ADUR & WORTHING
COUNCILS

2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

September, 2022

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Executive Summary: Air Quality in Our Area

Air Quality in Adur and 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 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

As with 2020, it is acknowledged that prior to the lifting of national lockdowns resulting from coronavirus, traffic volumes were not considered to be normal, particularly during the early months of the year and that as a result any air quality monitoring data gathered during this time might again not represent 'normal' baseline concentrations of pollution.

We have again 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 currently remain 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 in and around both AQMAs increased slightly over 2020 levels but remain below the annual mean objectives.

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

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2021

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

Adur District Council undertook automatic (continuous) monitoring at one site in Shoreham High Street (A259) during 2021. The measured NO_2 annual mean was 19.6µg/m^3. This is well below the objective of 40µg/m^3. There were no recorded exceedances of the one hour mean objective of 200µg/m.

We also monitored levels of NO_2 using non-automatic (passive diffusion tube) monitoring using 27 diffusion tubes across the Adur District. Measured levels have steadily fallen over recent years, however this trend was reversed in 2021 with a slight increase measured in all but two tubes.

No monitoring sites exceeded the annual mean objective of 40µg/m^3 during 2021.

As with previous years, we maintain that we must keep the measured levels in AQMA1 under review before making decisions on the future of the AQMA. The large number of approved major developments remained delayed in 2021, so have yet to fully commence construction. Alongside other planned major developments for the Adur District (as detailed in section 2), we believe revocation of AQMA1 remains an unrealistic option at this time.

In our previous ASR's we advised that we would consider revoking AQMA2 as measured levels had been below the annual mean objective for a number of years. Unfortunately this did not progress in 2021. We will now review this during 2022.

Measurements of Particulate Matter PM_{10} were again below the annual mean objective of 40µg/m^3, at 24.2µg/m^3. There were two recorded exceedances of the 24 hour objective of 50µg/m^3.

We replaced PM_{10} monitoring with $PM_{2.5}$ in August 2021. Measured $PM_{2.5}$ levels were 16.2µg/m^3 , up from the estimation of 15.4µg/m^3 in 2020. These are below the permitted level of 25µg/m^3, but above the WHO guideline value of 5µg/m^3 (which is not a legal limit in England).

We commenced a draft of our new Adur Air Quality Action Plan (AQAP) in late 2021. The draft will be published for consultation later in 2022.

Worthing

There is one Air Quality Management Area (AQMA) within the Worthing Borough: Worthing AQMA No.2 on the A27/A24 in Worthing, declared for exceeding the annual mean objective for Nitrogen Dioxide (NO_2) of 40µg/m^3.

Worthing Borough Council undertook automatic (continuous) monitoring of Nitrogen Dioxide (NO_2) and Particulate Matter $PM_{2.5}$ at an AURN (Automatic Urban and Rural Network) affiliated site at Grove Lodge Worthing (A27) during 2021. Non-automatic (passive) monitoring of NO_2 also took place using 32 diffusion tubes across the Borough.

Some sites registered an increase in measured levels of NO_2 in 2021 whilst others showed a decrease.

The continuous monitoring site at Grove Lodge recorded an increase in the annual mean to 27.6µg/m^3. The hourly mean objective of 200µg/m^3 was not exceeded at any time.

One monitoring site exceeded the annual mean objective of 40µg/m^3 during 2021; N30A Grove Lodge Cottages. Other localtions showed small increases and decreases over 2020 levels.

The measured level of $PM_{2.5}$ increased slightly to 8.7µg/m^3, below the Limit Value of 25µg/m^3, but above the WHO guideline value.

Traffic levels increased in both Adur and Worthing in 2021.

Both Adur District and Worthing Borough Councils work with external partners, particularly the highway authorities (West Sussex County Council and Highways England) and West Sussex Public Health. Much of our partnership work is achieved through the Sussex Air Quality partnership (https://sussex-air.net/).

