



ADUR & WORTHING
COUNCILS



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: June, 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Adur & Worthing

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

We have combined reporting for both Adur District and Worthing Borough into this single report. Data and actions for both Authorities are clearly labelled and referenced throughout.

Adur

There are currently two Air Quality Management Areas (AQMAs) within the District: AQMA1 – High Street, Shoreham-by-Sea; and AQMA2 – Old Shoreham Road, Southwick. Both were declared for exceedances of the Nitrogen Dioxide annual mean objective. Levels of NO₂ in and around both AQMA's either decreased slightly or remained similar to those measured in 2021.

Adur District Council undertook automatic (continuous) monitoring of Nitrogen Dioxide (NO₂) and Particulate Matter (PM_{2.5}) at one site in Shoreham High Street (A259) during 2022. The measured NO₂ annual mean was 20.3µg/m³, slightly up on the 2021 level, but

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

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

³ Defra. Air quality appraisal: damage cost guidance, January 2023

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

still below the objective of $40\mu\text{g}/\text{m}^3$. There were no recorded exceedances of the one hour mean objective of $200\mu\text{g}/\text{m}$.

No monitoring sites exceeded the annual mean objective of $40\mu\text{g}/\text{m}^3$ during 2022 and levels in both AQMA's remain below the annual mean objectives.

We propose to revoke AQMA2 as measured levels have been below the annual mean objective for five years and we believe the AQMA is unlikely to be affected by major developments as much as the High Street AQMA1. Revocation is therefore scheduled for 2023.

As with previous years, we maintain that we must keep AQMA1 under review before making decisions on revocation. There remain a large number of approved major developments and only a few have so far started construction. Alongside other planned major developments for the Adur District (as detailed in section 2), we believe revocation of AQMA1 remains unrealistic at this time.

The $\text{PM}_{2.5}$ annual mean dropped from $16.2\mu\text{g}/\text{m}^3$ to $11.6\mu\text{g}/\text{m}^3$, this is below the permitted level of $25\mu\text{g}/\text{m}^3$, but above the WHO guideline value of $5\mu\text{g}/\text{m}^3$.

A draft of the new Adur Air Quality Action Plan (AQAP) progressed during 2022 and was scheduled for consultation in Spring 2023.

Worthing

There is one Air Quality Management Area (AQMA) within Worthing: Worthing AQMA No.2 on the A27/A24 in Worthing, declared for exceeding the annual mean objective for NO_2 of $40\mu\text{g}/\text{m}^3$.

Worthing Borough Council undertook automatic (continuous) monitoring of NO_2 and $\text{PM}_{2.5}$ at an affiliated AURN (Automatic Urban and Rural Network) site at Grove Lodge Worthing (A27) during 2022. Non-automatic (passive) monitoring of NO_2 also took place using 30 diffusion tubes across the Borough.

The continuous monitoring site at Grove Lodge recorded a drop in the NO_2 annual mean from to $27.6\mu\text{g}/\text{m}^3$ to $25.4\mu\text{g}/\text{m}^3$. The hourly mean objective of $200\mu\text{g}/\text{m}^3$ was not exceeded at any time.

One monitoring site exceeded the annual mean objective of $40\mu\text{g}/\text{m}^3$ during 2022; N30A Grove Lodge Cottages. Other sites registered an increase in measured levels of NO_2 in 2022, whilst some showed a decrease.

The measured level of $\text{PM}_{2.5}$ remained similar at $8.5\mu\text{g}/\text{m}^3$, below the Limit Value of $25\mu\text{g}/\text{m}^3$, but above the WHO guideline value.

Traffic levels in Adur increased around AQMA2 in Southwick and decreased at sites close to AQMA1. In Worthing traffic levels on the A27 at Grove Lodge increased very slightly.

Both Adur District and Worthing Borough Councils work with external partners, particularly West Sussex County Council. Much of our partnership work is achieved through the Sussex Air Quality partnership (<https://sussex-air.net/>). We progressed some interesting projects with schools through Sussex-air and progress was made on car clubs and development of the West Sussex County Council led programme of kerbside EV chargepoints.

Air Quality information is available on our website at <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/local-air-quality-management/#page-content>

Actions to Improve Air Quality

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

The Environmental Improvement Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $\text{PM}_{2.5}$ targets. The National Air Quality Strategy, has been published in 2023, providing more information on local authorities' responsibilities to work towards these new targets and reduce $\text{PM}_{2.5}$ in their areas. The Road to Zero⁶ details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely

⁵ Defra. Environmental Improvement Plan 2023, January 2023

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

important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

During 2022 we progressed a number of measures in pursuit of improved air quality. These included working with consultants Bureau Veritas to produce a draft Adur Air Quality Action Plan; continued delivery of the Sussex-air Defra funded intervention programme in primary and secondary schools and expansion into Community Groups and Events; replace the continuous NO_x analyser in Shoreham High Street; worked with the Environment Agency to plan a replacement monitoring station cabinet at Grove Lodge Worthing; began work on a taxi engagement project in Sussex; continued work with WSCC on the Connected Kerb EV charge point project; continued to use the Sussex Air Quality Emissions Mitigation Planning Guidance when looking at the impacts of 'major'⁷ developments; provided two dedicated bays in Pond Road car park, Shoreham and two in High Street surface car park Worthing for car club use; worked with WSCC on designs for an Upper Shoreham Road cycle route and traffic calming measures for Middle Rd and Eastern Avenue, Shoreham and on cycle routes in Worthing; planned an expansion of the Council's bike share scheme (Donkey Bikes⁸); and as part of a Sussex-air consortium made a further bid.

Conclusions and Priorities

Measured concentrations of NO₂ showed small increases and decreases at monitoring sites across Adur & Worthing and all but one site was below the annual mean objective. That one site was within Worthing AQMA No.2 and when predicted back to the nearest façade, exceeds the objective.

Levels of PM_{2.5} were also measured below the current limit values.

Development pressures remain in both Adur & Worthing. A large number of major developments have either been granted permission or are being planned for both areas, particularly in and around Worthing and Shoreham town centres and Shoreham Harbour. Construction progressed on some developments in 2022. Balancing the demand for

⁷ as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015

⁸ <https://timeforworthing.uk/bike-hire-worthing/>

development with the need to improve air quality brings challenges. These developments also bring opportunities to improve infrastructure, especially for walking and cycling.

Specific priority actions for 2023 include consulting on and publishing the new Adur Air Quality Action Plan; progressing a review of the 2015 Worthing Air Quality Action Plan including a new source apportionment study; revoking the Southwick AQMA2; reviewing our PM_{2.5} monitoring results and looking at how levels could be reduced locally; working with our Sussex-air partners on the Defra funded projects (schools/communities and taxi engagement) and working with West Sussex County Council on the Connected Kerb EV charge point project.

Local Engagement and How to get Involved

We engage with interested parties in the area, including community groups, elected members, transport planners, planning policy and development control. We are active members of the Sussex Air Quality Partnership (Sussex-air), co-chairing the Group. The Partnership provides assistance to members and information to the public via their website with air quality data, news updates, educational resources, links and other services such as Sussex Air Quality Alert. See <http://www.sussex-air.net/> for more information.

With development pressures across the Adur and Worthing area, it is important that interested parties try to work together to achieve favourable outcomes.

The Council is always interested in hearing from residents and businesses who may have innovative ideas to reduce air pollution in and around Adur & Worthing. You may contact us using our online form at <https://www.adur-worthing.gov.uk/eforms/aw-ext-environmental-health.ofml>.

Road vehicles produce over 50 per cent of the emissions of nitrogen oxides in the UK.

Before using your car, ask yourself:

- Could I walk or cycle instead of taking the car?
- Could I take a bus or train?
- Are the levels of air pollution high today? (See our website for forecasts: <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/air-quality-monitoring/#airalert>)

- Using quieter streets when you're on a bike or on foot can lower your exposure to air pollution by up to 20%.

If you must drive:

- Drive smoothly and don't rev your engine unnecessarily. You'll save fuel, and your engine will also pollute less;
- Maintain your car. Keep the engine properly tuned and the tyres at the right pressure; and
- Turn off your engine when your car is stationary for prolonged periods, particularly at main junctions and level crossings. By not idling your engine you'll help to make the air cleaner for you, other drivers, pedestrians and cyclists.

At home:

- Buy water-based or low-solvent paints, varnishes, glues and wood preservatives.
- Half of all deliveries to workplaces are personal parcels for staff. By using pick-up points in corner shops or lockers in train stations you can help to reduce pollution from delivery vehicles. Where this is not possible, grouping deliveries together can reduce the number of journeys made by delivery vans.
- Open fires and wood-burning stoves have risen in popularity, particularly as gas and electricity prices have risen substantially. This means more smoke from chimneys, which has a negative effect on air quality, particularly in relation to fine particulate matter PM_{2.5}. This can cause breathing problems, asthma attacks and contribute to other health conditions. The use of inappropriate fuels such as treated or damp wood can cause problems with local air quality.

The website at the link below provides information and advice for those that use wood burning stoves or open fires. Following its advice can help reduce the effect of burning: <https://sussex-air.net/clean-burn/>.

- Avoid lighting bonfires and instead take waste to your local recycling centre for them to compost, sign up for our garden waste collection service, buy some garden waste sacks or make compost at home. Never burn household waste, particularly plastic, rubber, foam or paint. Levels of pollution can be quite high on bonfire night and other events/festivals and sensitive people, including people with

respiratory conditions, may notice some effects. However exposure can be considerably reduced by remaining indoors and keeping windows closed. Further information is available on our website at <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/bonfires-and-smoke/>.

- Consider signing up to our air quality alert service – Sussex Air Quality Alert is a service provided by the Sussex Air Quality Partnership that sends free messages informing you of episodes of poor air quality predicted in your area. See <https://sussex-air.net/sussex-air-quality-service-for-sussex/>.
- Information on Air Quality, including reports and monitoring results, is available on our website at <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/>. Information is also available at <http://www.sussex-air.net/>.

Local Responsibilities and Commitment

This ASR was prepared by the Public Health & Regulation Team at Adur and Worthing Councils, with the support of the following officers and departments:

- Adur & Worthing Councils Sustainability Team
- Jamie Dallen, Transport Planning and Policy Team; Planning Services, West Sussex County Council
- Peter Phillips, National Highways

This ASR has been approved by:

Cllr Kevin Boram, Adur Cabinet Member for Communities & Wellbeing

Cllr Vicki Wells, Worthing Cabinet Member for the Environment



This ASR has not been signed off by the West Sussex Director of Public Health.

If you have any comments please send them to:

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Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in Adur & Worthing	i
Actions to Improve Air Quality	iii
Conclusions and Priorities	iv
Local Engagement and How to get Involved.....	v
Local Responsibilities and Commitment	viii
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
Air Quality Management Areas	2
Progress and Impact of Measures to address Air Quality in Adur & Worthing.....	5
PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations	22
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	23
Summary of Monitoring Undertaken	23
3.1.1 Automatic Monitoring Sites.....	23
3.1.2 Non-Automatic Monitoring Sites	23
Individual Pollutants	24
3.1.3 Nitrogen Dioxide (NO ₂).....	24
3.1.4 Particulate Matter (PM _{2.5})	29
Appendix A: Monitoring Results	30
Appendix B: Full Monthly Diffusion Tube Results for 2022	60
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	63
New or Changed Sources Identified Within Adur & Worthing During 2022	63
Additional Air Quality Works Undertaken by Adur & Worthing During 2022	63
QA/QC of Diffusion Tube Monitoring	63
Diffusion Tube Annualisation	68
Diffusion Tube Bias Adjustment Factors	68
NO ₂ Fall-off with Distance from the Road.....	69
QA/QC of Automatic Monitoring	70
PM ₁₀ and PM _{2.5} Monitoring Adjustment	70
Automatic Monitoring Annualisation.....	70
NO ₂ Fall-off with Distance from the Road.....	71
Appendix D: Map(s) of Monitoring Locations and AQMAs	73
Appendix E: Traffic Data	85
Appendix F: Summary of Air Quality Objectives in England	88

Glossary of Terms	89
References	90

Figures

Figure A.1 – ADUR Trends in Annual Mean NO ₂ Concentrations	39
Figure A.5 – Trends in Annual Mean PM _{2.5} Concentrations - Worthing.....	59
Figure D.1 – Map of Non-Automatic Monitoring Sites in Adur and Worthing	73

Tables

Table 2.1 – Declared Air Quality Management Areas	3
Table 2.2 – Progress on Measures to Improve Air Quality.....	13
Table A.1 – Details of Automatic Monitoring Sites	30
Table A.2 – Details of Non-Automatic Monitoring Sites	31
Table A.3 – Annual Mean NO ₂ Monitoring Results: Automatic Monitoring (µg/m ³)	35
Table A.4 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)	36
Table A.5 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	57
Table A.8 – Annual Mean PM _{2.5} Monitoring Results (µg/m ³).....	58
Table B.1 – NO ₂ 2022 Diffusion Tube Results (µg/m ³)	60
Table C.1 – Annualisation Summary (concentrations presented in µg/m ³)	68
Table C.2 – Bias Adjustment Factor	68
Table C.4 – NO ₂ Fall off With Distance Calculations (concentrations presented in µg/m ³)	69
Table E.1 – Adur Traffic Data 2016-22	85
Table F.1 – Air Quality Objectives in England.....	88

1 Local Air Quality Management

This report provides an overview of air quality in Adur & Worthing during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Adur & Worthing 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 F.2.

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 Adur & Worthing can be found in Table 2.1. The table presents a description of the three AQMAs that are currently designated within Adur & Worthing.

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:

- NO₂ annual mean

Previously we have stated we would consider revoking Adur AQMA2 – Southwick. We did not progress this in 2022, but have included it within our revised Air Quality Action Plan and propose to revoke in 2023.

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
Adur District Council AQMA1	Declared 2005	NO ₂ Annual Mean	An area encompassing the A259 High Street, Shoreham-by-Sea between Ropetackle Roundabout and Surry Street	NO	42	24.2	5	Adur Air Quality Action Plan 2007	https://www.adur-worthing.gov.uk/media/media,104971,en.pdf
Adur District Council AQMA2	Declared 2005	NO ₂ Annual Mean	An area encompassing the A270 Old Shoreham Road, Southwick between Kingston Lane and Lower Drive	NO	46	25.4	5	Adur Air Quality Action Plan 2007	https://www.adur-worthing.gov.uk/media/media,104971,en.pdf

Worthing Borough Council AQMA No.2	Declared 13/07/2010, Amended 15/12/2014	NO ₂ Annual Mean	Crockhurst Hill, Offington Corner Roundabout, Warren Road, Grove Lodge Roundabout, Upper Brighton Road up to and including the Downlands Retail Centre and Lyons Way	YES	71.5	44.7	0	Worthing Air Quality Action Plan 2015	https://www.adur-worthing.gov.uk/media/media,138133,en.pdf
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- Adur DC & Worthing BC confirm the information on UK-Air regarding their AQMA(s) is up to date.
- Adur DC & Worthing BC confirm that all current AQAPs have been submitted to Defra.

Progress and Impact of Measures to address Air Quality in Adur & Worthing

Defra's appraisal of last year's ASR concluded

1. *The report contains extensive discussion on trends seen in monitored concentrations throughout 2021, which is commended. This level of detail is encouraged in future reports and is considered an example of good practice.*
2. *The Council is adopting a cautious approach in their decision to remove or maintain their AQMAs. Given the uncertainty in concentrations following the easing of restrictions, the Council intend to keep the AQMA in place until sufficient evidence is obtained. This action is supported.*
3. *It would be beneficial for the Council to include a screen grab of the national bias adjustment factor spreadsheet depicting the factor applied. Should the local factor be applied in future, evidence to demonstrate correct calculation of this factor will be required.*
 - a. Noted and included in this year's report.
4. *Several NO₂'s are not subscripted in text throughout the report. The Council should ensure to correct such errors in future reports.*
 - a. Noted
5. *Several Maps are included showing monitoring locations throughout the District. This is welcomed. It is suggested that a legend would be a useful addition to these maps to aid readability.*
 - a. A legend has been added this year.
6. *Progress on measures is described in detail and upcoming measures are clearly stated. The council is commended for their meticulous documentation of their strategies.*
7. *The Council continually reviews their monitoring strategy each year. Diffusion tubes were removed this year in response to latest NO₂ data. This is an example of good practice.*

Adur & Worthing has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2, with the type of measure and the progress Adur & Worthing have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans, Adur & Worthing Sustainability Plan, West Sussex Walking and Cycling Strategy 2016 - 2026 and Adur & Worthing Local Cycling and Walking Infrastructure Plan (LCWIP), West Sussex Transport Plan 2022 – 2036 (WSTP), West Sussex public health and sustainability framework – *Creating healthy and Sustainable Places*, West Sussex Electric Vehicle Strategy 2019-2030, Adur Local Plan 2017 and Worthing Local Plan 2023.

Key completed measures are:

- Worked with consultants Bureau Veritas to produce a draft Adur Air Quality Action Plan. At the time of writing the Plan had been consulted upon and will be published in mid 2023.
- Continued delivery of the Sussex-air Defra funded intervention programme in primary and secondary schools and expansion into Community Groups and Events. As part of a Sussex-air consortium we successfully bid for Defra grant funding in 2021 for an extension to the project and adding the links to climate change. A Sustrans Air Quality officer engaged with schools and groups to investigate local air quality.

Schools participating in 2022 included Shoreham Academy in Adur and Durrington High School, Davison High School for Girls and Bohunt School in Worthing.

Other schools to have participated in the project since 2018 are Swiss Gardens Primary, St Nicholas and St Marys Primary and Eastbrook Primary in Adur and Downsbrook Primary, Thomas A Becket Infant and Junior Schools, Bohunt School, Worthing High, Chesswood Junior and Broadwater CofE School in Worthing;

- As part of the Sussex-air consortium we were successful in a funding bid to the Defra air quality grant to fund additional or replacement monitoring across Sussex. Part of this helped us fund a replacement continuous NOx analyser in Shoreham High Street, which replaced the existing monitor which was over 10 years old.
- Worked with the Environment Agency to plan a replacement monitoring station cabinet at Grove Lodge Worthing;
- Part of the successful Sussex-air funding bid to the Defra air quality grant to fund was for the purchase of low cost sensors (nodes), primarily for use in Brighton & Hove, but with some to be used in West Sussex.
- Also part of the successful Defra grant bid was a taxi engagement project in Sussex, looking at how we could increase the uptake of EV's and associated charging. This work began in 2022 and is continuing into 2023;

- Continued to work with WSCC on the Connected Kerb EV charge point project, identifying and confirming kerbside sites across Adur & Worthing;
- Use of the Sussex Air Quality Emissions Mitigation Planning Guidance when looking at the impacts of ‘major’⁹ developments. The Guidance has assisted the Councils with obtaining costed air quality mitigation at development sites and relevant section 106 funds;
- Provision of two dedicated bays in Pond Road car park, Shoreham, and two in High Street surface car park, Worthing, for car club use. We also continued discussions with car club providers to develop these further;
- Discussions with WSCC around the design for an Upper Shoreham Road cycle route and traffic calming measures on Middle Road and Eastern Avenue, Shoreham;
- Discussions with WSCC around which cycle routes should be prioritised in Worthing;
- Planning for expansion of the Council’s bike share scheme (Donkey Bikes¹⁰) in Worthing and into Adur for the first time
- As part of a Sussex-air consortium we made a further bid for Defra grant funding to continue funding the Sustrans run schools/community engagement project.
- Commissioning of 55 Ground Source Heat Pumps in Adur, replacing large communal gas boilers with zero emissions heating solutions;
- Installation of Air Source Heat Pumps at the Shoreham Centre to reduce gas combustion on site;
- Letting of a contract to design, build, own, operate and maintain a large, low carbon heat network in Worthing Town Centre, with complete removal of multiple large gas boilers from public and private sector developments.

Adur & Worthing worked to implement these measures in partnership with the following stakeholders during 2022:

- West Sussex County Council
- Sussex-air

⁹ as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015

¹⁰ <https://timeforworthing.uk/bike-hire-worthing/>

Adur and Worthing expect the following measures to be completed over the course of the next reporting year. Those marked * are key priorities.

- *Publish a new Adur Air Quality Action Plan following a period of public consultation in Spring 2023, drafted in partnership with West Sussex County Council and Bureau Veritas consultants;
- *Revocation of the Southwick AQMA2;
- *Work with National Highways and West Sussex County Council to develop and consult on a new Worthing Air Quality Action Plan;
- Provision of a new monitoring cabinet to house NO_x and PM_{2.5} measuring equipment at the Worthing A27 AURN site;
- Purchase and deployment of low cost sensors (nodes) through Sussex air. The work is being led by Brighton and Hove City Council and the majority will be deployed in the City, funded in part by City Council carbon neutral funds. However some will be deployed in other areas of Sussex and we are pushing for one to be used within the Adur & Worthing area.
- *Continue to work with WSCC on the Connected Kerb EV charge point project;
- *Engagement with the Sussex-air Defra funded schools and community group programme in Adur & Worthing;
- Revise the Sussex Air Quality & Emissions Mitigation Guidance for Planning as part of the Sussex-air project team;
- Continue dialogue with Car Club providers, particularly in new developments and those with reduced parking;
- *Continue discussions with WSCC to develop cycling routes on Upper Shoreham Road, Shoreham, traffic calming measures on Middle Road and Eastern Avenue, Shoreham; and priority routes in Worthing.
-

The principal challenges and barriers to implementation that Adur & Worthing anticipates facing are:

- A. Development pressures in both Adur and Worthing.** A large number of major developments have been granted permission and there are still a large number planned, particularly for the Adur District. Balancing the demand for development with good air quality is challenging. These developments do also bring opportunities to improve infrastructure, especially for walking and cycling, and thus limit the

impacts on the existing AQMAs and avoid creating new hotspots. Many developments in Worthing, either granted or planned, are in or close to the Town Centre. Similarly, there are several planning permissions granted for development at the Western Harbour Arm, Shoreham, or in the vicinity, some of which have commenced development.

Adur

Please note that an update of the Adur Local Plan has commenced.

The Adur Local Plan 2017 allocated the following sites:

- West Sompting – allocated in the Adur Local Plan for a minimum of 480 homes and a range of open space. Application AWDM/0323/19 was granted consent on 20th September 2021, for a total of 469 dwellings, subject to completion of a s106 agreement which is anticipated by the end of summer 2023.
- New Monks Farm. Application AWDM/0961/17 was determined on 4th February 2020 (following completion of the associated s106). Outline permission was granted for 249 dwellings and other matters including a country park and relocation and extension of a gypsy and traveller site, in addition to outline permission for 351 further dwellings, a primary school, and a non-food retail store (use class A1). This retail store was intended to replace the employment allocation originally sought by the Adur Local Plan 2017, creating a number of jobs, and contributing to the local economy. Construction work continues on site.
- AWDM/0021/22 created an additional 34 dwellings within the existing boundary of the site, by reducing the number of four and five bed dwellings and increasing the number of two and three bed homes.
- The New Monks Farm application is linked to planning ref. AWDM/1093/17 at Shoreham Airport due to a shared access to the A27. This site was allocated in the Adur Local Plan 2017 for 15,000 square metres of employment generating floorspace. (Subsequent to this, application planning ref. AWDM/1093/17 was granted consent for 25,000sqm of business floorspace in 2019). A reserved matters application (AWDM/1831/21) was submitted in October 2021, and permitted in July 2022.

