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: October 2023

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Report Reference Number	ASR GBC 2023
Date	October 2023

Executive Summary: Air Quality in Our Area

This annual status report updates on the 2022 monitoring data and key actions in the year 2022 and part of 2023.

Guildford Borough Council continued monitoring of its diffusion tubes monitoring network across the borough as per the DEFRA diffusion tube monitoring calendar. The diffusion tubes network monitored at 45 locations, focussing on the relevant receptor locations (residential properties, schools) near busy roads. In addition, two co-location studies were carried out. The collocation data from Godalming Monitoring Station was submitted to DEFRA to contribute to the national co-location study data.

Guildford has three AQMAs declared for exceedance of the annual average air quality objective level for nitrogen dioxide (NO_2). The Compton and Shalford AQMA were declared in January 2018 and May 2019 respectively and still remain in place.

The Guildford Town Centre Air Quality Management Area (AQMA), which was adopted in October 2021 (Map D.2, AQMA boundary) is the most recently declared AQMA. An Air Quality Action Plan was approved by DEFRA. The progress is reported in section 2.2.

The A3 air quality measures to tackle the breaching levels of NO_2 along the PCM link 17736, is a joint project between Guildford Borough Council, Surrey County Council and National Highways and is funded by National Highways. The £11million project is called Electric Towns and Cities Initiatives (ETCI) and comprise of three elements: a) A3 Sustainable Travel Initiative with an aim to provide active travel network to the businesses located either in proximity to the A3 or likely to use A3 for commuting and business trips, b) Rapid charging network for light commercial vehicles, and c) grants upto £10,000 to businesses driving on the A3 in Guildford to switch their diesel to a new fully electric van, which commute more than 3 times a week on the A3 – Guildford stretch. This report provides an update on the progress.

We have participated and contributed in the early engagement stages of the Guildford Local Cycling and Walking Infrastructure Plans (LCWIPS), which is currently under development. LCWIPs are 10 year plans for investing in walking and cycling infrastructure

and Surrey County Council is currently working to develop one for Guildford Borough Council.

Planning has been identified as important tool to promote sustainable development through introduction of infrastructure such as electric vehicle charging points, ebike charging facility and bike storage, car clubs, cycling paths etc and to promote sustainable travel planning. We also give regards to the Air Quality Strategy – Framework for Local Authority[1] when commenting on a planning application or delivering our statutory duties under the LAQM.

Air quality improvement is a collaborative work between local authorities and other stakeholders. We have a regular liaison with Shalford community representatives on Shalford AQAP review and progress.

We hope that through this ASR we hope to communicate air quality challenges in Guildford. The residents and local communities can get involved in various ways; choosing sustainable mode of transports, supporting local businesses, using cleaner smokeless fuel for wood burners, low NO_2 emission boilers are only few of the suggestions listed here. The residents and interested parties can contact us with their concern or suggestions using the online webform: https://www.guildford.gov.uk/article/18932/Report-an-issue-with-air-quality.

Air Quality in Guildford Borough

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[2,3].

[1] Air quality strategy: framework for local authority delivery - GOV.UK (www.gov.uk)

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

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[4], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[5].

The main source of emissions in Guildford Borough is from motor vehicles. The Borough of Guildford has a population of around 150,000, approximately half of which live within the urban area. Its location 32 miles to Central London (35 minutes by direct train), coupled with being almost equidistant of both Heathrow and Gatwick airports, makes it the ideal to work and commute from. Being a popular regional shopping and leisure destination, Guildford's High Street and three shopping centres attract a lot of visitors and road traffic.

Four major roads pass through the Borough. The M25 enters the Borough briefly at Junction 10 (Wisley), which links to the A3 London to Portsmouth trunk road. The A3 runs from north to south through the Borough, linking with the A31, which joins the A331 Blackwater Valley Road. A high proportion of traffic in Guildford comprises of through-traffic on these strategic roads. The A3 Guildford origin destination study[6] concluded that 60% of trips on A3 are external trips with neither origin nor destination within Guildford Borough.

Whilst the land use is predominantly residential, there are several light industrial sites. The authority has 31 permitted processes under the Pollution Prevention and Control Act 1999. To date there is no record of any significant air quality impact from these premises. No new major point source of emission has been introduced in the Borough during 2021. In December 2019 the cremators at Guildford Crematorium were renewed to an up-to-date facility with mercury and NO_2 abatement. In September 2020 the flue height of the crematorium was increased by one metre following a variation to the permit.

Smoke Control Areas were set up in the 1960's covering approximately 12 square kilometres of the urban area (See the Figure 1). These areas are still operational and subject to statutory control. The interactive smoke control areas map is available on the

[4] Defra. Air quality appraisal: damage cost guidance, January 2023

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

[6] A3 Guildford Report, Guildford Borough Council, Project Number: 606439884, March 2021, https://www.guildford.gov.uk/article/26606/Working-to-improve-air-quality-on-the-A3-in-Guildford

Guildford Borough Council's website for the residents:
https://www.guildford.gov.uk/article/25093/What-are-smoke-control-areas.

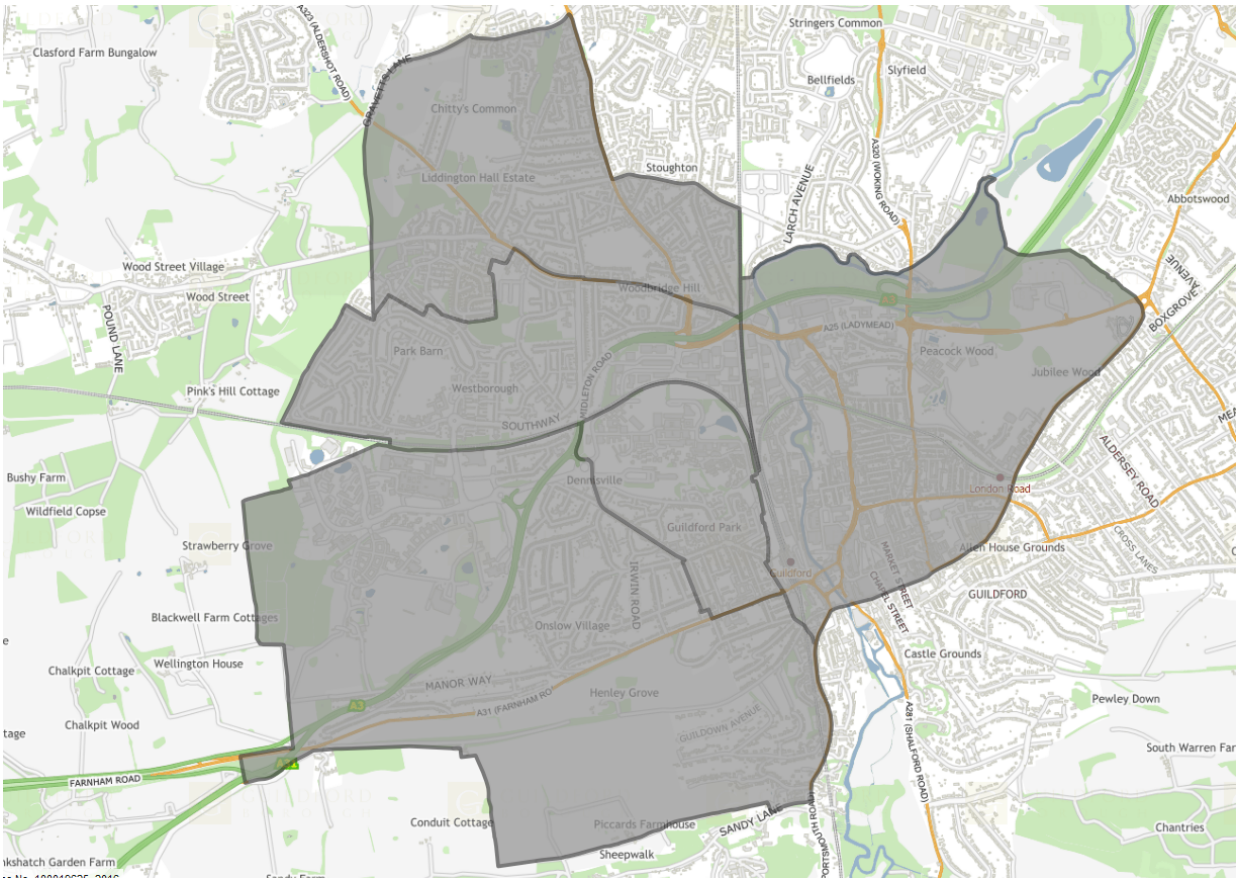

Figure 1: Map of Guildford Smoke Control Area

Nitrogen dioxide (NO_2) is the main pollutant of concern in Guildford Borough and is routinely monitored under the local air quality monitoring regime. In 2022, our diffusion tubes network monitored at 45 locations, primarily focussing the Air Quality Management areas and areas of know air quality concerns.

There are currently three air quality management areas (AQMAs) in Guildford:

1. A small section of The Street, B3000 passing through Compton and where three properties are in close proximity to the road.
2. A section of A281, The Street, Shalford affecting seven properties.
3. The Guildford Town Centre AQMA encompassing Millbrook, Commercial Road, and the Park Street, Bridge Street/Onslow Road sections of the Guildford Gyratory.

Further information on the AQMAs in Guildford can be found at: https://www.guildford.gov.uk/article/21335/Find-out-about-Guildford-air-quality-management-areas

Monitoring Trends and comparison with national trend

The long-term monitoring of urban and rural background in Guildford compares with the national trend (https://www.gov.uk/government/statistics/air-quality-statistics/ntrogen-dioxide). Emissions of nitrogen oxides in the UK have continued to decrease as newer road vehicles subject to stricter emission standards enter the fleet.

In Guildford, the annual mean NO2 concentration at urban background sites reduced by 20% in 2020. In 2021, the coronavirus pandemic continued with third national lockdown across the country between January – March 2021 followed by phased exit from lockdown until July 2021. This is reflected in the NO_2 levels measured for the period.

The background sites in Guildford are seeing upward trend and the monitoring data for the two background sites, Chantries and The Garth are comparable with pre-pandemic levels (2017 – 2019).

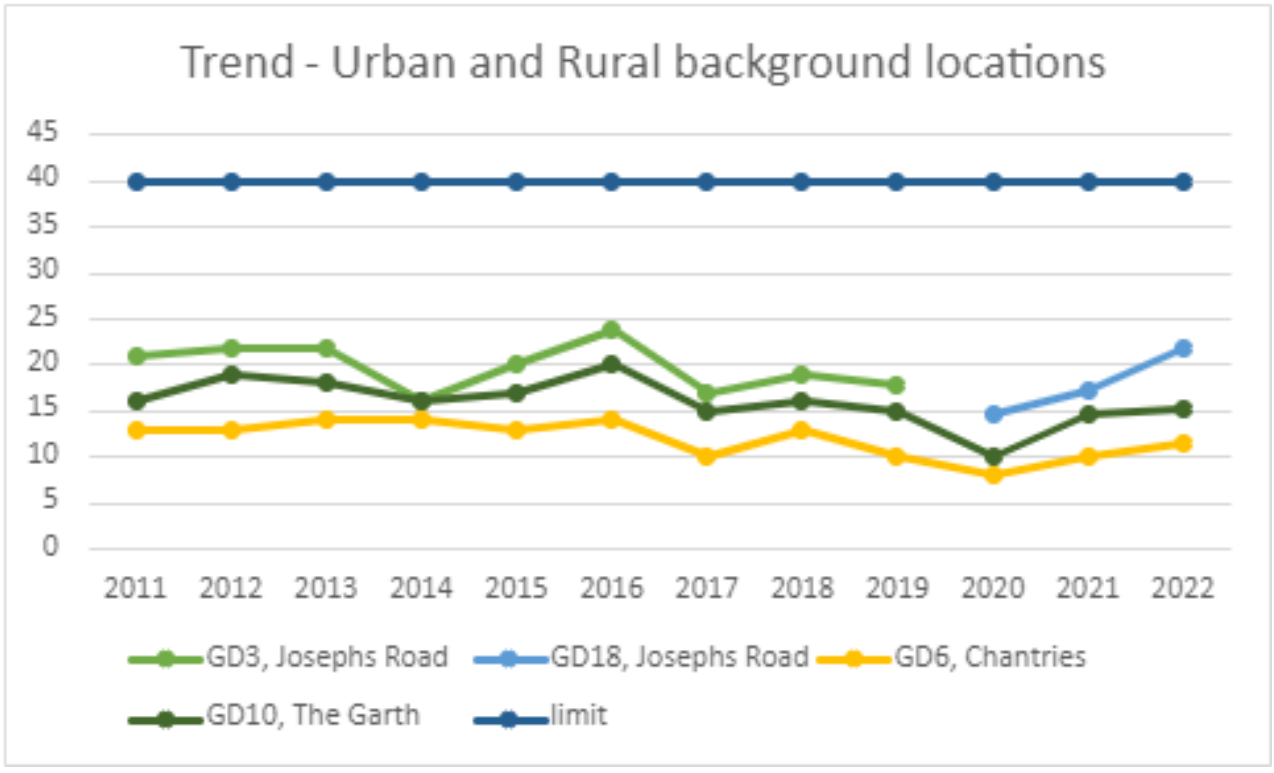

Figure 2 Long term trend - Urban and Rural Background

The monitoring was carried out at 45 locations in 2022. Only one location, TC6, 18 Park Street exceeded the annual average objective level for NO_2 at receptor location. The NO_2 annual average concentration within Compton and Shalford AQMAs did not exceed the objective level of 40µg[3], however, remained within 10% of this limit.

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 Plan[7] 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, due to be published in 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 Zero[8] 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.

The Council is committed at identifying areas where air quality could potentially be of concern and implementing local measures to provide opportunities for further local air quality improvements.

[7] Defra. Environmental Improvement Plan 2023, January 2023

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

The Key actions in 2022 were:

- Some of the monitoring locations from 2020-21 were removed and we expanded our diffusion tube network in the Towncentre AQMA, A3 stretch of Guildford and in Shalford.
- A draft Air Quality Action Plan was submitted to DEFRA on the 26th October 2022 following a full public consultation on the proposed measures and adoption of the draft AQAP by the Guildford Joint Committee. DEFRA accepted the AQAP in December 2022.
- Several projects were completed such as implementation of the Sustainable Movement Corridor (SMC) to provide a priority pathway through the urban area of Guildford for buses, pedestrians, and cyclists, including serving the potentially new communities at Blackwell Farm, SARP (Slyfield Area Regeneration Project) and Gosden Hill Farm; the replacement Walnut Bridge providing enhanced links between the railway station and the retail centre for pedestrians and cyclists.
- Planning is being used as a tool to build EV infrastructure, promote sustainable travel plan, low emission non-road mobile machineries and generators.
- Partnership working with National Highways to expand monitoring network along the A3 Guildford stretch, identifying sites suitable for rapid charging networks for light commercial vehicles and development of two important schemes, which will aim at businesses and other organisations likely to contribute to traffic on the A3:
  - Electric vehicle grant scheme for vans
  - Active Travel Programme to promote sustainable transport alternatives.

  At the time of writing this report, both the schemes have just gone live.

Conclusions and Priorities

Priorities for 2023:

- We will continue to assess and review our monitoring network and continue the monitoring survey in the following year.
- completion of the economic feasibility study for our towncentre AQAP for the year 2023-24. Shalford AQMA will be the part of the feasibility study.

- Deliver the measures identified in Shalford AQAP that were delayed due to COVID restrictions and continue to liaise with the stakeholders and local residents to achieve this.
- Work in collaboration with National Highways and Surrey County Council for effective implementation of ETCI (Electric Towns and Cities Initiatives).
- Identifying air quality projects from the town centre AQAP that will bring benefits to local communities and will apply for government grants.
- Identify and promote local community projects aimed to encourage sustainable travelling, increase awareness on air quality issues and bring behavioural changes.
- Working with our Web team and Communications to improve the content of air quality web pages and make it informative for all the potential users of the site, such as air quality experts, local interest groups, residents etc.

There are challenges expected which will affect the shape and form in which town centre AQAP can be implemented:

1. The vibrancy of the town centre is important for Guildford's economic growth and the AQAP should therefore not have negative impact on the economy.
2. The increased cost of living will have impact on various national and local initiatives such as heating homes by burning solid fuels, delay in fleet renewal, etc.
3. There are capacity and air quality issues on A3 in Guildford. The delivery of new Guildford West Station which will serve the residential are of Park Barn and economically active area of Guildford (including Royal Surrey Hospital, University of Surrey campuses including Surrey Sports Park and Surrey Research Park) will relieve some pressure off the A3. However, these are long term projects.
4. Council has a priority to meet the need and welfare demands of its residents and often the resources must be matched to meet those demands.
5. Funding and resources constraints
6. To get more people to use sustainable mode of transport, there is a need for improved cycle network and safe cycling infrastructure, adequate bus transport and economical park and ride facility etc.

Local Engagement and How to get Involved

There is considerable interest from the residents, members of the public and local action groups on the air quality issues in Guildford. We have information available on local air quality and how we monitor on our website: (https://www.guildford.gov.uk/article/19807/Find-out-how-we-monitor-air-quality-and-pollution).

In July 2022, we ran a full consultation on our proposed AQAP for the town centre AQMA and received over 400 responses to the action plan. The full result and analysis have been reported as part of AQAP submission. The measures are now included in table 2.2.

We welcome and support any individual monitoring requests and listen to local air quality concerns.

We engage with the Planning Services on any development, where air quality is likely to be of concern.

Most of the air quality concerns in Guildford are related to road traffic. Preventative measures include avoiding getting exposed to emissions by choosing alternative routes. Everyone has a role and can contribute to air quality improvement in many of the following ways:

1. Are there alternatives to use of personal car? Consider alternatives to using the car. There are now several car free cycle routes, and you can you journey planner on Cycle Travel to plan your journey. Google maps are very handy to plan journeys by train, on foot or bike.
2. Can you avoid taking car for short journeys and instead walk or cycle?
3. Are you aware of Guildford car club? Guildford has 9 cars in the club with designated parking bays in a convenient location. Club cars are accessible to members 24 hours a day, 365 days a year. You can book them online, via a smart phone app or over the phone. The club cars either low or ultra-low emission vehicles. The residents in Guildford can benefit from the promotional offer of first year membership fee of £10 (Guildford car club - Guildford Borough Council).
4. Is car sharing possible for school drop offs and pickups. Often, more than one car has same origin – destination from home to school or other activity clubs.

5. Turn off the car engine when stationary. Leaving an engine idling causes unnecessary emission into the air. The children and parents walking along the path near parked cars are the recipient to any emission from cars idling near schools.
6. By choosing smokeless woodburning stoves and using seasoned woods or buy fuels certified as 'Ready to Burn' (Ready to Burn | A look at the regulations in more detail - HETAS).