More 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, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

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

As with 2020 our ability to deliver many of the planned actions during 2021 was impacted by covid restrictions, particularly during the first half of the year. We did manage to progress a number of measures in pursuit of improved air quality. These included development of a new Staff Travel Policy which followed the sustainable travel hierarchy where staff were encourage and supported to walk or cycle and then take low carbon transport, over the default of driving; consultation with WSCC around the design for the Upper Shoreham Road cycle route and traffic calming measures on Middle Rd and Eastern Avenue; decommissioning of communal boilers to reduce gas consumption and reducing NOx emissions at Shadwells Court and Tollbridge House (both Adur); the installation of air source heat pumps at the Shoreham Centre to replace gas use; continued delivery of the Sussex-air Defra funded intervention programme into primary and secondary schools; continued use of the Sussex Air Quality Emissions Mitigation Planning Guidance and we were part of the project team producing an update to the Guidance in early 2021; and both Councils continued their work to progress an Adur & Worthing Car Club. As with previous years there was still no decision or update from Highways England following their 2017 public consultation on a “proposal to improve the A27 junctions at Worthing and Lancing.” We also commissioned consultants late in 2021 to assist with drafting the Adur Air Quality Action Plan.

Conclusions and Priorities

Measured concentrations of NO_2 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 even when predicted back to the nearest façade, exceeds the objective.

[5] Defra. Clean Air Strategy, 2019

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

Levels of PM_{10} and $PM_{2.5}$ were also measured below the current limit values.

Traffic levels started to recover following the falls seen during the pandemic. It will be interesting to see how traffic levels have changed in 2022, the first full year without coronovirus restrictions.

There remain development pressures in both Adur & Worthing. A large number of major developments have either been granted permission or are planned for both areas, particularly in and around Worthing town centre and Shoreham. The pandemic delayed construction on some of these. Balancing the demand for development with the need to improve air quality brings challenges. These developments also bring opportunities to improve infrastructure, especially for walking and cycling, and thus limit the impacts on the existing AQMA and avoid creating new hotspots.

Specific priority actions for 2021 include producing a draft Adur Air Quality Action Plan for public consultation, in partnership with West Sussex County Council and Bureau Veritas consultants; commencing a review of the Worthing Air Quality Action Plan; revisiting the future of the Southwick AQMA2; reviewing our continuous air quality monitoring capability; reviewing our $PM_{2.5}$ monitoring results and looking at how levels could be reduced locally; decarbonisation of our waste fleet; 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). 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 air 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 who may have innovative ideas to reduce traffic congestion/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 over recent years. This means we now see more smoke from chimneys, which has a negative effect on air quality. This can result in elevated particulate emissions and cause breathing problems, asthma attacks and contribute to other health conditions. Fuels such as wood and coal are permitted as long as the smoke from their combustion does not cause a statutory nuisance to neighbouring properties. However the use of inappropriate fuel 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, to reduce environmental and health impacts. By

following its advice you can help to minimise the effect of your burning: https://sussex-air.net/clean-burn/.

- Try to avoid lighting bonfires. If you must have a bonfire only burn dry material and 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 to you via text, voicemails or email, 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/.

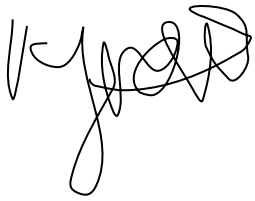
Local Responsibilities and Commitment

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 on this ASR please send them to:

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1 Local Air Quality Management

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Adur and 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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Adur and Worthing can be found in Table 2.1. The table presents a description of the three AQMA's that are currently designated within Adur and Worthing.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean

Previous ASR's have stated we would consider revoking Adur AQMA2 – Southwick. Unfortunately we have been unable to progress this in 2021, so we will review this in 2022 and act accordingly. An update will be provided in the next ASR.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance : Declaration	Level of Exceedance[7] : Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Adur District Council AQMA1	Declared 2005	NO2 Annual Mean	An area encompassing the A259 High Street, Shoreham-by-Sea between Ropetackle Roundabout and Surry Street	NO	42	19.8	Adur Air Quality Action Plan 2007	https://www.adur-worthing.gov.uk/media/Media,104971,smxx.pdf
Adur District Council AQMA2	Declared 2005	NO2 Annual Mean	An area encompassing the A270 Old Shoreham Road, Southwick between Kingston Lane and Lower Drive	NO	46	24.7	Adur Air Quality Action Plan 2007	