The Adur Local Plan (adopted 2017) allocates Shoreham Harbour Regeneration Area for a minimum of 1100 dwellings. Subsequently the Shoreham Harbour Joint Area Action Plan was adopted in 2019. This allocation includes

- 255 dwellings permitted at Kingston Wharf (AWDM/0204/20) in January 2021;
- Development at Free Wharf (AWDM/1497/17, 548 dwellings) was granted consent in 2018; application AWDM/1315/22 seeks 39 additional dwellings on this site;
- A development of 14 units has been completed at Humphrey's Gap on Brighton Road (AWDM/1625/16);
- Mariner's Point (132 dwellings permitted before the adoption of the Adur Local Plan and JAAP) also falls within this allocation.
- An application for the development of 176 apartments at Frosts 69-75 Brighton Road, just outside AQMA1, was received (AWDM/1473/21).

- Schemes at 5 Brighton Road (Howard Kent site) have been refused and an appeal has been lodged.
- The Mannings (AWDM/1281/19). This is a redevelopment of an existing residential (affordable housing) block. The scheme will deliver 74 units in total, a net addition of 40 dwellings. This was approved in October 2021.
- Pilot Pub AWDM/2139/20. 34 apartments on the site of a former pub. *Although a recommendation to approve subject to s106 was made in April 2021 the s106 has still not been signed off.*

Current housing projections for the Shoreham Harbour JAPP show potential for more development than originally anticipated, significantly more than the original projections, adding parking pressure issues and therefore increasing the importance of alternatives to private car use such as car clubs.

Worthing

The Submission Draft Worthing Local Plan was submitted for Examination in June 2021. The Worthing Local Plan was expected to be adopted in spring 2023. The Plan includes the following allocations (dwelling numbers are minimums):

- Beeches Avenue - 90 dwellings
- Caravan Club - 100 dwellings
- Centenary House - 250 dwellings and employment uses (10,000 sqm)

- Civic Centre - integrated health hub (7,000 sqm)
- Decoy Farm - employment uses (14,000 sqm)
- Fulbeck Ave - 152 dwellings
- Grafton - 150 dwellings and commercial uses (2,500 sqm)
- HMRC offices - 250 dwellings and care home – in development
- Lyndhurst Road - 150 dwellings
- Martlets Way - 28 dwellings and employment uses (10,000 sqm)
- Stagecoach site - 60 dwellings and commercial uses (2,000 sqm)
- Teville Gate - 250 dwellings and commercial uses (4,000 sqm)
- Union Place - 150 dwellings and commercial uses (700 sqm)
- Upper Brighton Road - 123 dwellings

The sites at Upper Brighton Road and Beeches Avenue are in close proximity to the AQMA.

- B.** Development pressures in both Adur and Worthing could also have an effect on traffic volumes in the other District, particularly along the A27 and within the Worthing AQMA;
- C.** Providing sufficient resources (financial and personnel) in order to progress and deliver effective air quality measures;
- D.** Identifying suitable sites for the provision of car club spaces alongside sufficient funding;
- E.** Identifying suitable sites for the installation of electric vehicle charge points (although this is becoming less of an issue as the Connected Kerb project develops);
- F.** Purchasing alternatively fuelled larger vehicles (HGV's) to replace conventionally fuelled vehicles within the Council's fleet will depend on suitable funding and sourcing appropriate vehicles and refuelling facilities.

Progress on the following measures has been slower than expected due to:

- Adur Air Quality Action Plan (AQAP) – We commissioned air quality consultants Bureau Veritas to assist in the production of a new Action Plan, the draft of which was almost complete in 2022. This is due for consultation and publication in 2023.

- Resources delayed progress on AQMA2 revocation. This is now due in 2023, following completion of the new AQAP.

Adur District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in *Adur AQMA1*

Worthing Borough Council

Whilst the measures stated above and in Error! Reference source not found. will help to contribute towards compliance, Worthing Borough Council anticipates that further measures may be required in subsequent years to achieve compliance and therefore enable the revocation of *Worthing Borough Council AQMA No.2*.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
								ADUR							
1	Adur/Worthing Car Club	Alternatives to private vehicle use	Car Clubs	2014	2022	Adur DC/Worthing BC/WSCC	Funding: Developer contributions/Adur DC	NO	Partially Funded	£50k - £100k	Implementation	1%	Number of people using the service/Number of vehicles available	There are now two dedicated bays in Pond Road car park, Shoreham. Discussions with WSCC and car club providers continued during 2022. Car club providers continued discussions with developers regarding specific development sites in Shoreham. These developments are still yet to be completed.	Car clubs also embedded in planned new developments.
2	LEZ/CAZ Feasibility	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2018	-	Adur DC/WSCC	Unknown	NO	Not Funded	£1 million - £10 million	Aborted	-	Reduction in older Euro class HGV's/LGV's and buses within the AQMA	No further discussions have taken place	As per 2019, no CAZ planned. Acceptability, feasibility and enforcement questioned. For these reasons this is not seen as a priority at this stage. Any feasibility study would need to understand the benefits, costs, deliverability, enforceability, level of support and any unintended consequences.
3	Embed AQ Emissions Mitigation Planning Guidance for Sussex into the planning process	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2012	2015	Adur DC/Worthing BC	LA	NO	Funded	< £10k	Implementation	1-5%	Low emission mitigation secured in local developments	Further revision of the Guidance expected in 2023. The guidance is signposted within the Adur Local Plan and the (draft in 2022) Worthing local Plan. Guidance and appropriate mitigation is flagged as a requirement at an early stage. Emission mitigation assessments required from major developments to ensure meaningful mitigation. Shoreham Harbour JAAP includes policies for sustainable travel and infrastructure improvements.	Will consider developing the Guidance into a Supplementary Planning Document if deemed necessary.
4	Improve emissions from the Council's vehicle fleet	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2012	2030	Adur DC/Worthing BC	LA	NO	Partially Funded	£1 million - £10 million	Implementation	<1%	No. of vehicles replaced with better Euro standard/Pure EV models	Programme of fleet replacement with ev/hybrid vehicles continued, as and when vehicles they are due for replacement. All pool cars hybrids. Explore alternative fuels for refuse vehicles.	Barrier: Suitable vehicles are both available and affordable (e.g. HGV's/refuse vehicles).
5	Reduce AQ impact of ADC/WSCC staff travel	Promoting Travel Alternatives	Encourage / Facilitate home-working	2012	2022	Adur DC/Worthing BC/WSCC	LA	NO	Funded	£50k - £100k	Implementation	<1%	Staff travel surveys reduced commuting and business travel by car	Staff Travel Plan updated in 2021. Hybrid models for mixed working from home/office is the business model now. Adur & Worthing & WSCC EASIT scheme for staff and local businesses continues. Pool cars now hybrid, EV's being actively investigated.	Barriers: local public transport links; staff owned fleet.
6	HGV/LGV assessment	Vehicle Fleet Efficiency	Other	2016	2024	Adur DC	LA	NO	Not Funded	£10k - 50k	Aborted	<5%	Data on Euro Classes	Source Apportionment study shows LGV's contribute more than HGV's, hence why this action has been aborted	LGV's would be prioritised over HGV's.

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
7	EV charging infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2016	2023	Adur DC/Worthing BC/WSCC	Adur DC/Worthing BC/WSCC/Developer contributions	NO	Partially Funded	£500k - £1 million	Planning	1-5%	Number of charge points provided	EV charge points continue to be provided for new 'major' developments aided by new Building Regulations Approved Document S; Connected Kerb, West Sussex County Council, Adur and Worthing Councils, Arun District Council, Crawley Borough Council, Horsham District Council, and Mid Sussex District Council have formed a partnership to provide a new chargepoint network across West Sussex. The partners are working together to install thousands of chargepoints across the county within the next ten years, forming the new West Sussex Chargepoint Network. West Sussex County Council advertised proposals to introduce electric vehicle charging points on the highway at various locations in Adur. The consultation ran 17th November - 8th December 2022. WSCC parking standards sets increasing year on year targets for EV charge points at new developments.	
8	Bus Fleet Improvements	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2010		BHCC/WSCC/ADC	DEFRA/DFT/OLEV grants/WSCC	NO	Partially Funded	£1 million - £10 million	Planning	1-5%	Improvements in fleet emissions - Euro Categories	Adur & Worthing Councils and West Sussex County Council have supported Brighton & Hove City Council and other partners and Brighton and Hove Buses with bids to retrofit buses in and around the city and LEZ. Some of these routes pass through the Adur District.	Retrofitting or fleet replacement will bring reductions in emissions; small in AQMA.
9	Traffic light/pelican crossing optimisation/MOVA traffic control	Traffic Management	UTC, Congestion management, traffic reduction	2010	2026	WSCC	WSCC	NO	Funded	£50k - £100k	Implementation	5-10%	Improvement in traffic flows	Signals continue to be optimised as far as reasonably practicable.	Improved flow/decrease in stop start driving would reduce emissions but future significant benefits are unlikely to be achieved given current optimisation.
10	Travel Plans secured through the planning process for all significant development sites in West Sussex	Promoting Travel Alternatives	Other	2010	2026	Adur DC/WSCC	Developer Contribution	NO	Partially Funded	£500k - £1 million	Implementation	1-5%	Number of Plans Delivered	Plans continue to be secured as and when developments come forward. The Adur Local Plan adds weight to the requirement for travel plans; Shoreham Harbour JAAP includes policies for sustainable travel and infrastructure improvements.	Focus on increasing public transport, walking and cycling trips whilst minimising private car journeys. Discussions must include emissions mitigation considerations, can be protracted.
11	Promotion of walking and cycling	Promoting Travel Alternatives	Personalised Travel Planning	2014	2023	Adur DC/WSCC	Adur DC/Worthing BC/WSCC/Developer contributions	NO	Partially Funded	£100k - £500k	Implementation	1-5%	Automatic cycle counters and travel surveys	The Living Streets "Walk To" campaign was run by WSCC and Living Streets in 2022, with some schools in Shoreham active in their participation.	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work (see also item 12).

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
12	School Travel Plans	Promoting Travel Alternatives	School Travel Plans	2010	2021	WSCC	WSCC/Defra Grants	NO	Funded		Implementation	0.01	Hands-up travel mode surveys in schools	Schools are directed to Modeshift Stars for assistance with travel planning, which is a nationally recognised online travel planning tool. See entry 11 for information on Living Streets Walk To School.	Focus on promoting sustainable travel amongst young people and reducing peak time car traffic. WSCC Bikeability have been engaging the schools with cycle training (lots of work with primary and secondary schools across Adur to offer cycle training.
13	Promotion of LEV's	Public Information	Via the Internet	2015	2030	Adur DC/Worthing BC	LA/DLEV grants	NO	Funded	< £10k	Implementation	0.01	Number of LEV's	Information remains on website.	OLEV grants removed 2022
14	Car Sharing	Public Information	Via the Internet	2015		WSCC	WSCC	NO	Funded		Implementation	1-5%	Website hits/journeys planned/number of registrants/take-up of initiatives	Car share website www.westsussexcarshare.com	Focus on promoting sustainable travel/car.
15	Public Health Information Campaign	Public Information	Via the Internet	2010		Adur DC/Worthing BC/WSCC	Adur DC/ Worthing DC/ WSCC	NO	Partially Funded	< £10k	Implementation	<1%	Number of promotional events, publications, social media. Annual increase in Sussex air Quality Alert subscribers	Liaison with WSCC Public Team who have supported the promotion of air Alert. Revamped Sussex-air website launched to provide a smoother more relevant customer experience including Shoreham High Street monitoring results and Diffusion tube data.	Attempt to reduce car journeys/increase walking and cycling, particularly through the AQMA, promotion of Sussex Air Quality Alert.
16	Air Quality Monitoring and availability of AQ information	Public Information	Via the Internet	2010		Adur DC	Adur DC	NO	Funded	< £10k	Implementation	N/A	Reduction in levels of NO ₂	Council's webpages updated. Order placed to replace the NOx analyser in the Shoreham High Street Air Quality Monitoring Station. Anticipated installation early 2023. All monitoring results available via the Sussex-air website, link on Council's website.	
17	Transport network infrastructure improvements for new development	Traffic Management	UTC, Congestion management, traffic reduction	2010		WSCC	WSCC/developer contributions	NO	Partially Funded		Implementation	<1%	Number of infrastructure improvements	Stakeholder support, business cases, land release and funding opportunities considered for identified schemes at Norfolk Bridge junction and A259 Shoreham Adur Ferry Bridge to Brighton & Hove cycle scheme	Focus on minimising traffic congestion. Funding sought.
18	Anti-idling promotion	Traffic Management	Anti-idling enforcement	2010		Adur DC/WSCC	WSCC/ Adur DC/ Sussex air	NO	Partially Funded		Implementation	N/A	Localised Air quality monitoring	Anti-idling signs continue to be placed at stationary traffic hotspots when deemed necessary and/or as requested by the public, funded by Adur DC - e.g junctions and level crossings adjacent to the AQMA.	Campaigns to promote anti-idling more generally still being considered e.g. social media campaign.

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19	New infrastructure for cyclists and pedestrians	Transport Planning and Infrastructure	Cycle network	2010	2021	WSCC	WSCC/developer contributions	NO	Partially Funded		Implementation	<1%	Length of new cycle routes provided	Initial public engagement was undertaken on principles of A259 Shoreham Adur Ferry Bridge - Brighton & Hove cycle scheme in Spring 2022 (also see entry 21). New signal crossing for pedestrians and cyclists installed on A283 Steyning Road and engagement has continued on potential cycling and walking improvements on Upper Shoreham Road and around Middle Road Shoreham (also see entry 23). Each of these routes are identified within the Adur and Worthing Local Cycling & Walking Infrastructure Plan (LCWIP).	Minimising the impacts of traffic on local streets. Linked to Item 23	
20	Shoreham High Street and Norfolk Bridge infrastructure improvements to reduce traffic flow conflicts with car, bus and taxi bays, and improve access and public realm within the High Street	Transport Planning and Infrastructure	Other	2010		WSCC	WSCC	NO	Not Funded		Planning	1-5%	Number of Projects Delivered	Feasibility work undertaken through Shoreham Town Centre Study 2014. Scheme options for Norfolk Bridge junction were reviewed in 2022 given challenges of limited highway space. Further engagement with Members and stakeholders regarding these scheme options is expected to take place.	Focus on reducing traffic congestion to improve air quality.	
21	Shoreham Area Sustainable Transport Package Feasibility Study	Transport Planning and Infrastructure	Other	2018		WSCC	WSCC/developer contributions	NO	Funded		Planning		Cycle counter flows, traffic counts, travel behaviour surveys	Feasibility Study completed for the development of high quality cycling facilities for the A259 Shoreham Adur Ferry Bridge to Brighton & Hove. Initial public engagement was undertaken on principles of scheme in Spring 2022, and planning also took place for public consultation on feasibility designs in early 2023.	Focus on promoting sustainable transport and minimising car use and vehicle congestion. Estimated completion TBC	
22	Taxi Fleet Emission Improvements	Promoting Low Emission Transport	Taxi Licensing conditions	2017		Adur DC	Adur DC/OLEV grants	NO	Not Funded		Planning	0.01	Number of taxi's replaced with better Euro standard models	Discussions on fleet improvements through minimum standards. No further progress.	District wide improvement will have some limited effect in High Street, particularly at taxi rank	
23	Active Travel Fund Schemes	Transport Planning and Infrastructure	Cycle network	2020		WSCC	DFT Emergency Active Travel Fund/Active Travel Fund	NO	Funded		Implementation		Length of new cycle routes provided	Department for Transport Active Travel Fund funding received to develop designs for cycle route and pedestrian improvements in the Upper Shoreham Road, Eastern Avenue and Middle Road areas. Active Travel Fund funding used to deliver cycling and pedestrian signal crossing of A283 to link Downs Link with St Nicholas Lane near Upper Shoreham Road. Engagement has continued on potential cycling and walking improvements on Upper Shoreham Road and around Middle Road Shoreham.	Focus on promoting sustainable transport and minimising car use and vehicle congestion.	
							WORTHING									

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	A27 Highway Improvements	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2015	2026	National Highways (NH)	NH	NO	Partially Funded	> £10 million	Planning	High	Reduction in levels of NO ₂	National Highways have been working with key stakeholders to identify a package of potential improvements to meet the revised objectives in the government's Road Investment Strategy 2 (RIS 2): 2020 to 2025, to improve capacity and flow of traffic on the A27 from Worthing to Lancing, including preparing revised plans ahead of a public consultation in early 2023	
2	Cut Engine, Cut Pollution Signs	Traffic Management	Anti-idling enforcement	2016	2020	NH/WSCC	Worthing BC/NH/WSCC	NO	Funded	< £10k	Implementation	Low/Medium	Local AQ monitoring/reduction in NO ₂	AQMA anti idling signs on exit road from Lyons Farm. Additional signs will be erected at known traffic hotspots.	Funded by Worthing BC. Sussex-air funded additional signs at level crossings. For A27 and feeder roads Highway 'clutter' is a concern.
3	LEZ/CAZ Feasibility	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2016		NH/Worthing BC/WSCC	NH	NO	Not Funded	£100k - £500k	Planning	High	Reduction in older Euro class HGV's/LGV's and buses within the AQMA	Highly unlikely to progress. National Highways A27 changes a priority.	As a NH road any CAZ/LEZ is an issue. Issues with displacement of vehicles onto surrounding local roads, Finance, Enforcement - meaning this is not current priority.
4	Embed Air Quality Emissions Mitigation Planning Guidance for Sussex into the planning process/planning policies	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	2015	Worthing BC/WSCC	Worthing BC/WSCC	NO	Funded	< £10k	Implementation	Low	LE mitigation secured in developments	Revised Guidance published April 2021. The guidance is signposted within the Worthing Local Plan. Guidance and appropriate mitigation is flagged as a requirement at an early stage. Emission mitigation assessments required from major developments to ensure meaningful mitigation.	Consider developing the Guidance into a Supplementary Planning Document if deemed necessary.

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5	EV vehicles and infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2016	2025	Worthing BC/WSCC	Worthing BC/WSCC/NH	NO	Partially Funded		Implementation	Low/Medium	Number of charge points provided	EV charge points continue to be provided for new 'major' developments aided by new Building Regulations Approved Document S ; Connected Kerb, West Sussex County Council, Adur and Worthing Councils, Arun District Council, Crawley Borough Council, Horsham District Council, and Mid Sussex District Council have formed a partnership to provide a new chargepoint network across West Sussex. The partners are working together to install thousands of chargepoints across the county within the next ten years, forming the new West Sussex Chargepoint Network. West Sussex County Council advertised proposals to introduce electric vehicle charging points on the highway at various locations in Worthing. Consultation ran 17th November - 8th December 2022. WSCC parking standards sets increasing year on year targets for ev charge points at new developments.	Focus is to increase the number of eV's. Discussions continue successfully with developers as part of AQ mitigation packages, aided by new Building Regulations Approved Document S
6	Worthing Car Club	Alternatives to private vehicle use	Car Clubs	2015	2022	Worthing BC/ADC	Worthing BC/Developer Contributions	NO	Partially Funded	£50k - £100k	Implementation	Low	Number of people using the service/ Number of vehicles	There are two dedicated bays in High Street surface car park Worthing. Discussions with WSCC and car club providers continued during 2022. Car club providers continued discussions with developers regarding specific development sites. Developments nearing completion.	V. small reduction in AQMA, however larger reductions anticipated elsewhere (e.g. town centre where new developments are more likely to be car free). Car clubs embedded in planned new developments.
7	Public transport improvement	Transport Planning and Infrastructure	Public transport improvements -interchanges stations and services	2010		WSCC	WSCC/DFT/OLEV	NO	Partially Funded		Implementation	Low	Journey time and passenger number improvements	WSCC and WBC proposals for Worthing Station Railway Approach are expected to benefit pedestrians, cyclists, and train, bus and taxi users. WSCC has committed funding to develop detailed designs for Worthing Railway Approach public realm and access improvements with the scheme programmed to be delivered in 2024. Bus operators in West Sussex continue to explore low emission fuel technologies in their fleets and local authorities are in dialogue with operators as plans develop, including consideration of any funding opportunities as they arise. Work with Brighton & Hove City Council continued to reduce emissions on routes through Adur/Worthing and into the Brighton LEZ.	Subject to appropriate funding being made available.
8	WBC AND WSCC Staff Travel Planning	Promoting Travel Alternatives	Workplace Travel Planning	2018		Worthing BC/ ADC/ WSCC	Worthing BC/ ADC/ WSCC	NO	Partially Funded		Implementation	Low	Staff travel surveys reduced commuting and business travel by car	Staff Travel Plan updated in 2021. Hybrid models for mixed working from home/office is the business model now. Adur & Worthing & WSCC EASIT scheme for staff and local businesses continues. Pool cars now hybrid, EV's being actively investigated.	

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
9	Improve Emissions from Council's Vehicle fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2015	2030	Worthing BC/ADC/WSCC	Worthing BC/ADC/WSCC	NO	Partially Funded	£1 million - £10 million	Implementation	Low	No. of vehicles replaced with better Euro standard models	Programme of fleet replacement with ev/hybrid vehicles continued, as and when vehicles they are due for replacement. All pool cars hybrids. Exploring alternative fuels for larger vehicles including the fleet of refuse vehicles.	Barrier: Suitable vehicles are both available and affordable (e.g. HGV's/refuse vehicles).
10	Increase availability of AQ information in relation to impacts on Public Health	Public Information	Via the Internet	2015		Worthing BC	Worthing BC	NO	Funded	< £10k	Implementation	Low	Reduction in levels of NO ₂ /No. of hits on AQ pages	Worthing AURN Grove Lodge Monitoring Station cabinet to be replaced in early 2023. AQ information available via UK Air and the Sussex-air website, links on Council website.	Measure success of AQAP/levels in AQMA. Assist with PM2.5 strategy
11	Embedding AQ in Adur & Worthing Public Health Plan	Policy Guidance and Development Control	Other policy	2015	2020	Worthing BC	Worthing BC	NO	Not Funded	< £10k	Completed	Low	Inclusion in each revision of public Health Plan	Air Quality embedded within Health & Wellbeing Plan 'Healthy AW 2021/2024' - https://www.adur-worthing.gov.uk/media/Media,130482,smxx.pdf .	
12	Promotion of Air Alert	Public Information	Via the Internet	2014		Worthing BC	Worthing BC/WSCC	NO	Partially Funded	£10k - 50k	Implementation	Low	Annual increase in subscriber numbers	Liaison with WSCC Public Team who have supported the promotion of air Alert. Revamped Sussex-air website launched to provide a smoother more relevant customer experience including Worthing Grove Lodge monitoring results and Diffusion tube data.	Attempt to reduce car journeys and increase walking and cycling through the AQMA, promotion of alert service.
13	Re-assess traffic light sequencing in AQMA	Traffic Management	UTC, Congestion management, traffic reduction	2010		NH/WSCC	HE/WSCC	NO	Funded		Implementation	Low	Reduction in levels of NO ₂	Ongoing optimisation by NH/WSCC.	
14	Safe Cycling and Walking Routes	Transport Planning and Infrastructure	Cycle network	2010	2030	NH/WSCC	NH/WSCC	NO	Funded	£1 million - £10 million	Implementation	Low	Length of new cycle routes provided	The Adur and Working Local Cycling and Walking Infrastructure Plan (LCWIP) was adopted in summer 2020. This sets out a series of primary and secondary cycling and walking routes intended to be supported by contributions from strategic developments across the Borough. Throughout 2022, construction of the Findon Valley to Findon village cycle path began, to connect cycle route from the A24 Findon village to Worthing through the AQMA (see entry 25).	There already exist cycle paths segregated from pedestrians in and around the Grove Lodge AQMA.
15	Travel plans for significant/major developments	Promoting Travel Alternatives	Other	2015	2026	Worthing BC/WSCC	Developer Contribution	NO	Partially Funded	£500k - £1 million	Implementation	Low	Number of plans delivered	Plans continue to be secured as and when developments come forward. The Local Plan adds weight to the requirement for travel plans. The Submission Draft Worthing Local Plan was Submitted for Examination in June 2021. The revised Plan is expected to be formally adopted by the Council in 2023.	
16	Car Sharing	Alternatives to private vehicle use	Car & lift sharing schemes	2015		WSCC	WSCC	NO	Funded		Implementation	Low	Website hits/ journeys planned/Number of registrants/take-up of initiatives	Car share website www.westsussexcarshare.com	Focus on promoting sustainable travel/car. Link on Worthing website.

