2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

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Executive Summary: Air Quality in Our Area

Air Quality in the Forest of Dean District

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].

The monitoring reported within this 2021 Annual Status Report for Forest of Dean District Council took place during the whole of 2021. It does not indicate any additional areas of general concern with regard to air quality, but our designated Air Quality Management Area (AQMA) continues to experience elevated nitrogen dioxide levels. As with last year's results, this year's annual mean levels did not exceed the national objective of 40 μgm^{-3}, which was set to protect health. Most of the locations remained lower than 2019 concentrations, the last full year before pandemic restrictions affected general mobility nationally and locally. However, there was a general increase compared to the 2020 results. This probably reflects the gradual lifting of restrictions during late spring and early summer of 2021.

We have one Air Quality Management Area (AQMA) in the District which is in Lydney and was declared in July 2010. It was identified that traffic congestion (at the T-junction between the High Street and the Bream Road) was the most likely cause of the nitrogen dioxide (NO_2) levels which exceeded the national air quality objectives at the time the

[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 2021

[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

AQMA was declared. The District's centralised national AQMA page can be found here: Link to Forest of Dean AQMA details

Monitoring throughout 2021 has not identified any other exceedances of the national objectives within the Forest of Dean District. During 2021, there were no proposed industrial developments within the District with significant air pollution implications.

All residential development proposals were considered with regard to their potential to increase traffic pollution in the AQMAs and other areas. Of note this year is progress with a number of new housing and other developments, proposed or already occurring in the Lydney area and each of these have been assessed in relation to their potential to affect the AQMA at Lydney.

Redevelopment of Lydney Harbour is ongoing, with planning permission currently pending for the redevelopment of the former Pine End plywood manufacturing site. If approved, this will see the transformation of the currently derelict site into an eel fishery and smokery, which will include café and education/visitor centre.

The Council has considered the air quality implications of each development proposal and worked closely with developers and other bodies, in particular Gloucestershire County Council highways officers and the Environment Agency where required.

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 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.

[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

The Council has produced air quality guidance for planners and developers. The Air Quality Technical Guidance document for the Forest of Dean District Council has been produced to provide a screening tool to assist planners and developers in deciding when air quality should be assessed as part of the development control process. It also provides guidance for air quality consultants undertaking air quality and emission mitigation assessments, in order to protect local air quality from any impacts arising from the development. It can be found here:

Link to Forest of Dean Air Quality Guidance

To encourage sustainable transport, there is planning permission pending on the proposed Dean Forest Greenway, a multi-use track between Parkend and Lydney, connecting with existing Forest of Dean cycling trails, Lydney Station and Harbour.

Similar to last year, it is too soon to establish whether actions taken in the last couple of years have affected traffic patterns in the District, particularly the Lydney area, which will be better assessed over the coming years now all Covid restrictions have been lifted.

Conclusions and Priorities

We deploy a number of diffusion tube monitors across the District, measuring nitrogen dioxide as part of an ongoing survey. These are collected and sent for analysis on a monthly basis.

This has shown that air quality across the Forest of Dean District remains very good with measured levels of nitrogen dioxide (NO_2) generally well below national limits.

Concentration of NO_2 have shown an increase compared to the previous year, but remain lower than 2019. This probably reflects the lockdown imposed during the beginning of the year, followed by the gradual lifting of pandemic restrictions as the year progressed. The 2021 monitoring programme shows the NO_2 concentrations within the Lydney Air Quality Management Area (AQMA), remain below the mean objective of 40 μgm^{-3}, set to protect health, and at all other monitoring locations this objective continued to be comfortably met.

The AQMA has seen the annual mean for NO_2 concentrations below the national objective for two consecutive years. However, due to the unusual circumstances of 2020 & 2021, where trends in air quality are likely to be dominated by the pandemic effect on local traffic, we intend to keep this in place.

The 2005 – 2021 Forest of Dean District Council Air Quality reports are available online at:

Forest of Dean District Council - Air Quality pages

Over the coming year it is anticipated that progress will be made with cycling schemes as an alternative to car use. Whereas travel due to bike rather than car will result in less emissions, it is recognised that some of these schemes are intended as much to promote tourism as well as bike use. However, the benefit of encouraging leisure bike use as a positive activity may then become a future commuting mode option.

As discussed above, local planning policy is encouraging further cycleway development. Planning policy AP27 of the Forest of Dean Allocations Plan 2006-2026 (adopted 2018) seeks to safeguard land for a future Lydney to Parkend Cycle Route. Land will be protected for the establishment of a cycle route between these two locations. Similarly policy AP27 seeks to safeguard land between Christchurch and Berry Hill for the Christchurch to Coleford cycle route and policy AP29 for Sedbury and Tintern Bridge. The latter route opened in April 2021 as the Wye Valley Greenway.

Local Engagement and How to get Involved

As the air pollution of concern in the District is related to traffic emissions, we can all do our bit to reduce emissions by not using a car unless entirely necessary. More sustainable forms of transport include walking or cycling, taking public transport, and car sharing (rather than driving an otherwise empty car), all reduce our individual carbon footprint.

The solution to congestion-related pollution lies to a large extent in road traffic management and District authorities do not have the remit to manage this. Local interest groups can however lobby County Councils directly to influence the content of Local Transport Plans (LTP).

Any queries about Air Quality should be directed to the Environmental Protection team within Forest of Dean District Council. This team can be contacted by email on: ers@fdean.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality in the Forest of Dean District during 2021. 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 Forest of Dean District 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

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority 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 Forest of Dean District Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within the Forest of Dean District. Appendix D: Map(s) of Monitoring Locations and AQMAs, provides maps of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean;

The outlined area on the map in Figure 2.1 shows the designated AQMA in Lydney, which incorporates roads affronting residential properties in High Street, Hill Street and Newerne Street from Temple Way junction (A) to Albert Street Junction (D); and Bream Road from High Street junction (B) to approximately 75m past the entrance to Lydney Church of England Primary School (F); and Forest Road from Hill Street (C) to just past 17 Forest Road (E). A more detailed plan showing the locations of monitoring points within the AQMA will be found in Appendix D.

Figure 2.1 – Map of Lydney AQMA Boundaries

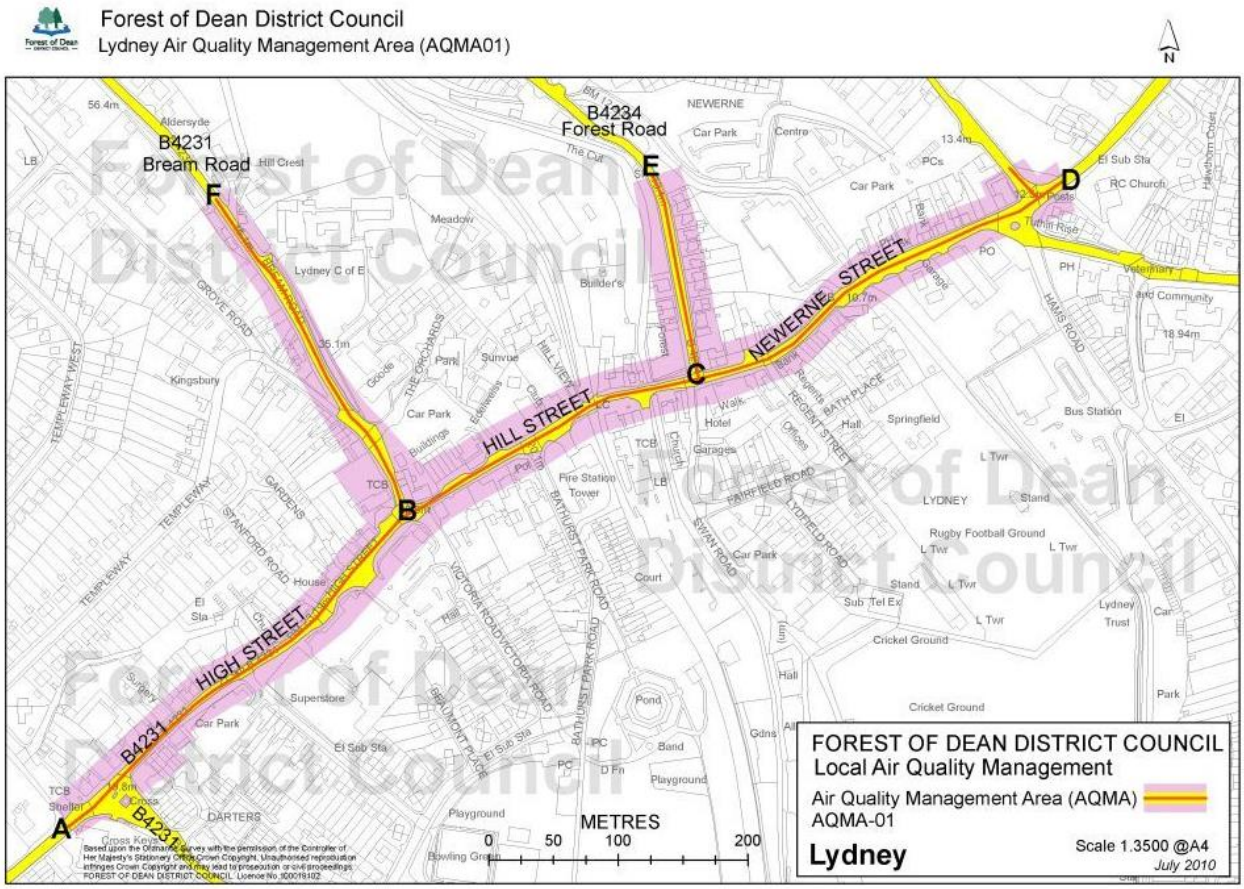


Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
High Street Lydney	July 2010	Annual Mean NO_2; 40µg/m^3	High Street, Hill Street and Newerne Street from Temple Way junction to Albert Street Junction; and Bream Road from High Street junction to approximately 75m past the entrance to Lydney C of E Primary School; and Forest Road from Hill Street to just past 17 Forest Road.	NO	50µg/m^3	31.5µg/m^3 (not exceeding)	A draft Lydney AQMA Action Plan dated January 2015 has been prepared with the assistance of a steering group and after local consultation with stakeholders.	

☒ **Forest of Dean District Council confirm the information on UK-Air regarding their AQMA is up to date**

2.2 Progress and Impact of Measures to address Air Quality in Forest of Dean District

Defra's appraisal of last year's ASR concluded that although '*Overall the report is detailed, concise and satisfies the criteria of the relevant reporting standard*', there was room for improvement. Suggested improvements are listed below, along with updates for the Council where applicable:

Comment	Action
The Council have included a detailed discussion of measures to improve air quality in the District and have completed a number of air quality improvement measures, particularly those that focus on new cycling schemes to encourage the uptake of active travel. The Council are encouraged to review and update their AQAP, as it is now over 5 years old, and consider additional measures to improve air quality in the AQMA.	Travel restrictions imposed by the Covid-19 pandemic continued to influence air quality during 2021. At time of writing, raw 2022 data indicates no significant rise in concentrations of NO_2 within the AQMA, compared to 2021 data for comparable months. In addition, annual pre-pandemic NO_2 concentrations showed a gradual decline since the declaration of the AQMA in 2010. With this in mind, we have made the decision to delay a revision of the AQAP, until we have a clear picture of the post-pandemic air status within the Lydney AQMA.
NO_2 trends in the Lydney AQMA and across the District are presented with a detailed discussion of the impacts of COVID-19 on air quality in the AQMA which is supported by a comparison of monthly monitoring results for 2019 and 2020. This level of detail is encouraged future reports.	We have updated this comparison to include the 2021 results.
The QA/QC procedures are thorough and follows the methodologies outlined in TG16. The Council have presented the methodology and factors applied for annualisation and bias adjustment. The Council are encouraged to include some justification for the national bias adjustment factor (i.e. there are no co-located triplicated sites within the monitoring network).	Please refer to Appendix C.
The report includes clear figures that show monitoring locations and the AQMA boundary. The Council could consider including an additional figure to show all monitoring locations across the District to represent the distribution of monitoring.	Please refer to Appendix D

An Air Quality Action Plan (AQAP) was drafted in 2015 and consultations undertaken. Various options were assessed and assigned scores. Those options scoring 20 or more were considered to be the most feasible and cost effective options for positive air quality impacts in the town centre.