[7] Calculated to the nearest point of relevant exposure

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance : Declaration	Level of Exceedance[7] : Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Worthing Borough Council AQMA No.2	Declared 13/07/2010, Amended 15/12/2014	NO2 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	43.7	Worthing Air Quality Action Plan	https://www.adur-worthing.gov.uk/media/Media,138133,smxx.pdf

☒ **Adur & Worthing Councils confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Adur & Worthing Councils confirm that all current AQAPs have been submitted to Defra.**

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

Defra's appraisal of last year's ASR concluded

1. *The report is well structured, detailed, and provides the information specified in the Guidance. The report is considered an example of good practice.*
2. *The report contains extensive discussion on trends seen in monitored concentrations throughout 2020, which is commended. This level of detail is encouraged in future reports and is considered an example of good practice.*
3. *Adur Council is adopting a cautious approach in their decision to maintain their AQMAs, despite stating their intention to commence revocation of AQMA No 2 Old Shoreham Road, Southwick in their ASR for 2019. 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.*
4. *The Council are commended on their ability to maintain consistency in their air quality monitoring work during the course of the Covid-19 pandemic, which has resulted in excellent data capture for 2020.*
5. *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.*

   This is included in this year's report.
6. *Diffusion tube mapping is sufficient, with sites labelled in accordance with the IDs listed in the results tables. However, it would be beneficial if ID labels could be added to maps D.1 and D.8 (borough-wide maps depicting all monitoring sites within the Council area), to allow easier interpretation of the spatial variation in concentrations across the districts.*

   This has been rectified in this year's report.
7. *Appendix F: Impact of COVID-19 upon LAQM has been completed in detail, clearly demonstrating the Councils' understanding of the implications of the pandemic on current and future air quality within the local area. Information of traffic flow changes and trends in NO_2 concentrations is presented and discussed, in addition to a detailed description of the opportunities presented by the pandemic in improving air quality across the boroughs.*
8. *Whilst a significant decline in concentrations has been identified in Adur & Worthing during 2020, it is acknowledged by the Councils that this decline is likely attributable to reduced traffic flows as a result of national lockdowns during the COVID-19 pandemic. It is therefore*

important that monitoring data for 2020 be interpreted with caution. Moreover, NO2 concentrations recorded during 2020 should not be used in isolation to determine the success of any existing AQAP measures, nor should they solely be used as grounds for progressing amendments to existing AQMAs or justifications ceasing of interventions. This is acknowledged by Adur Council, whose decision to keep the AQMA designations in place despite achievement of the AQO is supported.

9. *It is acknowledged that the implication of the pandemic has resulted in a delay in several measures being actioned, and it is subsequently advised that the Council place focus during 2021 and beyond on measures which have stalled, to ensure these are progressed in the coming years.*
10. *Adur Council's AQAP was published in 2007 and is therefore significantly out of date. The production of a revised AQAP is currently in progress, with a view to complete this over the course of the next reporting year. This is supported. A full list of new actions is expected to be presented within the Council's ASR for 2021 (should the AQAP be under consultation at the time of submission of the Councils ASR for 2021, a list of draft actions is acceptable).*

Adur District and Worthing Borough have taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2, with the type of measure and the progress Adur and Worthing have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on the measures for Worthing can be found in the Worthing Action Plan. The Adur Action Plan is being updated. Plans are available at https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/local-air-quality-management/.

Key completed measures are:

- Commissioned specialist consultants Bureau Veritas to assist in the production of a draft Adur Air Quality Action Plan, with the aim of having a draft available for public consultation in 2022;
- Development of a new Staff Travel Policy which followed the sustainable travel hierarchy where staff were encourage and supported to walk or cycle and then take low carbon transport, over the default of driving;
- Consultation with WSCC around the design for the Upper Shoreham Road cycle

route and traffic calming measures on Middle Rd and Eastern Avenue;