Local Responsibilities and Commitment

This ASR was prepared by the Regulatory Service of Guildford Borough Council with the support and agreement of the following officers and departments:

Anjana Papnai, Environmental Health Officer, Regulatory Services
Gary Durrant, Lead Specialist-Environment Control (Noise and Pollution)
Kimberley Ewan, Policy Officer – Planning Policy (Transport)
Andrew Chessum, Principal Strategic Transport Officer

The ASR has been approved by the Joint Executive Head of Regulatory Service. On behalf of the Surrey County Council Director of Public Health, the Public Health team work closely with Surrey Air Alliance including District and Borough Council partners responsible for submitting Annual Statement Reports (ASR) on air quality within their area; to develop initiatives, air quality action plans, and implement actions to improve air quality across the county of Surrey.

If you have any comments on this ASR please send them to Gary Durrant, Lead Environmental Protection Specialist at:

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Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Guildford Borough Council during 2022during. 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 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 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 Guildford Borough Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

Air Quality Management Areas

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

- NO_2 annual mean

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
Guildford Borough Council AQMA Order (No. 1) 2018	01/02/2018	NO2 Annual Mean	Section of B3000 to its northern end, encompassing 3 residential properties in Compton	NO	43.8 µg/m3	37.3	3 years	Guildford Borough Council Air Quality Action Plan - Compton Village, 05/07/2019	https://www.guildford.gov.uk/article/21335/Guildford-air-quality-management-areas
Guildford Borough Council AQMA Order (No. 2) 2019	05/07/2019	NO2 Annual Mean	Section of A281, The Street, Shalford	NO	50 µg/m3	37.2	3 years	Guildford Borough Council Shalford Air Quality Action Plan, 01/09/2019	https://www.guildford.gov.uk/media/30621/Shalford-Draft-Air-Quality-Consultation/pdf/Draft_Air_Quality_Report_for_consultation_-_19.9.2019.pdf?m=637044877947270000

Guildford Borough Council Air Quality Management Area (No 3) 2021	22/10/2021	NO2 Annual Mean	incorporates section of A281 Milbrook, A31 Farnham Road, A3100 Portsmouth Road; Onslow Street, Park Street, North Street, Commercial Road, Guildford Park Road and Woodbridge Road	YES	41.3 µg/m3	50.5	0 years	Draft AQAP approved in December 2022; The AQAP will be finalised following completion of economic feasibility study	https://www.guildford.gov.uk/media/34555/Draft-Air-Quality-Action-Plan/doc/Draft_Air_Quality_Action_Plan.docx?m=637921975406600000

☒ **Guildford Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Guildford Borough Council confirm that all current AQAPs have been submitted to Defra.**

Progress and Impact of Measures to address Air Quality in Guildford Borough Council

Defra's appraisal of last year's ASR accepted the conclusions reached for all sources and pollutants. It acknowledged the expansion of monitoring network since 2019 which led to identification of areas of exceedances. However, after distance correction, only one location in Guildford Towncentre AQMA (TC6) remained above the annual air quality objective level.

It went on to say that the data presented were clear and showed all relevant information regarding pollutant concentrations. The QA/QC was robust, with supporting discussion; Data capture across the monitoring network was good during 2021, however, annualization was performed for two locations where data capture less than 75%.

The following comments were made for consideration in the future reports and how we have incorporated them into this year's report:

No	Comment from Defra, June 2023	Actions
1	For diffusion tube ID's TC10, FRH5, SEND3 and A3-3, in Table A.1, data to show the distance from the exposure distance column is missing. Any information that has been omitted from the data tables; please justify why you have done this.	Checked and ensured that all relevant data is included in 2023 report.
2	Defra recommends that Directors of Public Health approve draft ASRs. Sign off is not a requirement, however collaboration and consultation with those who have responsibility for Public Health is expected to increase support for measures to improve air quality, with co-benefits for all. Please bear this in mind for the next annual reporting process.	On behalf of the Surrey County Council Director of Public Health, the Public Health team work closely with Surrey Air Alliance including District and Borough Council partners on air quality within their area; to develop initiatives, air quality action plans, and implement actions to improve air quality across the county of Surrey
3	There some minor spelling mistakes and typographical errors. Please ensure that the document is reviewed by	This report has been reviewed by another member of the team

	another member of the team for spelling mistakes and grammatical errors. For example: The NO_2 Fall-off with Distance from the Road section in the Appendix has been duplicated.	to avoid any grammatical, spelling or formatting errors.
4	The newly declared AQMA 3 does not currently have an AQAP associated with it; it is understood a new AQAP is being drafted. Guildford Borough Council should progress with publishing a new AQAP and provide an update in their next ASR.	The economic feasibility study is one of the major tasks associated with the AQAP. We would, therefore, submit the final version once that is completed.

Guildford Borough 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 0.1. Thirty one measures are included within Table 0.1, with the type of measure and the progress Guildford Borough 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 0.1.

A summary of key completed measures from table 2.2 is as follows:

1. **Measure 8 School initiatives:**

   The Road Safety and Sustainable School Travel Team have been operating the following programmes across schools in Surrey:

   a) Road Safety Outside Schools (RSOS):

   Safer Travel Team and partners have completed over 170 site assessments across surrey, £3 million have been assigned to deliver infrastructural improvements outside schools.

   b) School Travel Plans (STPs)

As part of the Safer Travel Team's goal of improving safe and sustainable travel to schools, schools are helped to develop their School Travel Plan using the Modeshift STARS system. Surrey currently has the second largest number of Good level (bronze) accredited travel plans in the UK. Travel plans help the school to identify issues and barriers which prevent active and sustainable travel to school for pupils and staff.

Currently in Guildford 7 schools either have or working on their travel plans. 4 schools hold bronze accreditation. Guildford High School currently hold Silver accreditation but going for Gold accreditation.

c) Surrey Cycle Training (Bikeability)

For the 2022/23 academic year, training was delivered to **4,500 pupils at Bikeability Level 1** (Year 4, 8-9-year-olds) and **6,100 pupils at Bikeability Level 2** (Year 6, 10-11-year-olds).
The scope of training is currently being widened to include secondary school pupils and adults.

d) Feet First: Walking Training

This was launched in 2022 and aimed at Year 3 pupils (7-8 year olds), charged for service, either paid by school or parents. The course prepares them to walk confidently and safely in future. Since launch it has taught approximately 5,100 primary school pupils in nearly 90 schools across the county in 2022-23, and 40 schools have booked for the next academic year.

e) Eco-Schools

Eco-Schools is a Globally recognised programme. Schools connect to three or more of the 10 topics available e.g., transport, biodiversity and waste.
Countywide, Surrey has 73 Green **Flag schools**, which puts us in the **top five** of local authorities in England and the Surrey's Safer Travel Team achieved the **second highest** number of new awards last year.

232 Surrey schools (primary, secondary & all-through) are involved with the programme, contributing to SCC's net-zero target by 2050.

2. **Measure 14: Improve Sustainable transport opportunities:**

In 2021 ASR we reported on some of the completed projects:

- Improvement of River Wey towpath around Parsonage Water meadows
- North Downs Line (Great Western Railway) service frequency and timetable improvements (scheme NR6)
- Electric bus fleet operating on the Guildford Park and Ride network – part of Guildford Quality Bus Corridors project, itself part of Unlocking Guildford Package
- A25 cycle corridor scheme (part of Guildford town Centre Transport Package (TCTP)) completion in following sections
    - South side of the A25 Midleton Road between Midleton Industrial Estate and Surrey Way
    - South side of A25 Woodbridge Road between A322 and Woodbridge Meadows
    - South side of A25 Parkway between Stoke Crossroads and Boxgrove Roundabout.
- Sustainable Movement Corridor: West – phase 1 Pedestrian/ cycle route across Bannisters Field ; phase 2a Egerton Road to University and Town Centre pedestrian and cycle improvements

Schemes completed in 2022

- Walnut Tree Close experimental one-way closure – part of Guildford Town Centre Transport Package. Following completion of the trial, one way motor traffic route with two way cycle route along part of Walnut Tree Close has been made permanent. The scheme has many benefits including better air quality, improved safety for all road users. It creates a dedicated, safe cycle route from Ladymead to Guildford's town centre and the railway station.

- Dagley Lane – The improvement of Dagley Lane was also identified as one of the measures in Shalford AQAP. The path was improved by Surrey County Council using the allocated government funding to deliver a number of active travel schemes. The path improvement commenced following a public consultation.
- Walnut Bridge – The scheme was delivered by GBC. The new wider bridge designed for non-motorised users is now open, linking Guildford Station to Bedford Wharf area.

3. **Measure 26, Policy ID11: Achieving a Comprehensive Guildford Borough Cycle Network in the emerging Local Plan: Development Management Policies.**

   A Guildford Local Cycling and Walking Infrastructure Plan (LCWIP), which is a Department for Transport initiative to provide an evidence based approach to plan for cycling and walking infrastructure, is currently in development stage. The project has completed the early stage of data gathering and propose core cycle and walking corridors and is currently engaging with community.

4. **Measure 27: EV Taxi Project**

   In 2020, the SAA applied for a DEFRA 2020/21 Air Quality Grant to fund a project to encourage a greater uptake of Electric Vehicles as Taxi's across 7 eligible Boroughs and Districts in Surrey. Taxis were selected as the target vehicles given the high mileage and multiple trips the vehicles make within Surreys Air Quality Management Areas and the nature of the journeys which take the vehicles into areas frequented by the members of our communities who are most sensitive to air pollution such as to hospitals and care facilities and schools. In March 2021, the project was awarded £256.686 from the Defra AQ Grant Fund. Following attempts to find a supplier and to begin procurement in 2021 it became clear that the prolonged impact of the pandemic on the taxi trade made the project unviable as it had been originally configured, and no vehicle supplier could be found. The project was reconfigured to accommodate longer vehicle trials based on feedback from the taxi trade and potential vehicle suppliers and submission of the reconfigured project was made to Defra for approval. The project team obtained legal advice regarding State Subsidy Control, and this was submitted to Defra for review at their request. It is anticipated that the scheme will go ahead within 6 months of this report.

5. **Measure 20 - Towncentre AQAP**

   The Guildford Towncentre Air Quality Management Area (AQMA) was approved and adopted on 21 October 2021 by the Joint Committee due to the breach of national air quality objective for annual mean of nitrogen dioxide. The extent of the AQMA is the bold purple area shown in figure 8 below. There are approximately 300 residential properties with accommodation at various levels above ground within the AQMA.

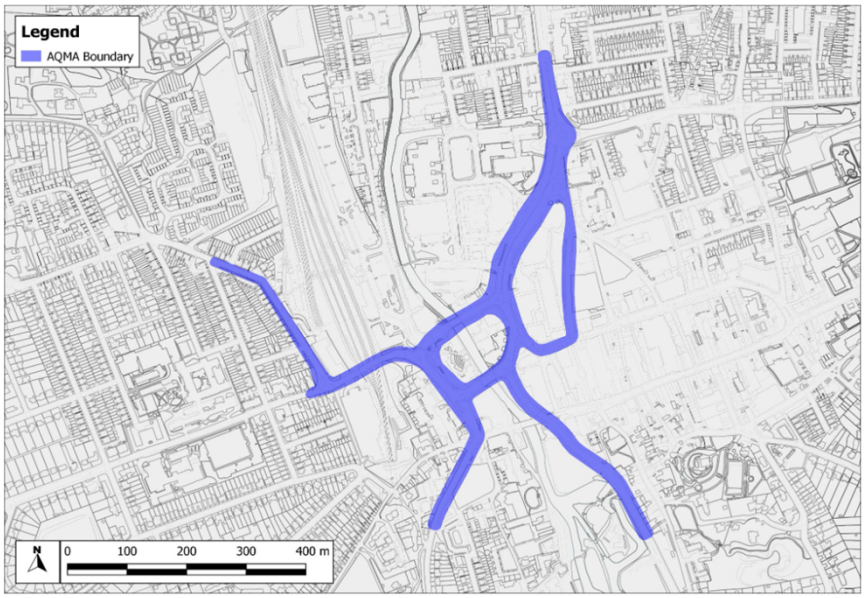
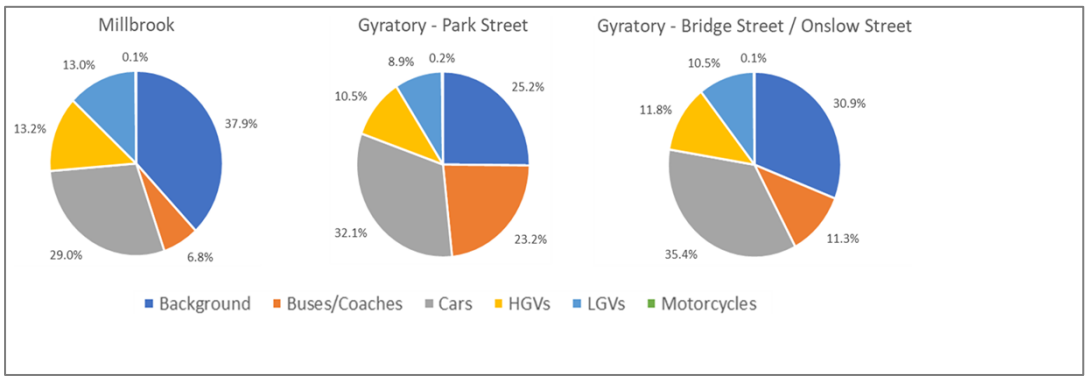


Figure 3 Guildford Town Centre AQMA Boundary

The source apportionment study concluded that whilst large proportion of NO_2 is caused by emissions from the cars; HGVs, LGVs and buses also contribute significant proportions. At least 57% reduction is required to achieve compliance with the annual mean objective level at the highest predicted concentration location, Park Street.

The list of measures identified in the draft AQAP are added to the table 2.2 and progress will be updated in subsequent ASRs.



Source apportionment (extracted from APS detailed assessment)

6. Measure 30 – Ebike hire scheme

A Brompton bike hire scheme is in operation at the main rail station and there is also a small bike share scheme in operation at the University of Surrey. These are both run by third parties. Significant work has already been undertaken on delivery of an electric bike scheme by GBC. This was deferred and budget removed in 2020.

However, SCC, as Local Transport Authority, is leading on an electric bike share scheme for Guildford which will enter the implementation stage soon.

7. **Measure 31 - Electric Towns and Cities Initiative (ETCI) A3 – Guildford**
   It is a pleasure to include that the £11million project from National Highways in collaboration with SCC and GBC, is now live and comprise of the following 3 elements:
   - A3 electric vehicle grant scheme offering up to £10,000 grants to businesses driving on the A3 in Guildford to switch their diesel to a new fully electric van. The details on the program and instructions on how to apply are available on the surrey county council website: A3 EV grant funding programme - Surrey County Council (surreycc.gov.uk).
   - Extension of rapid charging network with new bays designed specifically for the commercial vans (longer and wider bays and appropriate length cables). GBC and SCC are working together in identifying suitable sites.
   - Active Travel Programme – The active travel programme will be aimed at supporting local employers in the Guildford area of the A3 to promote sustainable transport initiatives and help their employees switch to more sustainable mode of transport. The schemes included are salary sacrifice, discounted bus and rail fares, promote cycling and provision of shower facilities at work, and development of car sharing portal for businesses.

A number of actions taken by Guildford Borough Council to reduce vehicle emissions within existing duties and responsibilities:

a) Emissions are a prominent factor in procurement of the Council's vehicle fleet.
b) The diffusion tubes swaps are carried out using electric GBC company cars.
c) Guildford Borough Council encourage internal lease car users to consider low emission vehicles by highlighting the tax benefits and setting a limit on the carbon dioxide (CO2) emissions.
d) Guildford town centre car clubs have expanded and utilise more vehicles that are electric.

e) The information on the electric charging spaces and cost of charging in public car parks is available on Guildford's website: https://www.guildford.gov.uk/article/25314/Electric-vehicle-charging-points
f) Where practicable, procurement of ultra-low emission fleet vehicles is encouraged. Progress has been covered in table 2.2.
g) The Council continues to provide internal and external meetings to be conducted virtually on Teams saving unessential car journeys.
h) GBC is member of Easit Network (Easit Guildford) providing the opportunity of discounted rail and bus tickets for Council employees, discounts on Enterprise car clubs hire and car share by signing up on easitGuildford web portal.

Guildford Borough Council expects the following measures to be completed over the course of the next reporting year:

- The progress in implementation of ETCI schemes targeted for air quality improvement on A3
- Economic Feasibility Study for Guildford Towncentre and Shalford AQMA and final AQAP
- Review of Guildford Borough Councils Air Quality Strategy

Guildford Borough Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Surrey County Council – Highways
- SCC – Travel Planning Team
- Guildford Borough Council's Planning Policy
- Neighbouring LAs in particularly Waverley Borough Council
- Other Surrey Local Authorities through Surrey Air Alliance (SAA)
- The National Highways

Whilst the measures stated above and in Table 0.1 will help to contribute towards compliance, Guildford Borough Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Shalford and Towncentre AQMAs.

Table 0.1 – 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	Air quality is a consideration at pre-application and application stage to allow effective use of planning conditions	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2018	2025	Guildford Borough Council; SCC Highways	Guildford Borough Council	NO	Not Funded	< £10k	Implementation	Reduced vehicle emissions	Number of developments where air quality has been assessed and actioned	Service Level Agreement between Planning Development and Regulatory Services with quarterly monitoring meetings.	For medium and large scale development, the Council recommends air quality assessment as pre-requisite emphasising on consideration of good design practices, mitigation measures and travel plan; Developers are made aware of the Institute of Air Quality Management Guidance: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf; Standard condition for EV charging facility is attached to all relevant planning permissions; Condition for low emission NRMM also recommended to relevant planning applications
2	Development management policies	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2021	2023	Guildford Borough Council	Guildford Borough Council	NO	Funded	< £10k	Planning	Reduction in Emission	Number of developments where these apply	The planning inspector approved the use of development management policies for air quality in 2023	
3	Green scheme parking fees for electric vehicles in GBC car parks	Promoting Low Emission Transport	Priority parking for LEV's	2018	2023	Guildford Borough Council	Guildford Borough Council	NO	Funded	£10k - 50k	Implementation	Reduction in Emission	uptake of Green Parking Scheme	Implementation on-going	Green parking scheme continues to operate at 13 car parks in Guildford: https://www.guildford.gov.uk/article/25380/Where-can-I-park.
4	Parking App to direct users to closest and cheapest spaces	Public Information	Via the Internet	2019	2024	Guildford Borough Council	Guildford Borough Council	NO	Funded	< £10k	Implementation	Reduction in vehicles in towncentre area	App usage by the motorists	Implementation on-going	The Official Guildford App administered by Experience Guildford, is available for residents and visitors. The parking function of the App utilises the latest GEOmii real-time parking technology, making parking efficient by directing cars to vacant space.