There were 8 options which score higher than 20, as detailed below:

- Option 1 - Action Schemes to encourage alternative transport
- Option 2 - Bream Road – Signalisation
- Option 7 - Switch off engines at heritage railway level crossing whilst idling
- Option 8 - Reduce parking near Lydney C of E School and encourage parking in car park at the bottom of Bream Road
- Option 10 - Promote regular HGV servicing and emission testing to ensure cleaner running vehicles
- Option 13 - Newerne Street Link
- Option 14 - Improve rail services and facilities
- Option 15 - Other public transport services

Some of these measures have been completed in recent years, with subsequent monitoring showing a general downward trend in NO_2 concentrations. Further information regarding these measures is provided below:

- Option 1 aligns with Gloucestershire County Council's LTP regarding 'smarter choices', their 'Active Together' scheme and their 'Connecting Places' proposals. It provides low cost methods to encourage mode shift from the private car.
- Options 2 and 13 have been promoted by the Council as part of the Forest of Dean District Council Infrastructure Delivery Plan (2015) Link to: Infrastructure Plan and funding is either provisionally available or is being actively sought.
- Options 7, 8 and 10 are not necessarily straightforward to implement.
- Options 14 and 15 involve other organisations, e.g. Network Rail, Great Western Trains, Transport for Wales, Stagecoach, Forest of Dean Community Transport Partnership, etc. Improvements put forward include those to station car parking and providing a cycle link from the town centre to the railway, with cycle parking at each end of the scheme.

Forest of Dean District 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. Eight measures are

included within Table 2.2, with the type of measure and the progress Forest of Dean District Council have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

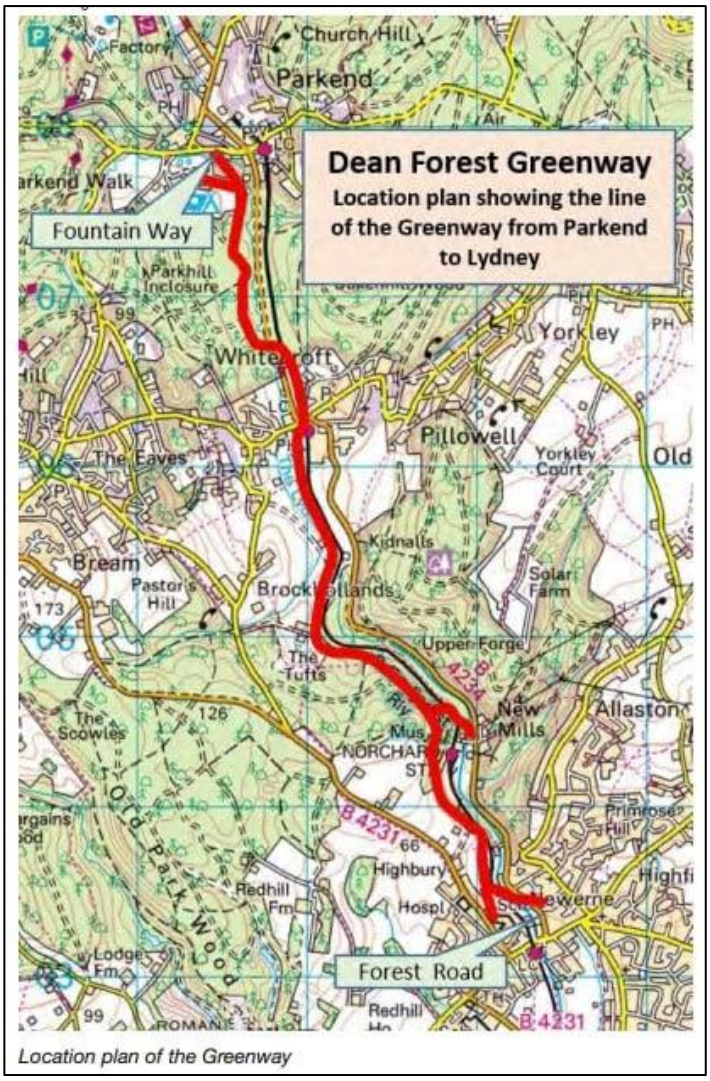
Forest of Dean District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in the Lydney AQMA

In relation to Options 14 and 15 above, the **Lydney Cycleway** improvement scheme was completed in spring 2020. This has created a safe and accessible network of pathways within Lydney and the wider area, linking Aylburton, Lydney Town Centre, the Railway Station, Dean Academy, and residential developments. The aim of the scheme is to encourage cycling and walking as an alternative means of transport within the town. This may have contributed to the fall in NO_2 concentration in 2020 and 2021, however this will not be confirmed until we have annual results which are not impacted by social / travel restrictions.

Other Recent and Future Measures across the District

Planning permission is currently being sought for the **Dean Forest Greenway**, a 5.5km path following the Forest of Dean Railway, linking Parkend (Forest of Dean) and Lydney. Outlined in Planning Policy AP27, this path will offer an alternative, more sustainable mode of transport between the Forest of Dean and Lydney, and other settlements located near the route. Further details are available at the following link: Dean Forest Greenway. The route is shown below.

Figure 2.2 – Dean Forest Greenway



The Wye Valley Greenway was opened in April 2021 and runs from Sedbury in the District to Tintern at the English/Welsh border. This provides an 8kms long (5 miles) traffic-free route from Wyedean School to the Wireworks Bridge at Tintern, within the District. It was created on the route of a former railway line after a Forest of Dean District Council resolution AP29 was adopted in June 2018 to safeguard the railway route for recreational use. Further details can be found in previous reports (2021) and at the following link:

Wye Valley Greenway

Policy AP28 seeks to safeguard land between Christchurch and Berry Hill for the Christchurch to Coleford cycle route.

The introduction of a 20 mph speed limit in Lydney High Street, already completed, is thought to have had the effect of relieving congestion at the T junction, as drivers on the main road more readily give way to exiting traffic when moving more slowly.

Housing and Other Developments

A number of new housing and other developments are proposed or already occurring in the Lydney area and each of these have been assessed in relation to their potential to affect the AQMA at Lydney.

A £2.1M scheme is proposed for Lydney Harbour to improve access and ultimately to encourage tourism. The access for this will be directly from the A48 highway to the south of the town and would not necessarily have a direct effect on the air quality in the AQMA.

Climate Change

Forest of Dean District Council declared a climate emergency in 2018 and since then has been working on a number of initiatives to address climate change. Some of these will have an impact on air quality. More details can be found here:

Link to: Climate action and what we are doing

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	Air Quality Technical Guidance for Forest of Dean District Council 2015	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2015	2015	District Council	Local Authority, Funding: Defra Air Quality Grant	NO	Funded	< £10k	Completed	Address potential increase in vehicular emissions due to vehicle usage associated with new residential and business developments	Approved policy in place and in use, with associated technical guidance available on FODDC website	Policy approved and in use from 30 July 2015	Air quality guidance available on FoDDC website
2	The Lydney Cycle Improvement Scheme	Promoting Travel Alternatives	Promotion of cycling	2020	2021	Gloucestershire County Council, with GFirst LEP Growth Deal	Gloucestershire County Council	NO	Funded	£500k - £1 million	Completed	Provides alternatives for travel around Lydney, especially within the AQMA	The Scheme involves the construction of an integrated cycleway network incorporating 5 individual “links” throughout Lydney.	Completed	None
3	Travel Alternatives	Promoting Travel Alternatives	Encourage / Facilitate home-working	2020	2021	Gloucestershire County Council & FODD Council	Gloucestershire County Council	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	n/a	Implementation on-going	None
4	Travel Alternatives	Promoting Travel Alternatives	Promotion of walking	2020	2021	Gloucestershire County Council & FODD Council	Gloucestershire County Council	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	n/a	Implementation on-going	None
5	Public Transport Information	Public Information	Via the Internet	2020	2021	Gloucestershire County Council	Gloucestershire County Council	NO	Funded	£10k - 50k	Implementation	Reduced vehicle emissions	n/a	Implementation on-going	None
6	Targeted speed limit reductions	Traffic Management	Reduction of speed limits, 20mph zones	2018	2018	Gloucestershire County Council	Gloucestershire County Council	NO	Funded	£100k - £500k	Completed	Reduced vehicle emissions	Improved traffic flow at peak hours in the Lydney Town Centre	Completed	None
7	Gloucestershire’s Local Transport Plan 2015-2031	Transport Planning and Infrastructure	Other	2015	2015	Gloucestershire County Council	Gloucestershire County Council	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Improvements to Lydney rail station, cycle networks at Lydney and park & ride study	Implementation on-going	Funding

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
8	Dean Forest Greenway	Promoting Travel Alternatives	Promotion of cycling	2022		West Dean Parish Council	West Dean Parish Council, Lydney Town Council, Forestry England, Dean Forest Railway and Lydney Park Estate	NO	Funded	Not known	Planning	Reduced vehicle emissions	Provision of a traffic free walking & cycling route Parkend to Lydney, as an alternative to driving.	Awaiting approval	Planning approval

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

2.3.1 General Approach

As detailed in Policy Guidance LAQM.PG16 (Chapter 7) (Reference D), 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.

Other than the potential source from vehicles, no other significant source of $PM_{2.5}$ has been identified within the District. Therefore the control at this stage is aligned with the measures designed to achieve a reduction in vehicular emissions. The Forest of Dean does not have any smoke control areas.

Partnership working with the county-wide Gloucestershire Pollution Group has included liaison with Gloucestershire County to coordinate air quality policy.

2.3.2 Public Health Outcomes Framework

Public Health England publishes various information related to public health.

The importance of the effect of air pollution on public health is reflected by the inclusion of an indicator of mortality associated with air pollution in the Public Health Outcomes Framework. This is a series of “indicators” prepared by Central Government as a measure of public health in various categories and across the regions of the UK. One category of data is “D01 - Fraction of mortality attributable to particulate air pollution” (2018).

For Gloucestershire as a whole, the estimated Fraction of Mortality attributable to particulate air pollution (April 2021 update) is ranked 4 out of 15 areas in the South West of England. This equates to a percentage of 4.8% compared with the regional average of 4.1%.

For the FoD District, the estimated Fraction of Mortality attributable to particulate air pollution is ranked 10 out of 30 areas in the South West of England. This equates to a percentage of 4.3% compared with the regional average of 4.1%.

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

This section sets out the monitoring undertaken within 2021 by Forest of Dean District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Forest of Dean District Council does not currently operate any automatic monitors within its area.

3.1.2 Non-Automatic Monitoring Sites

Forest of Dean District Council undertook non- automatic (passive) monitoring of NO_2 at 28 sites during 2021. We exposed 3 tubes at one site (61 High Street, Lydney) within the AQMA for Quality Control purposes, so we have 30 results each month. Table A.1 in Appendix A shows the details of the sites. Sample locations remain the same as the previous year

Maps showing the location of these 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.

Changes to some monitoring point positions have been made for the 2022 monitoring year. These include new locations in Coleford, Newent and Tutshill. The outcome will be reported in the 2023 annual report.

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. There were at least 10 months data for all monitoring sites.