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17	Cycling & Walking promotion	Promoting Travel Alternatives	Promotion of cycling	2015		Worthing BC/WSCC	WSCC/Developer Contributions	NO	Partially Funded		Implementation	Low	Automatic cycle counters and travel surveys	The Living Streets "Walk To" campaign was run by WSCC and Living Streets in 2022, with some schools in Worthing active in their participation	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work. Subject to available funding.
18	WSCC staff travel	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2014	2019	WSCC	WSCC	NO	Funded		Completed	Low		Pool cars provided for casual user staff including EV's.	Renault Zoe's added in 2018.
19	School Travel Plans	Promoting Travel Alternatives	School Travel Plans	2010		WSCC	WSCC	NO	Funded		Completed	Low		Schools are directed to Modeshift Stars for assistance with travel planning, which is a nationally recognised online travel planning tool. See entry 17 for information on Living Streets Walk To and Sussex-air schools project.	Focus on promoting sustainable travel amongst young people and reducing peak time car traffic. WSCC Bikeability has been engaging with primary and secondary schools across Worthing to offer cycle training. The Sussex-air/Defra funded project is hoped to have influenced school travel plans.
20	Business Travel Plans	Promoting Travel Alternatives	Workplace Travel Planning	2017	-	Worthing BC	Worthing BC/WSCC/Developer Contributions	YES	Partially Funded	<£10k	Aborted	Low	Number of plans devised/derived	Defra AQ grant project via Sussex-air for business fleet advice was unsuccessful. Uptake by businesses in Sussex was v poor, so project was taken no further.	Resource issues remain; Questions over whether LGV's should be prioritised over HGV's? A Source Apportionment update in 2023 will inform this.
21	Worthing College Travel Plan Review	Promoting Travel Alternatives	School Travel Plans	2015	2018	Worthing BC/WSCC	Worthing College	NO	Funded		Completed	Low/Medium	Reduction in use of private cars for trips to/from College/ Increase in use of alternative modes of travel	Review completed 2018.	No further updates
22	HGV/LGV assessment	Transport Planning and Infrastructure	Route Mgt plans/Strategic routing for HGV's	2016	2020	Worthing BC	Worthing BC/WSCC	YES	Partially Funded	< £10k	Aborted	Low	Data on Euro Classes	Defra AQ grant project via Sussex-air for business fleet advice was unsuccessful. Uptake by businesses in Sussex was v poor, so project was not taken any further	The next Source Apportionment Update (due 2023) will identify the proportion of HGV's/LGV's and the weighting to be applied to HGV/LGV actions.
23	Ecostars for Local Fleet Operators	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2016	2022	Worthing BC	Worthing BC	NO	Not Funded		Aborted	Low/Medium	Increase in new euro Class vehicles	No further developments	

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24	Increase and improve availability of WBC Air Quality Monitoring results	Public Information	Via the Internet	2015		Worthing BC	Worthing BC	NO	Funded	£10k - 50k	Implementation	Low	Reduction in levels of NO ₂ /No. of hits on AQ pages	Council's webpages updated. Linked Worthing webpage to UK Air and Sussex-air for Grove Lodge AURN monitoring.	Revision of webpages ongoing
25	Active Travel Fund Schemes	Transport Planning and Infrastructure		2020	2020	WSCC	DfT Active Travel Fund	NO	Funded		Implementation	Low	Length of new cycle routes provided	Department for Transport Active Travel Fund funding received to deliver Findon Valley to Findon cycle scheme to connect cycle route from the A24 Findon village to Worthing through the AQMA, with construction underway during 2022.	Focus on promoting sustainable transport and minimising car use and vehicle congestion

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.

Adur and Worthing Councils continue to develop approaches to address PM_{2.5} in partnership with partners through Sussex-air.

The Clean Burn campaign, funded through the Sussex-air Defra funding, highlighting the issue of particulate emissions from domestic burning, remains linked to the council's website and was updated in 2022.

The Councils continue to consider the declaration of Smoke Control Areas (SCA). There is increasing political and public support for this to progress and will be considered as part of our revised Action Plans in 2023.

Both Adur District and Worthing Borough Council monitor levels of PM_{2.5} through the automatic monitoring sites in Shoreham High Street (site ref. AD1) and the AURN affiliated continuous monitoring site at A27 Grove Lodge, Worthing (Site ref. WT2).

Both monitoring sites will assist us with assessing PM_{2.5} and developing strategies to address particulates.

Work carried out by Public Health England as part of the Public Health Outcomes Framework (PHOF) shows that the mortality associated with particulate air pollution within Adur District and Worthing Borough is 6%. This information is available from the following web link: <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework>.

The calculated mortality is equal to that for south east England, but greater than the average for England (5.6 %).

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

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

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Adur District and Worthing Borough Councils undertook automatic (continuous) monitoring at two sites during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem.

The [Sussex-air](#) webpage presents automatic monitoring results for Adur & Worthing, with automatic monitoring results also available through the UK-Air website .

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Adur District Council undertook non-automatic (i.e. passive) diffusion tube monitoring of NO₂ at 27 sites during 2022 and Worthing Borough Council at 28 sites. Table A.2 in Appendix A presents the details of the non-automatic sites.

The following non-automatic sites were added during 2022:

- Grinstead Lane Roundabout, Lancing (Adur) - in response to concerns about air quality in the area as a result of queuing traffic alongside forthcoming new local developments and changes to road layout (A27).

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 (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

A. Adur

Automatic Monitoring

The measured annual mean at the continuous monitoring site in Shoreham High Street was 20.3µg/m³ (data capture 92.5%). This is a slight increase over the level of 19.6µg/m³ measured last year, but still below the objective of 40µg/m³.

There were no recorded exceedances of the one hour mean objective of 200µg/m³. Data capture was 90%.

Non-Automatic Monitoring

27 diffusion tubes were used during 2022, one of which was a new location. For the other 26 tubes, 10 showed small decreases in measured annual means when compared to 2021, ranging from $-0.1\mu\text{g}/\text{m}^3$ (S3) to $-2.8\mu\text{g}/\text{m}^3$ (S14) and 14 showed small increases, ranging from $0.1\mu\text{g}/\text{m}^3$ (S47) to $3.2\mu\text{g}/\text{m}^3$ (S48).

All but one site recorded a data capture rate of 100%. Site S2 recorded 90%.

Importantly no monitoring sites exceeded the annual mean objective of $40\mu\text{g}/\text{m}^3$ during 2022.

- *In and around AQMA1, Shoreham High Street:*

Measured levels remained broadly similar to 2021 levels. S17/18/19 are collocated tubes alongside the continuous analyser in the High Street. These recorded an average of $24.2\mu\text{g}/\text{m}^3$ a $0.6\mu\text{g}/\text{m}^3$ reduction on 2021, but $4\mu\text{g}/\text{m}^3$ above the continuous monitoring result at this location. This difference is likely to be the result of the lower accuracy of diffusion tube monitoring.

Tubes in West Street Shoreham, S46 (just inside the AQMA) and S47 (just outside the AQMA), showed virtually no change in recorded levels. Measured levels were well below the objective at $18.8\mu\text{g}/\text{m}^3$ and $16.9\mu\text{g}/\text{m}^3$ respectively. West Street is regularly used by vehicles trying to avoid congestion along the High Street (A259).

Site S36 Victoria Road Footpath Shoreham, just to the north of AQMA1 showed a decrease of $0.9\mu\text{g}/\text{m}^3$ to $18.6\mu\text{g}/\text{m}^3$.

S37 Humphrey's Gap Shoreham showed an increase of $1.1\mu\text{g}/\text{m}^3$ to $24.9\mu\text{g}/\text{m}^3$.

Site S50 was erected on a facade within the AQMA in 2021, replacing site S49 near the continuous monitoring site. The measured level increased slightly in 2022 to $22.8\mu\text{g}/\text{m}^3$.

West Sussex County Council (WSCC) reinstated the automatic traffic counter (ATC) in Shoreham High Street in November 2021. The measured AADT for 2022 was 15,120. As we have no data prior to this year we will need to wait a further year before making comparisons.

Whilst measured levels remain below the annual mean objective, we maintain that we must keep the measured levels in AQMA1 under review before making decisions about the future of the AQMA. There remain a large number of approved major developments which are either under construction or have yet to commence. A number of other planned major developments remain for the Adur District, detailed in section 2. Therefore it is our

intention not to revoke AQMA1 at this time. This was a view endorsed in the review of last year's ASR.

- *AQMA2, Southwick:*

Sites S8 and S9 are in Southwick within AQMA2. S8 increased by $0.3\mu\text{g}/\text{m}^3$ to $23.2\mu\text{g}/\text{m}^3$ and S9 fell by $0.8\mu\text{g}/\text{m}^3$ to $25.4\mu\text{g}/\text{m}^3$. Both are below the annual mean objective. Both are roadside locations and levels drop further when predicted back to the nearest receptors, 4m and 2m away respectively.

Interestingly the nearby WSCC automatic traffic counter recorded a 7% increase in AADT in the area, but this does not appear to have resulted in a significant increase in measured levels of NO_2 .

In previous Adur ASR's we committed to consider revoking AQMA2 as measured levels had been below the annual mean objective for many years. Furthermore we believe this AQMA will not be affected as much by local developments as AQMA1.

Revocation was again delayed in 2022 however it is a priority for 2023.

- *Other Sites:*

Site S48 Grinstead Lane in Lancing showed the highest increase in the District, $3.2\mu\text{g}/\text{m}^3$ to $30\mu\text{g}/\text{m}^3$. Unfortunately there is no traffic data available at this location to see if the increase was a result of increased traffic.

A new tube site S52 was erected in Grinstead Lane close to the roundabout, in response to our concerns about levels in this area. The measured level here was $35.7\mu\text{g}/\text{m}^3$ the highest level recorded in the District. This is a kerbside site and when levels are predicted back to the nearest receptor, they drop to $22.6\mu\text{g}/\text{m}^3$.

Site S44 Upper Brighton Road, Lancing increased by $2.1\mu\text{g}/\text{m}^3$ to $33.6\mu\text{g}/\text{m}^3$. This site is adjacent to the eastbound A27 dual carriageway with the closest receptor just over 5m away.

The area around the Grinstead Lane roundabout on the A27 is an area we are keeping a close eye on, especially with some large development taking place nearby.

Site S51 close to the Sussex Pad on the A27 Lancing produced an annual mean of $22.8\mu\text{g}/\text{m}^3$. This site is close to a new roundabout under construction to service the New

Monks Farm development adjacent to the A27. The tube is not located at a site of relevant exposure.

Site S25 Mash Barn Lane in Lancing showed a fall of $2.1\mu\text{g}/\text{m}^3$ to $25.7\mu\text{g}/\text{m}^3$.

S45 Dolphin Mews Shoreham, adjacent to a level crossing where vehicles often queue and idle for prolonged periods, decreased from $17.2\mu\text{g}/\text{m}^3$ to $16.4\mu\text{g}/\text{m}^3$.

Site S14 in West Street Sompting recorded the largest decrease of $2.8\mu\text{g}/\text{m}^3$ to $18.4\mu\text{g}/\text{m}^3$.

B. Worthing

Automatic Monitoring

The annual mean recorded at the continuous monitoring site WT2 Grove Lodge was $25.4\mu\text{g}/\text{m}^3$ (data capture 95%). This is a drop of $2.2\mu\text{g}/\text{m}^3$, over the 2021 level. This is below the national objective of $40\mu\text{g}/\text{m}^3$.

There were no recorded exceedances of the one hour mean objective of $200\mu\text{g}/\text{m}^3$.

The automatic monitoring site is an AURN affiliated site located adjacent to the A27, a single lane strategic trunk route through Worthing with slow moving or stationary traffic for prolonged periods. Annual average NO_2 peaked at $51.4\mu\text{g}/\text{m}^3$ in 2014, decreased in 2015 and then increased again in 2016 to $48\mu\text{g}/\text{m}^3$. The nearest relevant receptor (a residential facade) is 18m away, meaning the level at the facade reduces further still.

Traffic levels within the AQMA increased slightly: by 2.2% westbound and 1.1% eastbound.

Non-Automatic Monitoring

30 diffusion tubes were used at 28 locations during 2022. 19 sites showed an increase in measured levels, 8 decreased and one showed no change. The largest increase was at site N24 (152 Upper Brighton Road) at $9.1\mu\text{g}/\text{m}^3$ and the largest decrease was $-3.4\mu\text{g}/\text{m}^3$ at Site N66 (Sompting Road).

As in 2019, 2020 and 2021 only one monitoring site exceeded the annual mean objective of $40\mu\text{g}/\text{m}^3$ – N30A Grove Lodge Cottages.

In and around AQMA No.2:

N30A Grove Lodge Cottages continued to show the highest levels of any monitoring site. Measured levels increased very slightly by $0.3\mu\text{g}/\text{m}^3$ to $44.7\mu\text{g}/\text{m}^3$, still above the $40\mu\text{g}/\text{m}^3$ objective. The monitoring site is adjacent to the westbound carriageway of the A27 with

the nearest residential façade just 2m away, so the measured level only decreases marginally to $44\mu\text{g}/\text{m}^3$ when predicted back.

The collocated tubes N44A/B/C alongside the continuous monitor again recorded a reduction in levels, the average of the three being $27.8\mu\text{g}/\text{m}^3$, a reduction of $2\mu\text{g}/\text{m}^3$ over 2021 levels. This difference in levels measured when compared to the automatic analyser is likely to be the result of the lower accuracy of diffusion tube monitoring.

Site N24 close to Lyons Farm on the A27 showed a large increase of $9.1\mu\text{g}/\text{m}^3$ to $29.2\mu\text{g}/\text{m}^3$. Whilst still below the $40\mu\text{g}/\text{m}^3$ objective this is the second year running with an increase, so we are keeping a close eye on this site.

Site N29 Downlands Parade, also close to the Lyons Farm junction of the A27/Sompting Road, showed an increase of $1.8\mu\text{g}/\text{m}^3$ to $26\mu\text{g}/\text{m}^3$.

Of the other monitoring sites within the AQMA there were small increases at N39 and N53 and a small decrease at N43. All were well below the objective of $40\mu\text{g}/\text{m}^3$.

Other Sites

N57 Lyndhurst Road showed virtually no change ($20.7\mu\text{g}/\text{m}^3$), well below the annual mean objective. This area is close to a number of major development sites earmarked for major development, so we continue to closely monitor changes here.

N66 Sompting Lane, Worthing which was installed in 2020 as it is located at a site of traffic queuing to access the A27, showed the largest drop in levels, down $3.4\mu\text{g}/\text{m}^3$ to $21.5\mu\text{g}/\text{m}^3$.

The tube in the busy High Street (N1C), close to Steyne Gardens, remained below the objective at $23.5\mu\text{g}/\text{m}^3$.

Site N54 on Brighton Road near the Aquarena, close to recent major developments, showed a small increase from $17.1\mu\text{g}/\text{m}^3$ to $19.3\mu\text{g}/\text{m}^3$, still well below the objective.

The two sites added in 2021, N71 King Street and N72 New Street, showed levels of $11.8\mu\text{g}/\text{m}^3$ and $12.3\mu\text{g}/\text{m}^3$, virtually unchanged from 2021 and well below the objective.

Five year trend graphs are included in Appendix A.

3.1.4 Particulate Matter (PM_{2.5})

Table A.6 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years.

A. Adur – PM_{2.5} monitoring commenced in Shoreham High Street in August 2021. So 2022 is the first full year of PM_{2.5} monitoring at this location. The measured ratified level for 2022 was 11.6µg/m³ (data capture 87%¹¹). The level for 2021 had to be annualised as measurements were only across for 5 months of the year) and was 16.2µg/m³.

This is well below the EU Limit Value of 25µg/m³ but above the Air Quality Strategy Objectives (Target Year 2040)¹² and above the World Health Organisation (WHO) annual mean guideline limit of 10µg/m³.

B. Worthing - 2022 is our fifth full year of PM_{2.5} monitoring at Grove Lodge (A27). The measured ratified level for 2022 was 8.5µg/m³ (data capture 93%¹³), almost the same as the 2020 level of 8.8µg/m³. This is still below the EU Limit Value of 25µg/m³, the World Health Organisation (WHO) annual mean guideline limit of 10µg/m³ and the Air Quality Strategy Objectives (Target Year 2040).

¹¹ PM_{2.5} data invalid: 1/1/22 to 11/2/22 plus intermittent issues May – Dec 2022, resulting in 1181 hours loss of data.

¹² Provides a comparison to the future target value. Regulation 4 of the Environmental Targets (Fine Particulate Matter) (England) Regulations 2022 sets the target to ensure that the annual mean concentration of PM_{2.5} in ambient air is equal to or less than 10 micrograms per cubic metre by 31st December 2040. This is a non-binding target for local authorities.

¹³ AURN data capture rates available on UK-AIR

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
AD1	High Street Shoreham	Kerbside	521399	105039	NO ₂ ; PM2.5	YES Adur AQMA1	Chemiluminescence	4	1.6	2
WT2	Grove Lodge, Worthing	Roadside	514184	104963	NO ₂ ; PM2.5	YES Worthing AQMA No.2	Chemiluminescence	18.3	2.9	1.75

Notes:

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

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co located with a Continuous Analyser?	Tube Height (m)
ADUR										
S2	Old Mill Close Fishersgate	Roadside	525330	105085	NO ₂	No	3.5	1.5	No	2.5
S3	St. Aubyns Crescent Fishersgate	Urban Background	525562	105313	NO ₂	No	5.1	2.4	No	2.5
S7	Queens Road Southwick	Urban Background	524139	106321	NO ₂	No	3.0	2.5	No	2.5
S8	Underdown Road Southwick	Roadside	524018	106070	NO ₂	AQMA2	4.3	2.3	No	2.5
S9	Old Shoreham Road Southwick	Roadside	523784	106081	NO ₂	AQMA2	1.6	2.8	No	2.3
S10	Holmbush Roundabout Shoreham	Roadside	523343	106111	NO ₂	No	27.0	1.7	No	2.8
S11	Lancing Manor Lancing	Roadside	518820	105584	NO ₂	No	14.8	2.0	No	2.8
S12	Boundstone Lane Lancing	Roadside	517731	105505	NO ₂	No	8.0	1.8	No	2.8
S13	Upper Brighton Road Sompting	Roadside	517291	105550	NO ₂	No	8.6	4.6	No	2.3
S14	West Street Sompting	Urban Background	516057	105190	NO ₂	No	3.6	1.2	No	2.0
S17	High Street AQMS 1 Shoreham	Kerbside	521400	105040	NO ₂	AQMA1	5.0	0.9	Yes	2.8
S18	High Street AQMS 2 Shoreham	Kerbside	521400	105040	NO ₂	AQMA1	5.0	0.9	Yes	2.8
S19	High Street AQMS 3 Shoreham	Kerbside	521400	105040	NO ₂	AQMA1	5.0	0.9	Yes	2.8

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)
S25	Mash Barn Lane Lancing	Roadside	519117	105710	NO ₂	No	N/A	6.0	No	2.5
S26	Loose Lane Sompting	Suburban	516536	104783	NO ₂	No	5.0	0.8	No	2.5
S36	Victoria Road Footpath Shoreham	Roadside	521282	105254	NO ₂	No	5.8	1.9	No	2.5
S37	Humphrey's Gap Shoreham	Roadside	522103	105126	NO ₂	No	0.5	1.7	No	2.8
S39	Brighton Road Kingston	Kerbside	523329	104960	NO ₂	No	7.0	1.2	No	2.5
S43	Brunswick Road Shoreham	Roadside	521733	105251	NO ₂	No	0.0	2.7	No	2.8
S44	Upper Brighton Road Lancing	Roadside	518494	105464	NO ₂	No	5.4	2.0	No	3.0
S45	Dolphin Mews Shoreham	Roadside	522300	105258	NO ₂	No	0.0	4.7	No	2.8
S46	West Street 1 Shoreham	Roadside	521363	105082	NO ₂	No	0.0	1.3	No	2.5
S47	West Street 2 Shoreham	Roadside	521375	105101	NO ₂	AQMA1	0.0	1.3	No	2.5
S48	Grinstead Lane Lancing	Roadside	518590	105463	NO ₂	No	4.0	3.3	No	2.5
S50	High Street Shoreham	Roadside	521478	105002	NO ₂	AQMA1	0.0	5.2	No	2.3
S51	Sussex Pad Lancing	Kerbside	520042	106054	NO ₂	No	16.5	0.4	No	2.0
S52	Grinstead Lane Roundabout Lancing	Kerbside	518560	105460	NO ₂	No	17.5	1.8	No	2.5
Worthing										
4N	Heene Way (UK02)	Urban Background	513609	102556	NO ₂	No	5.3	1.7	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co located with a Continuous Analyser?	Tube Height (m)
5N	Cleveland Road (UK01)	Urban Background	512701	105562	NO ₂	No	6.2	2.5	No	2.0
N1C	High Street East	Urban Centre	515114	102670	NO ₂	No	0.0	3.3	No	2.0
N5	First Avenue	Roadside	514495	105020	NO ₂	Worthing AQMA No.2	15.2	2.2	No	1.5
N8	Littlehampton Road	Roadside	513236	104651	NO ₂	No	14.1	1.5	No	3.5
N11	Dawes Close	Urban Background	515812	103309	NO ₂	No	8.4	1.4	No	1.5
N21	Forest Lane	Suburban	510611	105595	NO ₂	Worthing AQMA No.2	14.5	60.5	No	2.0
N22	Falmer Close, C-Dust monitor	Urban Background	511010	102226	NO ₂	No	14.6	2.2	No	2.0
N24	152 Upper Brighton Road	Roadside	515151	105109	NO ₂	No	0.0	8.0	No	1.5
N25	Warren Court	Suburban	513845	105191	NO ₂	Worthing AQMA No.2	0.0	17.3	No	2.0
N28	Chapel Road / Teville Road	Roadside	514740	103173	NO ₂	No	1.6	3.0	No	2.0
N29	Downlands Parade	Roadside	515014	105099	NO ₂	No	0.5	6.5	No	2.5
N30A	Grove Lodge Cottages	Roadside	514183	104948	NO ₂	No	0.2	2.2	No	2.5
N31	South Farm Road, Roundabout	Kerbside	514317	103329	NO ₂	Worthing AQMA No.2	4.0	0.9	No	3.0
N39	SW of Roundabout, Grove lodge	Roadside	514088	104906	NO ₂	Worthing AQMA No.2	47.8	2.2	No	2.5
N42	Norfolk House, 122 Chapel Road	Roadside	514742	103234	NO ₂	No	0.0	3.4	No	2.5
N43	23 Upper Brighton Road	Suburban	514199	104982	NO ₂	Worthing AQMA No.2	0.0	19.2	No	2.0
N44A, N44B, N44C	AQMS O/S 21 Upper Brighton Road	Roadside	514184	104963	NO ₂	Worthing AQMA No.2	18.4	2.8	Yes	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co located with a Continuous Analyser?	Tube Height (m)
N48	Shaftesbury Avenue	Roadside	512063	103385	NO ₂	No	14.8	2.2	No	2.0
N52	Newland Road, outside 63	Kerbside	514973	103335	NO ₂	No	4.5	0.4	No	2.0
N53	Offington Corner	Roadside	513278	105623	NO ₂	Worthing AQMA No.2	20.5	6.0	No	2.0
N54	Aquarena	Roadside	515595	102725	NO ₂	No	30.2	3.7	No	3.0
N57	Lyndhurst Road	Roadside	515114	102975	NO ₂	No	0.0	3.5	No	2.5
N64	South Street, outside Starbucks	Urban Centre	514946	102541	NO ₂	No	2.8	2.4	No	2.5
N65	Teville Road (opposite Unleashed)	Kerbside	514543	103220	NO ₂	No	4.7	0.8	No	2.5
N66	Sompting Road	Roadside	515067	105082	NO ₂	Worthing AQMA No.2	3.7	4.7	No	2.5
N71	King Street	Roadside	514548	103843	NO ₂	No	4.0	1.8	No	2.5
N72	New Street	Urban Centre	514558	102416	NO ₂	No	0.5	1.0	No	2.0

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site 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
AD1	521399	105039	Kerbside	93	93	29.2	26.0	20.0	19.6	20.3
WT2	514184	104963	Roadside	95	95	36.8	32.9	26.0	27.6	25.4

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

Notes:

The annual mean concentrations are presented as µg/m³.