- Decommissioning of communal boilers to reduce gas consumption and NOx and Carbon emissions at Shadwells Court and Tollbridge House (both Adur);
- Continued delivery of the Sussex-air Defra funded intervention programme into primary and secondary schools. A Sustrans Air Quality officer engaged with schools to investigate local air quality. Schools in Adur and Worthing who participated in 2021 were Bohunt School, Worthing, Worthing High, Chesswood Junior, Worthing and Broadwater CofE School, 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 and Thomas A Becket Infant and Junior Schools in Worthing;
- Use of the Sussex Air Quality Emissions Mitigation Planning Guidance when looking at the impacts of 'major'[8] developments. We were also part of the project team that produced an update to the Guidance in early 2021. The Guidance has assisted the Councils with obtaining costed air quality mitigation at development sites;
- Continued discussions with car club providers to introduce an Adur & Worthing Car Club. These are ongoing, but in 2021 extended into discussions with major development sites;
- Through West Sussex County Council, worked in partnership with Connected Kerb and other Districts and Boroughs across West Sussex to provide a new chargepoint network across the County. The aim is to work together to install thousands of chargepoints across the county within the next ten years, forming a new West Sussex Chargepoint Network;
- As part of a Sussex-air consortium we bid for Defra grant funding for an extension to the schools project to continue working with local schools on air quality and adding the links to climate change. We also proposed to extend the project into local community groups.
- A Defra grant bid was also made to fund an extension to PM2.5 monitoring across Sussex and purchase low cost sensors, primarily for use in Brighton & hove, but with some to be used in West Sussex;
- A Defra bid was made for a taxi engagement project in West Sussex, looking at

[8] as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015

how we could increase the uptake of EV's and associated charging;

There was no decision from National Highways following their 2017 public consultation on a "proposal to improve the A27 junctions at Worthing and Lancing." National Highways say the Worthing and Lancing project is still investigating options, albeit very localised and are hoping to consult on options in 2022.

Adur and Worthing worked to implement these measures in partnership with the following stakeholders during 2021:

- West Sussex County Council
- Sussex-air
- National Highways.

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

- *Produce a draft Adur Air Quality Action Plan for public consultation, drafted in partnership with West Sussex County Council and Bureau Veritas consultants;
- *Commence a review of the Worthing Air Quality Action Plan;
- *Revisit and decide on the future of the Southwick AQMA2;
- *Review our continuous air quality monitoring equipment to ensure monitoring capabilities are maintained;
- *Review our $PM_{2.5}$ monitoring results and look at how levels could be reduced locally;
- *Continue to work with WSCC on the Connected Kerb EV charge point project;
- Decarbonisation of our waste fleet - we have a fleet of 133 vehicles (123 of which are diesel);
- Engagement with the Sussex-air Defra funded schools and community group programme in Adur & Worthing;
- As part of the Sussex-air project team, examine a further revision of the Sussex Air Quality & Emissions Mitigation Guidance for Planning to take account of changes in local policy etc.
- Dialogue with Car Club providers, particularly in relation to new developments and those with reduced parking.

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

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.

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 shortly.
- 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. Work has commenced on site.
- 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. A development at Free Wharf (AWDM/1497/17, 548 dwellings) was granted consent in 2018 and a

development of 14 units has been developed at Humphrey's Gap on Brighton Road (AWDM/1625/16).

- 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 2200 flats, double the original projections. It is likely that around 50% of these units will not have parking spaces, adding parking issues and increasing the importance of alternatives to private car use.

The Submission Draft Worthing Local Plan was submitted for Examination in June 2021. The Hearing Sessions of the Examination were held in November 2021 following which a number of proposed Modifications were published for consultation. The Inspector's Report is expected to be published in September 2022. If the Inspector finds the Local Plan to be 'sound' then it is expected that it will be formally adopted by the Council in autumn 2022. The Local Plan (as Modified) includes the following allocations:

- 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
- 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.

- Development pressures in either District could also have an effect on traffic volumes in the other District, particularly along the A27 and within the Worthing AQMA;
- Providing sufficient resources (financial and personnel) in order to progress and deliver effective air quality measures;
- Identifying suitable sites for the provision of car club spaces alongside sufficient funding;
- Identifying suitable sites for the installation of electric vehicle charge points;
- 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 vehicle and charging facilities.