3.2.1 Nitrogen Dioxide (NO_2)

The focus of our monitoring has been measurement of concentrations of nitrogen dioxide. The locations of individual monitoring points are set out in Table A.1.

Table A.2 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years (where available), for comparison 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 2021 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.

Overall NO_2 levels are somewhat lower across the District in comparison with pre-pandemic years. However, they were in general higher than 2020, reflecting the easing of lockdown measures during this period. Table A. 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 2021 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.

Trends

Figure 3.1 shows the trend of nitrogen dioxide levels at a representative selection of sites monitored around the district outside of our Lydney AQMA over the last 9 years to give a fuller picture of changes during the decade. During 2021 there was a slight raise in measured NO_2 concentrations in all areas.

Figure 3.2 shows the trend within the Lydney AQMA since 2012. A similar raise was noted within the most of the monitoring locations within the AQMA compared with 2020. In addition, NO_2 concentrations remained below the national objective of 40µg/m^3.

Figure 3.3 illustrates the effect on local NO_2 concentrations on the District's AQMAs as the pandemic took hold. The graph shown is a comparison of corresponding unadjusted, monthly NO_2 concentrations between the years 2019, 2020 and 2021. In the first month of 2020 concentrations of NO_2 were comparable to those of the previous year. As the Covid pandemic developed and social mixing was first voluntarily curtailed then enforced by lockdown in March it can be seen that the 2020 NO_2 measurements are somewhat lower during February to May 2020, recovering somewhat in the summer of 2020 before dropping back again as the less severe social restrictions of the "Tier" structure were gradually introduced from late autumn of 2020. At the lowest point measured NO_2 was around a third of the 2019 levels. This readily demonstrates how elevated NO_2 at these locations is dominated by emissions generated from vehicular traffic.

NO_2 concentrations in 2021 began lower than those recorded in 2020, reflecting the social restrictions imposed from Boxing Day 2020. The lifting of these restrictions began in March 2021, which was reflected by a corresponding rise in NO_2 concentrations, above 2020 levels, but remaining below 2019 for the most part.

The annual mean NO_2 concentrations for 2020 and 2021 are symptomatic of the reduced road traffic during this period, as a result of travel restrictions imposed to minimise the spread of Covid-19. As such, they cannot be used to review the validity of the AQMA, as they do not reflect true traffic volumes under normal circumstances when no restrictions are in place. Consequently, the Lydney AQMA will remain in place for the foreseeable future.

It is also noted that the annual mean was less than 60µg/m^3, which indicates that an exceedance of the 1-hour mean objective is unlikely at any sites for those months.

3.2.2 Particulate Matter (PM_{10} & $PM_{2.5}$)

Measurements of particulate matter were not made within the District.

The UK Government has produced a selection of statistics on annual emissions to air in the UK for the period 1970 to 2019. Whilst there has been a long-term decrease in the emissions of all of the air pollutants covered, burning of other solid fuels for domestic heating and industry has increased in recent years and this is having an adverse effect on

the release of particulate matter. Decreases in emissions of particulates from many sources have been partially offset by increases in emissions from residential burning (domestic solid fuel heating; emissions of PM2.5 from this source increased by 28 per cent between 2009 and 2019). In fact domestic combustion using wood as a fuel accounted for 38 per cent of primary emissions of PM2.5 in 2019. This reflects the increasing popularity of solid fuel appliances in the home such as wood-burning stoves. Emissions of particulates from domestic burning is cumulatively now greater than that from road transport.

As a reflection of these concerns, new legislation has come into effect in England, controlling the sale of wood and coal for domestic heating. Under the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020, wet wood (that is, wood having a moisture content of more than 20%) cannot be sold in units of less than 2m^3. The same legislation outlaws sale of bags of coal for domestic fireplaces. This is intended to encourage use of approved kiln-dried logs which produce much less smoke and thus particulates.

Figure 3.3 – Graph showing the trend over the last 9 years of nitrogen dioxide levels around the district (outside of our AQMA)

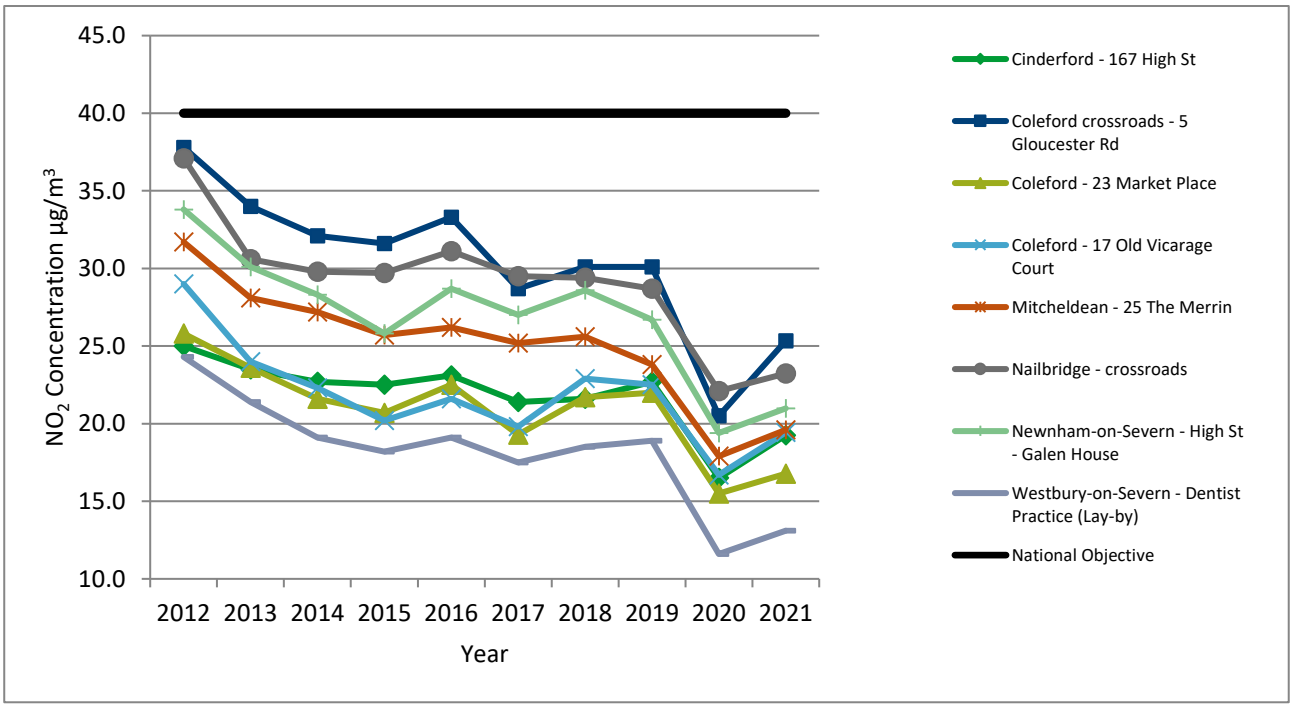


Figure 3.2 – Graph showing the trend over the last 8 years of nitrogen dioxide levels within our Lydney AQMA

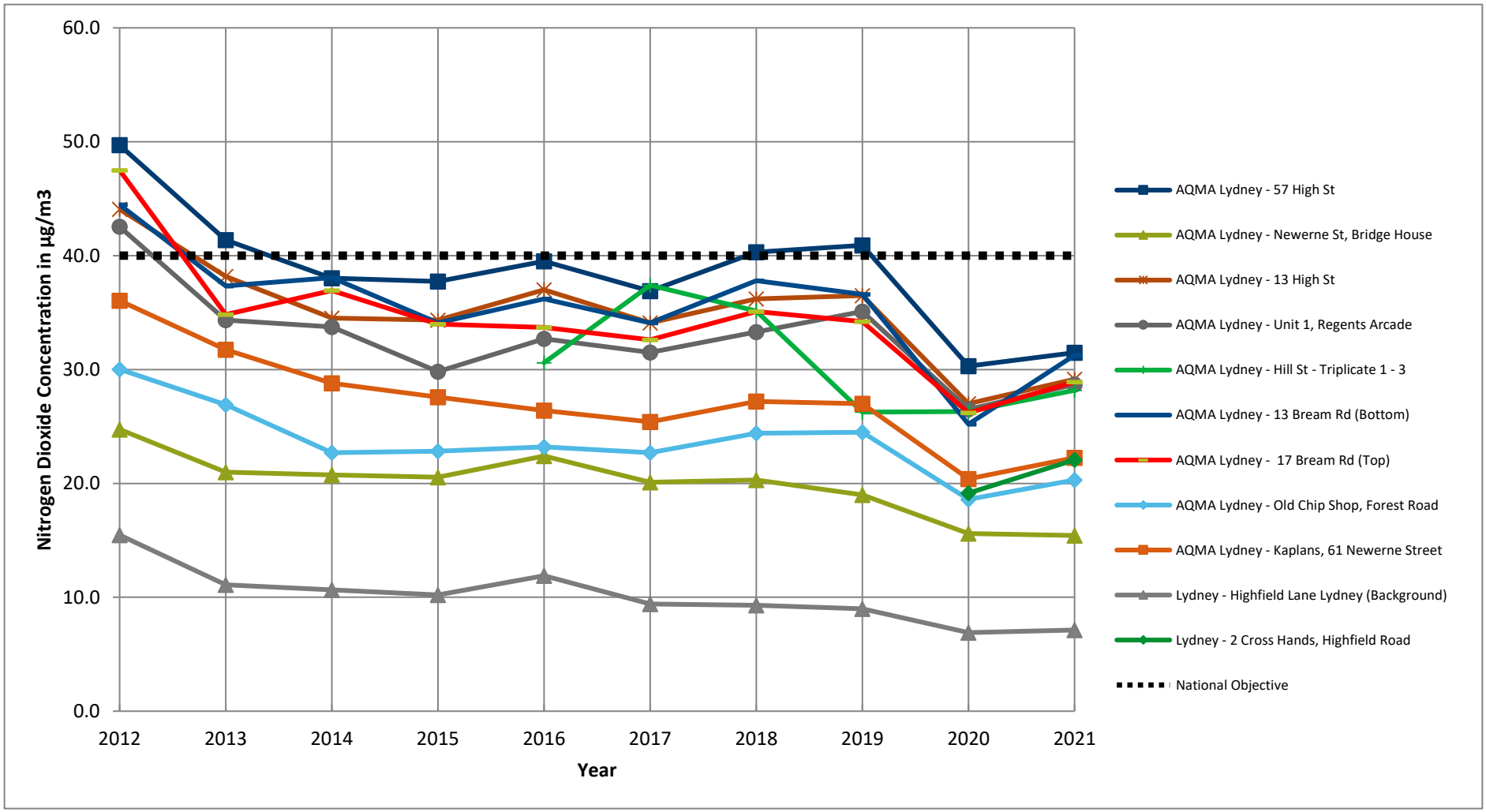
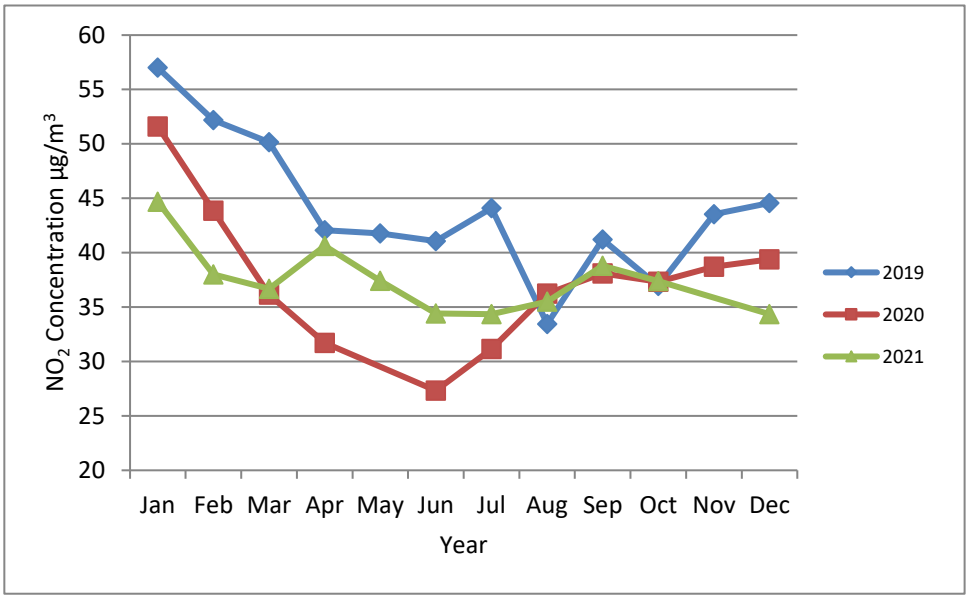