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
5	Education in communities and businesses to change behaviours	Promoting Travel Alternatives	Promotion of cycling	2017	2025	Guildford Borough Council	GBC/SCC	NO	Not Funded	£100k - £500k	Implementation	reduction of emissions	reduction in cars on road and increase in uptake of bikes/scooters	Implementation on-going	Guildford Car free day was on 24th September 2023. Families had the opportunity to trial e-bikes, e-scooters and learnt about active travel. More information available here: https://www.visitsurrey.com/whats-on/car-free-day-in-guildford-sunday-24-september-2023-p2067581
6	Electric buses for all Park and Ride	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	2025	GBC and SCC	Surrey County Council	YES	Partially Funded	£500k - £1 million	Completed	Less emissions	Number of buses	Assessment of improvements required	Since the pandemic, the spectrum and University's Park and Ride are closed; As part of the Town Centre AQAP /economic feasibility study, assessment of P&R is included.
7	Active Travel incentives for GBC staff	Promoting Travel Alternatives	Workplace Travel Planning	2018	2024	Guildford Borough Council	Guildford Borough Council	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	numbers of staff uptake of sustainable travel initiative.	Council employees have the opportunity to avail discounted travel initiatives from Easit Guildford: https://www.easit.org.uk/network/easitGUILDFORD-23; The scheme is regularly publicised via the Council's fortnightly newsletter	Uptake of the initiatives
8	Schools Initiative	Promoting Travel Alternatives	School Travel Plans	2017	2023	Guildford Borough Council and Surrey County Council	Surrey County Council	YES	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Take up by schools	Implementation on-going	Detailed in section 2.2 of the ASR
9	Promote alternative travel to work at the Council	Promoting Travel Alternatives	Workplace Travel Planning	2018	2023	Guildford Borough Council and Surrey County Council	Guildford Borough Council and Surrey County Council	NO	Funded	£10k - 50k	Completed	Reduced vehicle emissions	Working from home	Fully implemented; Issue of mobiles and laptops has enabled GBC employees to work flexibly and remotely, reducing the unnecessary car journeys to the Council offices.	With the merger of the management of Guildford and Waverley Councils, they may be additional challenges including relocation of offices and the Woking Road Depot to Slyfield Industrial Estate.
10	Car Clubs in Guildford Town Centre	Alternatives to private vehicle use	Car Clubs	2015	2024	Guildford Borough Council, Surrey County Council and Enterprise	Surrey County Council	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Car clubs increase	The Enterprise Car Club membership is available to Guildford residents at reduced price. The 9 club cars available are ultra low emission vehicles. Some of the new locations have been introduced as part of planning process at new development locations.	Resident's awareness and usage of the scheme; Limitation - limited car clubs outside Guildford Town centre; new locations are likely to be associated with planning developments.

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
11	Smoke control order compliance	Promoting Low Emission Plant	Regulations for fuel quality for low emission fuels for stationary and mobile sources	2021	2024	Guildford Borough Council	DEFRA, New burdens funding: enforcement and management of Smoke Control Areas Guildford Borough Council	NO	funded	< £10k	Implementation	Reduce household emissions	number of complaints of smoke	Implementation on-going; A map of the Guildford Smoke Control Areas is available on the website for information of the residents. No proactive monitoring takes place; only reactive and no complaints in 2022-23	With the introduction of new framework for implementation on the AQ strategy including PM2.5 targets, officer resource needs reallocation. DEFRA has issued £11,710 funding via the section 31 grant and payment scheme.
12	Anti vehicle idling at level crossings, taxi ranks, schools	Traffic Management	UTC, Congestion management, traffic reduction	2021	2024	Guildford Borough Council and Surrey County Council	NONE	NO	Not Funded	< £10k	Planning	Reduced vehicle emissions	number of penalty notices for idling engines	Responsibilities for enforcing anti-idling lies with SCC on controlled roads in the town centre or near schools and penalty notices amount are up to £50 or £70.	Since April 2023, SCC are responsible for the enforcement on controlled roads. GBC to investigate a potential joint project with SCC on anti-idling public information and displays in school vicinities and around the 3 AQMAs
13	Service delivery review to reduce public journeys to Council premises where appropriate	Promoting Travel Alternatives	Personalised Travel Planning	2020	2023	Guildford Borough Council and Surrey County Council	Guildford Borough Council and Surrey County Council	NO	Not Funded	< £10k	Implementation	Reduced vehicle emissions	Less car mileage claimed	Implementation on-going	Guildford BC's website has up and running online access to all the council services through MyGuildford Account for residents. Meetings are available virtually through Microsoft Teams.
14	Improve sustainable transport opportunities	Policy Guidance and Development Control	Other policy	2018	2024	Guildford Borough Council	Guildford Borough Council; SCC	NO	Funded	> £10 million	Implementation	Reduced vehicle emissions	Use of alternative travel modes	Implementation on-going	discussed in detail in setion 2.2 of this ASR
15	Sustainable procurement polices relating to air quality	Other		2020	2024	Guildford Borough Council	Guildford Borough Council	NO	Not Funded	< £10k	Implementation	Reduced vehicle emissions	Audit of procurement record	Implementation on-going	Already used by procurement team

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
16	Electric charging points in public areas and residential streets	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019	2024	Guildford Borough Council and Surrey County Council	Surrey County Council	NO	Not Funded	£50k - £100k	Implementation	Reduced vehicle emissions	number installed	Implementation on-going	The number of public chargepoints is growing and has increase to 40 locations in Guildford. The details are available here: https://www.surreycc.gov.uk/roads-and-transport/sustainable-driving/electric-vehicles#section-2
17	Adopt SCC Electric Vehicle Charging Policy	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019	2024	Guildford Borough Council and Surrey County Council	Guildford Borough Council and Surrey County Council	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Infrastructure detail	Implementation on-going	Every residential development has a condition for EV charging facility as per the Policy, recommended by the SCC; however the introduction of Building Control approved document S has made this unnecessary and undesirable; Part S of the Building Regulations, along with Approved Document S, focuses on infrastructure for the charging of electric vehicles (EVs) and includes a requirement for all new buildings, including residential buildings, to have EV charging points.
18	New Railway station at Park Barn Guildford	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2021	2030	Network Rail,	unknown	NO	Not Funded	> £10 million	Planning	Reduced vehicle emissions	use of train instead of car	Guildford West Station is a new station promoted by GBC, which will provide improved access to the Royal Surrey County Hospital, Surrey Research Park, Surrey Sports Park and Park Barn residential area; It is one of the priority Highway and Transport Scheme, critical for the delivery of Guildford Local Plan; A site has been allocated for the station in the Local Plan and funding for the feasibility study approved	Lengthy Timescale

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
19	Shaping Guildford's Future	Traffic Management	UTC, Congestion management, traffic reduction	2021	2030	Guildford Borough Council	Guildford Borough Council	NO	Funded	£1 million - £10 million	Planning	Reduced vehicle emissions	Traffic flow	The stage 1(Preparation of detailed scope & briefs; Procurement of Consultant team, High Level Strategic Appraisal including constraint analysis, Planning Strategy) and Stage 2 (Development of concept Master Plan, Stakeholder consultation, Data collection, Preparation of Strategic Outline Case, Preparation of Grant applications) of the Shaping Guildford's Future are completed and the council is ready to move to stage 3.	Lengthy Timescale; Shaping Guildford's future -
20	Guildford Town Centre AQMA	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	2022	Guildford Borough Council and Surrey County Council	Guildford Borough Council	NO	Funded	£10k - 50k	Planning	Reduced vehicle emissions	producing a draft Air Quality Action Plan	Draft AQAP submitted to DEFRA and approved in December 2022	AQAP measures implementation on the basis of feasibility study outcome; funding for the implementation of measures; Will be reported in 2024 ASR
21	Junction 10	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2021	2025	NH, SCC and GBC	NH	NO	Not Funded	> £10 million	Planning	Reduced vehicle emissions	Traffic flow	Decision was made in 2022, to be reported in ASR 2023	The Junction 10 improvement work is now underway and projected to be completed in summer 2025
22	Ash Railway Bridge	Traffic Management	Other	2020	2025	Guildford Borough Council	Homes England and SCC	NO	Funded	> £10 million	Implementation	Reduced vehicle emissions	monitoring after construction	Implementation on-going	The bridge will close a level crossing and will ease the traffic issues in Ash. The pre-construction site preparation has now begun.
23	Walnut Tree Close	Traffic Management	UTC, Congestion management, traffic reduction	2020	2023	Guildford Borough Council and Surrey County Council	Guildford Borough Council and Surrey County Council	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Change of road priority	Completed; continued to be monitored until the end of 2023	the one way motor vehicles and two-way cycle lane has been made permanent after end of trial.
24	Strategic Movement Corridor	Transport Planning and Infrastructure	Cycle network	2019	2024	Guildford Borough Council and Surrey County Council	Guildford Borough Council and Surrey County Council	NO	Partially Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Improved infratructure and increased usage of cycle path	Implementation on-going	Partly implemented; discussed in detail in section 2.2

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
25	Improvement to cycle network	Promoting Travel Alternatives	Promotion of cycling	2019	2023	GBC and SCC	GBC and SCC	NO	Partially Funded	£500k - £1 million	Implementation	more cycle update	Cycle counts	There are major plans from Surrey County Council to improve the route from Burpham to Guildford Towncentre along the London Road; Currently under consultation	Policy ID11: Achieving a Comprehensive Guildford Borough Cycle Network in the emerging Local Plan: Development Management Policies.
26	Electric vehicle trial project for taxis	Promoting Low Emission Transport	Taxi emission incentives	2021	2024	GBC and Surrey Air Alliance	DEFRA	YES	Funded	£50k - £100k	Planning	Reduced vehicle emissions	take up by taxis	Planning	Surrey Air Alliance bid of amount £256k was successful to be implemented in 2021 facilitating EV taxi trials. The previous proposal is currently being reconfigured to allow longer EV trials based on feedback from taxi trade and EV suppliers. The reconfigured project has been resubmitted to DEFRA for approval
27	GBC Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2017	2024	GBC	GBC	NO	Not Funded	< £10k	Implementation	Reduction in vehicle emissions	measures adopted	Implementation on-going	Currently under review
28	TC Clean Air Zone Feasibility Study	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2022	2024	GBC	GBC	NO	Funded	£50k - £100k	Planning	to be estimated in the feasibility study	completion of feasibility study	ANPR study commissioned in the towncentre; Procurement process for feasibility study started	Following discussions with the local representatives, the economic feasibility will now include Shalford AQMA; This was decided due to the close proximity of the two AQMAs; No barriers to the feasibility study.
29	E Bike and scooter hire scheme	Promoting Travel Alternatives	Promotion of cycling	2021	2024	GBC, SCC, University of Surrey		NO	Funded	£50k - £100k	Planning	Alternative Transport	usage	The scheme has progressed towards tender and implementation	E-bike scheme implementation planned for Guildford Towncentre; There is no plan for scooter scheme and that is unlikely to be put forward.

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
30	A3 Guildford - ETCI	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2023	2025	GBC, SCC, NH	NH	NO	Funded	> £10 million	Implementation	EV vehicle transformation	uptake of ETCI scheme	The scheme which is 2 year programme is now live	Full funding is available for the EV grant scheme and sustainable travel scheme; the challenges are 1) take up the schemes and 2) to find suitable site locations for the expansion of EV charging infrastructure for commercial vehicles
Towncentre and Shalford AQAP															
31	Incident management and effective contingency planning to minimise traffic disruption and unnecessary congestion	Traffic Management	UTC, Congestion management, traffic reduction	2023	2025	GBC, SCC	unknown	NO	Not Funded					Awaiting feasibility study outcome	TC AQAP measure
32	HGV ban around the gyratory during peak and interpeak hours	Freight and Delivery Management	Quiet & out of hours delivery	2023	2025	GBC, SCC	unknown	NO	Not Funded					Awaiting feasibility study outcome	TC AQAP measure; subject to feasibility study
33	Electric vehicle (EV) deliveries, local delivery hubs	Promoting Low Emission Transport	Other	2023	2026	GBC	unknown	NO	Not Funded					Awaiting feasibility study outcome	TC AQAP measure, will require appropriate site, planning process; subject to feasibility study
34	A Clean Air Zones (CAZ) and/or Low Emission Zone (LEZ) for buses + HGVs, including an assessment of exisiting park and ride	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2023	2026	SCC/GBC	unknown	NO	Not Funded					Awaiting feasibility study outcome	TC AQAP measure; subject to feasibility study

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
	facilities to identify potential for improvements														

$PM_{2.5}$ – 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.

Guildford currently has no monitoring program for PM2.5. The background annual mean for most of the Guildford Borough as per the DEFRA background maps[9], for 2021 is projected to be 6-8µg/m^3, except for the towncentre area impacted by the major arterial roads entering Guildford, where the annual average background PM2.5 is 9-10 µg/m^3. Maximum roadside annual mean PM2.5 concentration of 11 – 13 µg/m^3 is projected for A320 Stoke Road, A25 Guildford and A3 stretch of Guildford.

The Environmental Improvement Plan 2023 for England set interim targets that by January 2028:

- An annual average of 12 µg/m3 for PM2.5 is not exceeded at any monitoring station.
- Population exposure to PM2.5 is at least 22% less than in 2018.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 require that in England by the end of 2040:

- An annual average of 10 µg/m3 for PM2.5 is not exceeded at any monitoring station.
- Population exposure to PM2.5 is at least 35% less than in 2018.

These targets and Improvement plan will be incorporated in our Air Quality Strategy, which is due to be updated in 2023-24, however, it needs to be acknowledged that most of the PM2.5 is regional. The limited measures that can be undertaken locally is unlikely to bring significant reductions in PM2.5 levels unless complemented by regional and national measures.

[9] UK Ambient Air Quality Interactive Map (defra.gov.uk)

Measures to reduce PM2.5 levels:

- Measures already in place to achieve compliance with NO_2 levels in the AQMAs will also help in improvements of $PM_{2.5}$ levels.
- The medium and large scale developments are required to produce a construction management plan, with measures to control particulate matters and other emissions from construction on site and off site.
- Guildford Borough Council's existing Smoke Control Area (SCA) already covers the area of highest predicted PM2.5 concentration.

Measures specific to reducing PM2.5:

- Joint working with Trading Standards to review and enforce the new requirements re solid fuel and smoke control. Since this has been previously an unregulated market area, the first hurdle will be identifying the market structure all the solid fuel providers that may be operating in our area.
- Incorporating the Air Quality Strategy: Framework for Local Authority Delivery into our air quality strategy.