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

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%).

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
ADUR										
S2	525330	105085	Roadside	90.4109589	90.4	27.0	23.6	17.9	18.8	19.8
S3	525562	105313	Urban Background	100	100.0	18.1	16.7	13.9	14.4	14.3
S7	524139	106321	Urban Background	100	100.0	15.9	14.1	11.5	11.7	11.7
S8	524018	106070	Roadside	100	100.0	30.4	27.5	21.1	22.9	23.2
S9	523784	106081	Roadside	100	100.0	35.0	31.1	25.6	26.2	25.4
S10	523343	106111	Roadside	100	100.0	27.0	23.2	19.2	20.1	20.3
S11	518820	105584	Roadside	100	100.0	35.1	32.5	26.9	25.7	26.0
S12	517731	105505	Roadside	100	100.0	30.2	25.8	20.7	20.8	22.2
S13	517291	105550	Roadside	100	100.0	39.0	36.3	29.5	28.4	28.7
S14	516057	105190	Urban Background	100	100.0	19.4	23.6	19.1	21.2	18.4
S17	521400	105040	Kerbside	100	100.0	33.7	30.4	24.3	25.4	23.7
S18	521400	105040	Kerbside	100	100.0	32.8	30.9	24.2	25.0	24.4
S19	521400	105040	Kerbside	100	100.0	32.4	29.6	23.5	24.1	24.4
S25	519117	105710	Roadside	100	100.0	30.4	26.2	21.5	27.8	25.7
S26	516536	104783	Suburban	100	100.0	16.5	13.4	11.8	13.3	12.0
S36	521282	105254	Roadside	100	100.0	26.6	24.3	18.3	19.4	18.6
S37	522103	105126	Roadside	100	100.0	32.6	29.1	23.4	23.8	24.9
S39	523329	104960	Kerbside	100	100.0	26.1	21.9	17.4	17.4	18.1
S43	521733	105251	Roadside	100	100.0		22.5	16.6	18.4	17.1
S44	518494	105464	Roadside	100	100.0		38.4	31.4	31.5	33.6
S45	522300	105258	Roadside	100	100.0		19.1	15.9	17.2	16.4
S46	521363	105082	Roadside	100	100.0			18.3	18.8	18.8
S47	521375	105101	Roadside	100	100.0			16.3	16.8	16.9
S48	518590	105463	Roadside	100	100.0			25.7	26.8	30.0
S50	521478	105002	Roadside	100	100.0				22.2	22.8
S51	520042	106054	Kerbside	100	100.0				23.1	24.6
S52	518560	105460	Kerbside	100	100.0					35.7

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
WORTHING										
4N	513609	102556	Urban Background	92.3	92.3	14.1	12.7	10.8	10.2	11.1
5N	512701	105562	Urban Background	100	100.0	16.9	15.7	11.8	12.5	12.1
N1C	515114	102670	Urban Centre	92.3	92.3	28.5	26.2	19.8	22.2	23.5
N5	514495	105020	Roadside	100	100.0	25.6	28.3	24.5	23.0	21.5
N8	513236	104651	Roadside	100	100.0	29.6	28.6	22.8	22.3	23.6
N11	515812	103309	Urban Background	100	100.0	15.7	13.4	11.8	11.9	11.8
N21	510611	105595	Suburban	92.3	92.3	13.5	10.8	8.7	9.1	9.2
N22	511010	102226	Urban Background	100	100.0	12.8	11.6	10.2	10.3	10.5
N24	515151	105109	Roadside	100	100.0	34.5	23.5	18.4	20.1	29.2
N25	513845	105191	Suburban	90.4	90.4	20.3	17.8	14.8	15.4	15.4
N28	514740	103173	Roadside	100	100.0	33.4	27.2	17.3	17.3	17.6
N29	515014	105099	Roadside	100	100.0	23.6	29.9	25.6	24.2	26.0
N30A	514183	104948	Roadside	84.1	84.1	60.1	56.6	45.1	44.4	44.7
N31	514317	103329	Kerbside	100	100.0	27.1	25.8	20.8	20.2	20.6
N39	514088	104906	Roadside	100	100.0	32.7	28.5	24.1	23.7	24.4
N42	514742	103234	Roadside	100	100.0	26.6	24.2	18.1	17.3	19.5
N43	514199	104982	Suburban	100	100.0	22.3	19.9	17.6	17.2	16.6
N44A, N44B, N44C	514184	104963	Roadside	100	100.0	40.7	36.1	31.1	29.8	27.8
N48	512063	103385	Roadside	90.4	90.4	27.7	25.8	22.5	20.0	22.3
N52	514973	103335	Kerbside	90.7	90.7	26.4	22.4	24.0	19.2	17.3
N53	513278	105623	Roadside	100	100.0	33.9	30.7	30.2	23.7	24.4
N54	515595	102725	Roadside	100	100.0	22.8	19.3	17.2	17.1	19.3
N57	515114	102975	Roadside	100	100.0	25.0	23.4	23.9	20.8	20.7
N64	514946	102541	Urban Centre	90.7	90.7		27.9	23.8	20.9	21.4
N65	514543	103220	Kerbside	100	100.0		27.5	26.5	23.6	24.0
N66	515067	105082	Roadside	90.7	90.7			29.8	24.9	21.5
N71	514548	103843	Roadside	90.7	90.7				11.7	11.8
N72	514558	102416	Urban Centre	57.7	57.7				12.0	12.3

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 $\mu\text{g}/\text{m}^3$.

Exceedances of the NO_2 annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

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

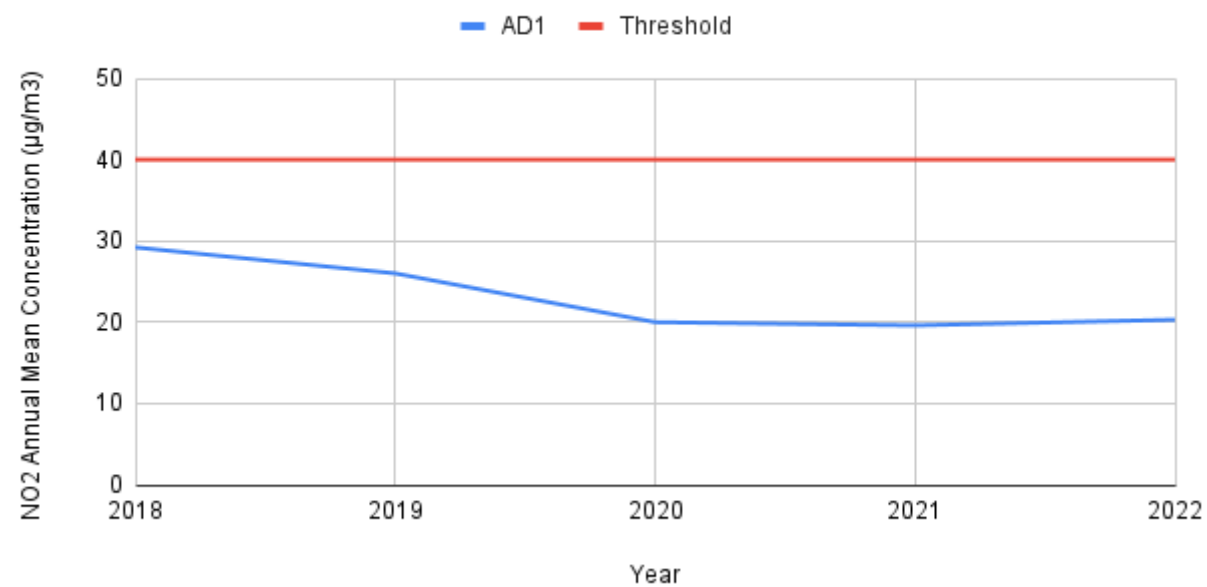
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

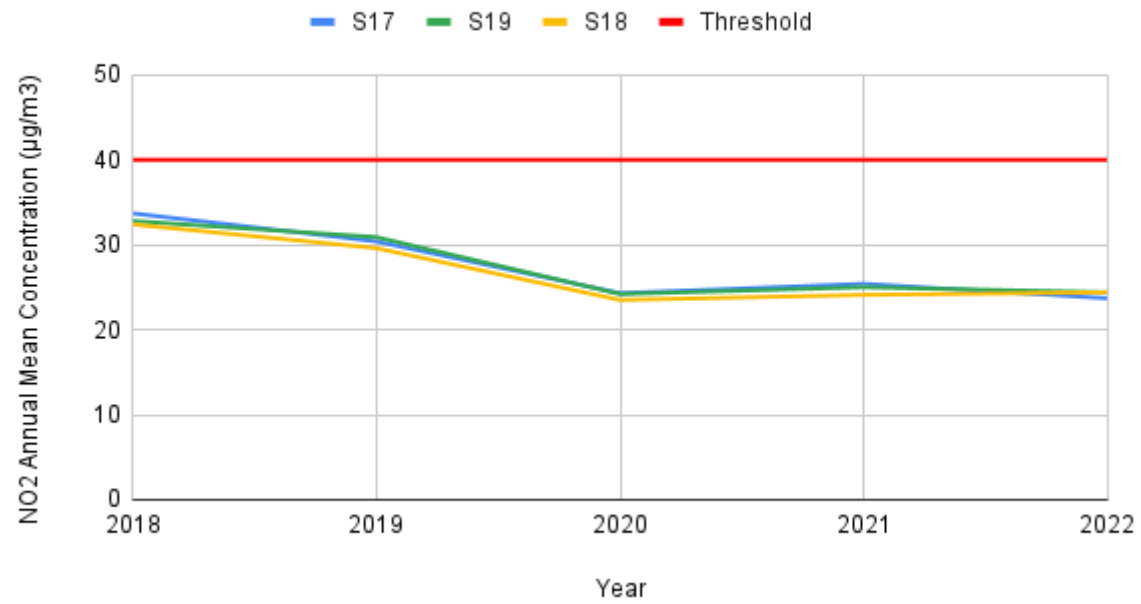
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – ADUR Trends in Annual Mean NO₂ Concentrations

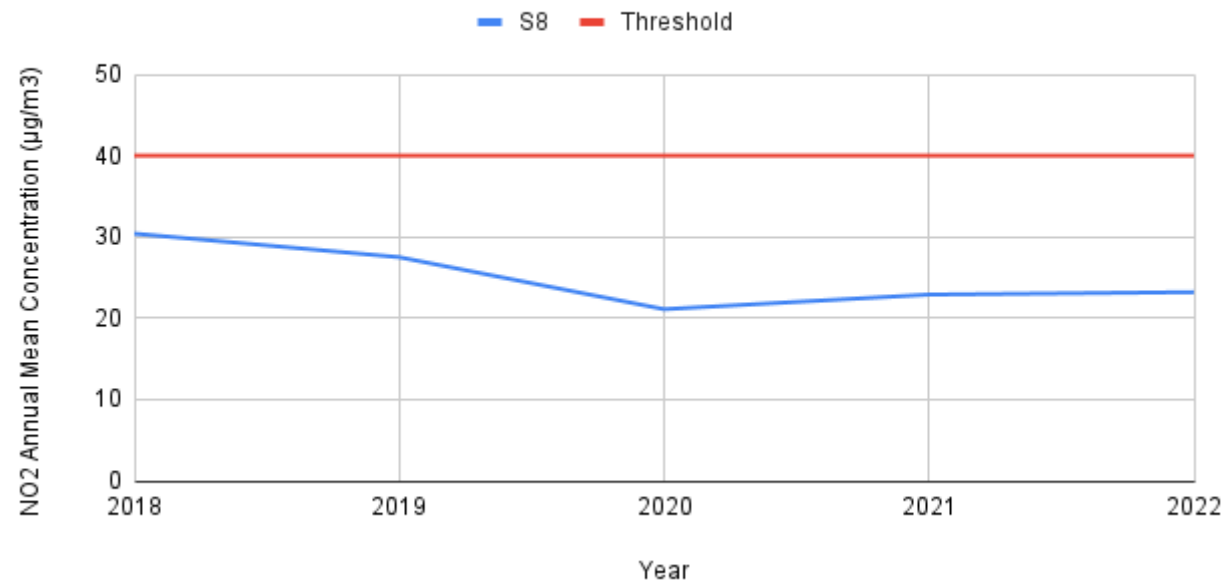
AD1 - High Street AQMS, Shoreham



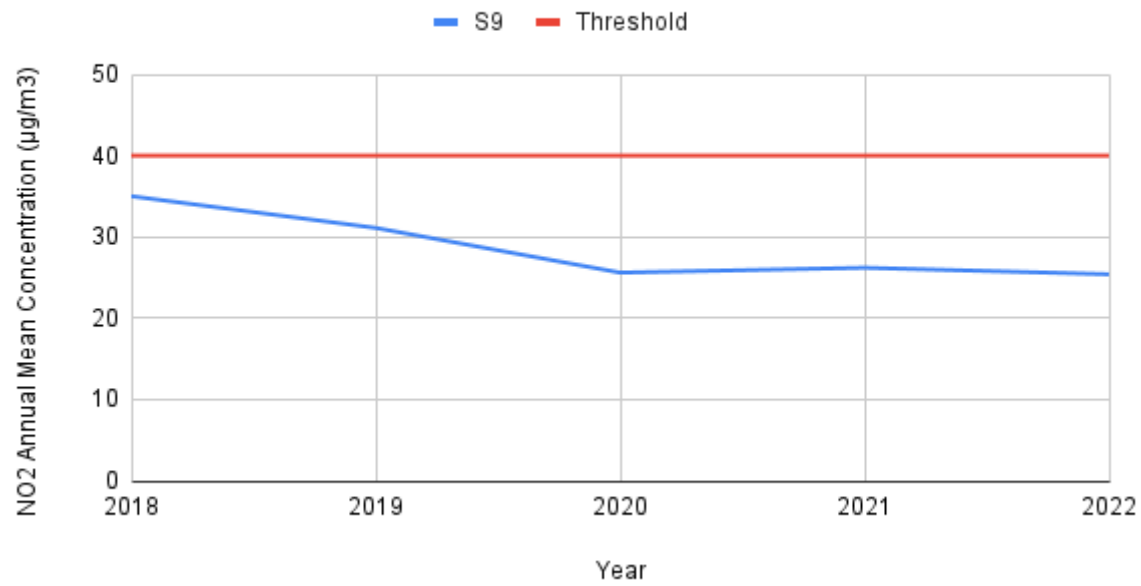
S17, S18 & S19 - High Street AQMS, Shoreham



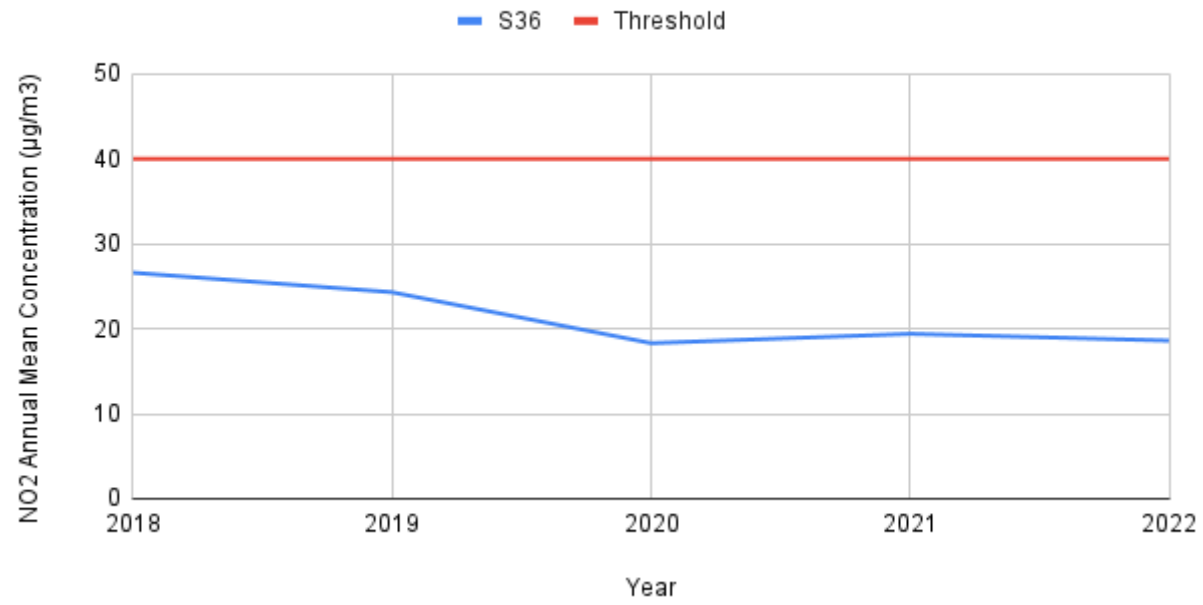
S8 - Underdown Road, Southwick (AQMA2)



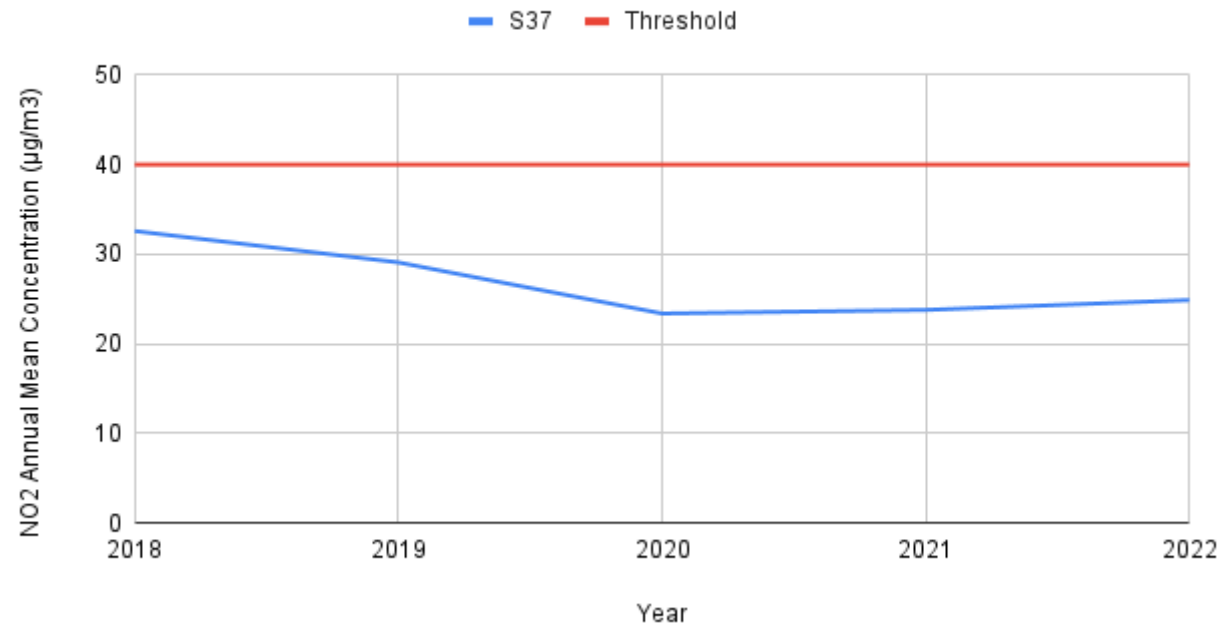
S9 - Old Shoreham Road, Southwick (AQMA2)