Figure 3.3 – 57 High Street, Lydney - relative NO2 concentrations 2019 to 2021



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)
CIN03	Cinderford - 167 High St	Roadside	365304	214732	NO2	None	0.0	0.9	No	3.0
CIN04	Cinderford - 31 Market St (CANDI)	Roadside	365637	214012	NO2	None	0.0	1.3	No	2.8
CIN06	Cinderford - High Street, Zebra Crossing (Top, near Factory Shop)	Roadside	365659	214171	NO2	None	1.2	1.5	No	2.9
COL01	Coleford crossroads - 5 Gloucester Rd	Roadside	357743	210600	NO2	None	0.0	3.1	No	2.7
COL02	Coleford - 23 Market Street	Roadside	357551	210756	NO2	None	0.0	3.2	No	3.1
COL03	Coleford - 11 Old Vicarage Court	Roadside	357631	210785	NO2	None	3.7	1.5	No	2.8
HUN03	Huntley - opposite 9 Frogmore Road	Roadside	372370	219678	NO2	None	>10	2.6	No	2.9
LON01	Longhope, Knapp House, Monmouth Road	Roadside	369176	218673	NO2	None	9.0	4.1	No	3.2

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)
LYD01	Lydney - 57 High St	Roadside	363147	203074	NO2	Lydney AQMA	0.1	3.4	No	3.1
LYD02	Lydney - Newerne St, Bridge House - Tucker	Roadside	363527	203261	NO2	Lydney AQMA	0.0	7.0	No	2.9
LYD04	Lydney - 13 High St	Roadside	362971	202915	NO2	Lydney AQMA	0.7	2.0	No	2.9
LYD05	Lydney - Unit 1, Regents Arcade	Roadside	363494	203238	NO2	Lydney AQMA	0.2	1.4	No	3.0
LYD06	Lydney - Hill St - Inspirations Gallery	Roadside	363185	203111	NO2	Lydney AQMA	0.7	1.8	No	2.9
LYD08	Lydney - 13 Bream Rd (Bottom)	Roadside	363109	203213	NO2	Lydney AQMA	0.0	3.4	No	2.9
LYD09	Lydney - 17 Bream Rd (Top)	Roadside	363042	203322	NO2	Lydney AQMA	0.3	1.0	No	3.0
LYD10	Lydney - Old Chip Shop, Forest Road	Roadside	363408	203226	NO2	Lydney AQMA	0.0	1.6	No	3.0
LYD12	Lydney - Kaplans, 61 Newerne Street	Roadside	363607	203320	NO2	Lydney AQMA	0.0	2.5	No	2.8
LYD15	Lydney - Highfield Lane (Background)	Roadside	364087	204138	NO2	None	0.0	>15	No	2.3
LYD16	Lydney - 55 High Street Launderette	Roadside	363142	203069	NO2	Lydney AQMA	0.1	1.6	No	3.1

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)
LYD17, LYD18 , LYD19	Lydney - 61 High Street (Triplicate 3 of 3)	Roadside	363160	203088	NO2	Lydney AQMA	0.0	1.4	No	3.1
LYD20	Lydney - 2 Cross Hands, Highfield Road	Roadside	364196	203874	NO2	None	2.2	1.5	No	2.7
MIT01	Mitcheldean - 25 The Merrin	Roadside	364108	218274	NO2	None	3.8	3.0	No	3.1
NAI01	Nailbridge - crossroads	Roadside	364566	216246	NO2	None	0.6	1.1	No	2.9
NEW03	Newent - 12 High Street	Roadside	372117	226049	NO2	None	0.5	1.6	No	3.0
NOS02	Newnham-on-Severn - High St - Galen House	Roadside	369038	211590	NO2	None	0.0	3.4	No	2.6
TUT01	Tutshill - Beachley Rd - Opposite Severn Lodge	Roadside	353926	194467	NO2	None	>10	1.3	No	3.0
TUT02	Tutshill - Beachley Rd - Wyedean School	Roadside	354268	193950	NO2	None	>10	2.3	No	2.9
WOS01	Westbury-on-Severn - Dentist Practice (Lay-by)	Roadside	371651	214042	NO2	None	0.0	>12	No	3.0

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)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CIN03	365304	214732	Roadside	100	100.0	21.4	21.6	22.7	16.5	19.2
CIN04	365637	214012	Roadside	100	100.0	22.9	23.9	24.2	18.7	20.9
CIN06	365659	214171	Roadside	100	100.0	*	*	27.3	23.4	27.5
COL01	357743	210600	Roadside	100	100.0	28.7	30.1	30.1	20.5	25.3
COL02	357551	210756	Roadside	100	100.0	19.3	21.7	22.0	15.5	16.8
COL03	357631	210785	Roadside	100	100.0	19.8	22.9	22.5	16.7	19.4
HUN03	372370	219678	Roadside	100	100.0	9.5	9.4	8.7	7.3	6.9
LON01	369176	218673	Roadside	100	92.6	*	*	18.1	17.0	19.4
LYD01	363147	203074	Roadside	100	92.3	36.9	**40.3**	**40.9**	30.3	31.5
LYD02	363527	203261	Roadside	100	100.0	20.1	20.3	19.0	15.6	15.4
LYD04	362971	202915	Roadside	100	100.0	34.1	36.2	36.5	27.0	29.1
LYD05	363494	203238	Roadside	100	89.9	31.5	33.3	35.1	26.5	28.7
LYD06	363185	203111	Roadside	100	100.0	38.7	38.9	37.5	27.5	31.1

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 2021 (%) [2]	2017	2018	2019	2020	2021
LYD08	363109	203213	Roadside	100	100.0	34.1	37.8	36.6	25.2	31.2
LYD09	363042	203322	Roadside	100	100.0	32.6	35.1	34.2	26.2	28.9
LYD10	363408	203226	Roadside	100	92.9	22.7	24.4	24.5	18.6	20.3
LYD12	363607	203320	Roadside	100	100.0	25.4	27.2	27.0	20.4	22.2
LYD15	364087	204138	Roadside	100	100.0	9.4	9.3	9.0	6.9	7.1
LYD16	363142	203069	Roadside	100	100.0	36.9	37.0	37.9	28.4	30.0
LYD17, LYD18 , LYD19	363160	203088	Roadside	100	100.0	30.6	37.4	35.1	26.3	28.2
LYD20	364196	203874	Roadside	100	100.0	*	*	*	18.5	22.1
MIT01	364108	218274	Roadside	100	100.0	25.2	25.6	23.8	17.9	19.6
NAI01	364566	216246	Roadside	100	100.0	29.5	29.4	28.7	22.1	23.2
NEW03	372117	226049	Roadside	100	100.0	26.2	28.6	28.1	20.1	23.1
NOS02	369038	211590	Roadside	100	85.2	27.0	28.2	26.7	19.4	21.0
TUT01	353926	194467	Roadside	100	92.9	*	13.6	13.7	9.5	9.7
TUT02	354268	193950	Roadside	100	100.0	*	*	15.8	12.6	11.2

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 2021 (%) (2)	2017	2018	2019	2020	2021
WOS01	371651	214042	Roadside	100	100.0	17.5	18.5	18.9	11.6	13.1

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **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/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%).

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CIN03	365304	214732	24.2	26.6	21.1	25.7	22.1	19.4	20.7	15.9	25.9	21.9	28.2	23.3	22.9	19.2	-	
CIN04	365637	214012	29.1	28.3	25.7	22.9	22.9	19.8	21.5	18.9	25.7	26.2	32.3	24.4	24.8	20.9	-	
CIN06	365659	214171	32.9	39.0	31.9	37.5	32.3	32.0	33.0	23.9	38.2	27.8	34.4	30.0	32.7	27.5	-	
COL01	357743	210600	32.3	28.8	29.7	32.7	30.7	26.9	27.4	31.3	32.6	28.5	33.0	27.9	30.2	25.3	-	
COL02	357551	210756	25.7	24.9	18.4	21.9	18.8	14.1	16.7	16.3	20.4	20.2	24.9	17.2	20.0	16.8	-	
COL03	357631	210785	26.6	24.1	23.2	23.9	22.3	20.9	20.7	19.7	23.1	22.0	29.2	22.1	23.1	19.4	-	
HUN03	372370	219678	14.4	12.2	8.3	6.9	5.4	5.9	5.2	5.3	7.3	8.4	9.3	9.4	8.2	6.9	-	
LON01	369176	218673	24.4	23.8	19.8	24.3	Missing	22.8	24.4	16.1	26.5	23.1	27.0	22.2	23.1	19.4	-	
LYD01	363147	203074	**44.7**	38.0	36.7	**40.6**	37.4	34.4	34.4	35.5	38.8	37.4	Missing	34.4	37.5	31.5	-	
LYD02	363527	203261	21.9	20.5	19.1	15.7	15.8	14.7	13.4	15.9	17.0	19.9	23.7	22.9	18.4	15.4	-	
LYD04	362971	202915	**42.2**	34.2	28.5	38.9	33.5	30.3	29.7	30.8	34.7	34.3	**43.2**	36.2	34.7	29.1	-	
LYD05	363494	203238	39.0	35.5	30.5	32.5	34.7	29.8	31.5	29.2	37.2	Missing	37.5	38.4	34.2	28.7	-	
LYD06	363185	203111	**40.9**	**40.5**	36.5	**42.0**	35.7	34.7	31.9	29.9	**41.0**	34.2	**40.7**	36.0	37.0	31.1	-	
LYD08	363109	203213	37.9	36.1	38.6	38.7	35.2	**40.4**	36.1	35.4	37.9	34.8	**42.7**	32.5	37.2	31.2	-	
LYD09	363042	203322	35.4	36.0	36.1	32.6	33.3	33.2	30.2	31.1	38.5	38.0	31.9	36.4	34.4	28.9	-	
LYD10	363408	203226	28.3	27.9	17.5	26.0	23.4	18.5	21.6	21.0	Missing	23.7	28.2	29.6	24.2	20.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LYD12	363607	203320	29.8	28.3	24.2	32.7	24.6	22.7	21.5	22.3	26.5	24.8	31.9	28.4	26.5	22.2	-	
LYD15	364087	204138	11.0	12.6	7.6	7.1	5.9	6.5	5.7	6.4	7.7	9.0	10.9	11.7	8.5	7.1	-	
LYD16	363142	203069	**43.0**	37.6	33.7	37.8	33.5	30.6	29.6	33.1	37.0	36.7	39.9	35.8	35.7	30.0	-	
LYD17	363160	203088	37.2	37.0	34.1	30.3	31.0	26.7	30.4	28.2	33.3	34.4	36.7	39.1	-	-	-	Triplicate Site with LYD17, LYD18 and LYD19 - Annual data provided for LYD19 only
LYD18	363160	203088	**40.1**	36.3	30.9	32.3	32.9	28.2	28.6	31.6	35.6	38.8	37.6	32.9	-	-	-	Triplicate Site with LYD17, LYD18 and LYD19 - Annual data provided for LYD19 only
LYD19	363160	203088	**41.0**	32.5	27.3	32.6	32.4	31.6	28.1	31.2	34.4	36.9	35.1	**40.2**	33.5	28.2	-	Triplicate Site with LYD17, LYD18 and LYD19 - Annual data provided for LYD19 only
LYD20	364196	203874	28.1	25.8	23.6	23.3	25.8	23.9	24.9	25.0	26.5	29.9	29.7	28.9	26.3	22.1	-	
MIT01	364108	218274	26.0	24.4	22.1	24.3	22.9	21.4	20.6	19.8	25.6	22.7	28.6	21.7	23.3	19.6	-	
NAI01	364566	216246	31.2	29.3	29.5	30.9	31.2	14.7	27.5	25.7	27.2	26.2	33.0	25.6	27.7	23.2	-	
NEW03	372117	226049	27.1	31.2	25.5	32.9	28.1	24.6	25.1	22.3	31.1	25.9	31.3	25.2	27.5	23.1	-	
NOS02	369038	211590	29.9	22.0	24.0	29.7	24.1	24.7	25.9	26.1	Missing	19.6	Missing	24.0	25.0	21.0	-	
TUT01	353926	194467	17.1	17.0	9.2	11.2	10.3	8.1	7.4	7.8	Missing	11.2	15.2	12.2	11.5	9.7	-	
TUT02	354268	193950	16.8	18.2	12.1	14.8	8.8	10.3	9.7	10.1	12.8	13.7	18.8	14.4	13.4	11.2	-	
WOS01	371651	214042	19.5	16.2	15.0	15.3	13.8	12.7	13.5	12.3	16.1	16.2	20.3	16.5	15.6	13.1	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Forest of Dean District Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