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

- Adur Air Quality Action Plan – Covid related work delayed further development of the plan in 2020 and 2021, hence why we commissioned air quality consultants Bureau Veritas to assist in the production of a draft plan.
- Resources and competing priorities delayed progress on considering AQMA2 for revocation.
-

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	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
							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	Discussions with WSCC and car club providers continued during 2021. Car club providers continued discussions with developers regarding specific development sites in Shoreham. These developments are yet to be completed.	Principle of car clubs embedded in planned new developments. Barriers are finding suitable spaces, particularly on street and cost of seed funding clubs. Also ensuring clubs are linked/preferably one provider.
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	Revised Guidance published April 2021. The guidance is signposted within the Adur 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. A&W Carbon Neutral Plan (Dec 2019) refers to HGV replacement with zero emission alternatives by 2030.	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.

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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	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. WSCC parking strategy sets increasing year on year targets for ev charge points at new developments.	
8	Bus Fleet Improvements	Alternatives to private vehicle use	Other	2010		Adur DC/WSCC	WSCC or DLEV grants	NO	Partially Funded	£1 million - £10 million	Planning	1-5%	Journey time and passenger number improvements	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.	Improvement in journey times points towards improved traffic flow. Retrofitting or fleet replacement should 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' project from 2020 that worked with a number of schools, colleges and workplaces was unable to continue through large parts of 2021 due to the Covid-19 Pandemic. WSCC bid into the 2021 Capability fund with many activities taking place during 2022 due to the allocation of funds delayed until Nov 2021, schools in Shoreham were targeted based on their engagement with strategic local transport projects in the area.	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work (see also item 12).
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.

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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 and was simplified and updated in 2021.	
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 now 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	AdurDC/ Worthing DC/ WSCC	NO	Partially Funded	< £10k	Implementation	<1%	Number of promotional events, publications, social media. Annual increase in air alert subscribers	Liaison with WSCC Public Health/Sustainability Teams who have supported the promotion of Sussex air Alert through part funding the service and supporting publicity. Sussex-air CleanBurn site promoted via website.	Attempt to reduce car journeys/increase walking and cycling, particularly through the AQMA, promotion of air Alert. (Title changed from 'Health & Wellbeing Promotion')
16	Air Quality Monitoring and availability of AQ information	Public Information	Via the Internet	2010		Adur DC	Adur DC	NO	Funded	< £10k	Completed	N/A	Reduction in levels of NO2	Councils webpages updated and simplified. Air Quality Monitoring station in Shoreham High Street - results available via 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	Development funding contributions continue to be sought for identified schemes at Norfolk Bridge junction and A259 Shoreham Adur Ferry Bridge to Brighton & Hove cycle scheme	Focus on minimising traffic congestion. Funding continues to be an issue, hence delays.
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.
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	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 District	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 being reviewed in 2021/22 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 from Adur Ferry Bridge to Brighton and Hove on the A259. Dialogue has continued with developers regarding safeguarding land for this scheme and to secure funding contributions. Planning also took place for 2 stage public consultation on the scheme being undertaken through 2022.	Focus on promoting sustainable transport and minimising car use and vehicle congestion. Estimated completion TBC

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22	Taxi Fleet Emission Improvements	Promoting Low Emission Transport	Taxi Licensing conditions	2017		Adur DC	Adur DC/DLEV 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.	Work to develop during 2019, implementation phase delayed due to pandemic. 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 to deliver signal crossing of A283 to link Downs Link with St Nicholas Lane near Upper Shoreham Road secured with expected delivery during 2022/23' Please rename column H to 'DfT Active Travel Fund' (i.e. remove Emergency ATF).	Focus on promoting sustainable transport and minimising car use and vehicle congestion.
						WORTHING									
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 NO2	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 ahead of future public consultation.'	
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 NO2	AQMA anti idling signs remain on exit road from Lyons Farm. Additional signs 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	No progress. Outcome of A27 consultation delaying further discussion	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 a current priority.

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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.
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 negotiated for new 'major' developments; 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. WSCC parking strategy sets increasing year on year targets for ev charge points at new developments.	Focus is to increase the number of eV's. Discussions continued successfully with developers as part of AQ mitigation packages
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	Discussions with WSCC and car club providers continued during 2021. Car club providers continued discussions with developers regarding specific development sites. Some of these devlopments are 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). Principle of car clubs embedded in planned new developments. Barriers are finding suitable spaces, particularly on street and cost of seed funding clubs. Also ensuring clubs are linked/prefearby one provider.