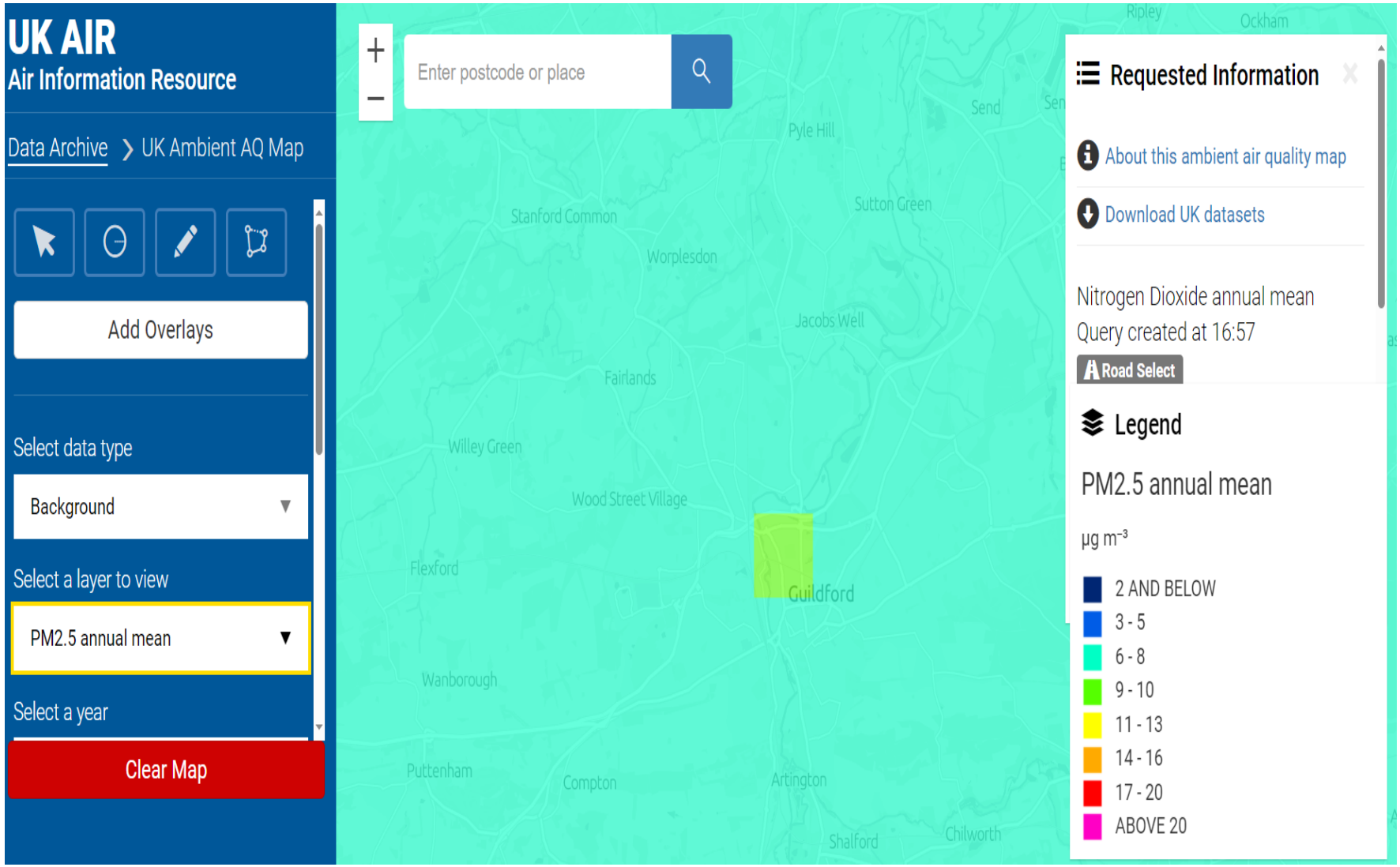


Figure 4 Background $PM_{2.5}$ Annual Mean projected for 2021

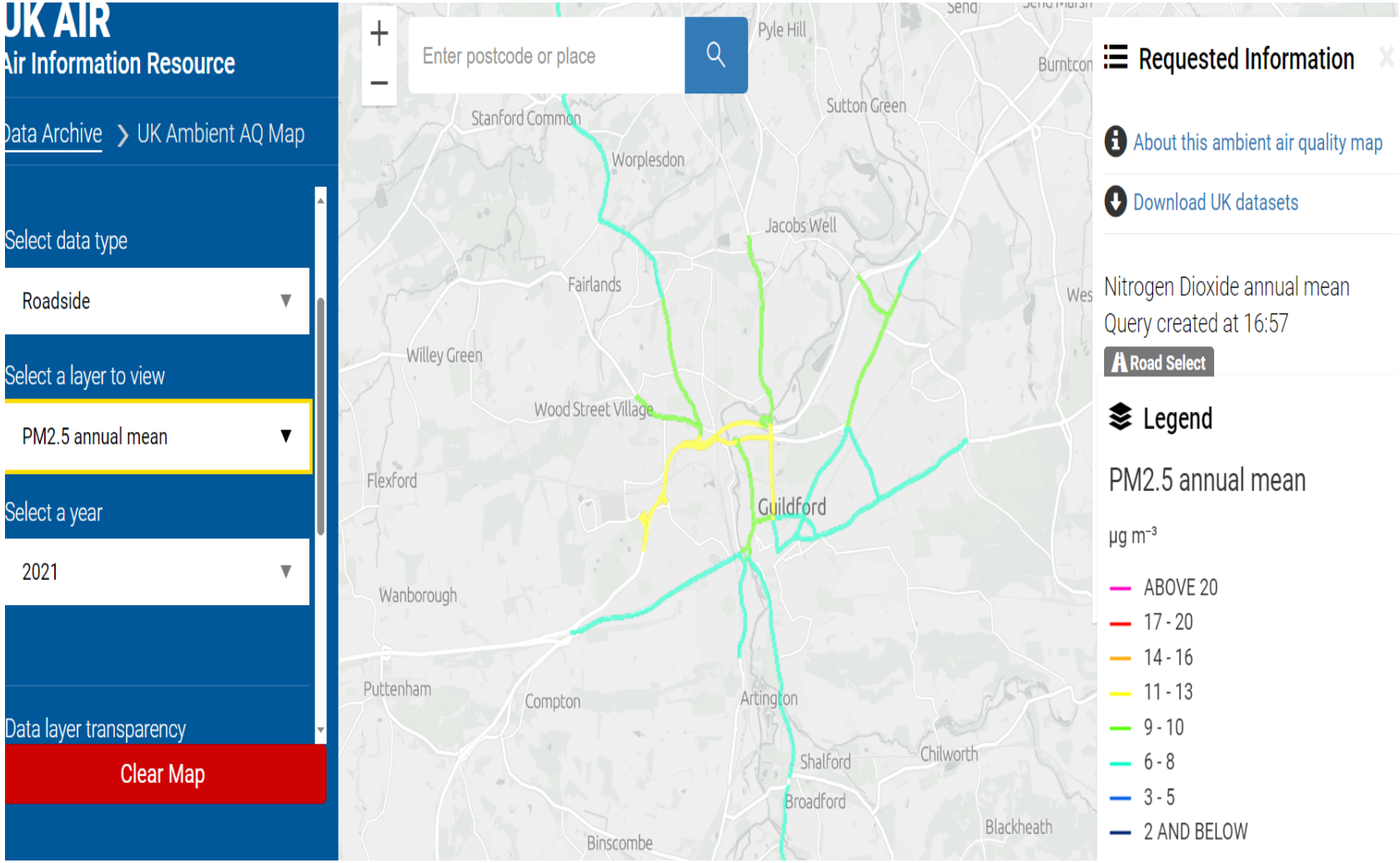


Figure 5 $PM_{2.5}$ Roadside Concentration, projected for year 2021

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

This section sets out the monitoring undertaken within 2022 by Guildford Borough Council 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

The Guildford Borough Council do not have any automated monitoring sites in their control within the borough.

3.1.2 Non-Automatic Monitoring Sites

Guildford Borough Council undertook non- automatic (i.e., passive) monitoring of NO_2 at 47 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.

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO_2)

Table A.2 in Appendix A compare the adjusted monitored NO_2 annual mean concentrations for the past five years (where available) 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 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.

Monitoring of NO_2 in 2022 has shown that:

- The annual mean NO_2 objective of 40 µg/m^3 was exceeded at six monitoring locations in 2022 (TC6 – 46.6 µg/m^3, A3-9 – 49.3 µg/m^3, A3-10 – 49.3 µg/m^3, A3-18 – 59.8 µg/m^3, A3-19 – 59.6 µg/m^3 and A3-20 – 58.4 µg/m^3);
- Three monitors measured NO_2 concentrations within 10% of the NO_2 objective (36 – 40 µg/m^3); C4 (38.8 µg/m^3), SH2 (37.7 µg/m^3), A3-8 (39.8 µg/m^3).
- Previous research carried out on behalf of Defra and the devolved administrations (2022) identified that exceedences of the 1-hour mean NO_2 objective are unlikely to occur where annual mean concentrations are below 60 µg/m^3. Since the highest measured annual mean concentration was 59.8 µg/m^3, it is considered unlikely that the 1-hour mean NO_2 objective was exceeded within the district in 2022;
- The number of exceedances of the annual mean NO_2 objective in the AQMAs has varied over the period of 2018 – 2022.
- The analysis for the last five years indicates that there are no clear trends in the measured concentrations indicating that concentrations have remained at a relatively stable level in recent years. It is, however, expected that concentrations will reduce in the future with the increasing uptake of electric and hydrogen fuelled vehicles.
- Monitoring of NO_2 will continue at all sites throughout 2023. The next air quality monitoring update will be provided in GBC's next ASR, due June 2024.

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)
GD2	York Road	Roadside	499799	149934	NO_2	No	10.5	1.5	No	2.6
GD6	Chantries	Rural	500385	148342	NO_2	No	-120.0	120.0	No	2.0
GD10	The Garth	Urban Background	488629	150032	NO_2	No	-12.0	12.0	No	2.2
GD16	Sandfields	Roadside	499761	149914	NO_2	No	-2.0	2.0	No	2.5
GD18	Josephs Road	Urban Background	499665	150720	NO_2	No	6.8	1.0	No	2.4
TC4	Stoke Mews	Kerbside	499822	150010	NO_2	No	1.6	1.7	No	2.4
TC5	Mangles Court	Other	499486	149951	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	-8.0	8.0	No	2.4
TC6	18 Park Street	Kerbside	499299	149466	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	1.0	0.5	No	2.4

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)
TC7	16A Park Street/TC17 from November	Kerbside	499308	149453	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	-1.0	5.0	No	2.5
TC8	13-21 High Street	Kerbside	499493	149402	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	-3.2	3.2	No	2.5
TC9	The Mount	Kerbside	499241	149257	NO_2	No	-0.5	0.5	No	2.4
TC11	YMCA	Urban Centre	499308	149505	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	-4.5	6.0	No	2.5
TC12	58 Quarry Street	Kerbside	499643	149340	NO_2	No	-1.8	1.8	No	2.5
TC13	Weatherspoon	Kerbside	499406	149584	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	1.5	0.5	No	2.6
TC14	ACM	Kerbside	499369	149577	NO_2	Yes, Air Quality	-0.4	1.9	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
						Management Area (No 3) 2021, Towncentre AQMA				
TC15	Weatherspoon / Pop World	Roadside	499382	149567	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	-3.1	4.6	No	2.5
TC16	Addison Road	Kerbside	500466	149466	NO_2	No	0.8	1.0	No	2.3
A281-1	The Legion	Kerbside	499624	149278	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	2.0	1.0	No	2.5
C4	Little Cottage, Compton	Kerbside	495437	147288	NO_2	Yes, AQMA Order (No. 1) 2018, Compton AQMA	-1.5	1.5	No	2.6
C9	Moors Cottage	Kerbside	495442	147270	NO_2	Yes, AQMA Order (No. 1) 2018, Compton AQMA	3.0	1.0	No	2.5
SH1	Oppo Sea Horse Pub	Kerbside	500046	147604	NO_2	No	3.0	1.0	No	2.4
SH2	36 The Street	Kerbside	499978	147704	NO_2	Yes, AQMA Order (No. 2)	-2.2	2.2	No	2.3

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)
						2019, Shalford AQMA				
SH3	Near Shalford Lane	Kerbside	500003	147670	NO_2	No	1.3	1.0	No	2.4
RP4	Newark Lane	Kerbside	505150	156741	NO_2	No	-0.5	0.5	No	2.3
RP6	Ripley High Street	Kerbside	505374	156883	NO_2	No	2.0	1.0	No	2.0
FRH2	38 Farnham Road	Roadside	499078	149414	NO_2	No	-5.0	5.0	No	2.0
FRH6	22 Farnham Road	Roadside	499102	149421	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	-6.0	6.0	No	2.0
PR1	Wycliffe Building, Portsmouth Rd	Kerbside	499305	149168	NO_2	No	-1.0	1.0	No	2.1
PR3	Oppo Cannon	Kerbside	499360	149326	NO_2	Yes, Air Quality Management Area (No 3) 2021, Towncentre AQMA	0.1	2.8	No	2.6
A3-4	Beckingham Road	Roadside	498133	150648	NO_2	No	-4.0	4.0	No	2.7
A3-6	Ash Grove	Other	498217	150649	NO_2	No	-19.5	19.5	No	2.0
A3-7	Kendale Court	Other	498653	150790	NO_2	No	-15.0	15.0	No	2.4
A3-8	Noise barrier, Cathedral Hill	Roadside	497777	149774	NO_2	No	12.0	7.0	No	2.0
A3-9	Lamp post 513-12	Kerbside	497736	149590	NO_2	No	23.0	1.0	No	2.5
A3-10	Raymond Crescent, lamp 513-002	Kerbside	497876	150000	NO_2	No	18.0	1.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
A3-12	Onslow school Reception block	Other	497610	149263	NO_2	No	-0.6	14.0	No	3.0
A3-13	Onslow School Reception play	Other	497592	149251	NO_2	No	3.4	10.0	No	1.8
A3-14	Onslow School Football court	Other	497636	149271	NO_2	No	-19.6	33.0	No	3.2
A3-15	Onslow School Bug Hotel	Other	497637	149303	NO_2	No	5.4	8.0	No	1.6
A3-16	119 Raymond Cres	Other	497883	149998	NO_2	No	20.8	2.2	No	1.8
A3-17	Wilderness Road	Roadside	497743	149559	NO_2	No	7.2	0.8	No	2.3
A3-18,19,20	HE - AMS	Kerbside	497715	149494	NO_2	No	18.0	2.5	Yes, the AMS belongs to National Highways	2.0
Godalming AMS1, Godalming AMS2, Godalming AMS3	Godalming AMS	Urban Centre	496711	143705	NO_2	Yes, Waverley AQMA No.2 - Godalming	0.5	2.5	Yes, the AMS belongs to Waverley	1.6
WTC3	The Billings, Walnut Tree Close	Kerbside	499257	149601	NO_2	No	1.0	1.4	No	2.6
WTC4	Gateway House, Walnut Tree Close	Kerbside	499208	149744	NO_2	No	0.3	2.2	No	2.2
WTC5	19 Walnut Tree Close	Kerbside	499207	149805	NO_2	No	0.5	1.5	No	2.7
WTC6	152 Walnut Tree Close	Kerbside	499147	150087	NO_2	No	4.3	1.5	No	2.6

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 NO_2 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 2022 (%) (2)	2018	2019	2020	2021	2022
GD2	499799	149934	Roadside	100	100.0	32.0	33.1	21.7	23.4	29.9
GD6	500385	148342	Rural	100	100.0	13.0	10.1	8.1	10.1	11.4
GD10	488629	150032	Urban Background	100	100.0	16.0	15.0	10.0	14.8	15.0
GD16	499761	149914	Roadside	91.7	92.3	36.1	38.2	25.4	29.6	28.9
GD18	499665	150720	Urban Background	100	100.0			14.6	17.2	21.3
TC4	499822	150010	Kerbside	100	100.0		31.8	21.0	25.9	25.6
TC5	499486	149951	Other	91.7	92.3			16.0	20.5	21.5
TC6	499299	149466	Kerbside	100	100.0			**42.7**	**50.5**	**46.6**
TC7	499308	149453	Kerbside	66.7	67.3				27.2	26.8
TC8	499493	149402	Kerbside	100	100.0				34.3	34.4
TC9	499241	149257	Kerbside	91.7	90.7				26.1	24.3
TC11	499308	149505	Urban Centre	75	75.0					25.8
TC12	499643	149340	Kerbside	83.4	82.7					23.9
TC13	499406	149584	Kerbside	100	100.0					34.7
TC14	499369	149577	Kerbside	91.7	92.3					28.7

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
TC15	499382	149567	Roadside	83.4	84.6					27.9
TC16	500466	149466	Kerbside	91.7	92.3					17.7
A281-1	499624	149278	Kerbside	83.4	84.3			31.0	34.7	34.4
C4	495437	147288	Kerbside	100	100.0	**46.0**	**46.0**	33.3	37.3	38.8
C9	495442	147270	Kerbside	91.7	94.0	**44.3**	**44.5**	31.7	35.8	33.0
SH1	500046	147604	Kerbside	100	100.0	**43.8**	39.6	27.6	30.2	30.9
SH2	499978	147704	Kerbside	100	100.0	**50.1**	**50.0**	34.8	37.1	37.7
SH3	500003	147670	Kerbside	100	100.0			23.5	25.0	26.8
RP4	505150	156741	Kerbside	100	100.0	32.2	33.3	22.1	25.4	26.9
RP6	505374	156883	Kerbside	75	73.1					26.3
FRH2	499078	149414	Roadside	100	100.0	38.4	36.8	25.5	29.3	32.5
FRH6	499102	149421	Roadside	91.7	90.4			24.6	28.1	32.5
PR1	499305	149168	Kerbside	91.7	90.4	**41.2**	36.1	23.7	28.4	30.6
PR3	499360	149326	Kerbside	100	100.0		28.1	20.8	22.6	26.7
A3-4	498133	150648	Roadside	91.7	90.4			23.2	35.0	31.4
A3-6	498217	150649	Other	100	100.0			19.0	21.7	26.5

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
A3-7	498653	150790	Other	83.4	84.6			20.7	26.1	26.6
A3-8	497777	149774	Roadside	100	100.0				**43.0**	39.8
A3-9	497736	149590	Kerbside	100	100.0				**49.2**	**49.3**
A3-10	497876	150000	Kerbside	100	100.0				**56.2**	**49.3**
A3-12	497610	149263	Other	100	100.0					23.8
A3-13	497592	149251	Other	91.7	90.7					20.6
A3-14	497636	149271	Other	100	100.0					22.2
A3-15	497637	149303	Other	83.4	82.7					25.4
A3-16	497883	149998	Other	91.7	92.3					25.3
A3-17	497743	149559	Roadside	91.7	92.3					30.5
A3-18, 19, 20	497715	149494	Kerbside	83.4	100					**59.5**
Godalming AMS1, Godalming AMS2, Godalming AMS3	496711	143705	Urban Centre	91.7	94.0					22.8
WTC3	499257	149601	Kerbside	83.4	42.3					31.5

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
WTC4	499208	149744	Kerbside	100	50.0					25.5
WTC5	499207	149805	Kerbside	83.4	44.0					21.5
WTC6	499147	150087	Kerbside	100	50.0					23.6

☒ **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/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.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 NO_2 Concentrations – Town centre