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 Forest of Dean District Council During 2021

Forest of Dean District Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Forest of Dean District Council During 2021

Forest of Dean District Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Forest of Dean District recorded data capture of at least 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 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.

The diffusion tubes (20% TEA in water) were supplied and analysed by Gradko. The tubes at all locations have a monthly exposure period. The Forest of Dean district does not have a triplicate co-location study within its area. Consequently, a bias adjustment factor of 0.84, based upon 33 studies, was obtained via the national bias spreadsheet, and this was applied to all diffusion tubes. This spreadsheet is available at:

https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/

A summary of bias adjustment factors used by Forest of Dean District Council 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
2021	National	03/22	0.84
2020	National	09/19	0.81
2019	National	06/18	0.93
2018	National	09/17	0.92
2017	National	06/16	0.87

NO_2 Fall-off with Distance from the Road

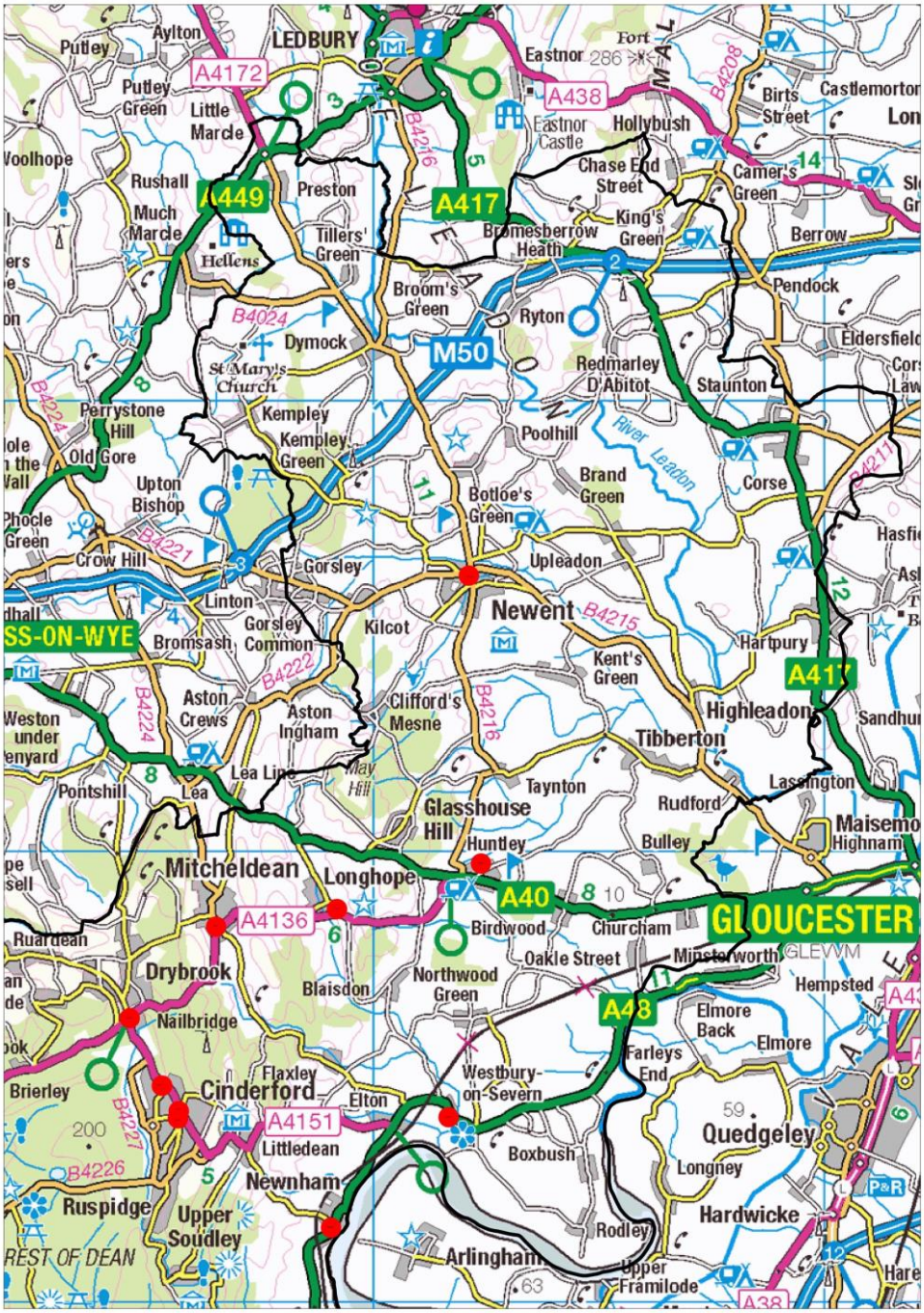
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM 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 Forest of Dean District Council required distance correction during 2021.

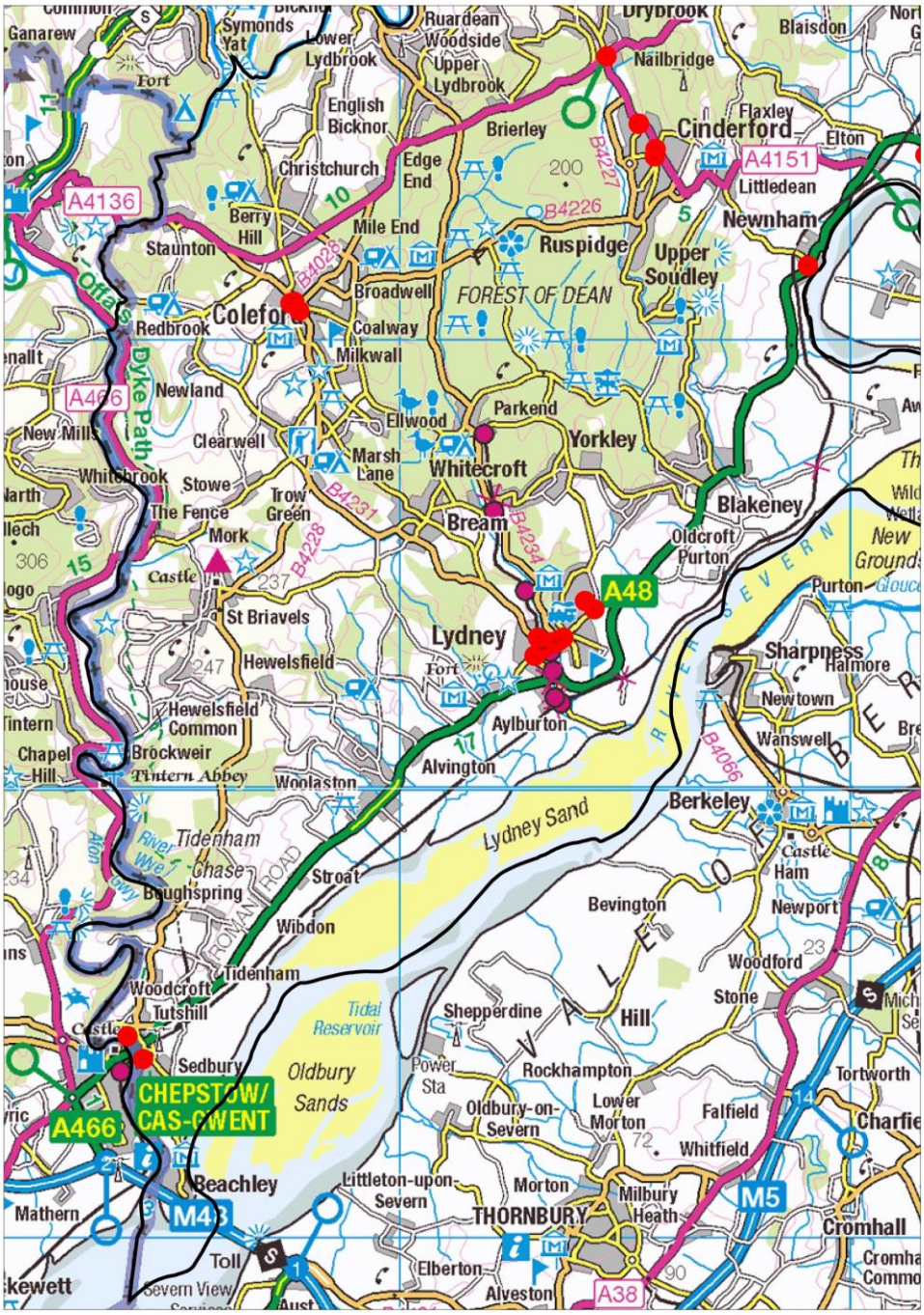
Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Maps of Monitoring Locations

Title **Diffusion Tube Location**	**Legend:** ● NO_2 Monitoring Location —— District Boundary	
Location: **Forest of Dean District**	**Date** June 2022	**Figure No.** D1
Contains Ordnance Survey Data Crown Copyright and Database Right [2022]		



Title **Diffusion Tube Location**	**Legend:** NO_2 Monitoring Location District Boundary	
Location: **Forest of Dean District - North**	**Date** June 2022	**Figure No.** D2
Contains Ordnance Survey Data Crown Copyright and Database Right [2022]		



Title **Diffusion Tube Location**	**Legend:** NO_2 Monitoring Location District Boundary	
Location: **Forest of Dean District - South**	**Date** June 2022	**Figure No.** D3

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

CIN03 - Bottom High Street, Cinderford

Title

Diffusion Tube Location

Date	**Figure No.**
Jun 2022	D4

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

CIN04 - Market Street, Cinderford

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D5

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

CIN06 High Street, Cinderford, Zebra Crossing (Top, near Factory Shop)