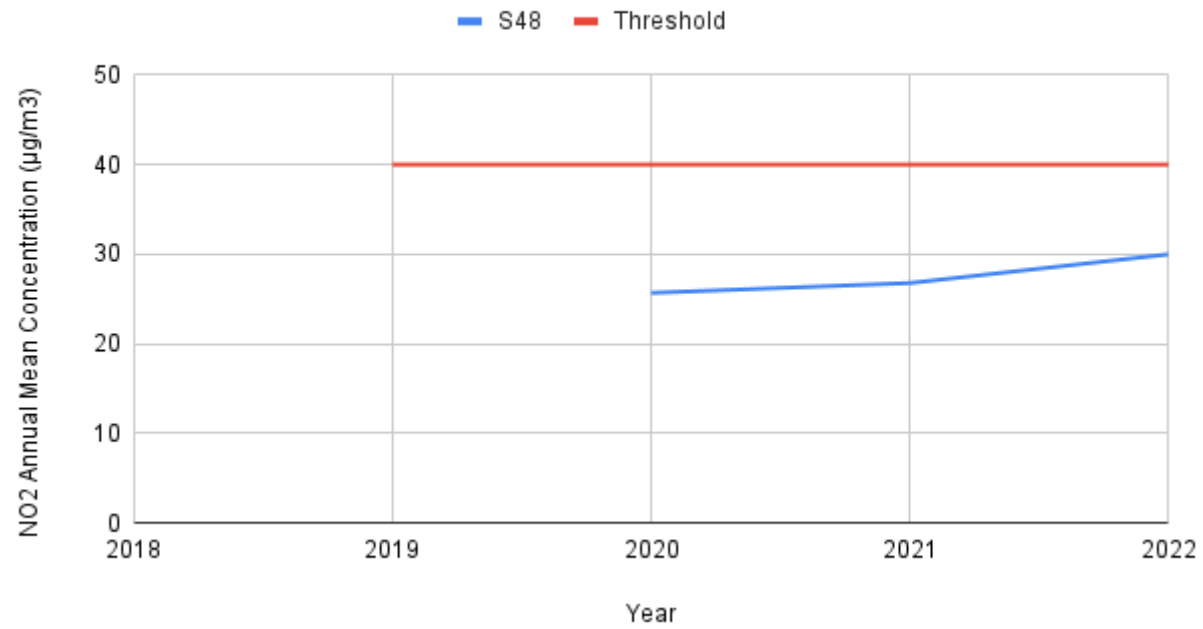
S36 - Victoria Road Footpath, Shoreham



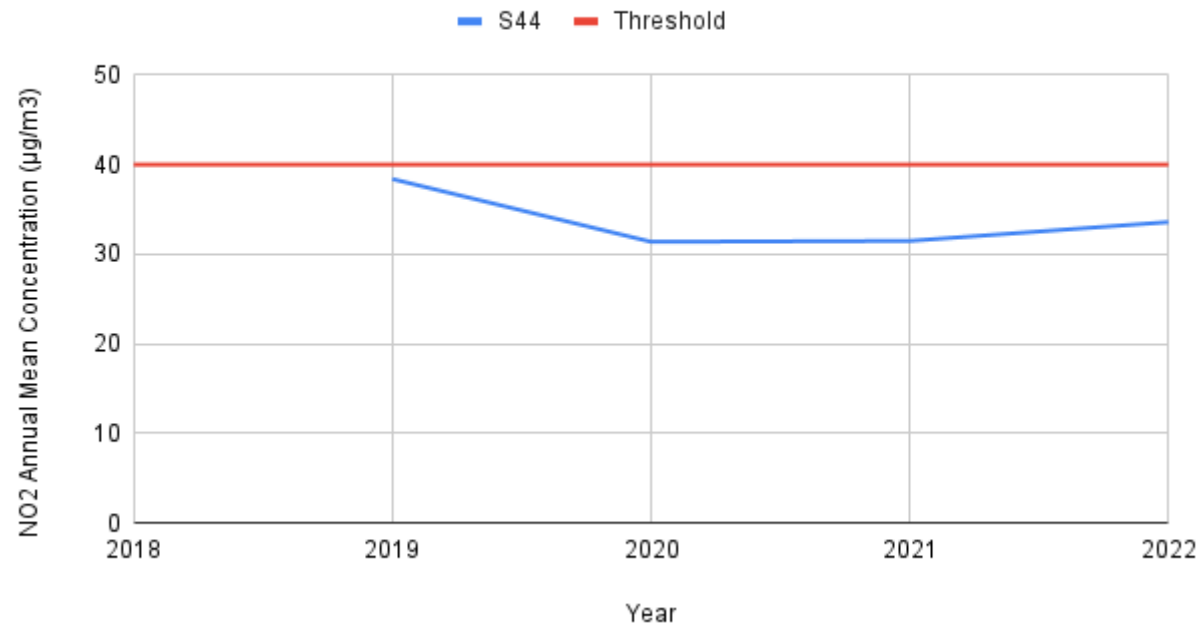
S37 - Humphrey's Gap, Shoreham



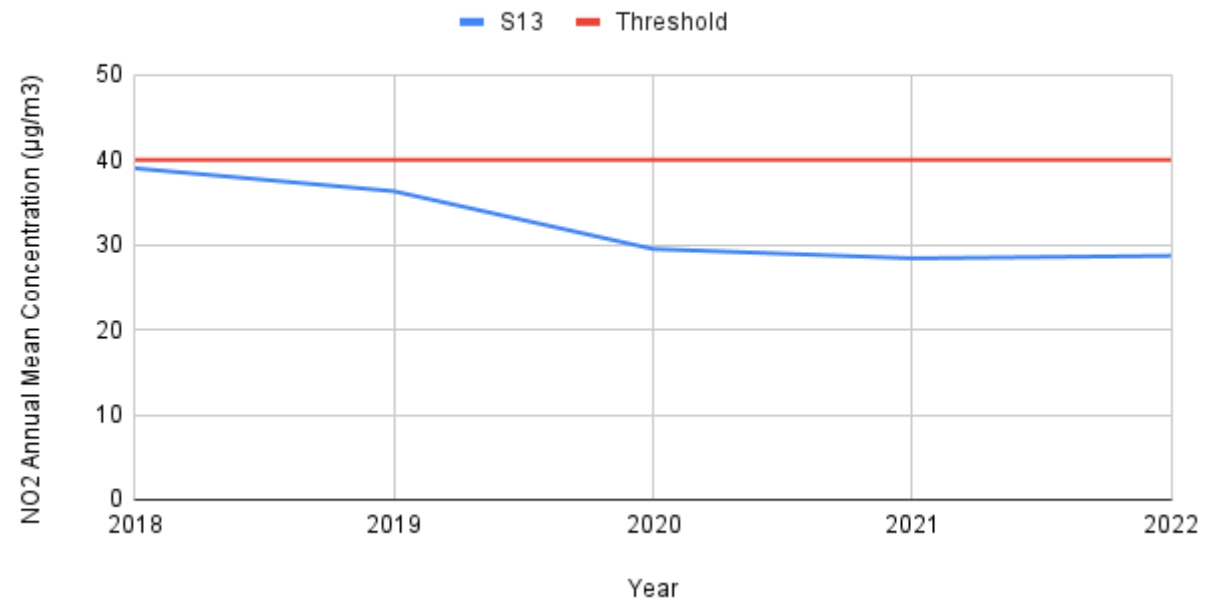
S48 - Grinstead Lane, Lancing



S44 - Upper Brighton Road, Lancing



S13 - Upper Brighton Road, Sompting



S11 - Lancing Manor, Lancing

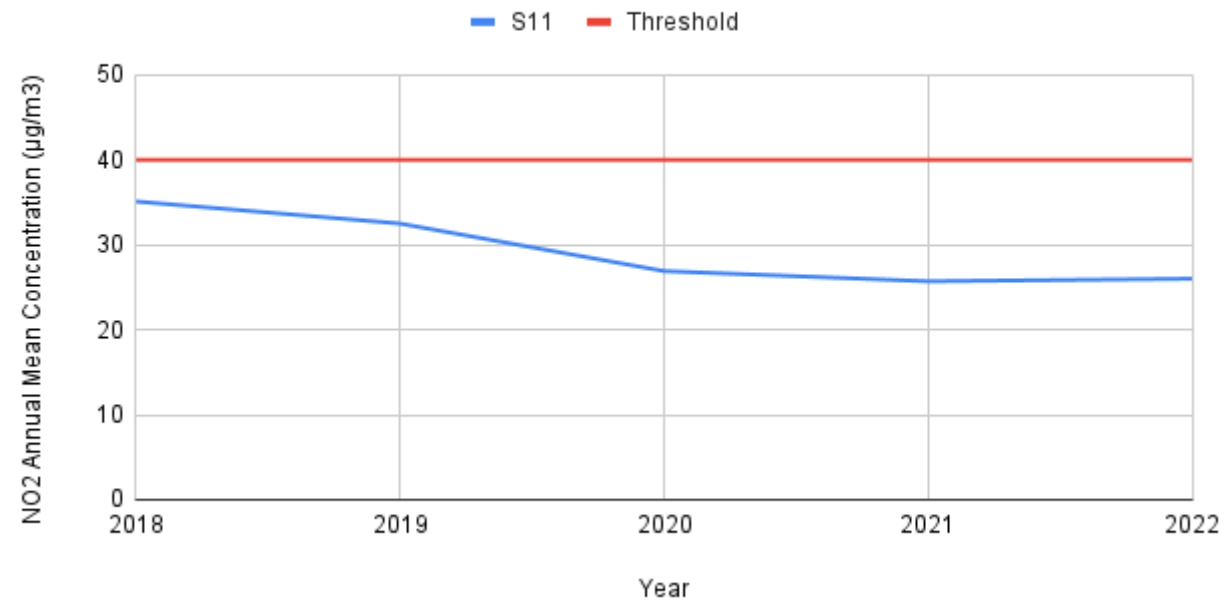
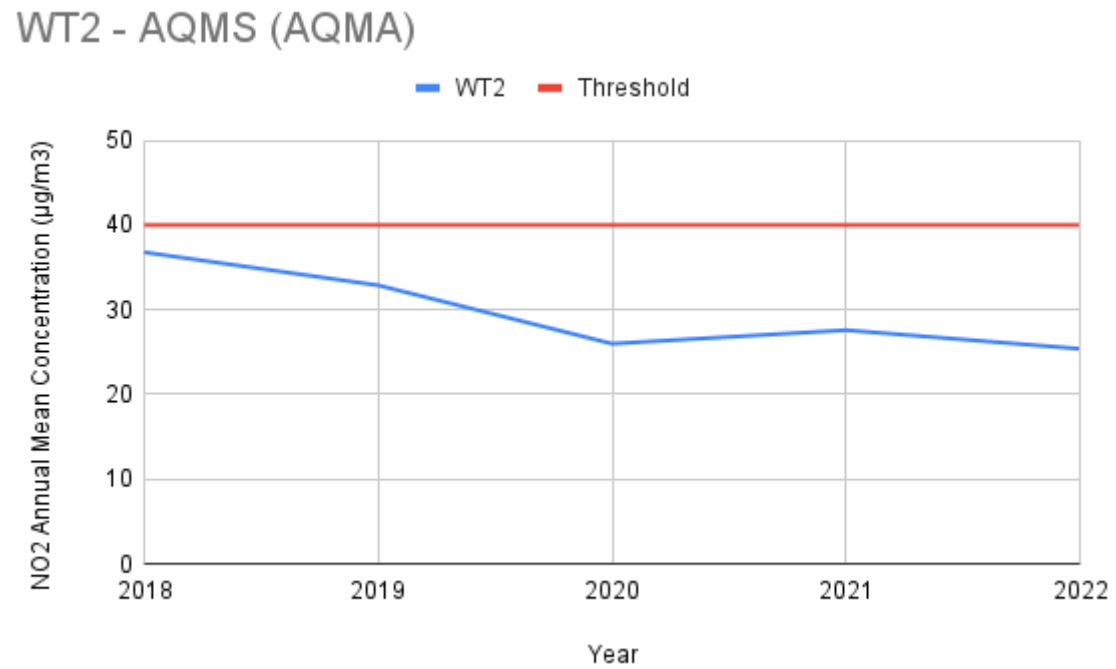
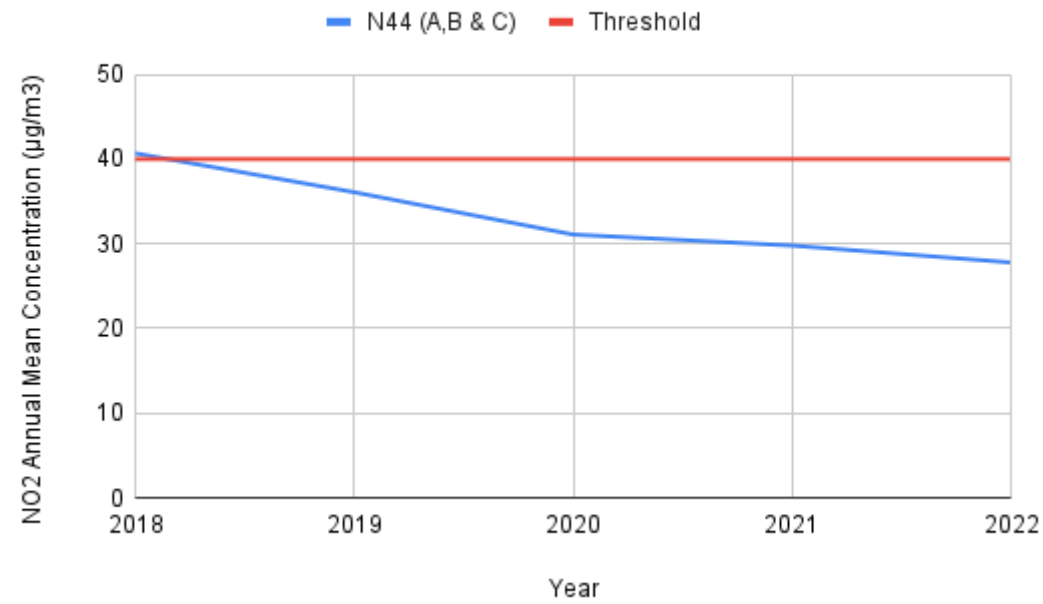
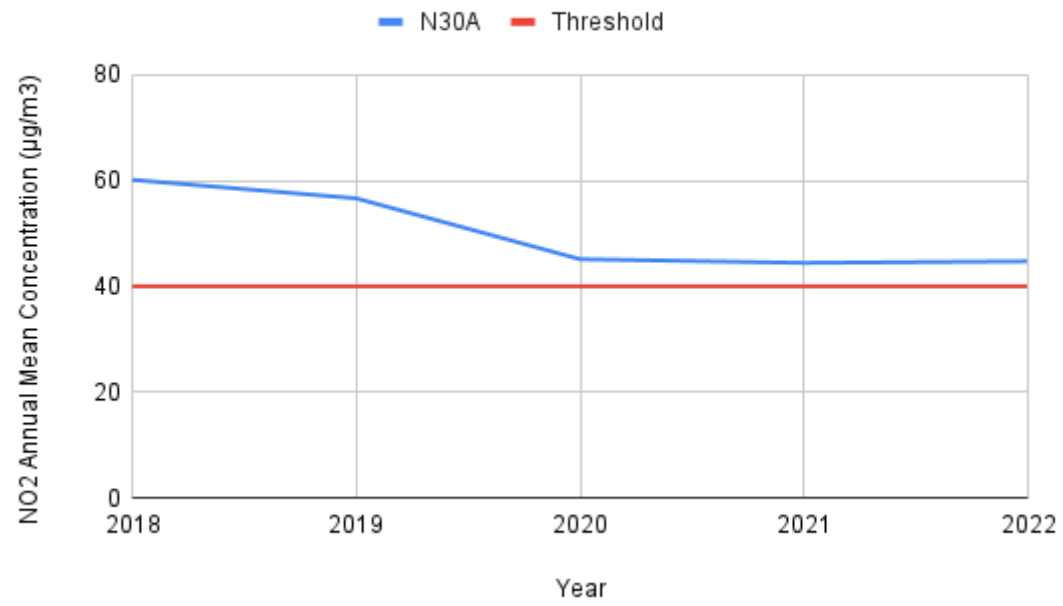


Figure A.2 – WORTHING Trends in Annual Mean NO₂ Concentrations

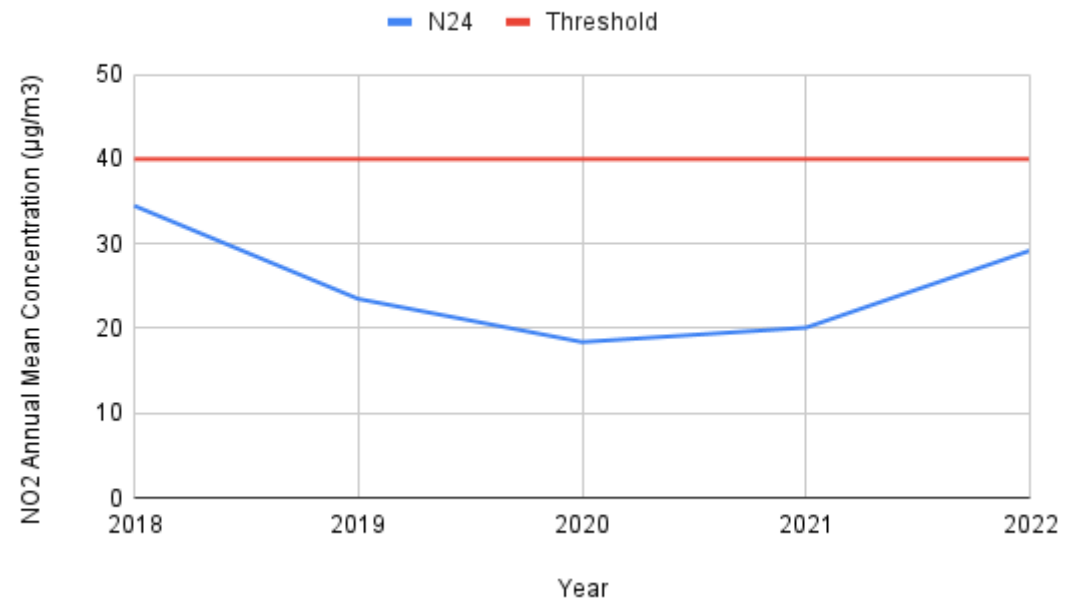
N44 (A,B & C) - AQMS (AQMA)



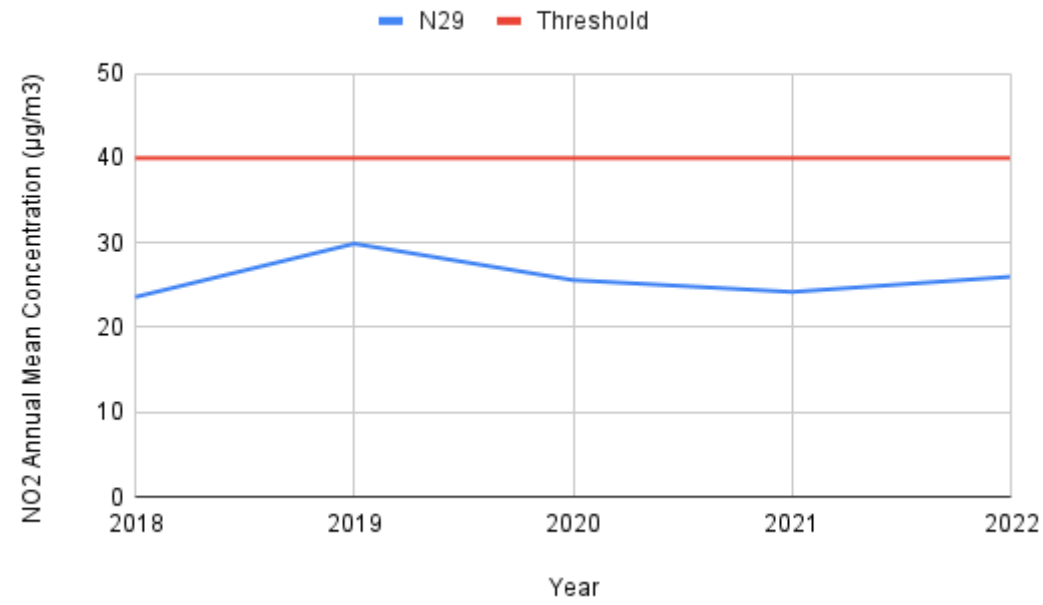
N30A - Grove Lodge Cottages (AQMA)



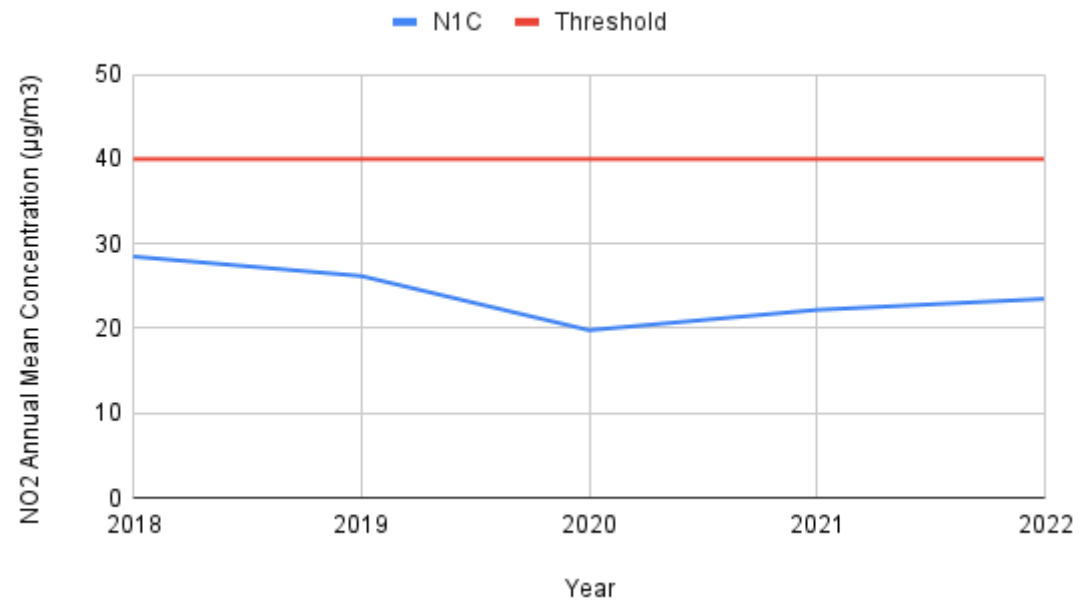
N24 - Upper Brighton Road (AQMA)



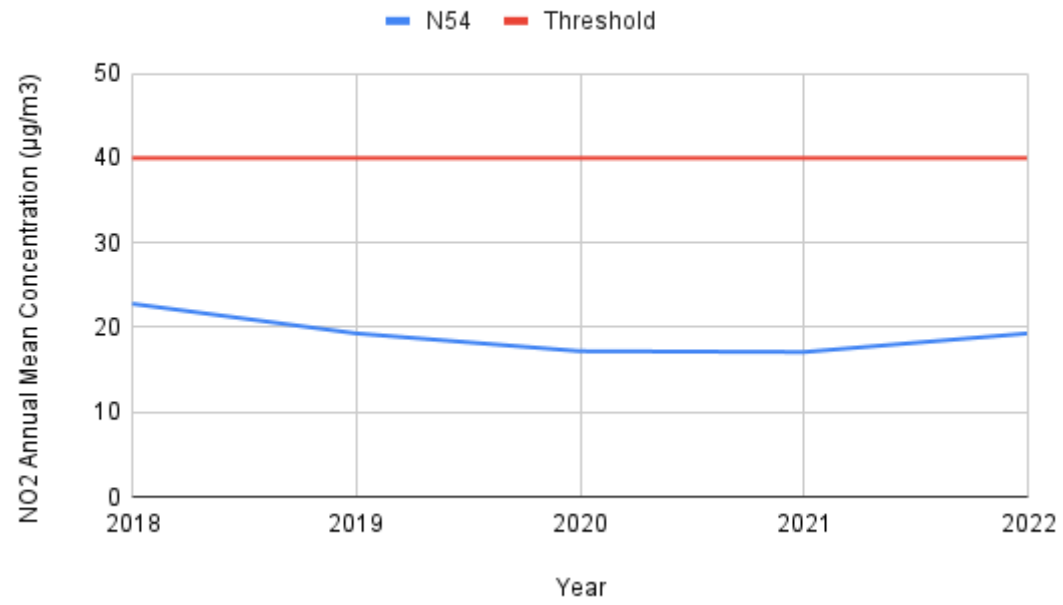
N29 - Downlands Parade (AQMA)