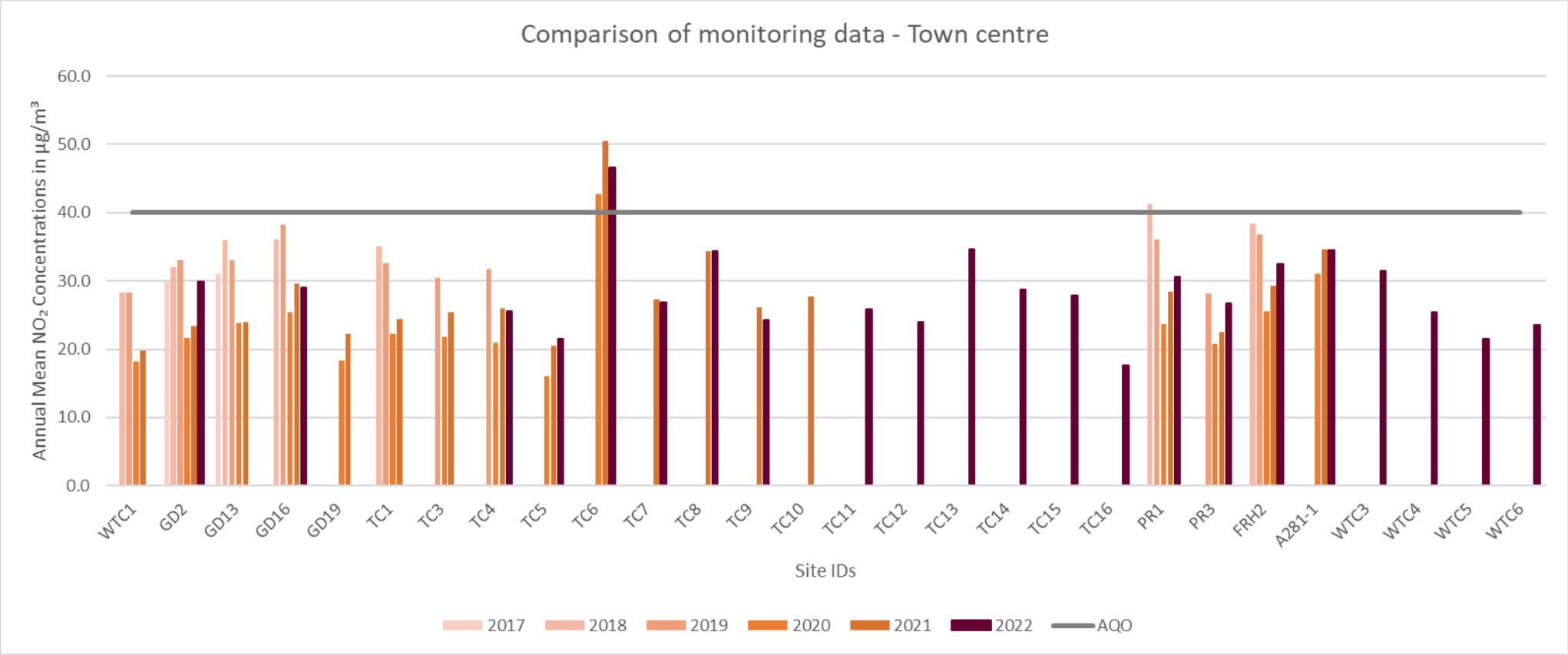


Figure A.2 – Trends in Annual Mean NO_2 Concentrations – Compton AQMA

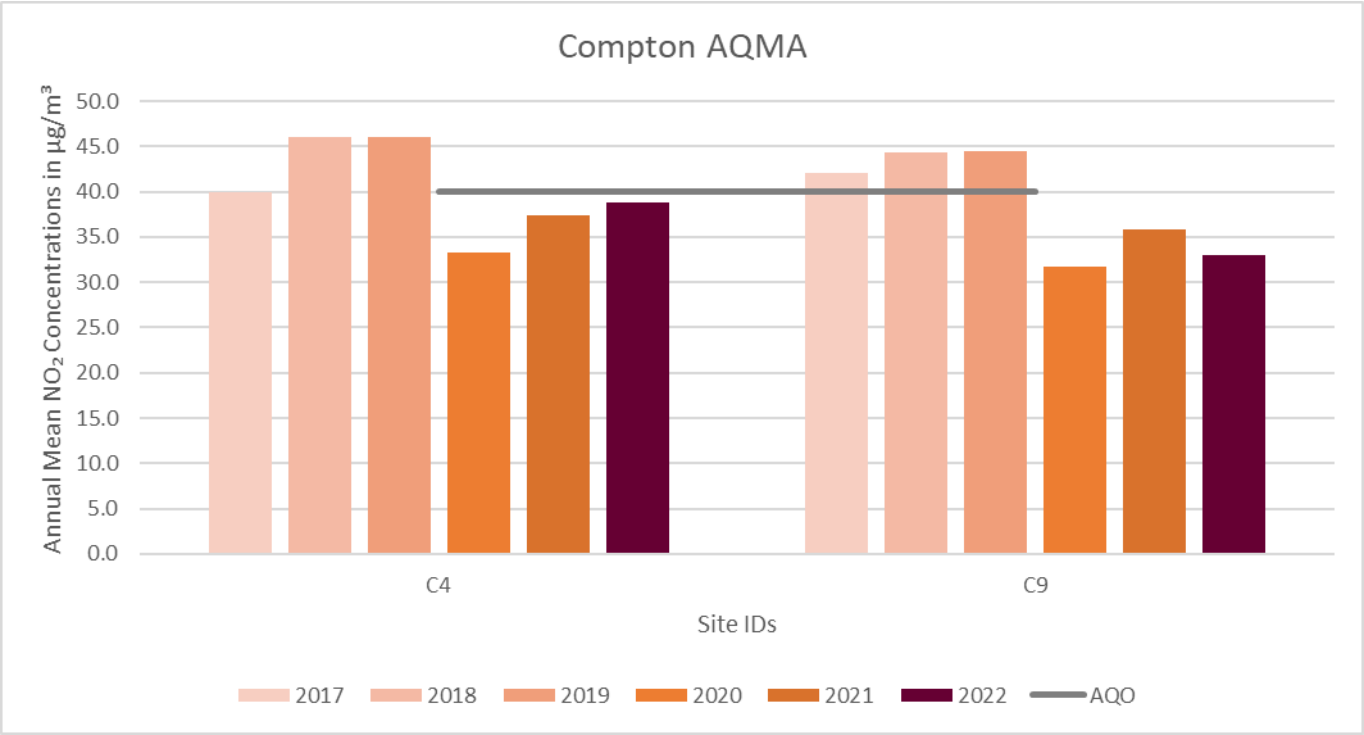


Figure A.3 – Trends in Annual Mean NO_2 Concentrations – Shalford AQMA

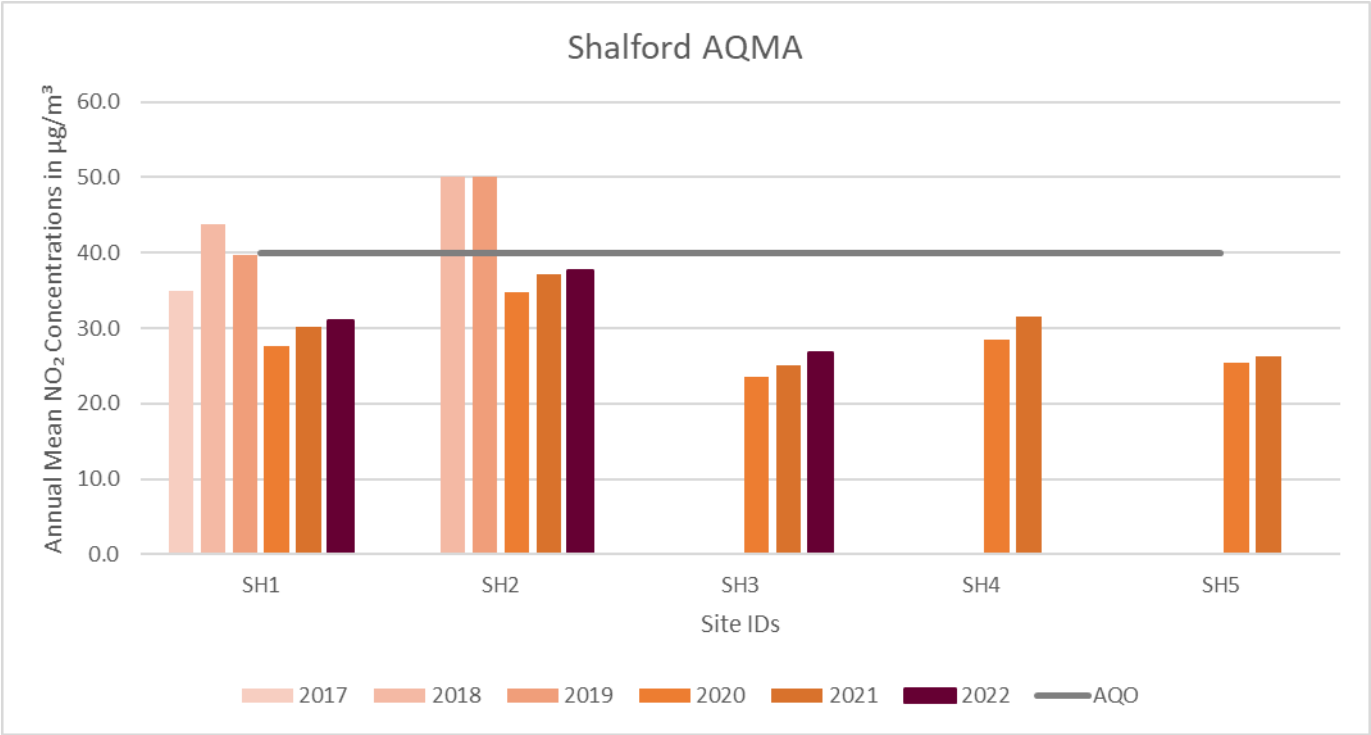
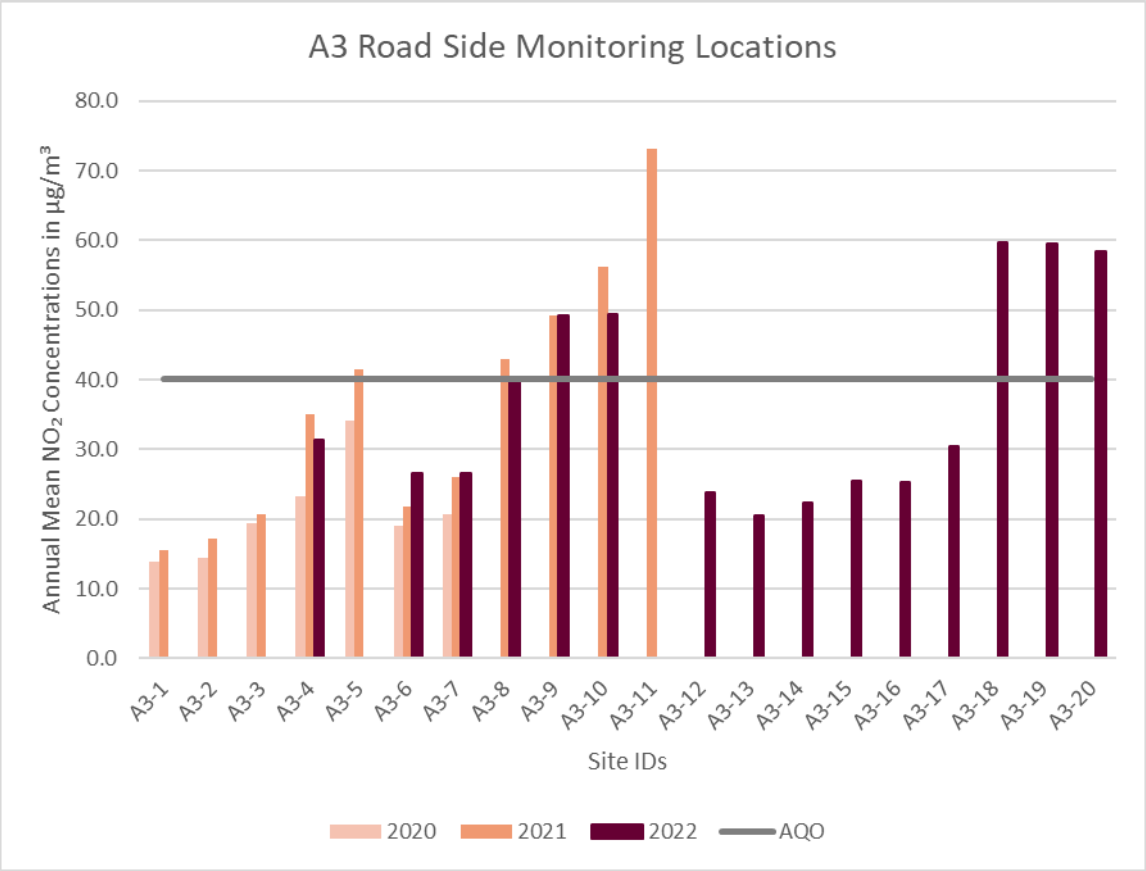


Figure A.4 – Trends in Annual Mean NO_2 Concentrations – A3 Guildford



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results (µg/m^3)

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GD2	499799	149934	45.0	36.0	37.0	24.0	26.0	22.0	23.0	28.0	49.0	33.0	36.0	27.0	31.5	29.9	-	
GD6	500385	148342	13.0	14.0	10.0	12.0	11.0	13.0	7.0	14.0	11.0	9.0	13.0	16.0	12.0	11.4	-	
GD10	488629	150032	21.0	14.0	13.0	14.0	14.0	18.0	15.0	12.0	24.0	15.0	17.0	16.0	15.8	15.0	-	
GD16	499761	149914	37.0	30.0	32.0	27.0	30.0	33.0		36.0	26.0	34.0	17.0	31.0	30.5	28.9	-	
GD18	499665	150720	47.0	19.0	19.0	20.0	12.0	12.0	14.0	21.0	44.0	25.0	19.0	24.0	22.4	21.3	-	
TC4	499822	150010	29.0	28.0	29.0	23.0	23.0	22.0	29.0	27.0	35.0	26.0	28.0	28.0	26.9	25.6	-	
TC5	499486	149951	28.0	29.0	27.0	21.0	19.0	17.0		24.0	20.0	16.0	23.0	26.0	22.6	21.5	-	
TC6	499299	149466	67.0	52.0	43.0	37.0	42.0	32.0	44.0	62.0	62.0	53.0	51.0	48.0	49.1	**46.6**	**40.5**	
TC7	499308	149453	48.0	30.0	33.0	29.0	25.0		25.0				26.0	26.0	29.9	26.8	27.6	
TC8	499493	149402	46.0	45.0	47.0	31.0	29.0	33.0	35.0	42.0	33.0	32.0	26.0	37.0	36.2	34.4	-	
TC9	499241	149257	35.0	27.0	26.0	15.0	22.0	22.0	26.0		35.0	32.0	19.0	26.0	25.6	24.3	-	
TC11	499308	149505	33.0		26.0	14.0			24.0	32.0	25.0	29.0	36.0	27.0	27.2	25.8	30.4	
TC12	499643	149340	44.0	29.0	30.0	25.0	18.0	17.0	20.0	25.0	24.0	22.0			25.2	23.9	-	
TC13	499406	149584	36.0	42.0	42.0	36.0	31.0	37.0	29.0	41.0	34.0	42.0	28.0	38.0	36.5	34.7	-	
TC14	499369	149577	35.0	33.0	33.0	33.0	20.0	24.0		43.0	34.0	26.0	30.0	24.0	30.2	28.7	29.4	
TC15	499382	149567	42.0			29.0	28.0	40.0	29.0	33.0	17.0	27.0	16.0	30.0	29.4	27.9	32.0	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
TC16	500466	149466		22.0	21.0	20.0	14.0	15.0	12.0	15.0	14.0	15.0	35.0	22.0	18.6	17.7	-	
A281-1	499624	149278	60.0	37.0	39.0	28.0	23.0	27.0	36.0	39.0			36.0	41.0	36.2	34.4	-	
C4	495437	147288	49.0	44.0	45.0	31.0	37.0	38.0	41.0	56.0	54.0	33.0	31.0	37.0	40.8	38.8	-	
C9	495442	147270	44.0	37.0	35.0	39.0	31.0	28.0	33.0	41.0		24.0	31.0	39.0	34.7	33.0	-	
SH1	500046	147604	42.0	36.0	38.0	25.0	25.0	31.0	31.0	35.0	31.0	35.0	41.0	25.0	32.6	30.9	-	
SH2	499978	147704	62.0	35.0	35.0	39.0	41.0	43.0	45.0	37.0	28.0	42.0	29.0	38.0	39.7	37.7	-	
SH3	500003	147670	35.0	28.0	28.0	27.0	22.0	27.0	25.0	29.0	33.0	27.0	31.0	29.0	28.2	26.8	-	
RP4	505150	156741	34.0	18.0	19.0	26.0	25.0	32.0	29.0	37.0	26.0	28.0	37.0	28.0	28.3	26.9	-	
RP6	505374	156883	36.0	28.0	26.0	27.0	22.0	21.0	27.0	34.0	29.0				27.7	26.3	-	
FRH2	499078	149414	39.0	37.0	35.0	31.0	27.0	34.0	30.0	39.0	25.0	49.0	32.0	30.0	34.3	32.5	-	
FRH6	499102	149421	32.0	35.0	35.0	36.0	27.0	33.0	34.0	38.0	46.0		33.0	31.0	34.2	32.5	-	
PR1	499305	149168	37.0	31.0	32.0	30.0	34.0	30.0	33.0	38.0	33.0		29.0	28.0	32.3	30.6	-	
PR3	499360	149326	33.0	27.0	25.0	25.0	16.0	20.0	23.0	33.0	37.0	37.0	38.0	26.0	28.1	26.7	-	
A3-4	498133	150648	60.0	34.0	28.0		22.0	38.0	33.0	39.0	28.0	24.0	22.0	37.0	33.0	31.4	-	
A3-6	498217	150649	33.0	24.0	20.0	21.0	19.0	15.0	20.0	24.0	28.0	39.0	75.0	21.0	27.9	26.5	-	
A3-7	498653	150790	37.0	23.0	24.0	19.0	20.0		36.0	28.0	29.0	20.0		46.0	28.0	26.6	-	
A3-8	497777	149774	55.0	36.0	35.0	44.0	44.0	43.0	49.0	43.0	29.0	28.0	51.0	45.0	41.9	39.8	31.2	
A3-9	497736	149590	68.0	47.0	41.0	36.0	39.0	65.0	63.0	52.0	62.0	46.0	62.0	52.0	51.9	**49.3**	26.5	
A3-10	497876	150000	131.0	37.0	32.0	34.0	38.0	50.0	64.0	59.0	59.0	52.0	19.0	55.0	51.9	**49.3**	27.6	
A3-12	497610	149263	22.0	18.0	17.0	23.0	21.0	19.0	19.0	21.0	40.0	59.0	19.0	21.0	25.1	23.8	24.0	
A3-13	497592	149251	24.0	15.0	18.0	24.0	23.0	19.0	20.0		44.0	15.0	21.0	21.0	21.7	20.6	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
A3-14	497636	149271	46.0	23.0	22.0	27.0	20.0	21.0	20.0	25.0	24.0	10.0	22.0	24.0	23.4	22.2	27.4	
A3-15	497637	149303	33.0		56.0		30.0		26.0	27.0	29.0	17.0	24.0	27.0	26.7	25.4	-	
A3-16	497883	149998	37.0	23.0	21.0	37.0	20.0		24.0	28.0	30.0	19.0	27.0	28.0	26.6	25.3	-	
A3-17	497743	149559	41.0	25.0	21.0	22.0	26.0		32.0	26.0	65.0	15.0	70.0	28.0	32.1	30.5	-	
A3-18	497715	149494	99.0	55.0	60.0	40.0	53.0	69.0	70.0	59.0			75.0	59.0	-	-	-	Triplicate Site with A3-18, A3-19 and A3-20 - Annual data provided for A3-20 only
A3-19	497715	149494	80.0	76.0	77.0	35.0	48.0	48.0	65.0	75.0	77.0	57.0	59.0	67.0	-	-	-	Triplicate Site with A3-18, A3-19 and A3-20 - Annual data provided for A3-20 only
A3-20	497715	149494	71.0	76.0	80.0	57.0	70.0	58.0	49.0	74.0		50.0	29.0	61.0	62.6	**59.5**	35.7	Triplicate Site with A3-18, A3-19 and A3-20 - Annual data provided for A3-20 only
Godalming AMS1	496711	143705	34.0	21.0	20.0	19.0	16.0	21.0	23.0	26.0		18.0	27.0	27.0	-	-	-	Triplicate Site with Godalming AMS1, Godalming AMS2 and Godalming AMS3 - Annual data provided for Godalming AMS3 only
Godalming AMS2	496711	143705	52.0	21.0	21.0	20.0	18.0	19.0	22.0	29.0		20.0	27.0	27.0	-	-	-	Triplicate Site with Godalming AMS1, Godalming AMS2 and Godalming AMS3 - Annual data provided for Godalming AMS3 only
Godalming AMS3	496711	143705	36.0	21.0	21.0	24.0	20.0	22.0	21.0	25.0		28.0	24.0	26.0	24.0	22.8	-	Triplicate Site with Godalming AMS1, Godalming AMS2 and Godalming AMS3 - Annual data provided for Godalming AMS3 only
WTC3	499257	149601								34.0	30.0	46.0	28.0	28.0	33.7	31.5	-	
WTC4	499208	149744							25.0	25.0	29.0	28.0	22.0	27.0	26.0	25.5	-	
WTC5	499207	149805							19.0	22.0		23.0	22.0	25.0	22.4	21.5	-	
WTC6	499147	150087							19.0	25.0	30.0	23.0	26.0	23.0	24.1	23.6	-	

☒ **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.TG22.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **Guildford Borough Council confirm that all 2022 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 Guildford Borough During 2022

Guildford Borough has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Guildford Borough Council During 2022

Guildford Borough Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

The following details relate to the following aspects of non-automatic (i.e. passive) monitoring using diffusion tubes:

- Lambeth Scientific was the supplier used for diffusion tubes within 2022 and the method of preparation, was 50% TEA (triethanolamine) in acetone.
- Lambeth participates in NO2 Proficiency Testing Scheme (January 2019 – March 2021)[10]. AIR NO2 PT forms an integral part of the UK NO2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). The following summary from the report shows the

[10] WASP – Annual Performance Criteria for NO2 Diffusion Tubes (defra.gov.uk) Summary of Laboratory Performance in AIR NO2 Proficiency Testing Scheme (January 2019 – March 2021).

percentage of samples submitted for the study by Lambeth and subsequently determined to be satisfactory for 2022.