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D6

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

COL01 - Gloucester Road, Coleford

COL02 – Market Place, Coleford

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D7

Legend

Diffusion Tube Locations

AQMA Boundary

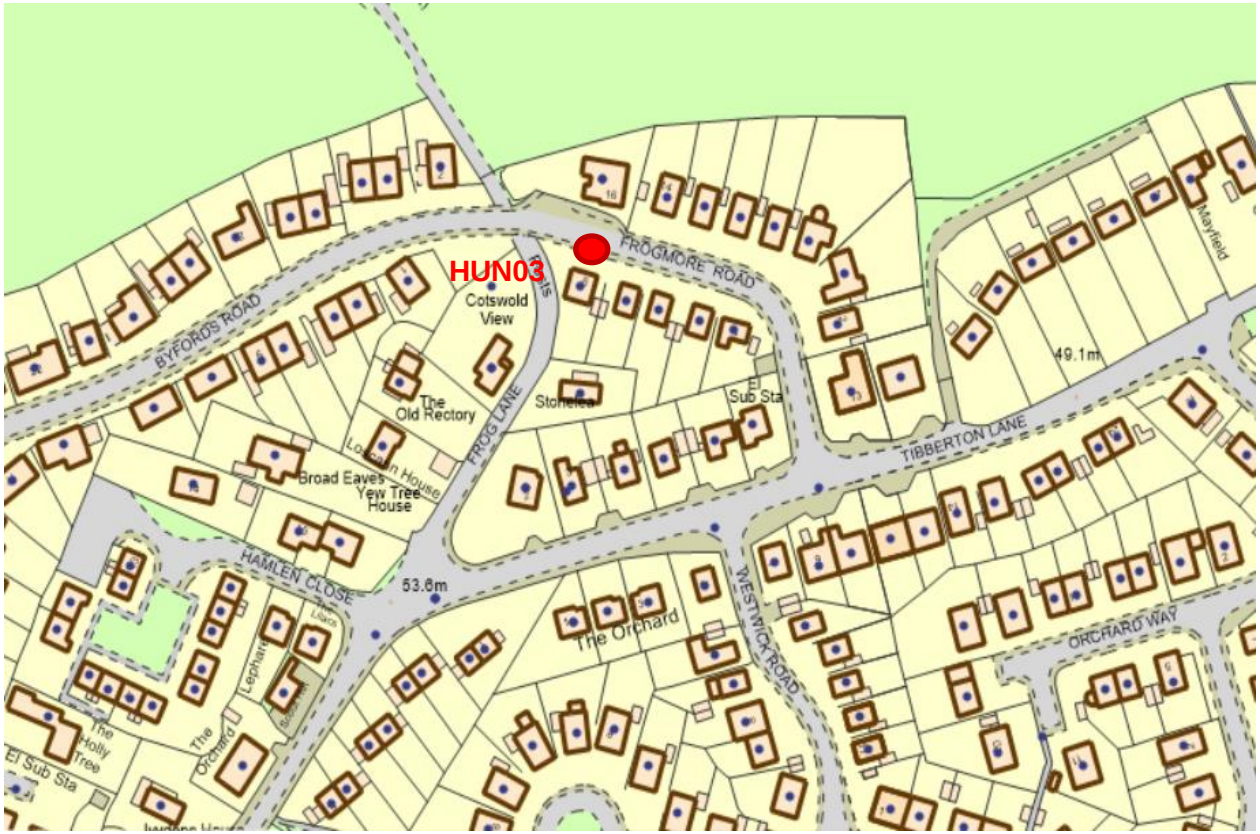
Location:

COL03 – Old Vicarage Court, Coleford

Title

Diffusion Tube Locations

Date June 2022	**Figure No.** D8



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

Location:

HUN03 Huntley - opposite 9 Frogmore Road

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D9

Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

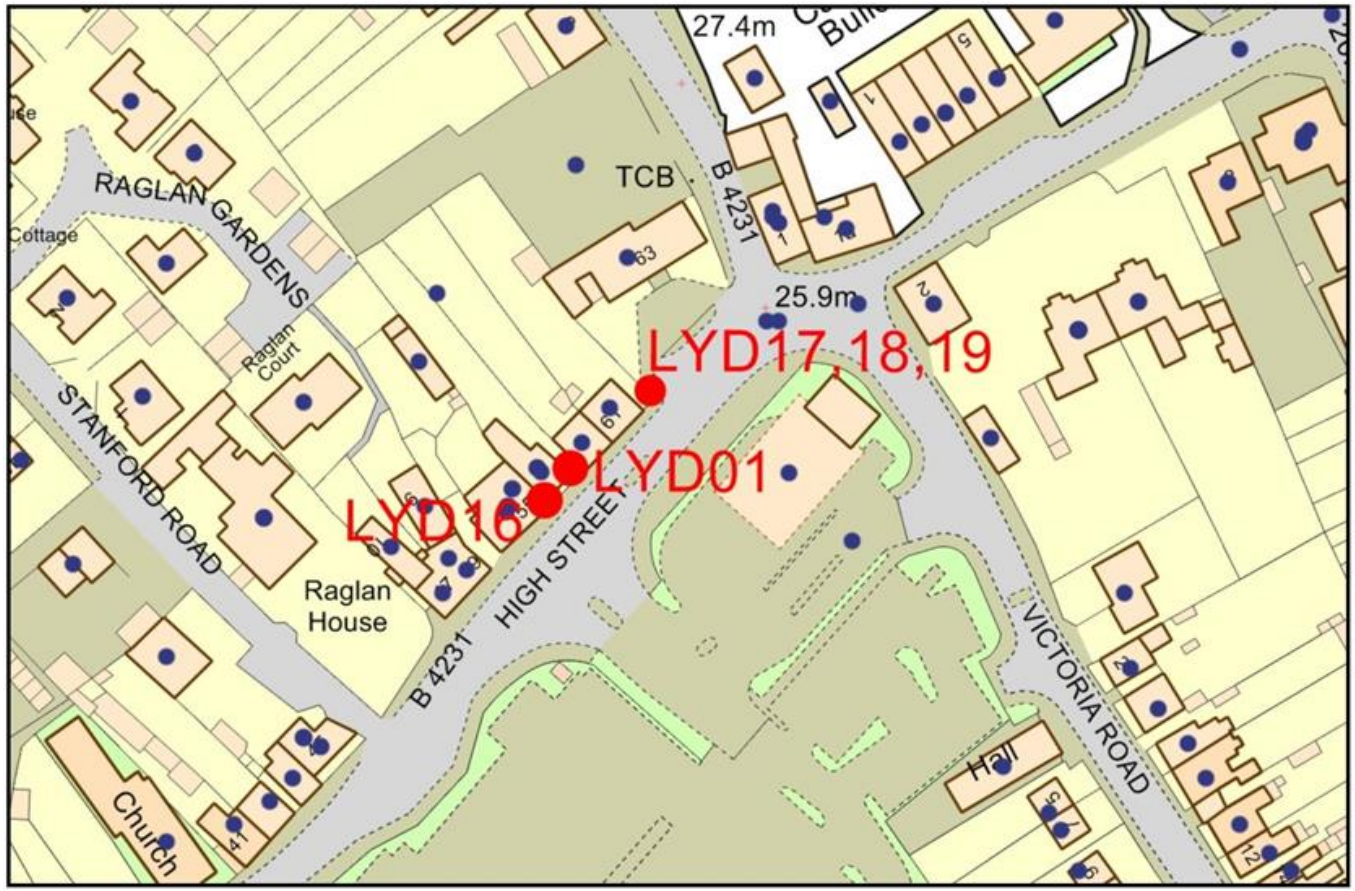
Location:

LON01 Longhope

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D10



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

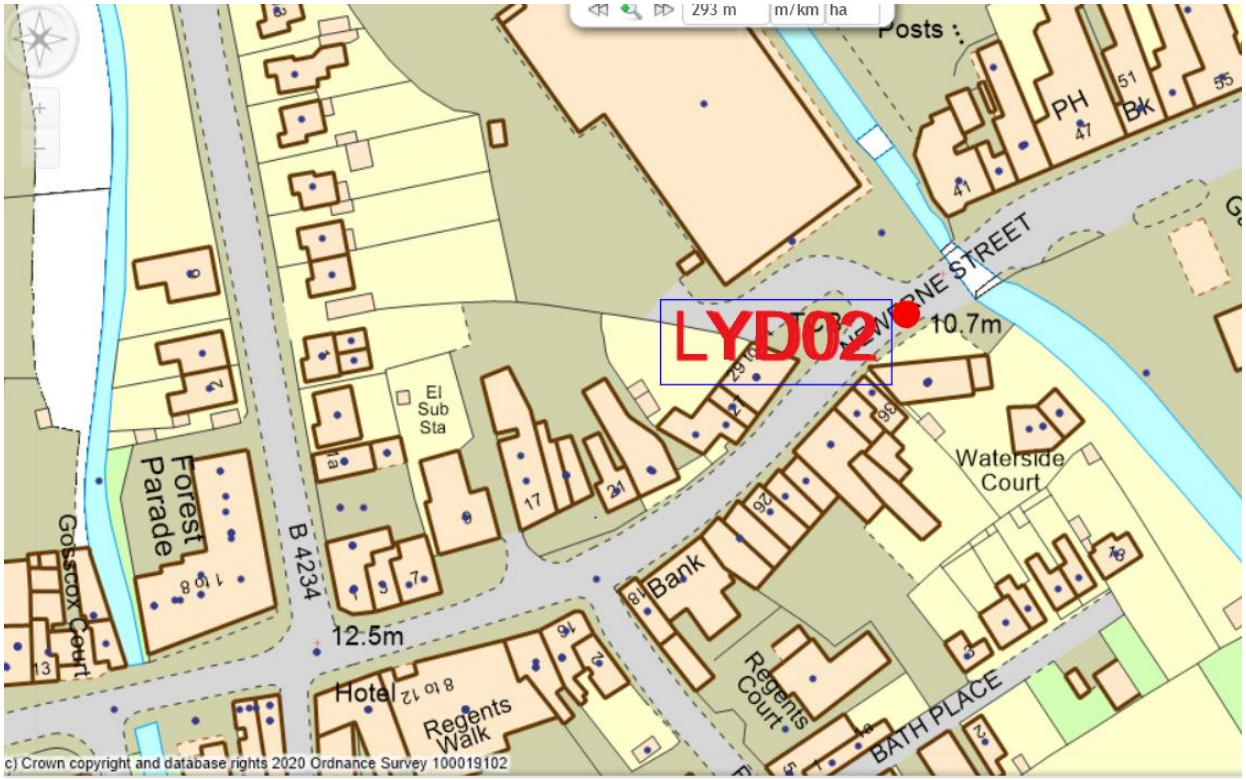
Location:

LYD01, LYD16,17,18,19 – Top High Street, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D11