N1C - The Steyne



N54 - The Aquarena



N57 - Lyndhurst Road

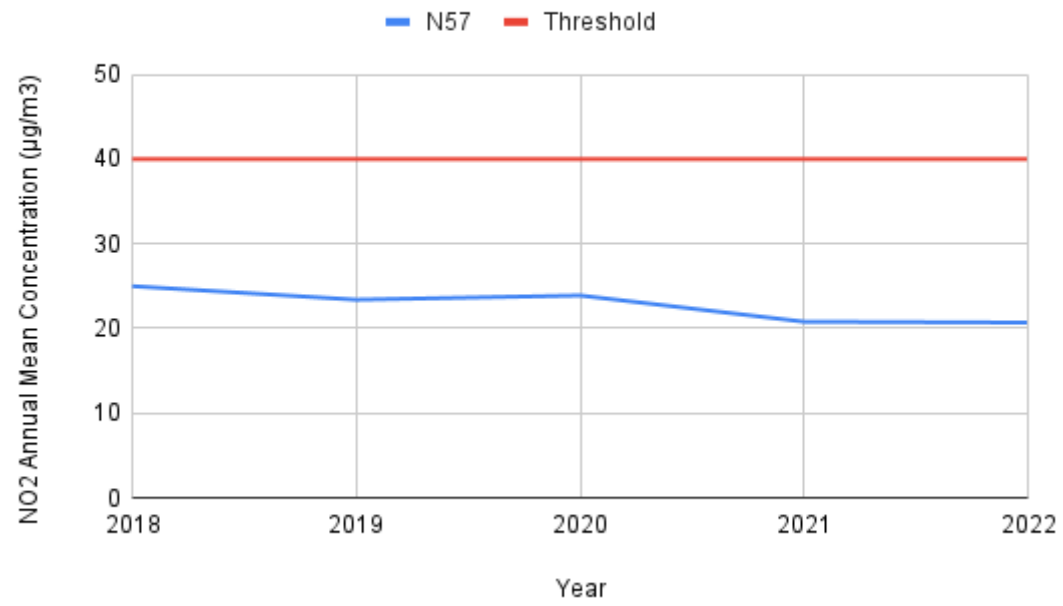


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site 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
AD1	521399	105039	Kerbside	93	93	0	0	0	0	0
WT2	514184	104963	Roadside	95	95	0	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.6 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site 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
AD1	521399	105039	Kerbside	87	87	n/a	n/a	n/a	16.2	11.6
WT2	514184	104963	Roadside	93	93	10.6	9.9	8.0	8.7	8.8

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22

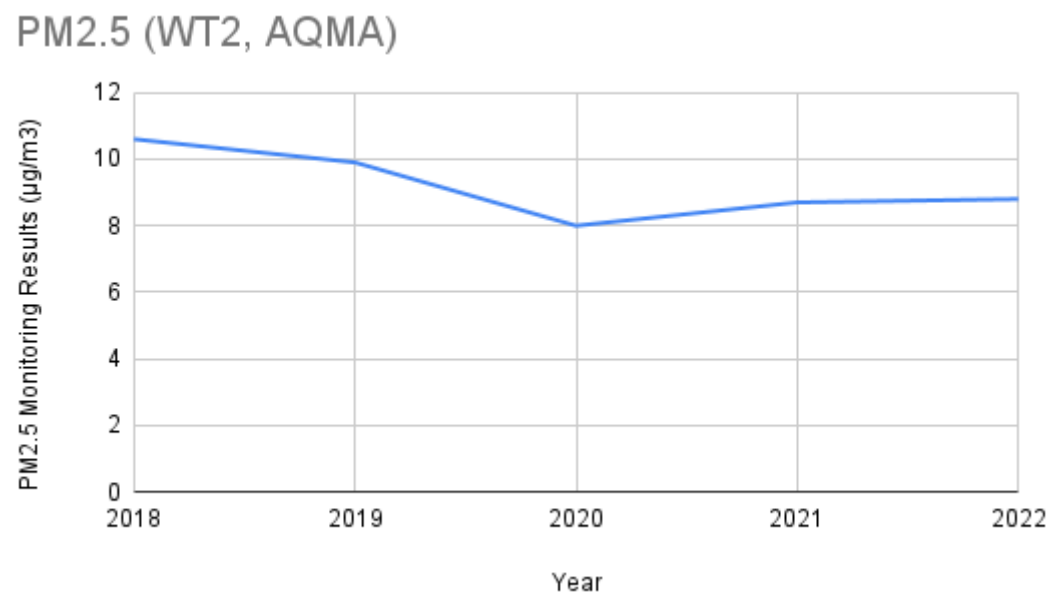
Notes:

The annual mean concentrations are presented as µg/m³.

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.

(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.2 – Trends in Annual Mean PM_{2.5} Concentrations - Worthing

No trend chart is included for Adur as less than 2 years data available

Appendix B: Full Monthly Diffusion Tube Results for 2022

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
ADUR																		
S2	525330	105085	26.4	25.9	32.9		23.3	19.1	22.8	19.3	20.3	23.3	22.8	29.2	24.1	19.8		
S3	525562	105313	24.7	19.6	21.3	15.3	15.7	14.4	12.5	14.1	13.9	17.2	16.8	23.5	17.4	14.3		
S7	524139	106321	21.8	14.6	17.5	13.7	11.8	10.2	10.5	10.2	12.4	13.3	15.6	19.8	14.3	11.7		
S8	524018	106070	38.7	28.0	35.7	25.5	26.3	22.0	22.6	22.1	25.7	28.0	30.1	35.7	28.3	23.2		
S9	523784	106081	35.0	30.7	37.8	28.5	27.7	27.5	28.3	30.2	32.3	28.2	29.5	35.8	31.0	25.4		
S10	523343	106111	36.6	19.0	31.3	26.8	19.5	18.3	21.0	21.5	26.0	19.1	23.2	34.3	24.7	20.3		
S11	518820	105584	48.1	28.3	35.2	32.6	28.8	27.7	27.8	29.9	34.6	26.1	30.0	30.8	31.7	26.0		
S12	517731	105505	40.7	25.9	28.4	28.0	23.9	19.9	23.9	27.0	27.0	21.5	25.6	32.9	27.1	22.2		
S13	517291	105550	33.2	35.1	38.3	28.7	38.7	37.0	38.3	37.9	29.6	35.7	34.3	32.5	34.9	28.7		
S14	516057	105190	28.3	13.0	27.2	21.1	24.8	22.5	23.3	19.6	15.1	21.0	25.6	28.5	22.5	18.4		
S17	521400	105040	36.5	26.6	30.7	25.8	29.9	26.2	27.7	29.4	25.3	27.0	28.2	34.4	29.0	23.7		
S18	521400	105040	36.4	31.7	33.1	27.6	30.9	30.2	27.6	28.9	25.6	28.0	26.5	30.7	29.8	24.4		
S19	521400	105040	35.6	32.2	32.6	28.5	29.4	27.8	26.8	28.9	27.3	27.2	28.2	32.7	29.8	24.4		
S25	519117	105710	43.6	30.2	33.0	29.0	28.5	30.7	29.8	30.4	33.0	29.0	27.4	31.1	31.3	25.7		
S26	516536	104783	21.0	19.3	14.0	13.5	11.6	10.5	10.3	10.5	11.4	12.2	16.8	24.0	14.6	12.0		
S36	521282	105254	32.9	18.7	28.6	20.8	17.1	19.2	22.2	24.1	22.6	17.5	20.7	27.1	22.6	18.6		
S37	522103	105126	36.7	29.0	34.6	26.9	29.3	30.1	28.8	32.4	27.0	29.2	28.8	31.0	30.3	24.9		
S39	523329	104960	35.9	17.5	29.6	22.0	18.2	16.3	18.4	16.7	21.8	16.9	22.1	30.1	22.1	18.1		
S43	521733	105251	32.4	17.8	24.4	20.4	18.0	16.1	17.9	18.5	19.1	19.0	19.9	27.3	20.9	17.1		
S44	518494	105464	45.8	40.3	43.4	33.5	40.4	41.7	39.4	47.0	37.9	41.5	35.7	45.2	41.0	33.6		
S45	522300	105258	30.0	16.5	25.8	19.8	15.4	15.2	16.8	18.5	19.7	18.0	18.3	26.8	20.1	16.4		
S46	521363	105082	30.1	22.6	22.5	19.7	23.0	20.6	20.5	19.8	23.0	22.7	24.1	26.2	22.9	18.8		
S47	521375	105101	27.8	20.2	22.6	18.3	18.5	17.8	17.7	20.0	20.3	20.0	18.1	26.7	20.7	16.9		
S48	518590	105463	44.4	41.2	41.1	35.2	32.8	31.9	32.3	36.5	40.3	31.9	35.1	35.9	36.5	30.0		
S50	521478	105002	38.2	28.9	30.3	24.6	27.9	24.1	24.7	24.8	25.4	24.2	28.5	32.9	27.9	22.8		

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 (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S51	520042	106054	28.8	30.6	32.3	24.7	35.5	32.0	31.5	29.6	25.7	30.5	30.9	27.8	30.0	24.6		
S52	518560	105460	52.8	36.0	43.8	45.0	41.0	37.9	37.3	47.5	47.0	42.2	44.4	47.6	43.5	35.7		
WORTHING																		
4N	513609	102556	22.5	13.4	19.1	12.7	10.4	9.0		10.4	10.1	9.8	12.9	18.9	13.6	11.1		
5N	512701	105562	21.8	13.5	17.5	14.4	11.1	10.2	11.2	12.3	12.8	12.3	16.3	23.6	14.8	12.1		
N1C	515114	102670	34.5	22.8	36.7	27.5	25.2	23.9	29.9	33.4		23.5	24.4	33.7	28.7	23.5		
N5	514495	105020	33.7	28.1	24.4	23.9	27.1	24.3	26.2	23.7	26.0	23.1	27.3	26.6	26.2	21.5		
N8	513236	104651	34.1	26.8	34.9	30.0	26.3	24.1	31.8	26.5	24.5	27.3	29.6	29.9	28.8	23.6		
N11	515812	103309	22.6	15.0	18.1	13.0	11.2	10.0	11.0	10.7	13.6	12.4	14.2	20.8	14.4	11.8		
N21	510611	105595	16.8	10.6	13.5	11.1	9.0	7.2	9.2	9.9		9.9	11.3	14.6	11.2	9.2		
N22	511010	102226	19.6	10.2	16.6	12.5	9.9	8.7	10.3	9.8	11.3	9.9	15.1	20.4	12.9	10.5		
N24	515151	105109	49.8	31.4	39.1	38.5	32.6	27.3	30.6	33.4	36.9	31.5	37.3	39.1	35.6	29.2		
N25	513845	105191	26.2	19.1	21.8	16.5	16.0	14.1	15.7	15.8	17.1		20.5	23.3	18.7	15.4		
N28	514740	103173	31.6	15.6	27.3	21.8	17.0	15.9	18.9	21.8	23.8	17.9	19.8	26.0	21.5	17.6		
N29	515014	105099	35.3	27.2	37.7	30.4	26.1	28.0	33.0	36.1	31.2	32.1	31.2	32.7	31.7	26.0		
N30A	514183	104948	58.3	50.7	60.3	53.3	53.7			61.2	52.2	51.6	54.1	49.8	54.5	44.7	44.0	
N31	514317	103329	32.9	23.6	28.2	20.2	23.8	20.6	23.4	22.1	22.8	22.0	28.5	33.4	25.1	20.6		
N39	514088	104906	37.6	24.9	40.4	31.9	25.5	24.4	27.9	31.6	32.9	23.6	25.1	31.8	29.8	24.4		
N42	514742	103234	29.5	19.4	33.5	24.5	19.5	20.1	23.7	24.7	22.1	21.0	23.3	24.0	23.8	19.5		
N43	514199	104982	28.7	21.7	20.7	17.3	18.8	16.5	18.2	17.6	18.3	19.5	22.3	23.4	20.2	16.6		
N44A	514184	104963	41.6	29.3	30.4	33.4	32.3	32.8	30.3	34.1	36.0	34.1	32.5	32.2	-	-		Triplicate Site with N44A, N44B and N44C - Annual data provided for N44C only
N44B	514184	104963		35.1	29.9	32.6	27.7	31.5	34.1	34.0	36.0	33.0	33.3	35.9	-	-		Triplicate Site with N44A, N44B and N44C - Annual data provided for N44C only
N44C	514184	104963	38.2	34.5	36.7	35.0	32.5	32.7	36.1	36.1	34.8	33.2	34.4	32.6	33.9	27.8		Triplicate Site with N44A, N44B and N44C - Annual data provided for N44C only
N48	512063	103385	34.7	23.6	31.6	23.5	22.4	19.7	25.2	27.2	24.5		37.4	29.8	27.2	22.3		
N52	514973	103335	37.5	27.6	21.7	17.9	16.6	16.3	15.6	17.4	20.2	18.0	22.8		21.0	17.3		
N53	513278	105623	33.9	34.8	33.5	25.6	30.7	29.1	34.4	14.5	27.9	32.2	28.8	31.5	29.7	24.4		
N54	515595	102725	30.4	20.0	31.0	22.6	21.6	21.5	22.8	22.8	21.4	21.9	23.1	23.9	23.6	19.3		
N57	515114	102975	33.7	23.9	26.9	25.2	22.3	20.2	20.2	24.5	25.6	22.6	25.1	32.5	25.2	20.7		
N64	514946	102541	33.4	22.6	30.3	29.4	22.6	22.4	26.2	28.6	25.4	24.1	21.6		26.0	21.4		

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 (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
N65	514543	103220	40.7	27.6	33.1	27.4	24.1	23.7	25.4	36.9	27.5	26.0	27.6	31.4	29.3	24.0		
N66	515067	105082	40.0	27.1	30.8	11.9	27.1	15.6	21.8	29.0	29.1	25.4	30.7		26.2	21.5		
N71	514548	103843	23.8	14.0	20.5	13.1	11.1	9.6	11.9	12.7	13.7	12.4	15.0		14.3	11.8		
N72	514558	102416	19.8	14.3						13.5	12.8	12.3	14.8	22.0	15.6	12.3		

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- Adur & Worthing confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 Adur & Worthing During 2022

Adur District and Worthing Borough Councils have not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Adur & Worthing During 2022

Adur District Council commissioned specialist consultants Bureau Veritas to help develop a new air quality Action Plan for Adur towards the end of 2021. Work on the draft progressed through 2022 and the new plan will be published in 2023.

Worthing Borough Council commissioned Bureau Veritas consultants to help develop a revised air quality Action Plan for Worthing towards the end of 2022. This work will progress in 2023.

QA/QC of Diffusion Tube Monitoring

NO₂ diffusion tubes are provided and analysed by Gradko laboratory. The NO₂ tube preparation method used is 50% triethanolamine (TEA) in Acetone.

In order to ensure NO₂ concentrations are of a high quality, strict performance criteria need to be met through the execution of QA and QC procedures. A number of factors have been identified as influencing the performance of NO₂ diffusion tubes including the laboratory preparing and analysing the tubes, and the tube preparation method (AEA, 2008). QA and QC procedures ensure that uncertainties in the data are minimised and allow the best estimate of true concentrations to be determined. Gradko participate in several national quality schemes such as Air PT, LEAP and Field Intercomparison, giving confidence in analysis results. Since April 2014, Gradko has taken part in AIR PT, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, ensuring NO₂ concentrations reported are of a high calibre.

Gradko participate in the AIR NO₂ Proficiency Testing (PT) Scheme. The AIR PT scheme uses diffusion tubes laboratory spiked with a Nitrite solution to test each participating laboratory's analytical performance on a quarterly basis. Defra advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme. Gradko's performance in the first half of 2022 was 100%.

All monitoring was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar.

Data from the NO₂ diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location data-base available from Defra,


<http://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

Schedule of Accreditation

issued by


United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 <p>2187</p> <p>Accredited to ISO/IEC 17025:2017</p>	Gradko International Ltd (Trading as Gradko Environmental)	
	Issue No: 024 Issue date: 15 April 2020	
	St Martins House 77 Wales Street Winchester Hampshire SO23 0RH	Contact: Mr A Poole Tel: +44 (0)1962 860331 Fax: +44 (0)1962 841339 E-Mail: diffusion@gradko.co.uk Website: www.gradko.co.uk
Testing performed at the above address only		

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors	<u>Chemical Tests</u>	Documented In-House Methods
	Ammonia as ammonium (NH ₄ ⁺)	GLM 8 by Ion Chromatography
	Benzene Toluene Ethyl benzene Xylene	GLM 4 by Thermal Desorption/ FID Gas Chromatography
	Hydrogen chloride as chloride (Cl ⁻) Nitrogen dioxide as nitrite (NO ₂ ⁻) Sulphur dioxide as sulphate (SO ₄ ²⁻) Hydrogen fluoride as fluoride (F ⁻)	GLM 3 by Ion Chromatography
	Hydrogen sulphide	GLM 5 by Colorimetric determination (UV Spectrophotometry)
	Ozone as nitrate (NO ₃ ⁻)	GLM 2 by Ion Chromatography
	Nitrogen Dioxide as nitrite (NO ₂ ⁻)	GLM 7 by Colorimetric determination (UV Spectrophotometry)
	Sulphur dioxide as sulphate (SO ₄ ²⁻)	GLM 1 by Ion Chromatography
	Formaldehyde as formaldehyde-DNPH	GLM 18 by HPLC
	Volatile Organic Compounds including: Benzene Toluene Ethylbenzene p-Xylene o-Xylene	GLM 13 by Thermal Desorption GC-Mass Spectrometry

 <p>2187</p> <p>Accredited to ISO/IEC 17025:2017</p>	<p>Schedule of Accreditation issued by United Kingdom Accreditation Service 2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK</p>	
	<p>Gradko International Ltd (Trading as Gradko Environmental) Issue No: 024 Issue date: 15 April 2020</p>	
Testing performed at main address only		
Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors (cont'd)	<p><u>Chemical Tests</u> (cont'd)</p> <p>Qualitative Analysis and Estimation of Volatile Organic Compounds on diffusion (sorbent) tubes and monitors</p> <p>Naphthalene</p> <p>Tetrachloroethylene Trichloroethylene</p> <p>trans-1,2-Dichloroethene cis-1,2-Dichloroethene</p> <p>Indane Styrene</p> <p>1,2,3-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene</p> <p>1,3-Butadiene</p> <p>Carbon Disulphide</p> <p>Vinyl Chloride</p> <p>Flexible scope for quantitative analysis of Volatile Organic Compounds on diffusion (sorbent) tubes and monitors in accordance with methods developed and validated by in-house procedure LWI 47</p>	<p>GLM 13 by Thermal Desorption GC-Mass Spectrometry with estimations in accordance with ISO standard 16000-6</p> <p>GLM 13-1 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-2 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-3 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-4 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-5 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-6 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-7 by Thermal Desorption GC-Mass Spectrometry</p> <p>GLM 13-8 by Thermal Desorption GC-Mass Spectrometry</p> <p>LWI 47 by Thermal Desorption GC-Mass Spectrometry</p>
END		

Certificate of Accreditation



Gradko International Ltd (Trading as Gradko Environmental)

Testing Laboratory No. 2187

**Is accredited in accordance with International Standard ISO/IEC 17025:2017
- General Requirements for the competence of testing and calibration
laboratories.**

This accreditation demonstrates technical competence for a defined scope specified in the schedule to this certificate, and the operation of a management system (refer joint ISO-ILAC-IAF Communiqué dated April 2017). The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued.

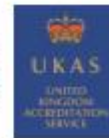
The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from www.ukas.com.

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements.

A handwritten signature in black ink, appearing to read 'Matt Gantley', is written over a horizontal line.

Matt Gantley, *Chief Executive Officer*
United Kingdom Accreditation Service

Initial Accreditation: 31 January 2001
Certificate Issued: 15 April 2020



Scan QR Code to
verify

UKAS is appointed as the sole national accreditation body for the UK by The Accreditation Regulations 2009 (SI No 3155/2009) and operates under a Memorandum of Understanding (MoU) with the Department for Business, Energy and Industrial Strategy (BEIS).

Diffusion Tube Annualisation

All but one diffusion tube monitoring location within Adur & Worthing recorded data capture of less than 75%, Worthing site N72. Annualisation was therefore carried out for this site, the details are contained in Table C.1 below.

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Site WT2	Annualisation Factor Site AD1	Annualisation Factor Site 3	Annualisation Factor Site 4	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
N72	0.9555	0.9681			0.9618	15.6	15.0

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.

Adur & Worthing have applied a national bias adjustment factor of **0.82** to the 2022 monitoring data. A summary of bias adjustment factors used by Adur & Worthing over the past five years is presented in Table C.2.

A screenshot of the National Bias Adjustment Factor Spreadsheet has also been added for information.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.82
2021	National	06/22	0.82

2020	National	09/21	0.84
2019	National	03/20	0.87
2018	National	03/19	0.92

National Diffusion Tube Bias Adjustment Factor Spreadsheet			Spreadsheet Version Number: 03/23							
Follow the steps below in the correct order to show the results of relevant co-location studies					This spreadsheet will be updated at the end of June 2023					
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods					Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet					
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.					LAQM Helpdesk Website					
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.			Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.							
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953							
Analysed By ¹	Method <small>To undo your selection, choose (All) from the pop-up list.</small>	Year <small>To undo your selection, choose (All)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁵	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in Acetone	2022	KS	Adur District Council	10	30	21	42.9%	G	0.70
Gradko	50% TEA in Acetone	2022	UC	Falkirk Council	12	32	26	22.7%	G	0.81
Gradko	50% TEA in Acetone	2022	UB	Falkirk Council	9	15	13	16.4%	G	0.86
Gradko	50% TEA in Acetone	2022	R	Lb Newham	12	30	23	29.1%	G	0.77
Gradko	50% TEA in acetone	2022	SU	Redcar & Cleveland Borough Council	12	14	10	44.9%	G	0.69
Gradko	50% TEA in Acetone	2022	R	Worthing Borough Council	9	33	23	44.2%	G	0.69
Gradko	50% TEA in Acetone	2022	KS	Marplebone Road Intercomparison	12	52	42	23.0%	G	0.81
Gradko	50% TEA in acetone	2022	R	City Of London	11	60	54	11.6%	G	0.90
Gradko	50% TEA in acetone	2022	UB	City Of London	12	28	23	23.7%	G	0.81
Gradko	50% TEA in Acetone	2022	KS	London Borough Of Croydon	12	41	37	11.1%	G	0.90
Gradko	50% TEA in Acetone	2022	R	Royal Borough Of Windsor And Maidenhead	12	30	26	13.9%	G	0.88
Gradko	50% TEA in Acetone	2022	R	Royal Borough Of Windsor And Maidenhead	12	27	27	-1.0%	G	1.01
Gradko	50% TEA in Acetone	2022	R	Sandwell Mbc	12	34	27	27.1%	G	0.79
Gradko	50% TEA in Acetone	2022	UB	Sandwell Mbc	12	21	19	11.9%	G	0.89
				Overall Factor³ (14 studies)				Use		0.92

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

Table C.3 – NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

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
N30A	2.2	2.4	44.7	11.5	44.0	Predicted concentration at

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
						<i>Receptor <u>above</u> AQS objective.</i>

QA/QC of Automatic Monitoring

Adur: The automatic continuous monitoring site in Shoreham High Street (site AD1) is part of the Sussex-air monitoring network (www.sussex-air.net/). The site is serviced every six months and Local Site Operator (LSO) routine calibrations are completed by Adur District Council every two weeks. Data ratification is carried out via the Sussex-air data management contract, which for 2022 was with Bureau Veritas.

Worthing: The automatic continuous monitoring site at Grove Lodge Worthing is part of the national Automatic Urban and Rural Network (AURN) and complies with the EU Directive on ambient air quality (2008/50/EC). The site is audited and serviced every six months and Local Site Operator (LSO) routine calibrations are completed by Worthing Borough Council every two weeks. For information on data ratification please visit https://uk-air.defra.gov.uk/assets/documents/Data_Validation_and_Ratification_Process_Apr_2017.pdf.

Data for both sites is available via www.sussex-air.net/

Worthing data is also available via the UKAir website - https://uk-air.defra.gov.uk/data/data_selector

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀ and PM_{2.5} monitors utilised within Adur District and Worthing Borough Councils do not require the application of a correction factor

Automatic Monitoring Annualisation

All automatic monitoring locations within Adur & Worthing recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.


NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.


No automatic NO₂ monitoring locations within Adur & Worthing required distance correction during 2022.

We have calculated the fall off with distance for sites of specific interest. As the annual mean concentration at all monitoring locations except N30A were less than 36µg/m³, such calculations are not strictly necessary, but included for information.


S8

		Enter data into the pink cells	
Step 1	How far from the KERB was your measurement made (in metres)?	2.3	metres
Step 2	How far from the KERB is your receptor (in metres)?	6.6	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.31544	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	23.2429	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	20.2	µg/m ³

S9

		Enter data into the pink cells	
Step 1	How far from the KERB was your measurement made (in metres)?	2.8	metres
Step 2	How far from the KERB is your receptor (in metres)?	4.4	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	12.91058	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	25.3865167	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	24.0	µg/m ³


S44



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.0	metres
Step 2	How far from the KERB is your receptor (in metres)?	6.4	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.59836	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	33.60565	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	27.6	µg/m ³


S48



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	3.3	metres
Step 2	How far from the KERB is your receptor (in metres)?	4	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.59836	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	29.9628	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	29.0	µg/m ³

N30A



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.2	metres
Step 2	How far from the KERB is your receptor (in metres)?	2.4	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.47381	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	44.71214	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	44.0	µg/m ³

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

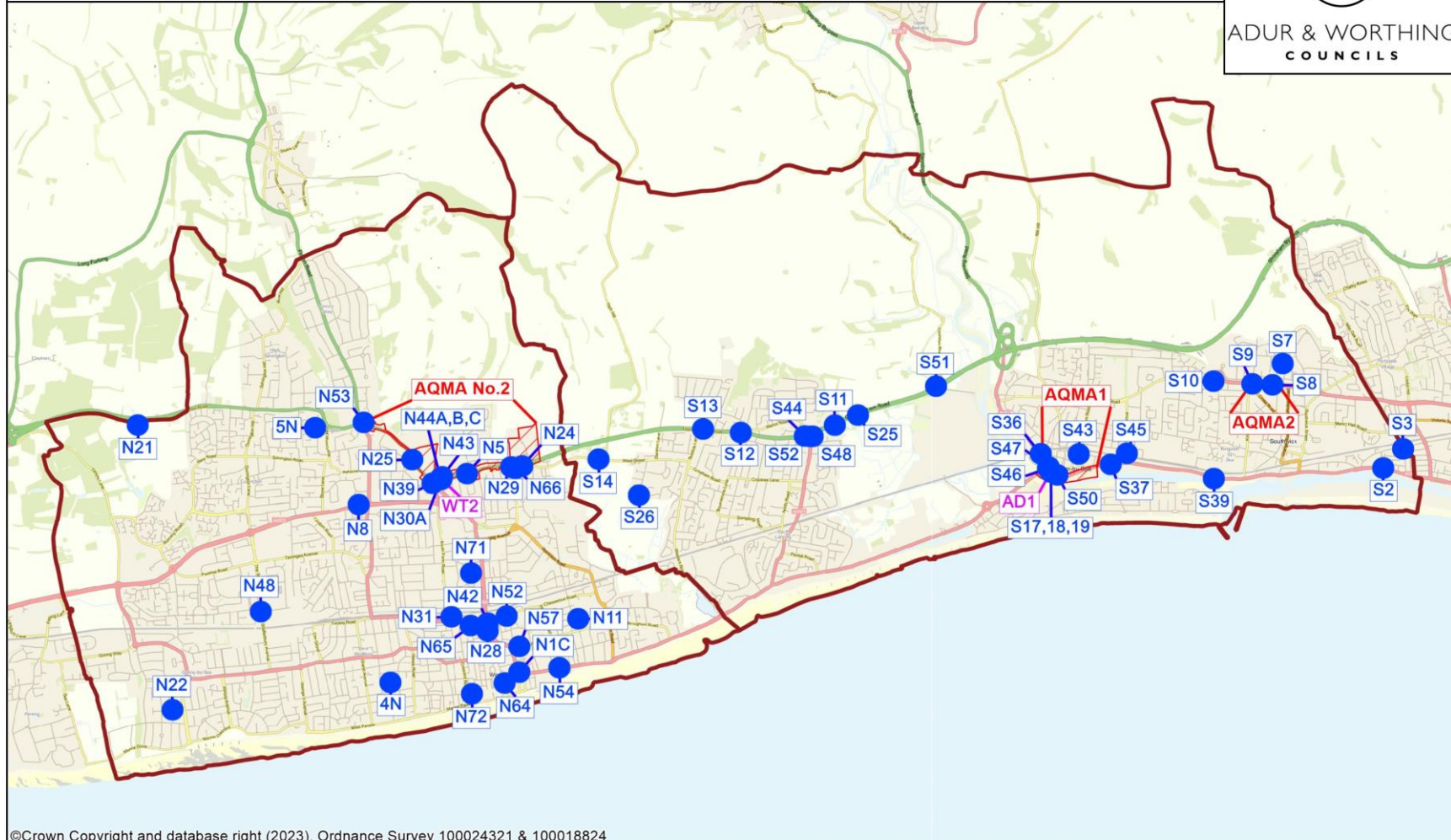
Figure D.1 – Map of Non-Automatic Monitoring Sites in Adur and Worthing

See next page

02 June 2023



ADUR & WORTHING
COUNCILS



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Figure D.2 – Map of Non-Automatic Monitoring Sites in Adur