AIR PT Round	AIR PT AR030	AIR PT AR031	AIR PT AR033	AIR PT AR034	AIR PT AR036	AIR PT AR037	AIR PT AR039	AIR PT AR040	AIR PT AR042
Round conducted in the period	January – February 2019	April – May 2019	July – August 2019	September – November 2019	January – February 2020	May – June 2020	July – August 2020	September – October 2020	January – March 2021
Lambeth Scientific Services	50 %	100 %	50 %	100 %	100 %	NR [3]	NR [3]	100 %	100 %

AIR PT Round	AIR PT AR037	AIR PT AR039	AIR PT AR040	AIR PT AR042	AIR PT AR043	AIR PT AR045	AIR PT AR046	AIR PT AR049	AIR PT AR050
Round conducted in the period	May – June 2020	July – August 2020	September – October 2020	January – February 2021	May – June 2021	July – August 2021	September – October 2021	January – February 2022	May – June 2022
Lambeth Scientific Services	NR [4]	NR [4]	100 %	100 %	100 %	75 %	75 %	50 %	75 %

- All the monitoring has been completed in adherence with the 2022 Diffusion Tube Monitoring Calendar. No divergences were necessary.
- DEFRA's Diffusion tube data processing tool was used for bias adjustment, annualization and fall off with distance calculations.

Diffusion Tube Annualisation

The annualisation of data was required for TC7, WTC3, WTC4, WTC5 and WTC6. The data capture for these five sites are less than 75%.

The annualization was carried out using the following four background automated monitoring locations, with data obtained from Air Quality England website (https://www.airqualityengland.co.uk/):

1. Spelthorne, Sunbury Cross
2. Hounslow Feltham
3. Horley
4. Southwark – Elephant and Castle.

The annualization has been carried out using the Diffusion Tube Data Processing Tool v3.0 and the summary is provided in the Table C.1.

Table C.1 – Annualisation Summary (concentrations presented in µg/m³)

Diffusion Tube ID	Annualisation Factor Spelthorne, Sunbury Cross, Urban Background	Annualisation Factor Hounslow, Feltham, Urban Background	Annualisation Factor Horley, Urban Background	Annualisation Factor Southwark – Elephant and Castle	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m3)	Annualised Data Simple Annual Mean (µg/m3)
TC7	0.9391	0.9464	0.9475	0.9355	0.9421	29.9	28.2
WTC3	0.9838	1.0289	0.9557	0.9713	0.9849	33.7	33.2
WTC4	1.0241	1.0491	1.0142	1.0384	1.0315	26.0	26.8
WTC5	1.0111	1.0428	0.9866	1.0190	1.0149	22.4	22.7
WTC6	1.0241	1.0491	1.0142	1.0384	1.0315	24.1	24.8

Diffusion 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 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.

Guildford Borough Council have applied a national bias adjustment factor of 0.95 to the 2022 monitoring data. A summary of bias adjustment factors used by the Guildford Borough Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	V 06/23	0.95
2021	National	V 03/22	0.97
2020	National	V 06/21	0.95
2019	Local	-	0.92
2018	National	-	1.03

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.

Most of the monitoring diffusion tube locations in Guildford Borough are located at the relevant receptor location. However, where this was not possible, the tubes are set up as close as possible to the receptor. The distance adjustment has been carried out using the Diffusion Tube Data Processing Tool V3.0. Local annual mean background NO_2 concentrations have been derived from Defra's latest national pollution maps which cover the whole country on a 1x1 km grid for each year from 2018 to 2030. Concentrations for 2022 have been used, to coincide with the monitoring results considered in this report.

The distance correction was required for four locations and is presented in Table C.3.

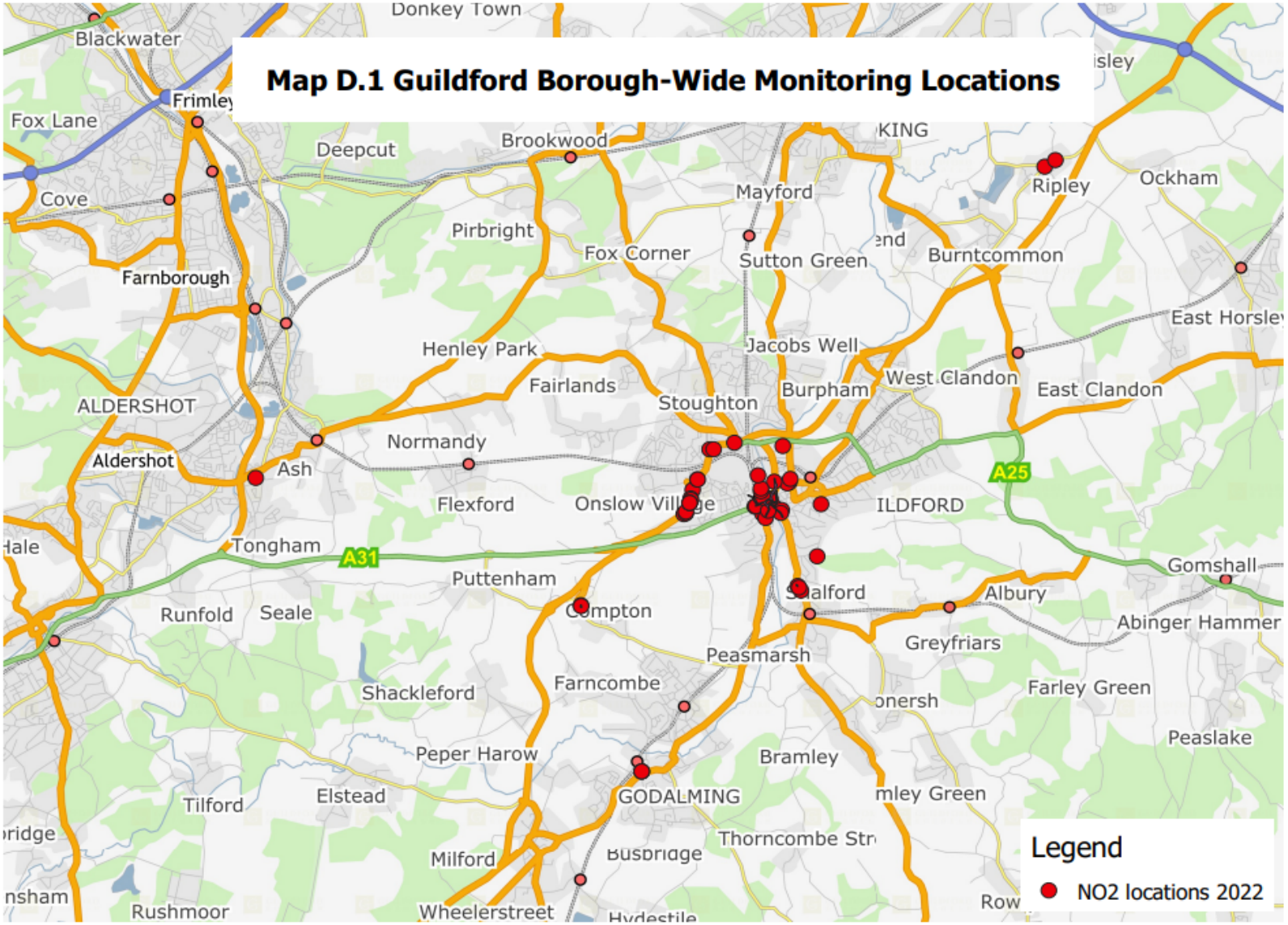
TC6 is in Guildford Town centre AQMA and is discussed in section 3.1.3.

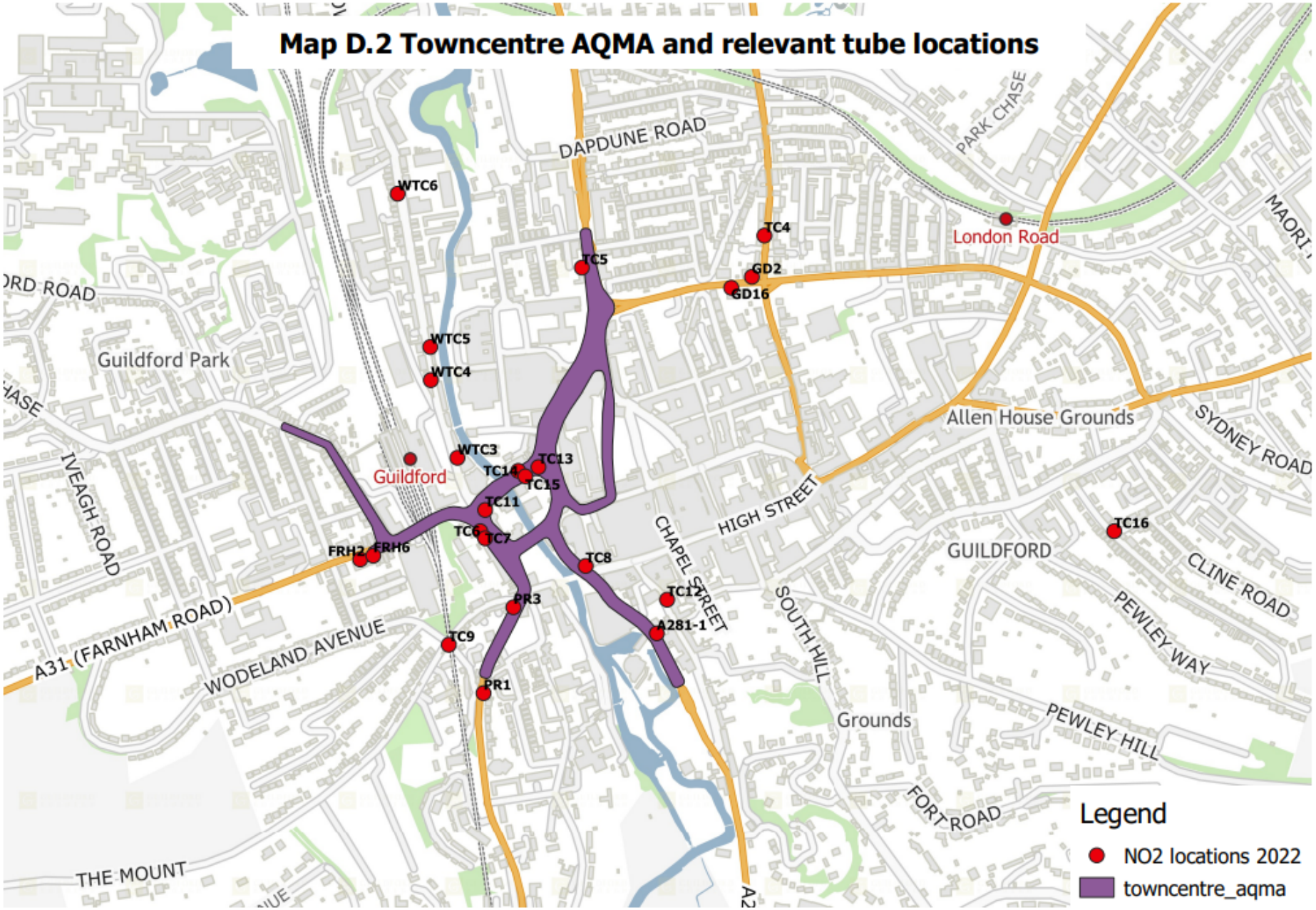
Table C.3 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
TC6	0.5	1.5	46.6	15.3	*40.5*	*Predicted concentration at Receptor above AQS objective.*
TC7	5.0	4.0	26.8	15.3	*27.6*	
TC11	6.0	1.5	25.8	15.3	*30.4*	
TC14	1.9	1.5	28.7	15.3	*29.4*	
TC15	4.6	1.5	27.9	15.3	*32.0*	
A3-8	7.0	19.0	39.8	13.8	31.2	
A3-9	1.0	24.0	49.3	13.8	26.5	*Warning: your receptor is more than 20m further*

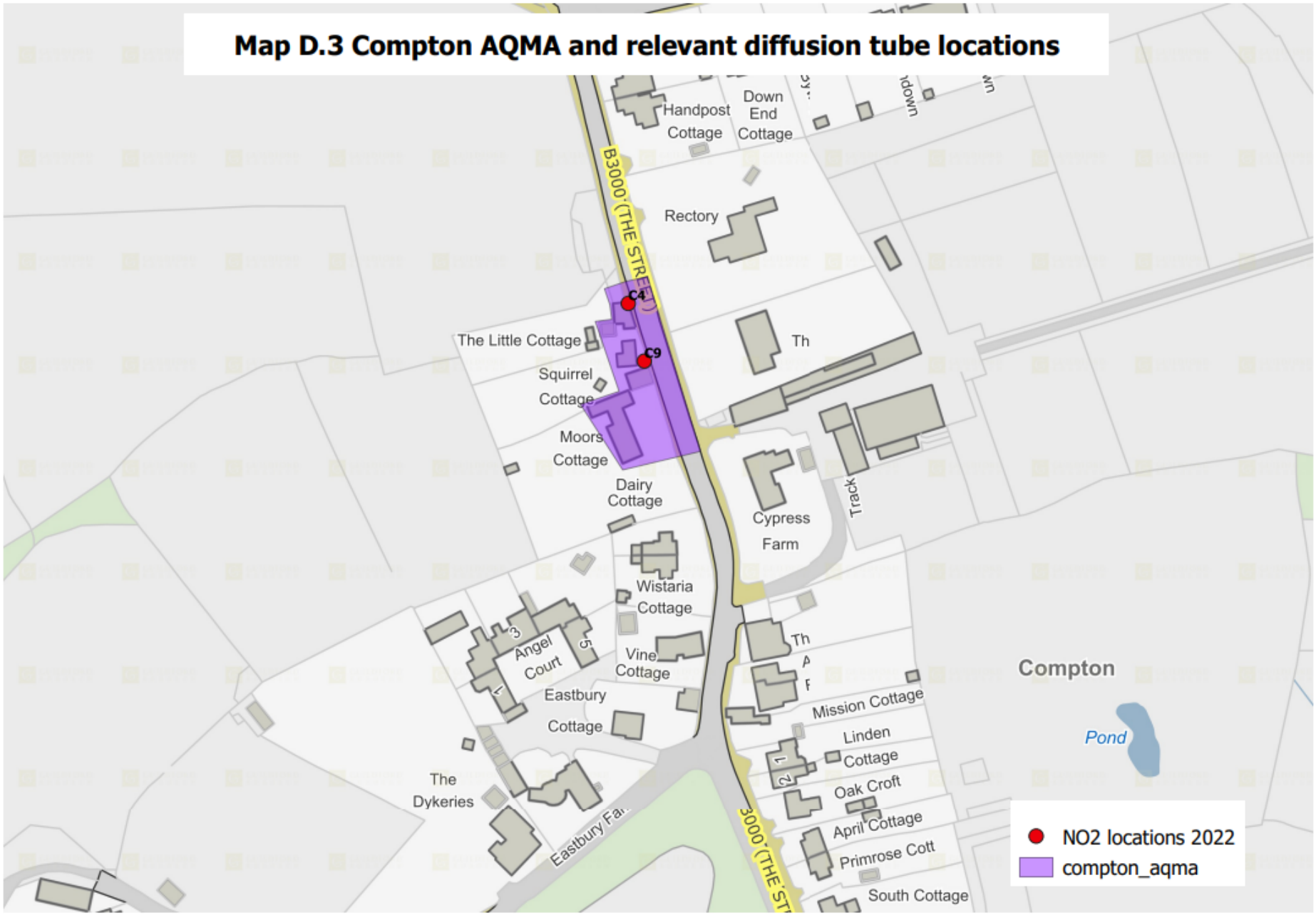
Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
						from the kerb than your monitor - treat result with caution.
A3-10	1.0	19.0	49.3	12.7	27.6	
A3-12	14.0	13.4	23.8	13.8	24.0	*Warning: your receptor is more than 10m further from the kerb than your monitor - treat result with caution.*
A3-14	33.0	13.4	22.2	13.8	27.4	*Warning: your receptor is more than 10m further from the kerb than your monitor - treat result with caution.*
A3-18	2.5	20.5	59.8	13.8	35.9	*Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.*
A3-19	2.5	20.5	59.6	13.8	35.8	*Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.*
A3-20	2.5	20.5	58.4	13.8	35.2	*Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.*