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

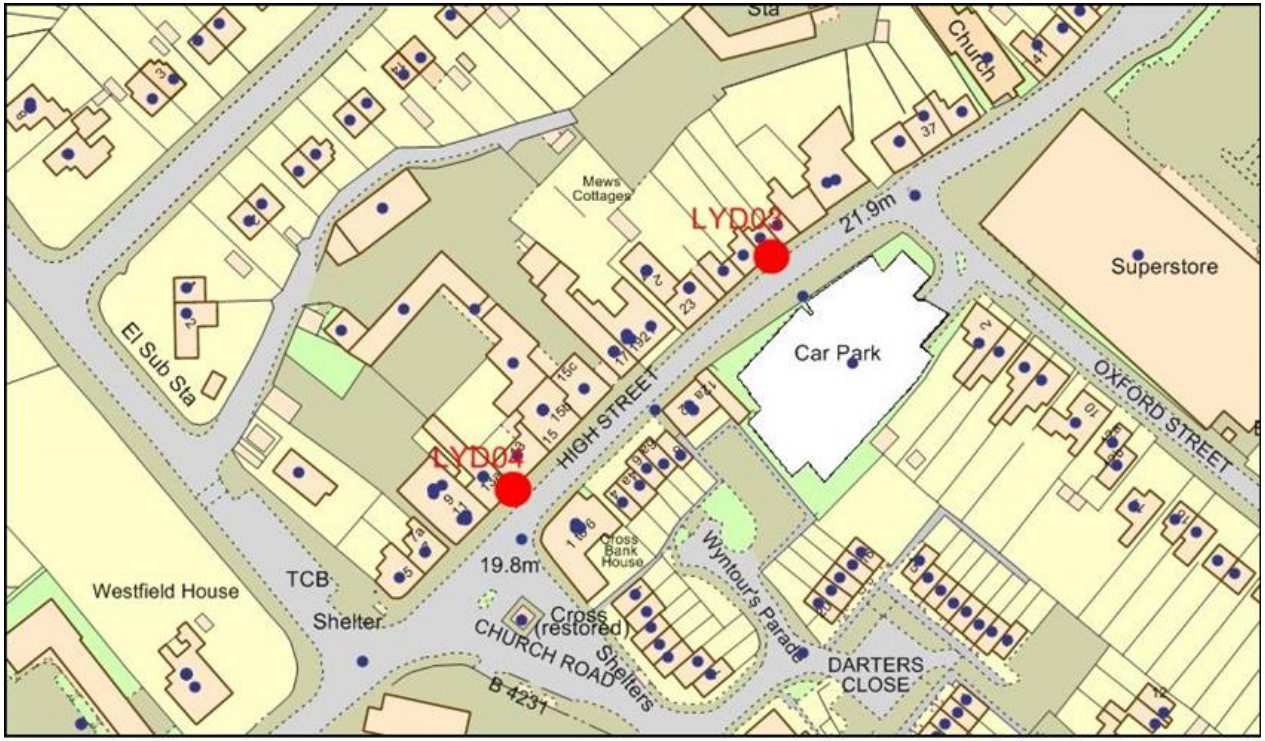
Location:

LYD02 – Newerne St, Bridge House, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D12



Legend

Diffusion Tube Locations

AQMA Boundary

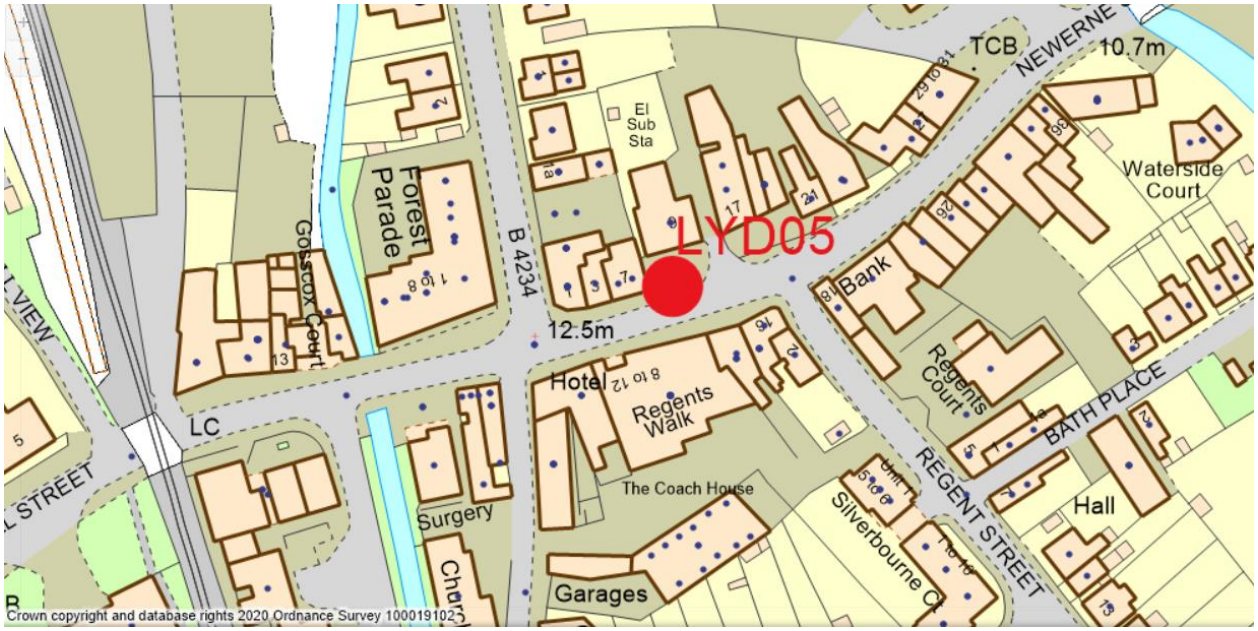
Location:

LYD03 - 33 High Street Lydney (no longer used), LYD04 - 13 High Street, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D13



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

Location:

LYD05 Unit 1, Regents Arcade, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D14

Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

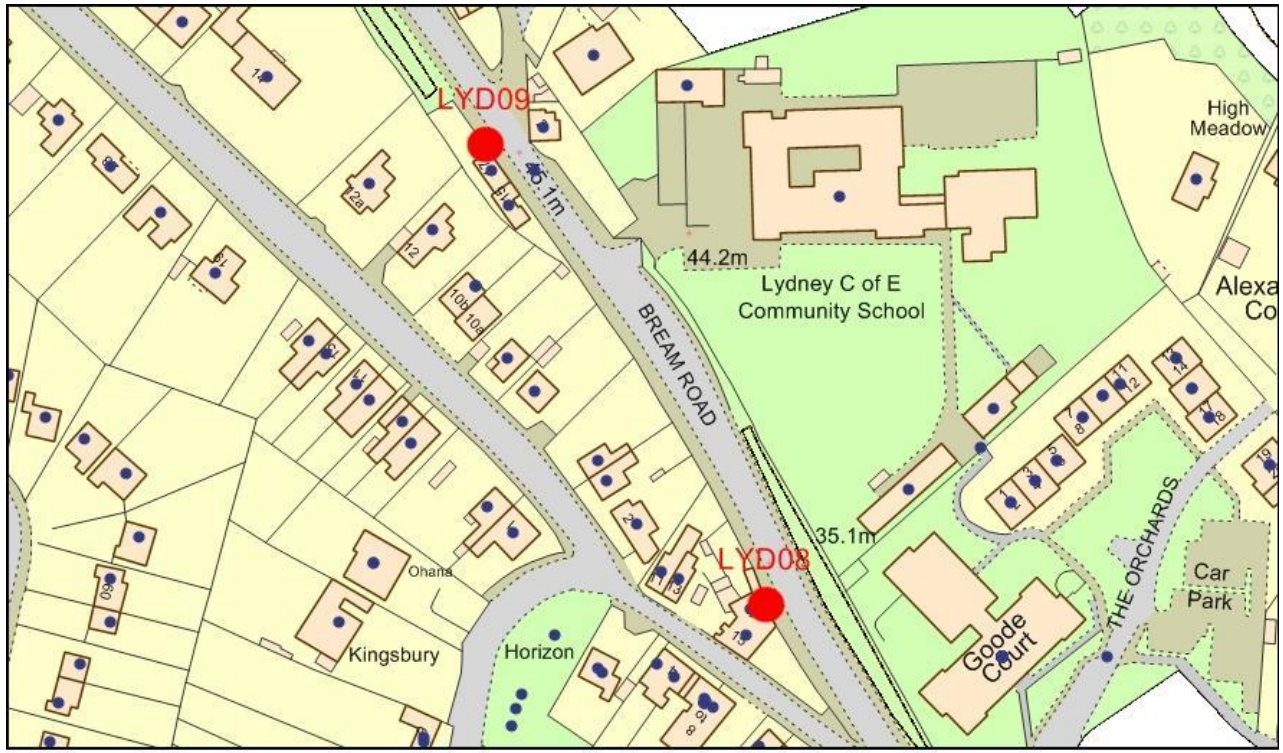
Location:

LYD06 Unit 1, Regents Arcade, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D15



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

Location:

LYD08 13 Bream Road, Lydney

LYD09 17 Bream Road, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D16

Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

Location:

LYD10 Old Chip Shop, Forest Road, Lydney

LYD12 Kaplans, 61 Newerne Street, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D17

Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

Location:

LYD15, Highfield Lane, Lydney (background)

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D18

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

LYD20 - 2 Cross Hands, Highfield Road, Lydney

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D19

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

MIT01 - 25 The Merrin, Mitcheldean

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D20

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

NAI01 Crossroads, Nailbridge

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D21

Legend

Diffusion Tube Locations

AQMA Boundary

Location:

NEW03 High Street, Newent

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D22

Legend

Diffusion Tube Locations

AQMA Boundary

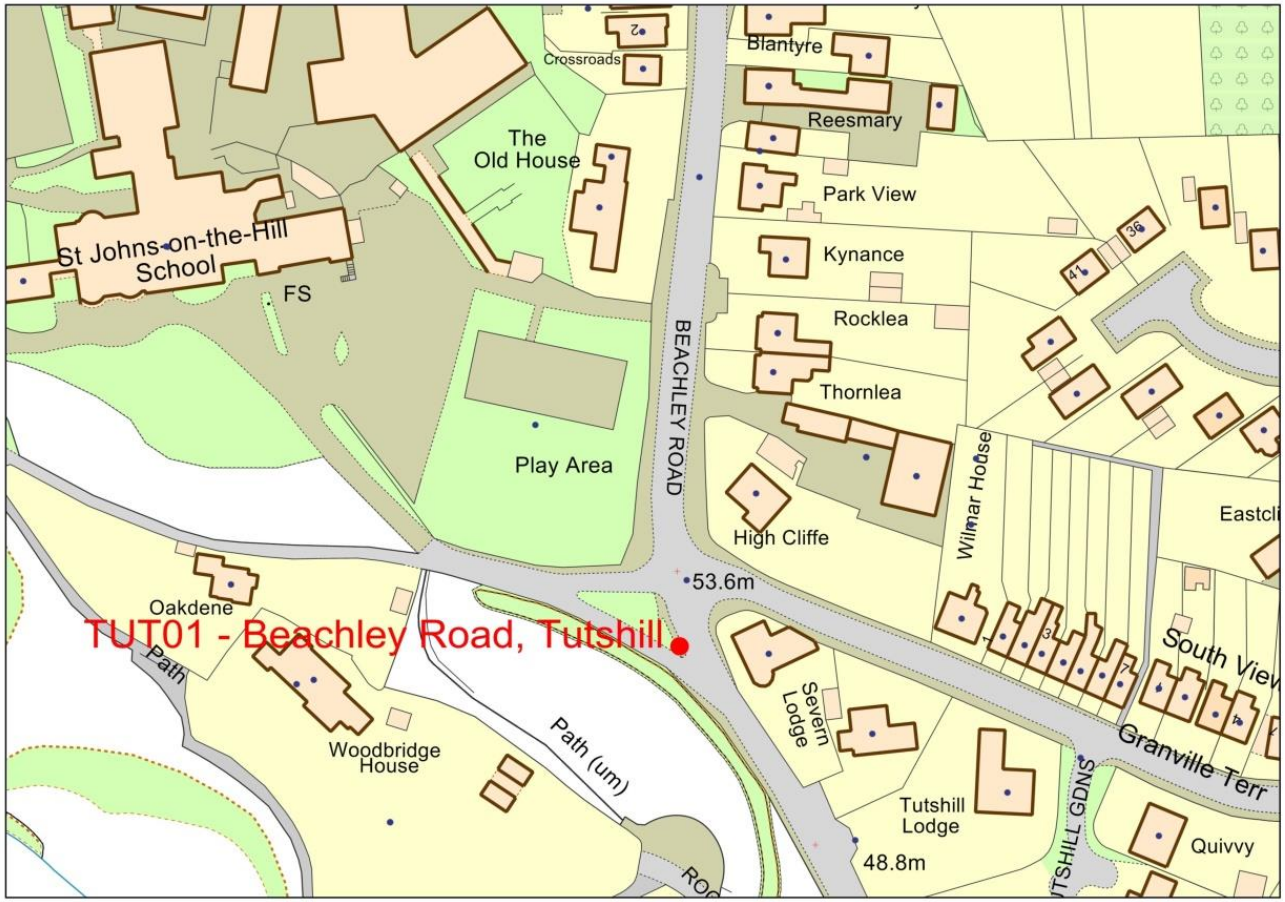
Location:

NOS02 - High St - Galen House, Newnham-on-Severn

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D23



Legend

Diffusion Tube Locations

AQMA Boundary

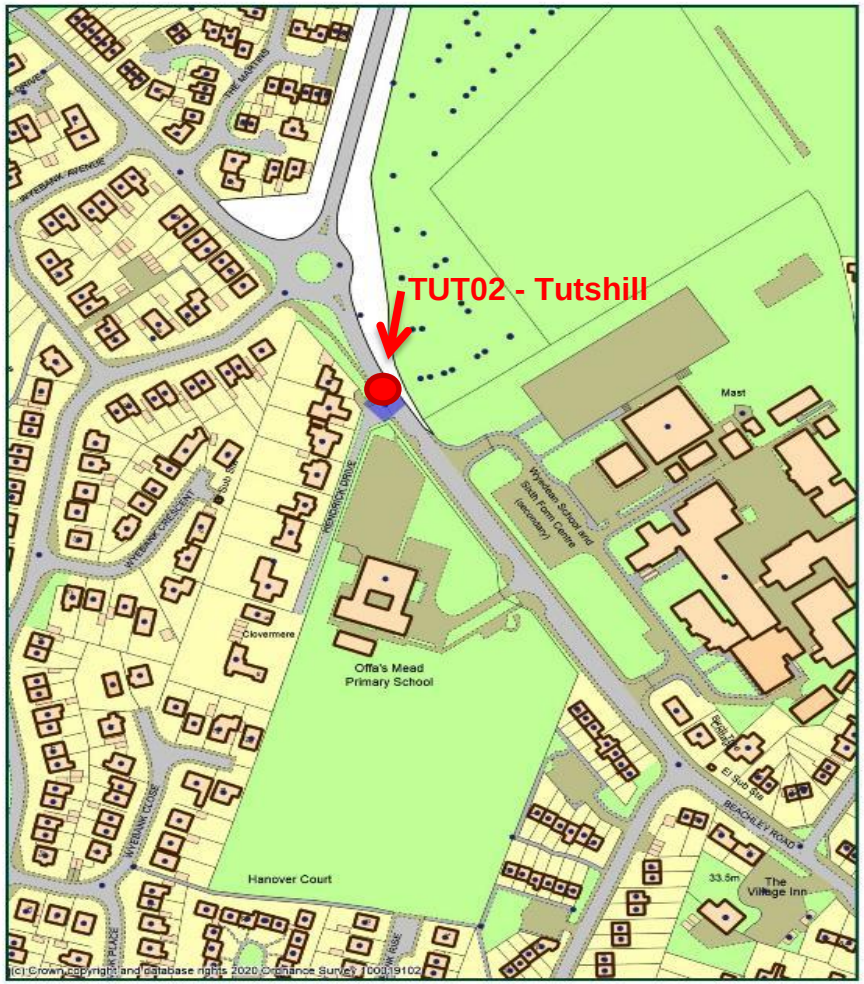
Location:

TUT01 Beachley Road, Tutshill

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D24



Forest of Dean

Scale: 1:2000

20 May 2020

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Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

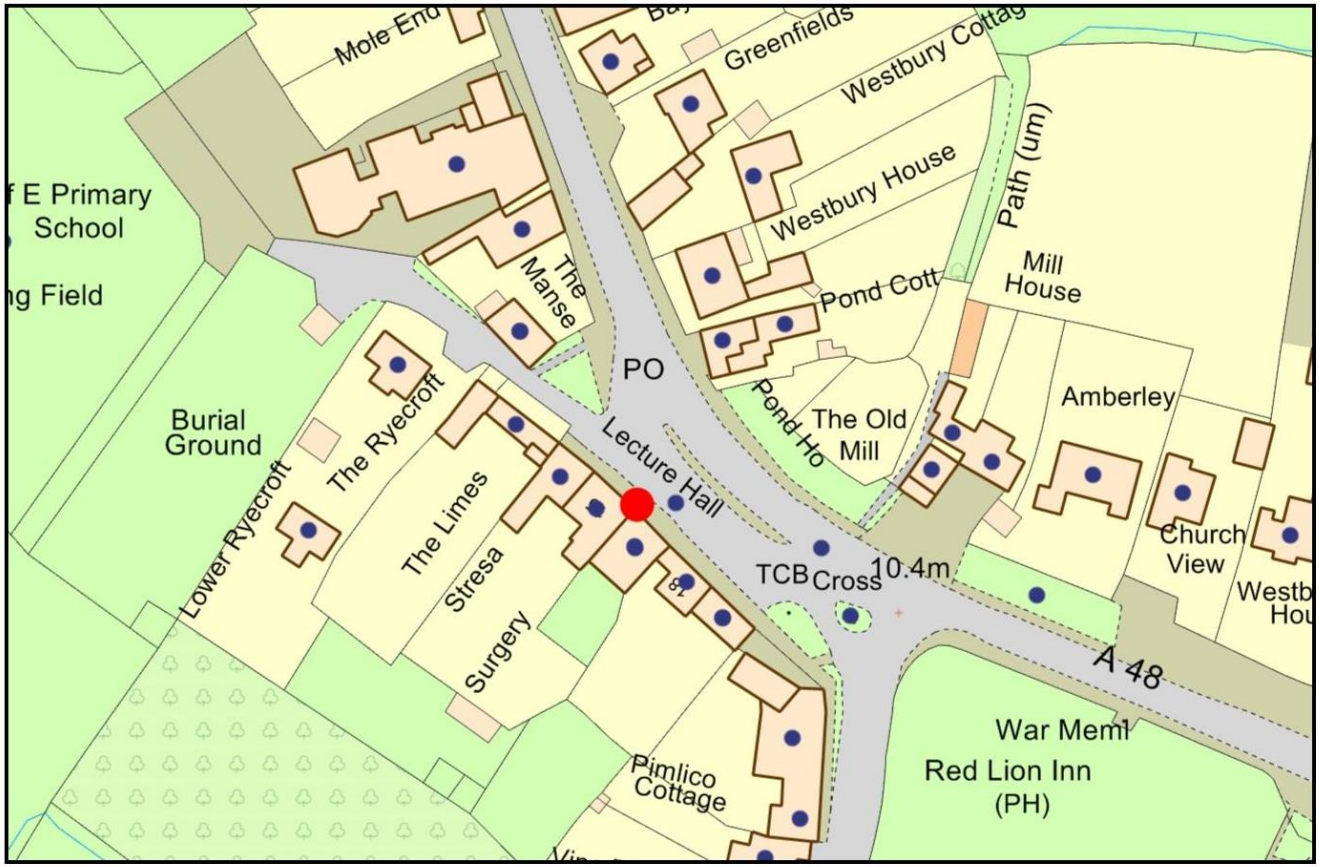
Location:

TUT02 Tutshill - Beachley Rd - Wyedean School

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D25



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2022]

Location:

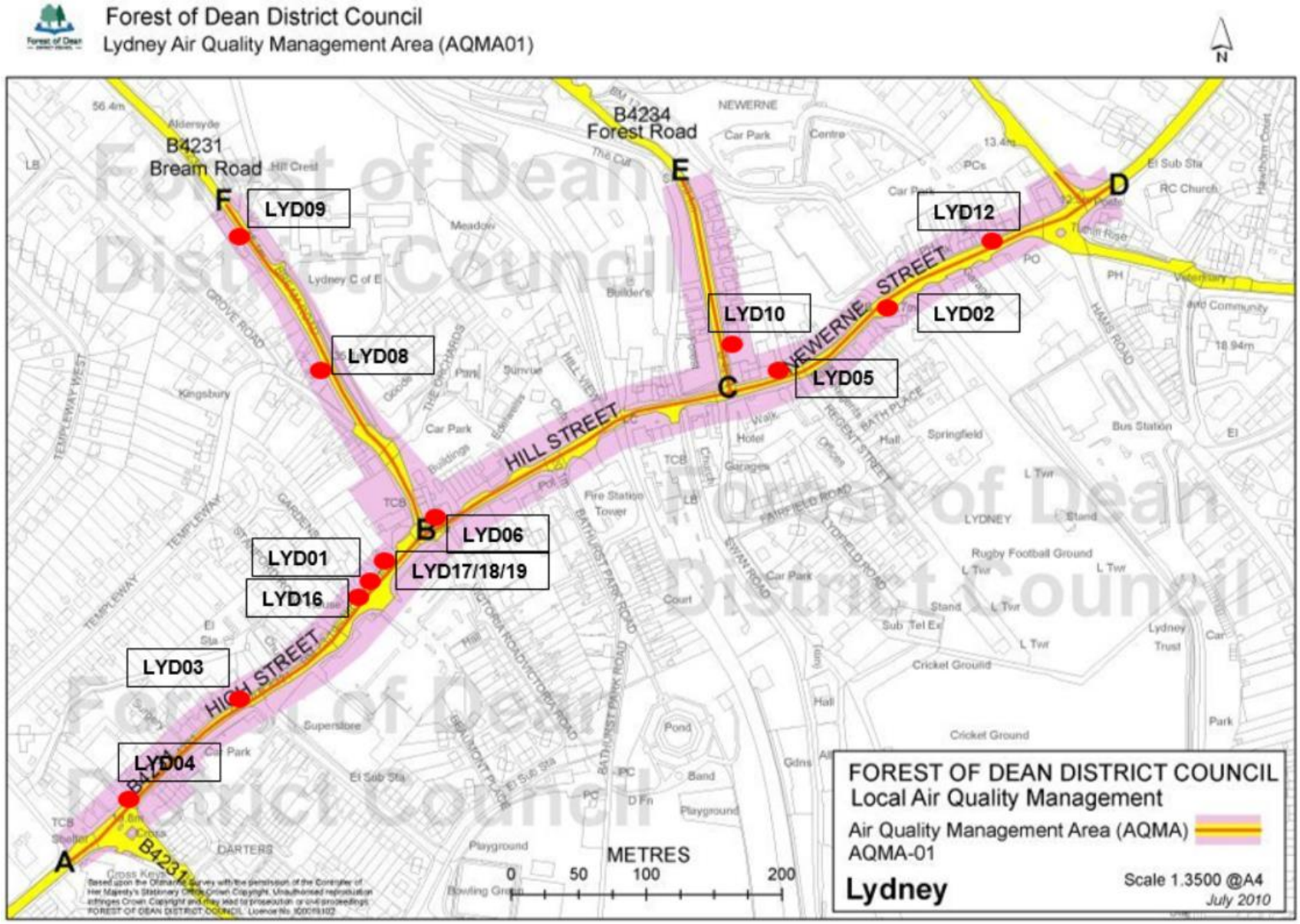
WOS01 Westbury-on-Severn - Dentist Practice (Lay-by)

Title

Diffusion Tube Locations

Date	**Figure No.**
June 2022	D26

Figure D27 Lydney AQMA Boundary Plan with diffusion tube positions



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).

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
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.