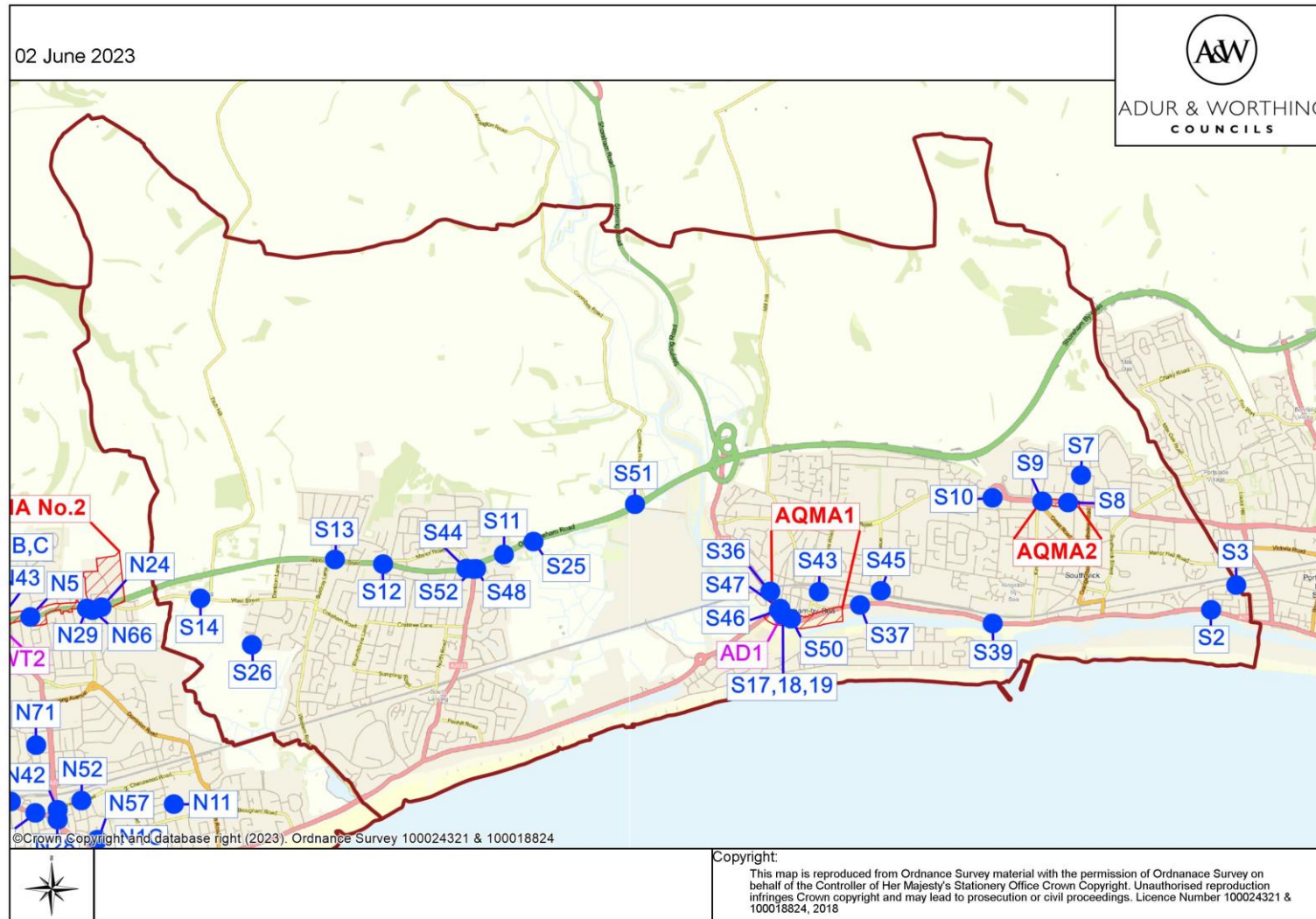


Figure D.3 – Map of Non-Automatic Monitoring Sites in Adur – Shoreham/AQMA1

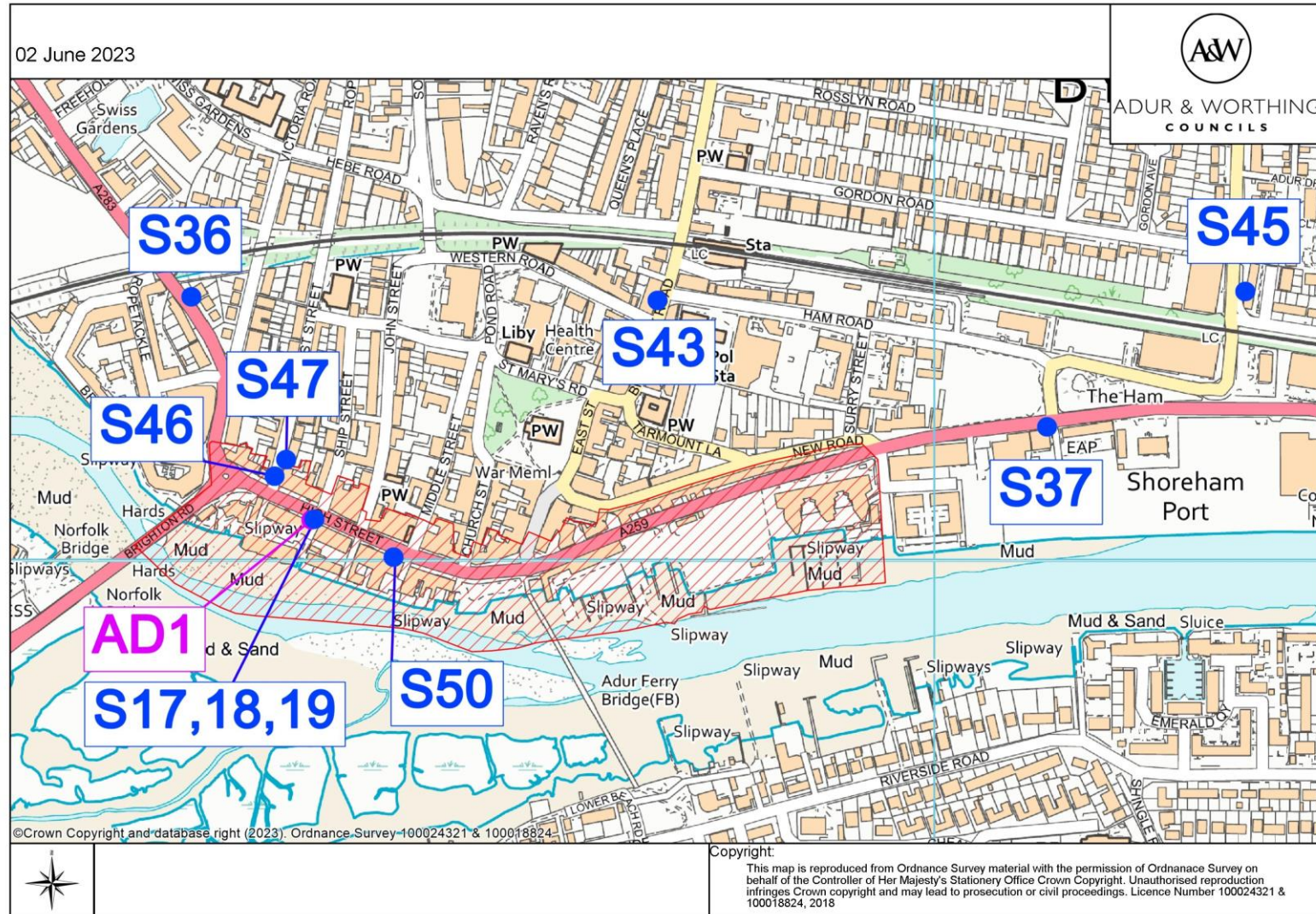


Figure D.4 – Map of Non-Automatic Monitoring Sites in Adur – Southwick/AQMA2

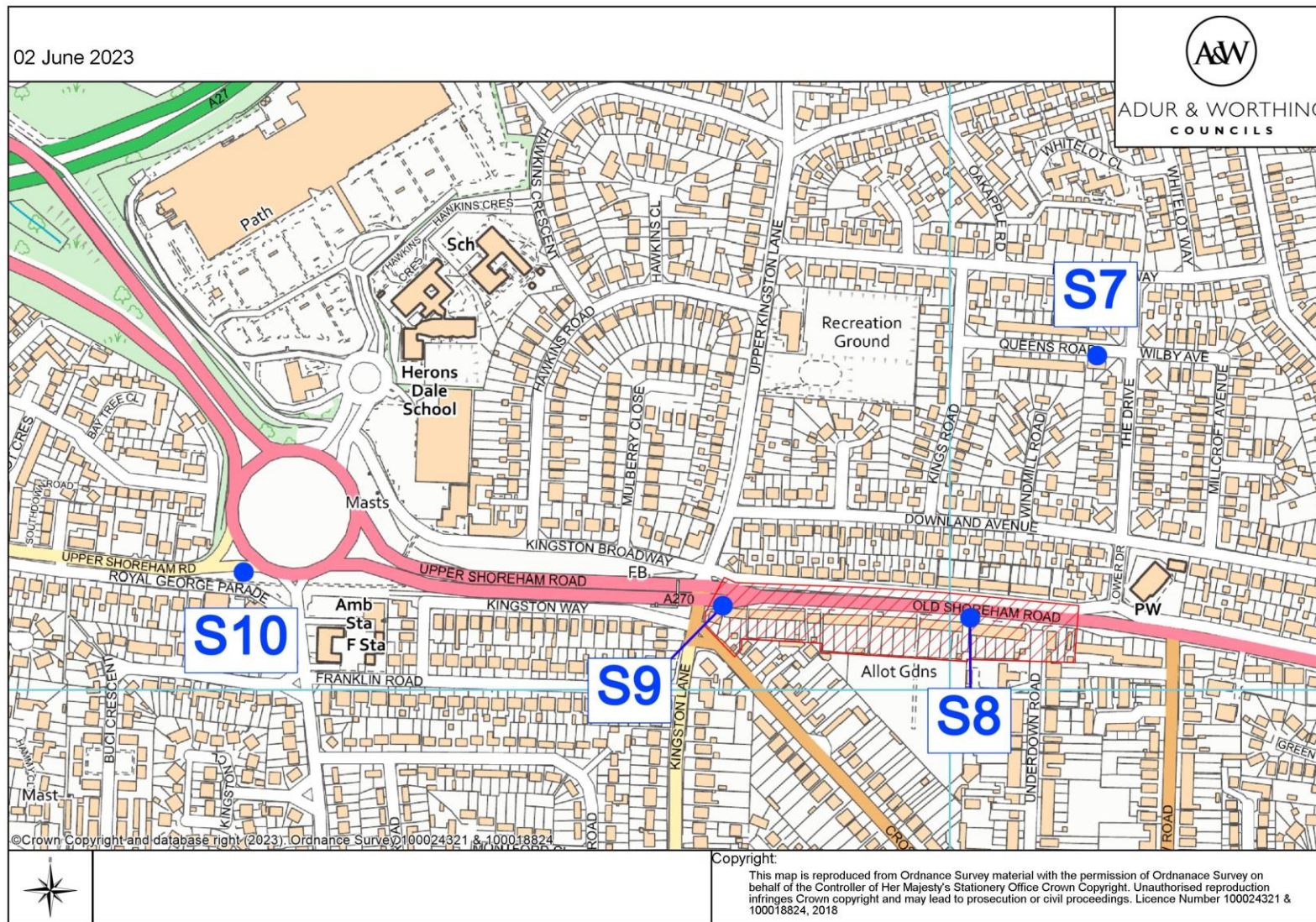


Figure D.5 – Map of Non-Automatic Monitoring Sites in Adur – Lancing

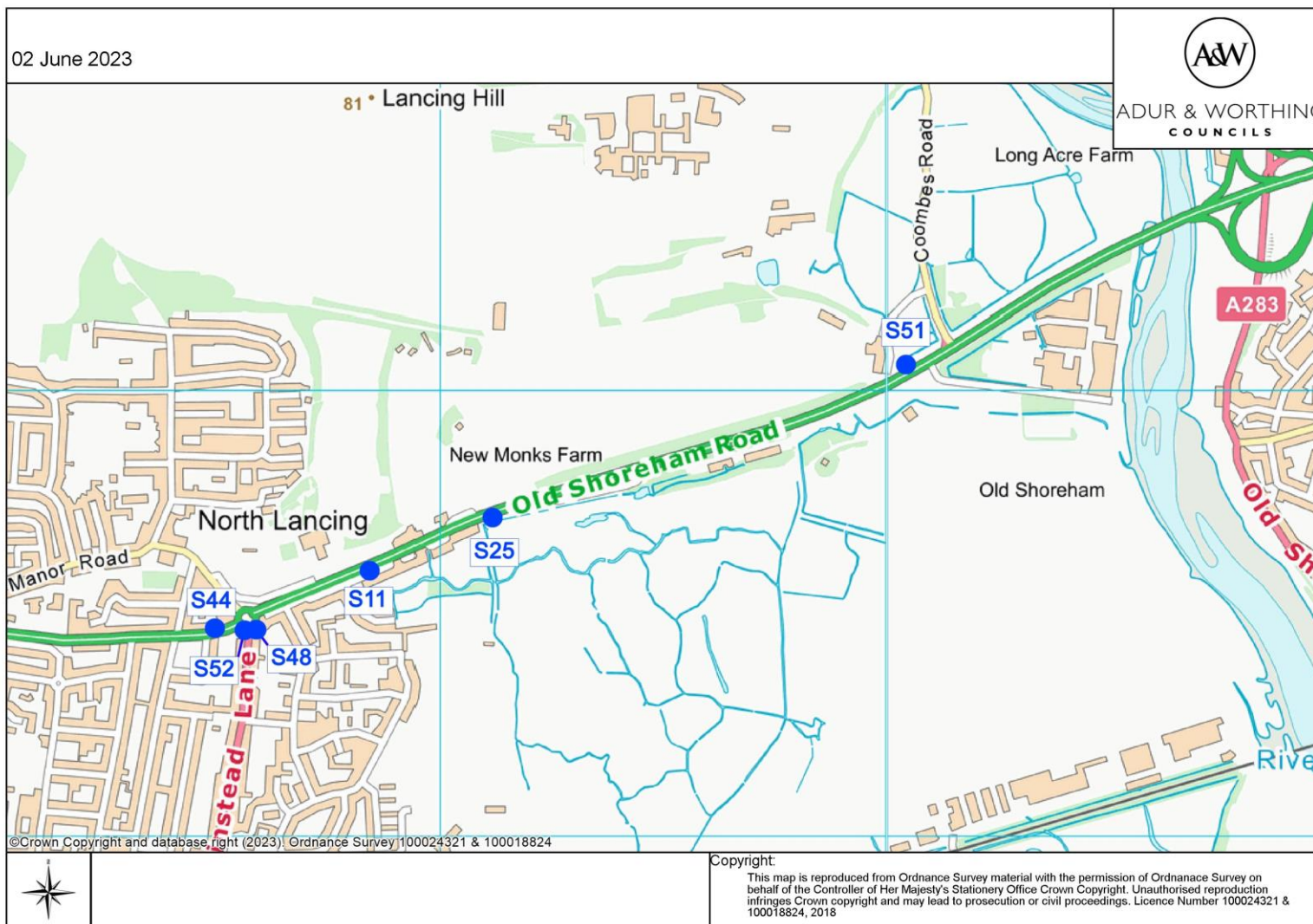


Figure D.6 – Map of Non-Automatic Monitoring Sites in Adur – Fishersgate

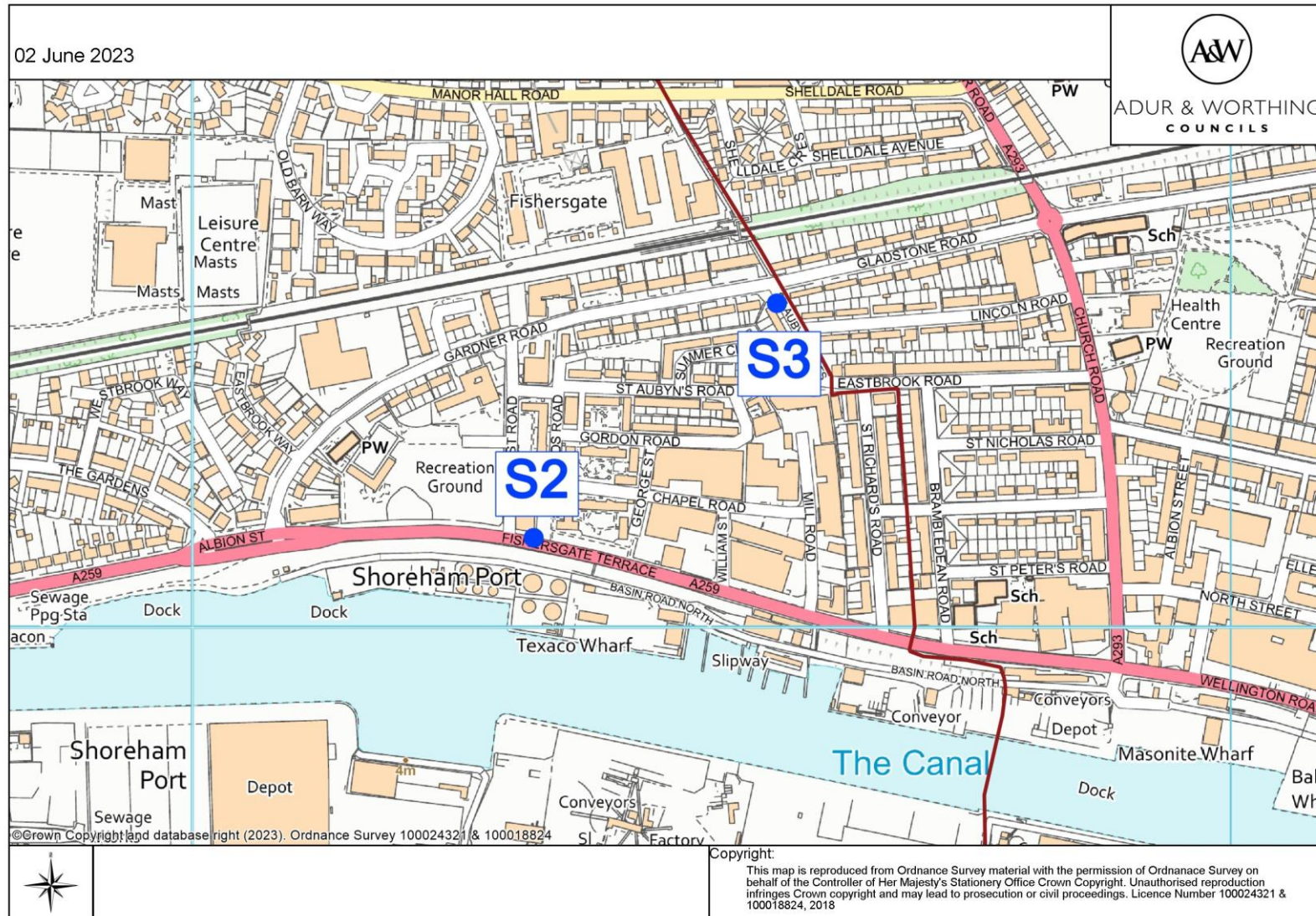


Figure D.7 – Map of Non-Automatic Monitoring Sites in Worthing

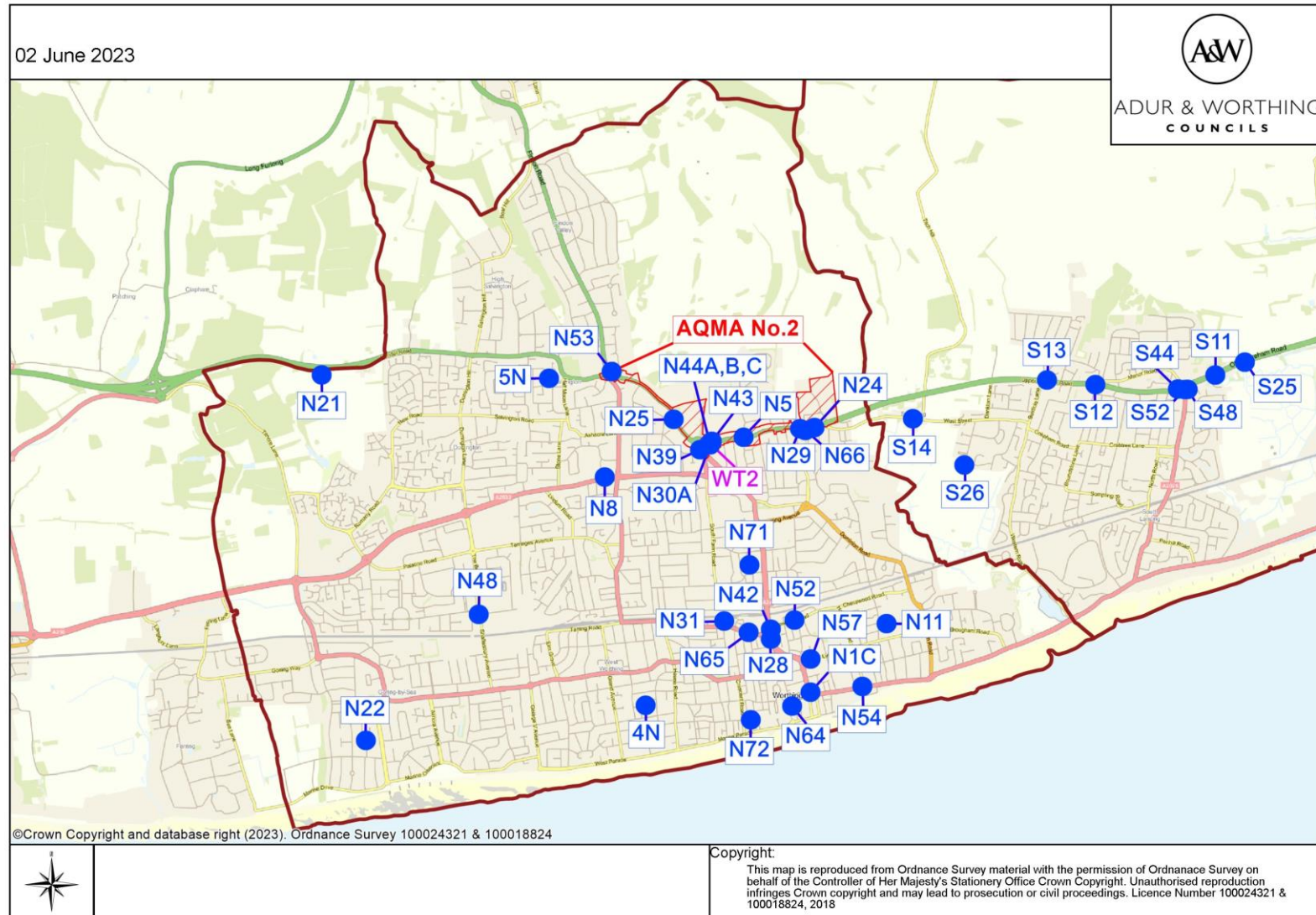


Figure D.8 – Map of Non-Automatic Monitoring Sites in Worthing – A27/AQMA No.21

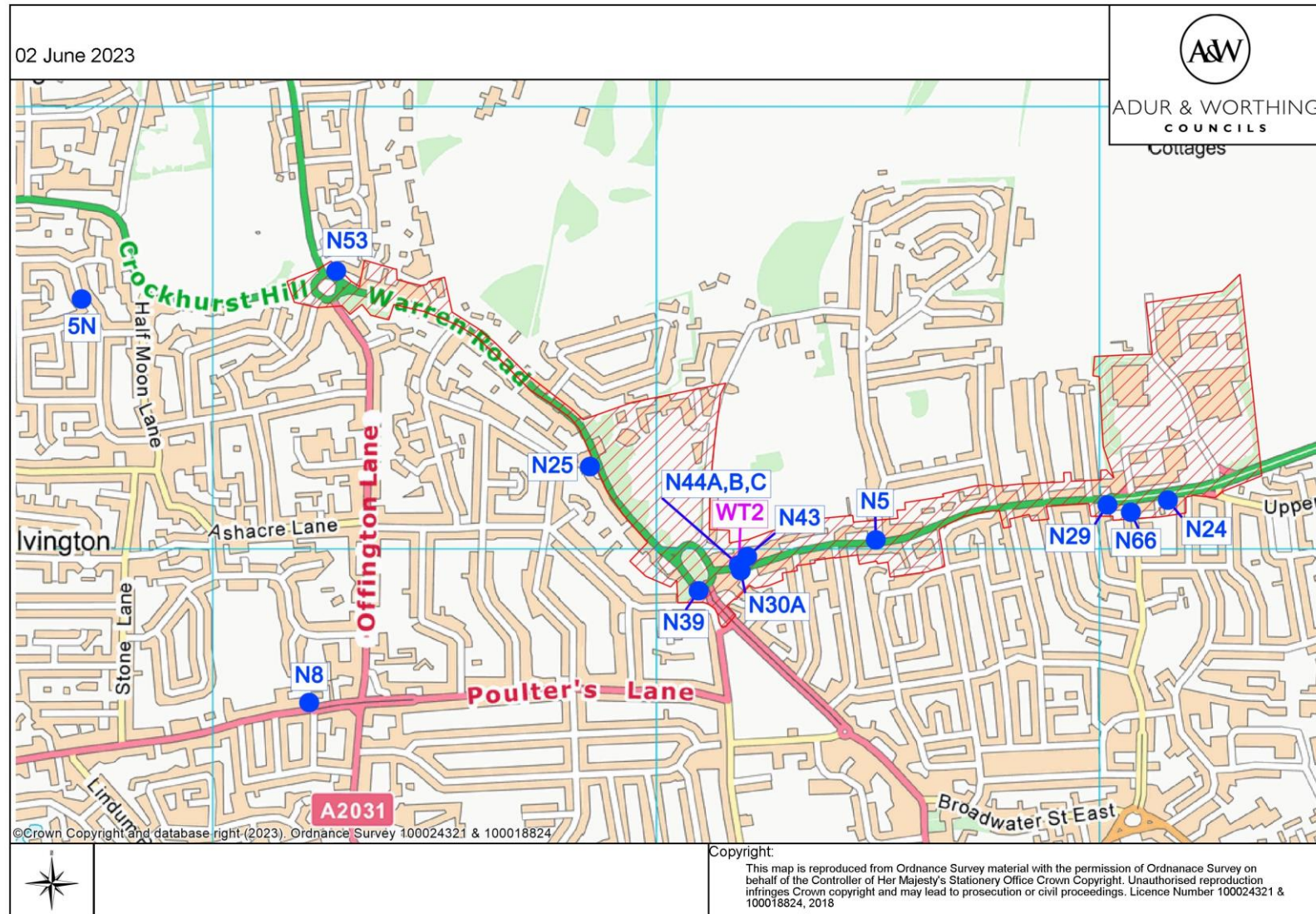


Figure D.9 – Map of Non-Automatic Monitoring Sites in Worthing Central & East

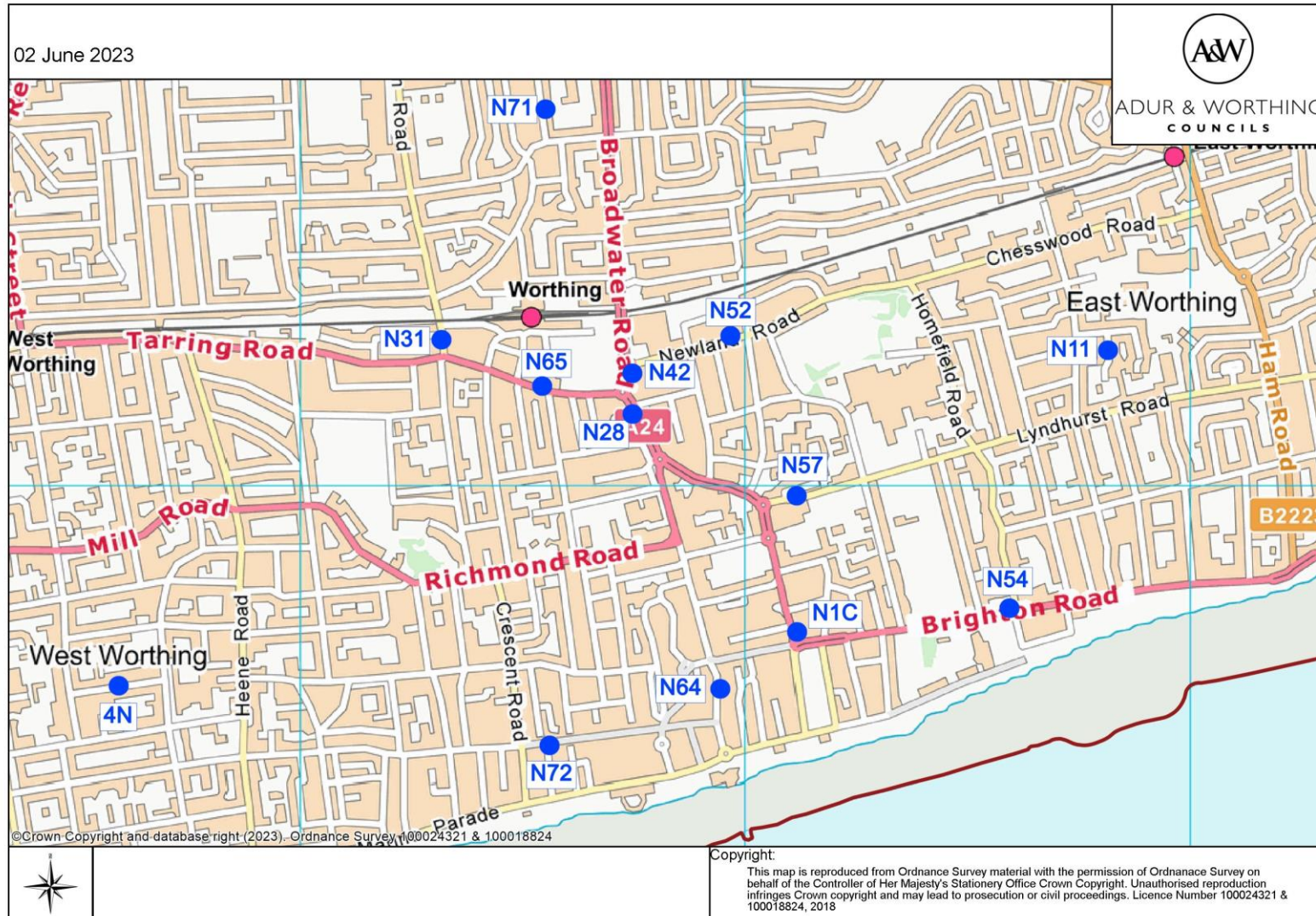


Figure D.10 – Map of Non-Automatic Monitoring Sites in Worthing – Goring

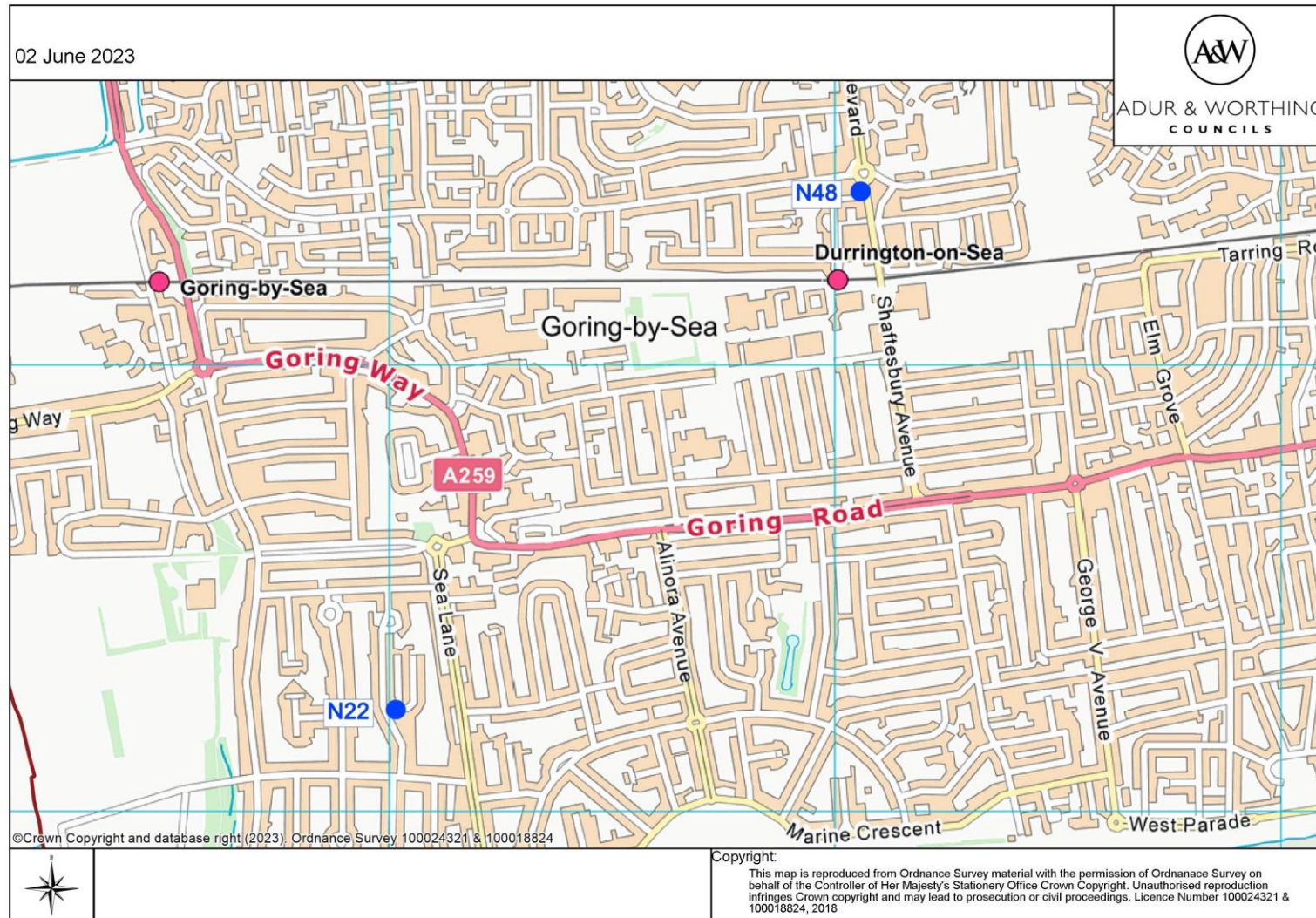
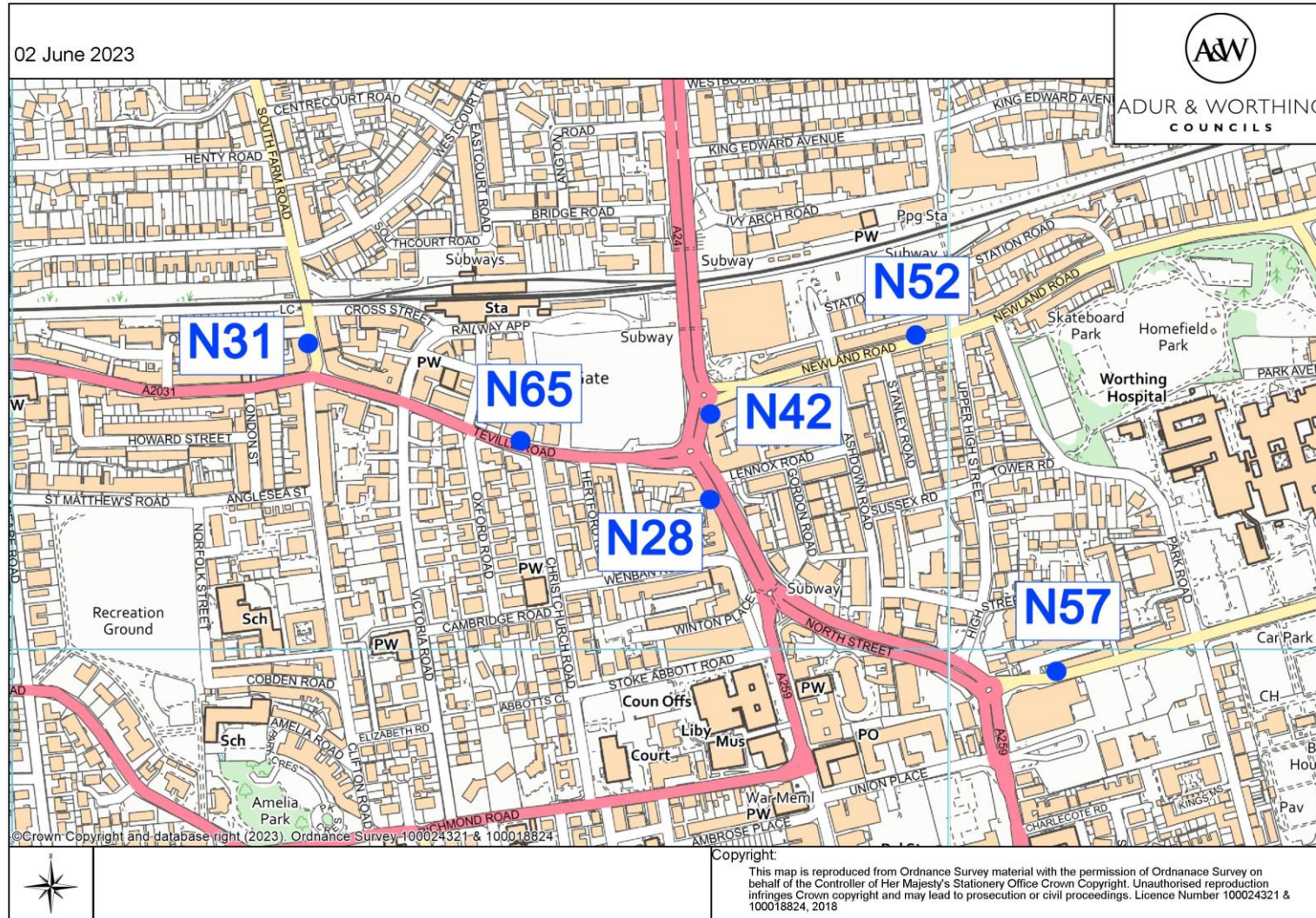


Figure D.11– Map of Non-Automatic Monitoring Sites in Worthing – A24



Appendix E: Traffic Data

Adur

- Traffic data has been obtained from West Sussex County Council (WSCC) for four locations in Adur, allowing a comparison of traffic numbers. The table below shows Annual Average Daily Traffic (AADT) data for these sites. Volumes increased close to the Southwick AQMA2. Traffic volumes at the locations around AQMA1 High Street Shoreham, although these were very small decreases. The traffic counter in Shoreham High Street (within AQMA1) was only reinstated in November 2021, so we have no previous data with which to compare.
- Traffic data from Highways England for the A27 Shoreham to Lancing shows AADT volumes increased by 4% in 2022.

Table E.1 – Adur Traffic Data 2016-22

Site no.	Location	AADT							Difference	% Difference
		2016	2017	2018	2019	2020	2021	2022	2021 22	
5035	A270 Old Shoreham Road, west of Southview Road, Southwick	23,667	23,671	23,288	23,541	N/A	21,229	22,806	+1,577	7%
257	A259 east of New Salts Farm Roundabout, Shoreham	25,915	25,415	25,194	24,730	20,991	22,266	22,242	-24	-0.1%
5037	A283 Old Shoreham Road, o/p no.138, Shoreham	13,665	13,659	13,775	12,087	10,324	11,261	11,124	-137	-1.2%

5036	A259 High Street, East of Middle St, Shoreham	No data	No data	No data	No data	No data	No data	15,120	/	/
-	A27 eastbound between A2025 (Grinstead Lane) and A283	No data	No data	23774	26768	23458	25021	26084	1063	4.2%
-	A27 westbound between A283 and A2025	No data	No data	24910	25520	22789	24057	25079	1022	4.2%

Worthing

- Traffic data from Highways England for the A27 through Worthing shows AADT volumes increased slightly by 2% and 1% in 2022. Data for 2016 - 2022 for both carriageways of the A27 near Grove Lodge is shown below. This is well below the increase seen in 2021 (due to covid lockdowns) and back to pre-covid levels.

Table E.2 – Worthing Traffic Data 2016-22

NTIS Link ID	NTIS Link Location Name	AADT 2016	AADT 2017	AADT 2018	AADT 2019	AADT 2020	AADT 2021	AADT 2022	Difference 2021 22	% Difference
103024103	A27 westbound between A2025 (Grinstead Lane Lancing) and A24 near Worthing (east)	15,334	14,511	14,994	16,354	14,350	15,819	16,161	+342	+2.2
125021201	A27 eastbound between A24 near Worthing (east) and A2025	18,454	15,849	15,527	16,642	14,622	16,539	16,714	+175	+1.1

Appendix F: Summary of Air Quality Objectives in England

Table F.2 – Air Quality Objectives in England¹⁴

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

¹⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AADT	Annual Average Daily Traffic
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
AQMS	Air Quality Monitoring Station
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.
- Air Quality and Emission Mitigation Guidance for Sussex (2021) - Available from <https://www.sussex-air.net/>