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

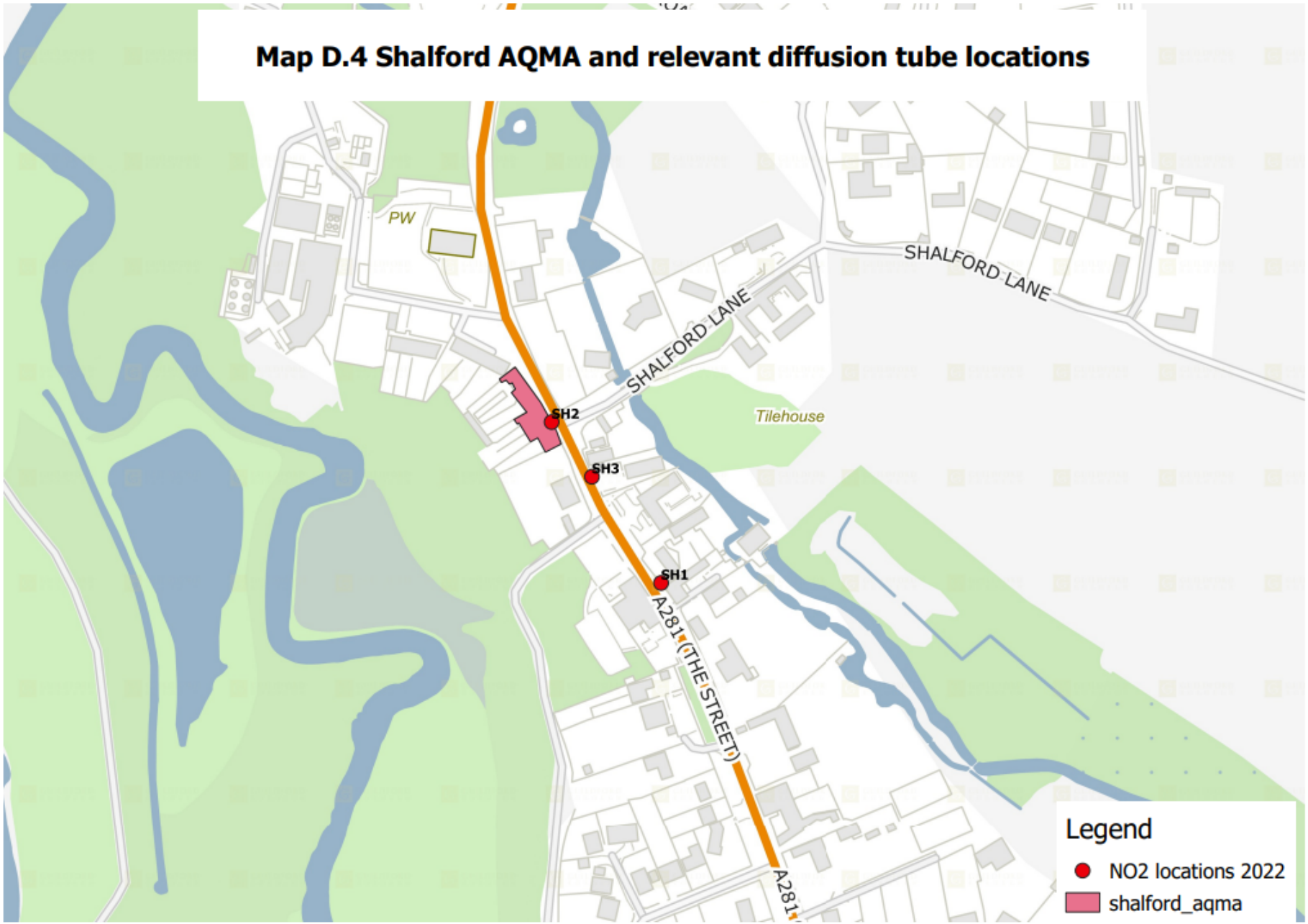


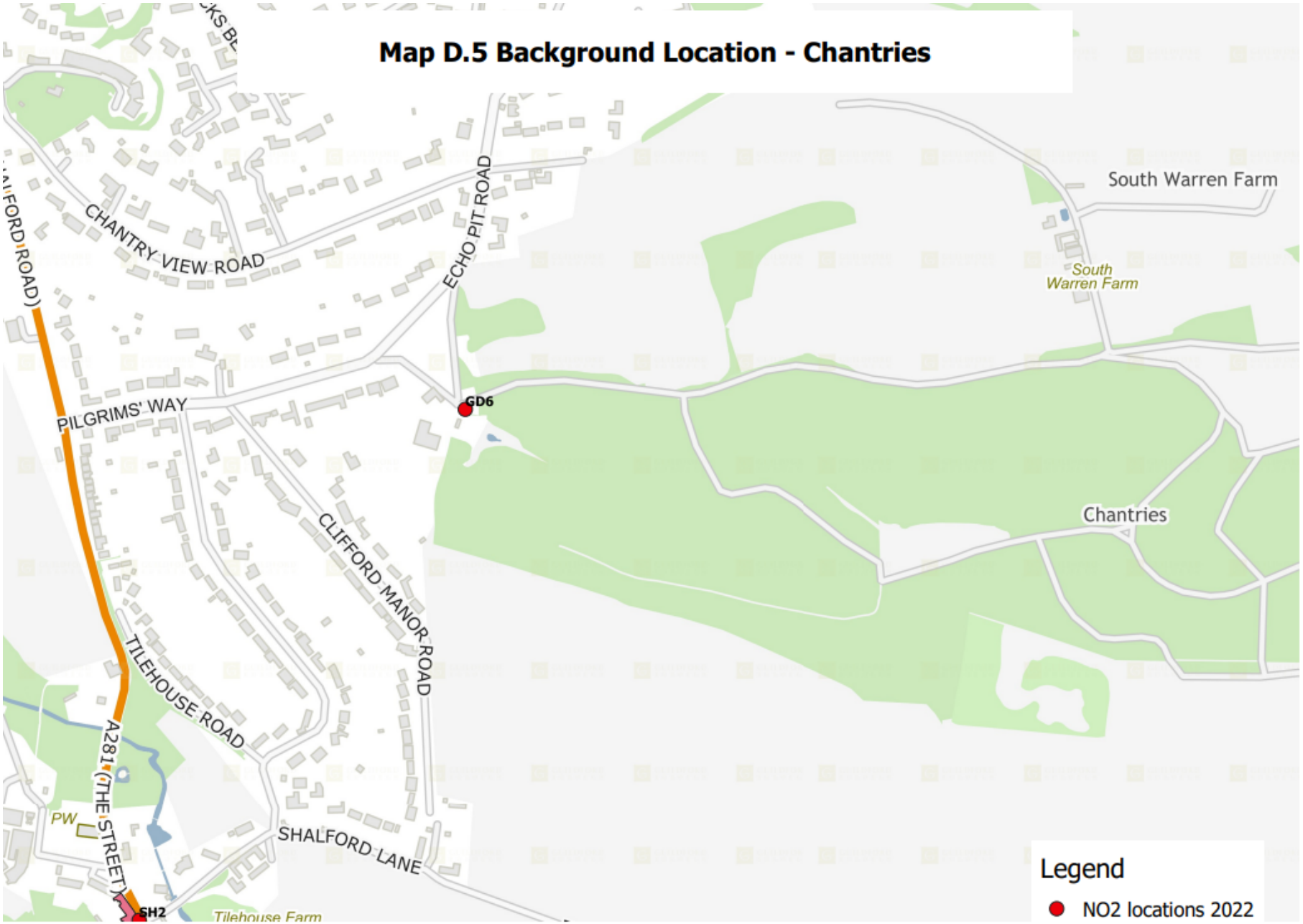

Map D.2 Towncentre AQMA and relevant tube locations
DAPDUNE ROAD
PARK CHASE
London Road
WTC6
TC4
TC5
GD2
GD16
WTC5
WTC4
Guildford Park
Allen House Grounds
SYDNEY ROAD
WTC3
TC13
TC14
TC15
Guildford
TC11
HIGH STREET
TC16
TC6
TC7
FRH2
FRH6
TC8
CHAPEL STREET
GUILDFORD
CLINE ROAD
TC12
PR3
SOUTH HILL
PEWLEY WAY
A281-1
TC9
A31 (FARNHAM ROAD)
WODELAND AVENUE
PR1
Grounds
PEWLEY HILL
FORT ROAD
THE MOUNT
Legend
NO2 locations 2022
towncentre_aqma

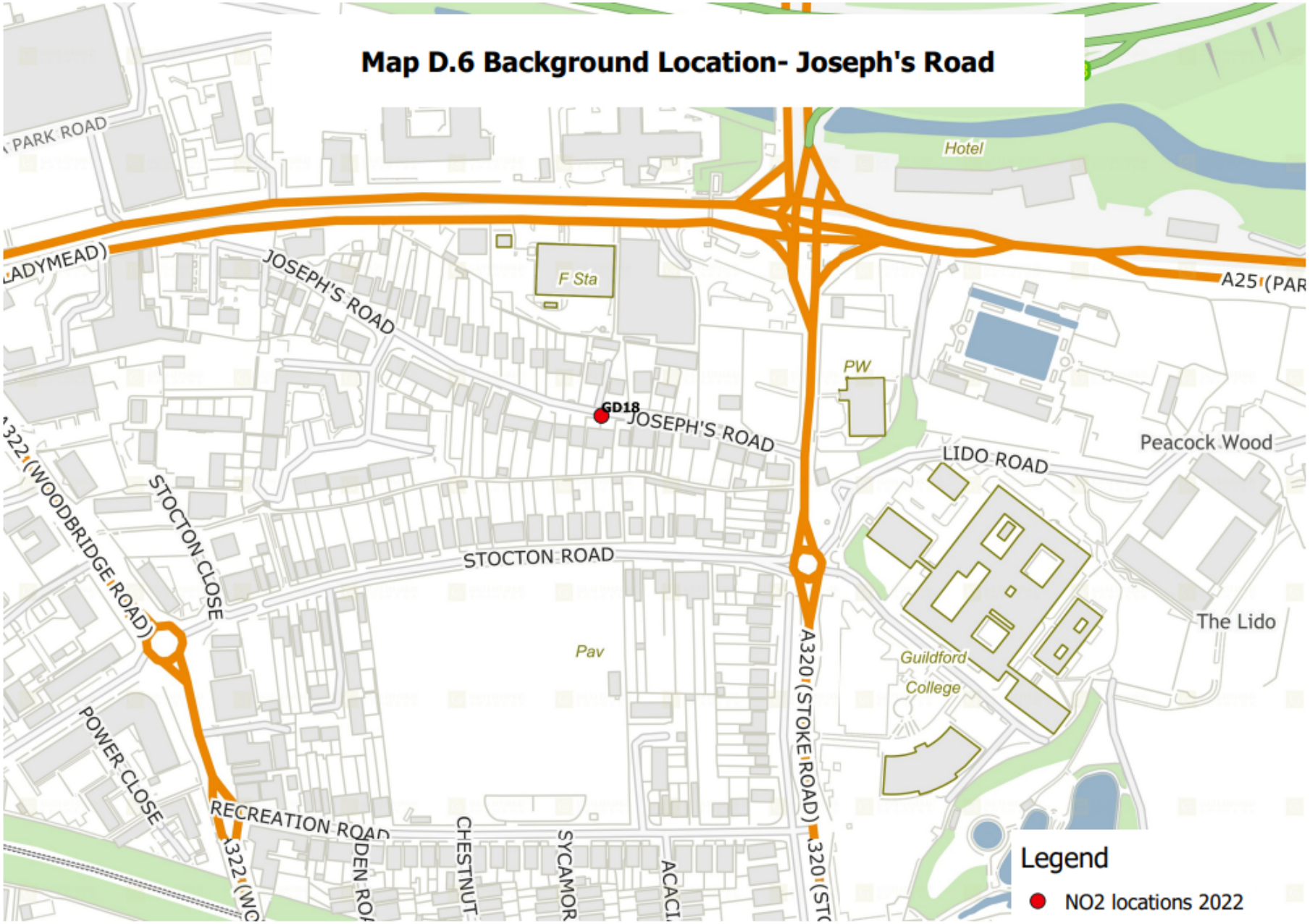
Map D.3 Compton AQMA and relevant diffusion tube locations

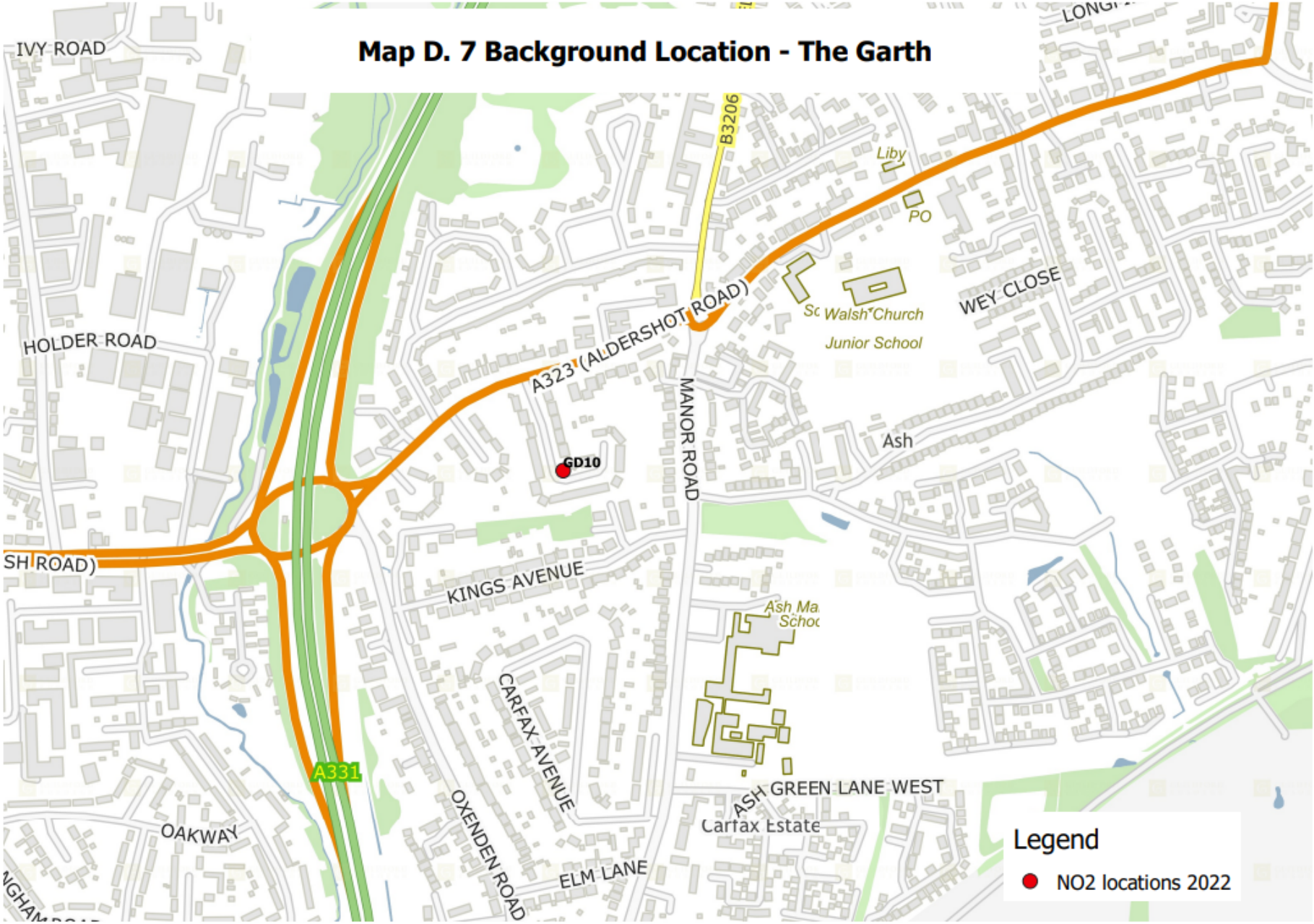


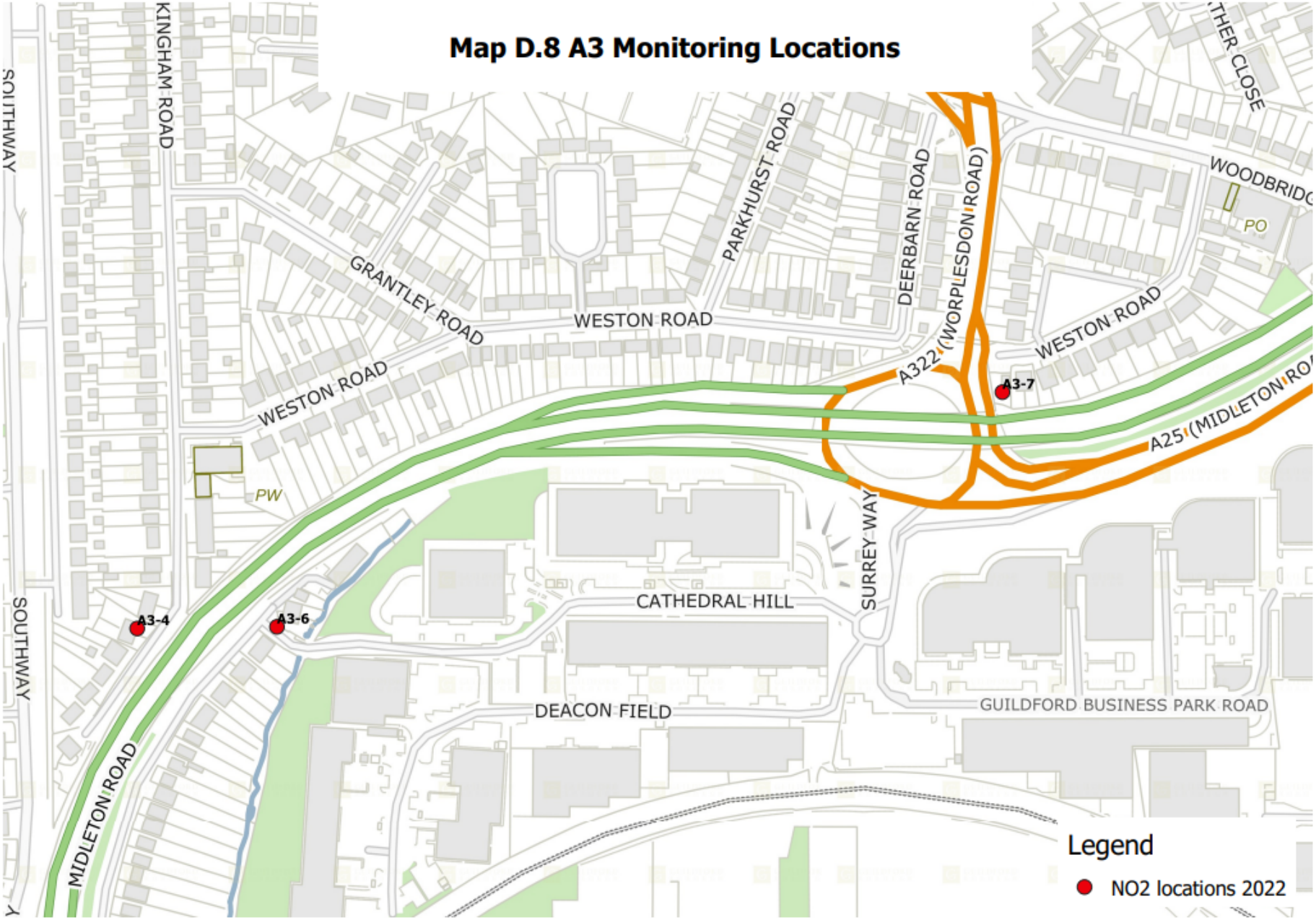
Map D.4 Shalford AQMA and relevant diffusion tube locations

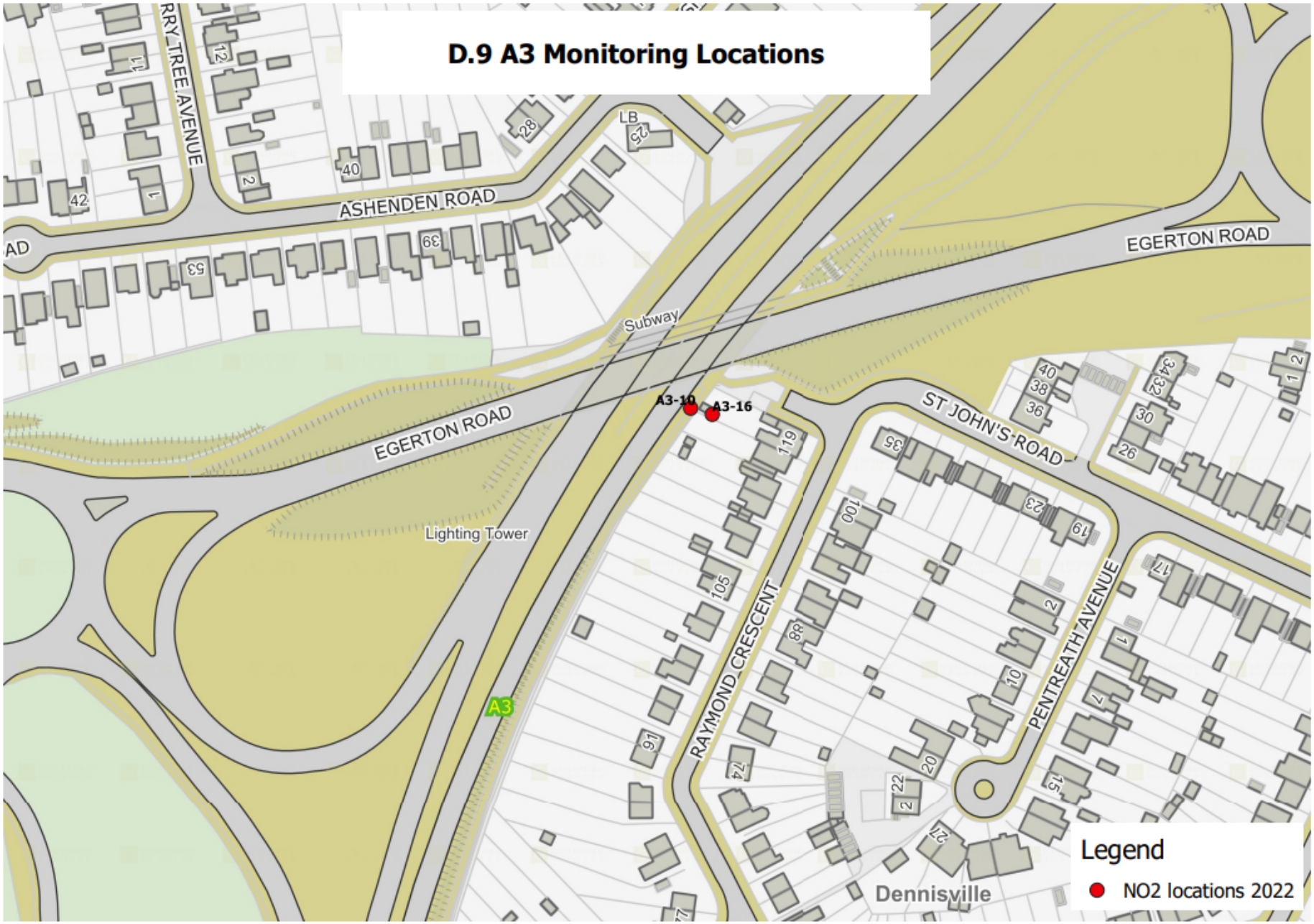


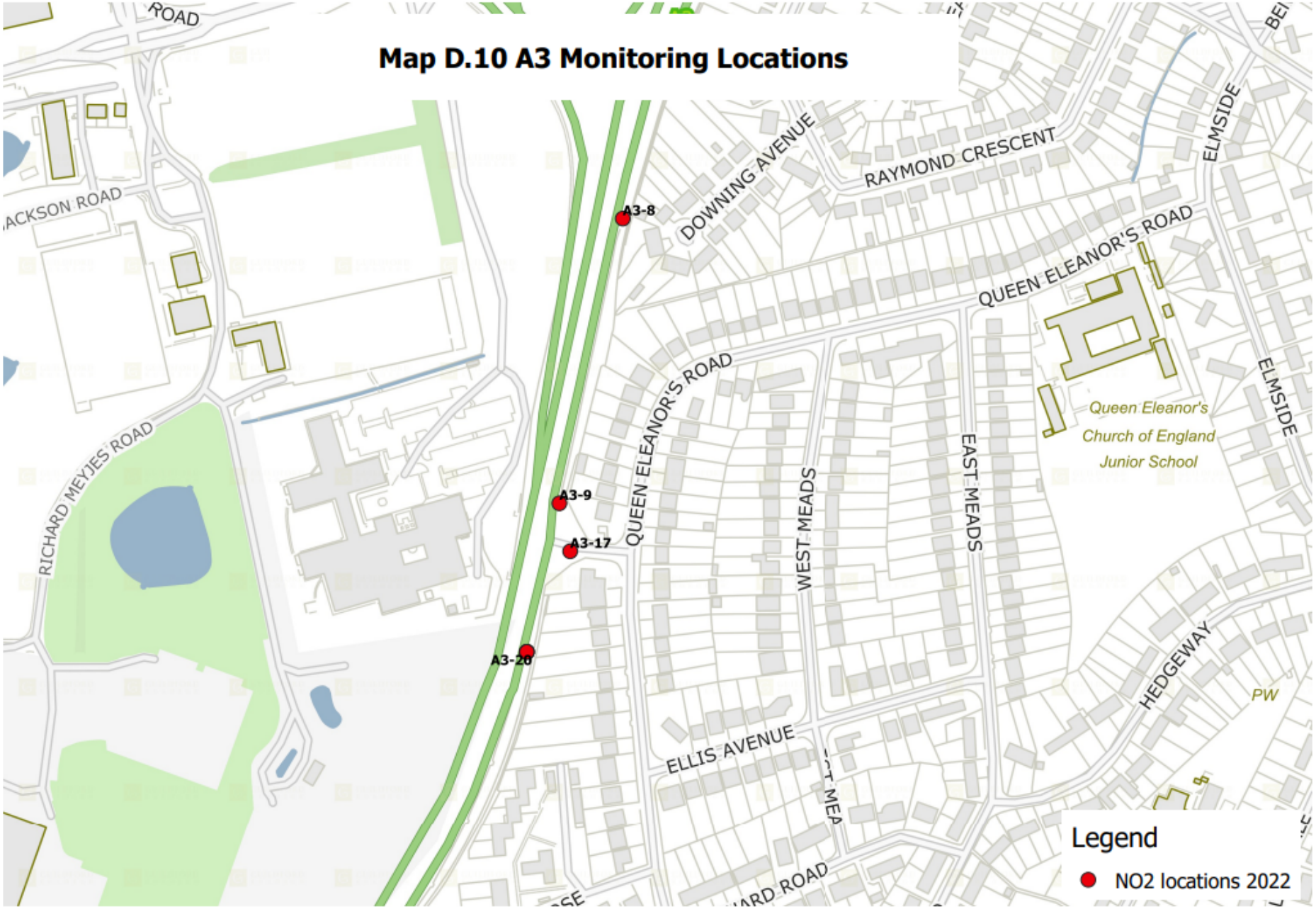

Map D.5 Background Location - Chantries
CHANTRY VIEW ROAD
ECHO PIT ROAD
South Warren Farm
South Warren Farm
PILGRIMS' WAY
GD6
Chantries
CLIFFORD MANOR ROAD
TILEHOUSE ROAD
A281 (THE STREET)
PW
SHALFORD LANE
SH2
Tilehouse Farm
Legend
NO2 locations 2022

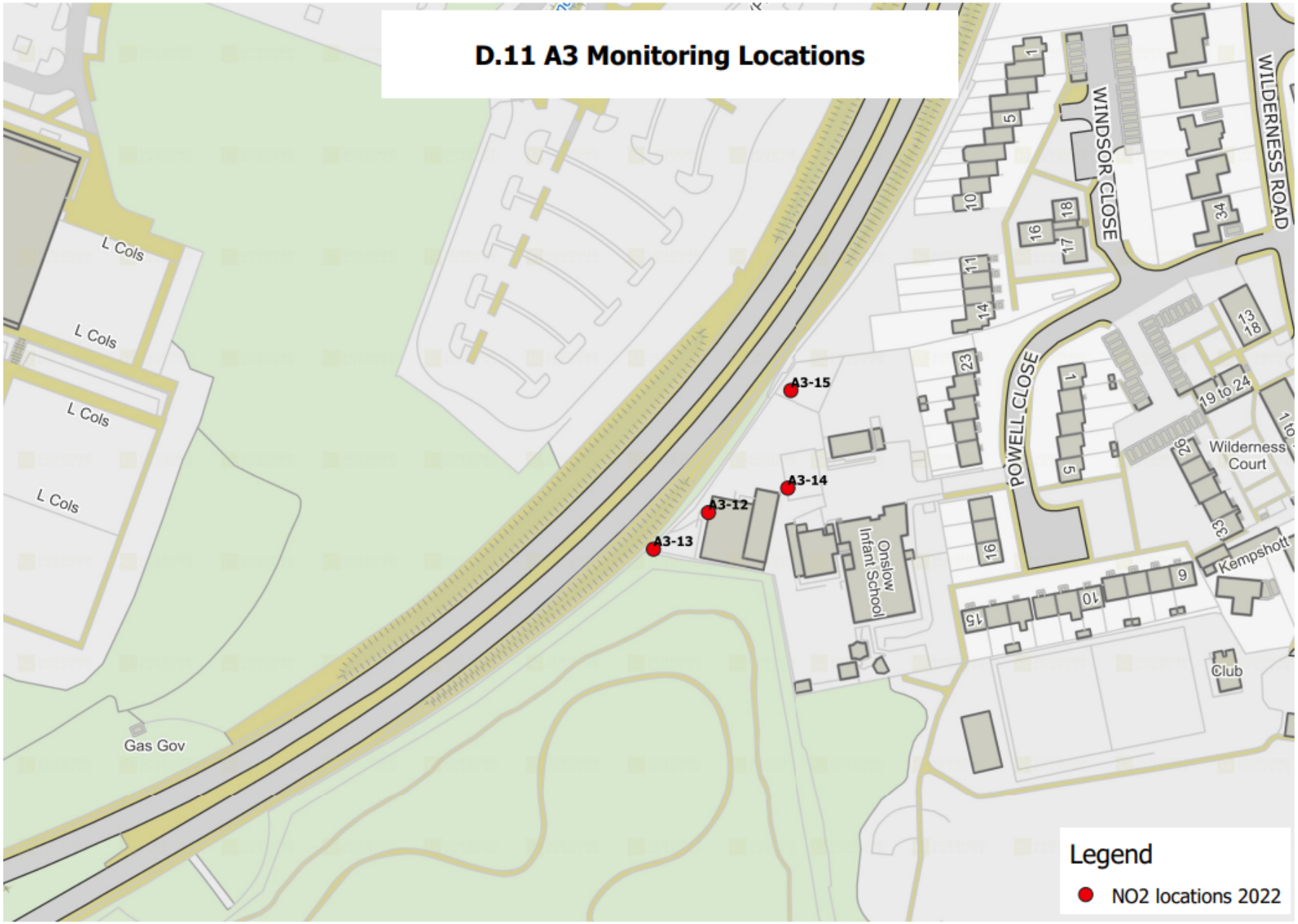

Map D.6 Background Location- Joseph's Road
PARK ROAD
Hotel
LADYMEAD)
JOSEPH'S ROAD
F Sta
A25 (PAR
PW
GD18
JOSEPH'S ROAD
Peacock Wood
LIDO ROAD
A322 (WOODBRIDGE ROAD)
STOCTON CLOSE
STOCTON ROAD
The Lido
Pav
Guildford
College
A320 (STOKE ROAD)
POWER CLOSE
RECREATION ROAD
Legend
NO2 locations 2022

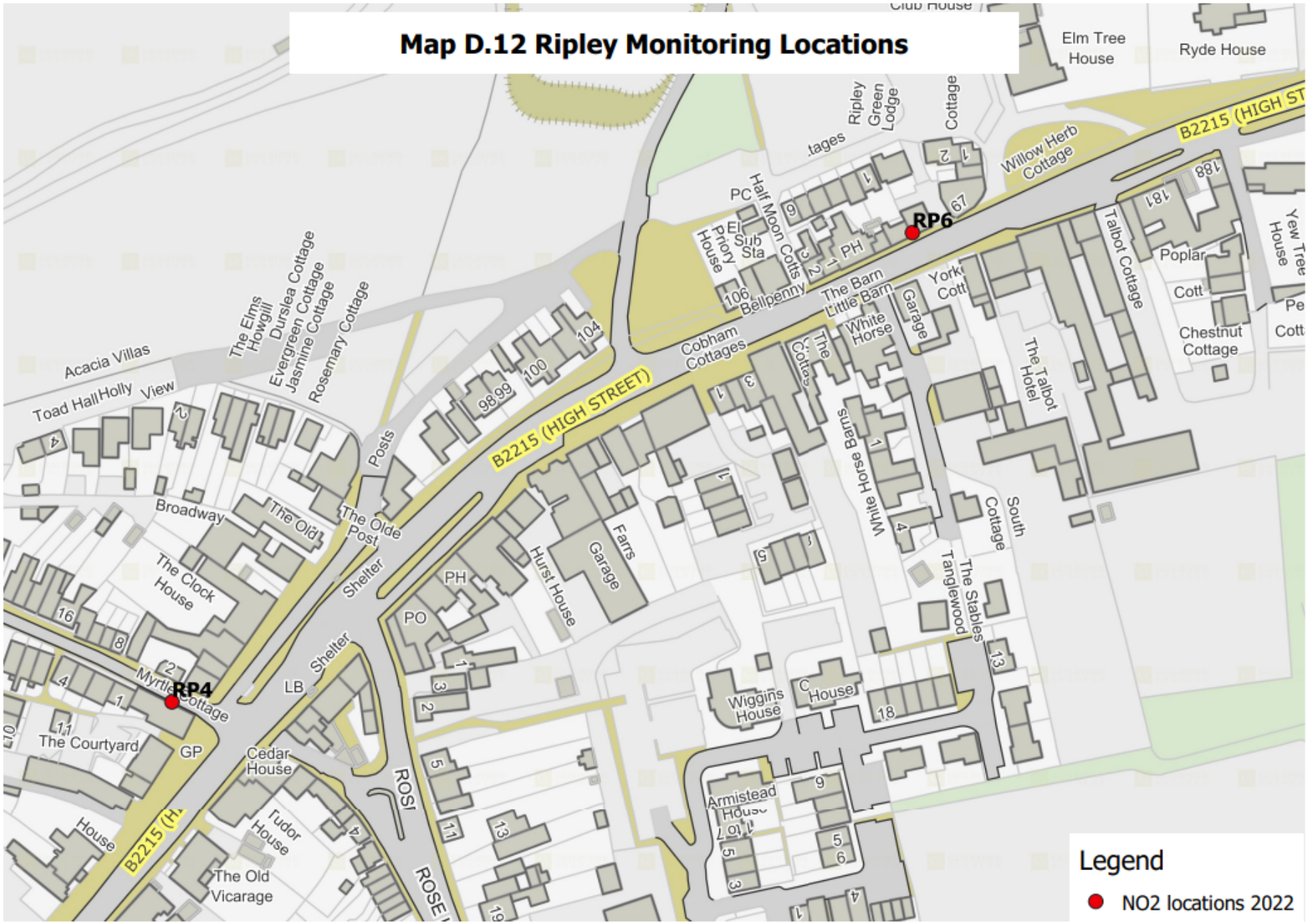

Map D. 7 Background Location - The Garth
IVY ROAD
B3206
Liby
PO
WEY CLOSE
Walsh Church
Junior School
HOLDER ROAD
A323 (ALDERSHOT ROAD)
MANOR ROAD
Ash
GD10
KINGS AVENUE
Ash Ma
Schoc
CARFAX AVENUE
A331
OXENDEN ROAD
ELM LANE
OAKWAY
ASH GREEN LANE WEST
Carfax Estate
Legend
NO2 locations 2022


Map D.8 A3 Monitoring Locations
SOUTHWAY
KINGHAM ROAD
GRANTLEY ROAD
WESTON ROAD
WESTON ROAD
PARKHURST ROAD
DEERBARN ROAD
A322 (WORPLESDON ROAD)
WESTON ROAD
A25 (MIDLETON RO
THER CLOSE
WOODBRIDG
PO
A3-7
PW
SURREY WAY
CATHEDRAL HILL
A3-4
A3-6
SOUTHWAY
DEACON FIELD
GUILDFORD BUSINESS PARK ROAD
MIDLETON ROAD
Legend
NO2 locations 2022


D.9 A3 Monitoring Locations
ASHENDEN ROAD
EGERTON ROAD
EGERTON ROAD
Subway
A3-10
A3-16
ST JOHN'S ROAD
RAYMOND CRESCENT
PENTREATH AVENUE
Lighting Tower
A3
Dennisville
Legend
NO2 locations 2022


Map D.10 A3 Monitoring Locations
ROAD
ACKSON ROAD
RICHARD MEYJES ROAD
A3-8
A3-9
A3-17
A3-20
DOWNING AVENUE
RAYMOND CRESCENT
ELMSIDE
QUEEN ELEANOR'S ROAD
QUEEN ELEANOR'S ROAD
WEST MEADS
EAST MEADS
ELMSIDE
Queen Eleanor's
Church of England
Junior School
HEDGEWAY
PW
ELLIS AVENUE
Legend
NO2 locations 2022


D.11 A3 Monitoring Locations
A3-15
A3-14
A3-12
A3-13
L Cols
L Cols
L Cols
L Cols
Gas Gov
WINDSOR CLOSE
WILDERNESS ROAD
POWELL CLOSE
Wilderness Court
Onslow Infant School
Kempshott
Club
Legend
NO2 locations 2022


Map D.12 Ripley Monitoring Locations
RP6
RP4
B2215 (HIGH STREET)
Legend
NO2 locations 2022


Map D.13 Godalming AMS Collocation
Telephone Exchange
1 to 30
144
132
HIGH S
STATION
135
139 to 143
1 to 6 Westbrook Heights
135d
145
147
149
PH
Shelter
El Sub Sta
Caesars Place
Church
Godalming AMS1
A3100 (OCKFORD ROAD)
(FLAMBARD WAY)
River Cottage
HARVEST HILL
HOLLOWAY HILL
New Sparling House
Ps
11 to 13
8
12
10
14
15
19
18
28
20
ROAD)
Legend
NO2 locations 2022

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[11]

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

[11] 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.TG22. August 2022. 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.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- DEFRA Clean Air Strategy, 2019
- DEFRA, Air Quality $PM_{2.5}$ Targets, Detailed evidence report, May 2022