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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 also recently committed funding to develop detailed designs for Worthing Railway Approach public realm and access improvements with the scheme programmed to be delivered by 2023. 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 teh business model now. Adur & Worthing & WSCC EASIT scheme for staff and local businesses continues. Pool cars now hybrid, EV's being actively investigated.	
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. A&W Carbon Neutral Plan (Dec 2019) refers to HGV replacement with zero emission alternatives by 2030.	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 NO2/No. of hits on AQ pages	Worthing Grove Lodge AQ information available via UK Air and the Sussex-air website, link on Council's 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 Action Plans embedded within Adur & Worthing Public Health Plan.	

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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	Following award of a new data management contract for Sussex-air, Air Alert is now called '*Sussex Air Quality Alert*'. Work on this is expected in 2022.	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 NO2	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 Boroug	There already exist cycle paths segregated from pedestrians in and around Grove Lodge.
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 Submission Draft Local Plan adds weight to the requirement for travel plans.	The Submission Draft Worthing Local Plan was Submitted for Examination in June 2021. The Hearing Sessions of the Examination were held in November 2021 following which a number of proposed Modifications were published for consultation. The Inspector's Report is expected to be published in September 2022. If the Inspector finds the Local Plan to be 'sound' then it is expected that it will be formally adopted by the Council in autumn 2022.
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' project from 2020 that worked with a number of schools, colleges and workplaces was unable to continue through large parts of 2021 due to Covid-19 Pandemic, however the DEFRA funded Sussex-air schools project promoting walking and cycling to schools including those in Worthing did continue. WSCC bid into the 2021 Capability fund with many activities taking place during 2022 due to the allocation of funds delayed until Nov 2021.	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work. Subject to available funding.
18	WSCC staff travel planning	Promoting Travel Alternatives	Workplace Travel Planning	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 18 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 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 will identify the proportion of HGV's/LGV's and the weighting to be applied to HGV/LGV actions.

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23	Ecostars for Local Fleet Operators	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2016	2022	Worthing BC	Worthing BC	NO	Not Funded		Planning	Low/Medium	Increase in new euro Class vehicles	No further developments	The Ecostars scheme remains an aspiration, but is subject to identification of suitable funding streams.
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 NO2/No. of hits on AQ pages	Councils webpages updated and simplified. Link 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 Emergency Active Travel Fund/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 expected to be delivered in 2022/23	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.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

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, remained linked to the council's website.

As with 2020, the Councils have considered the declaration of Smoke Control Areas (SCA). There are considerable barriers to this, most notably associated with non-compliant stoves and fireplaces existing at the time of any declaration. Any SCA would require political and public support. We continue to keep this option under review particularly as legislation in this area is continually evolving and we will continue to regularly review our approach, especially with our pending reviews of AQAP's.

In Adur District a new filter head was installed on 19 August 2021 at monitoring site AD1. This was to allow for measurements of $PM_{2.5}$ and replaced the previous PM_{10} filter head. Measurements of PM_{10} had been consistently below the objective since monitoring began and we decided it was more appropriate to monitor $PM_{2.5}$ as this is now the main pollutant of concern nationally.

Worthing Borough Council also monitors levels of $PM_{2.5}$ through an AURN affiliated continuous monitoring station at Grove Lodge, Worthing (A27).

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 avreage 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 2021 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 2017 and 2021 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 2021. 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 both Councils, with automatic monitoring results also available through the UK-Air website for Worthing.

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 and Worthing Borough Councils undertook non- automatic (i.e. passive) monitoring of NO_2 at 59 sites during 2021 - 27 in Adur and 32 in Worthing. Table A.2 in Appendix A presents the details of the non-automatic sites.

The following sites were removed during 2021 as previous measured levels were consistently below the 40µg/m^3 threshold and/or the sites were very close to other monitoring locations.

(i) Adur

S15 Western Road, Lancing

S49 High Street Shoreham

(ii) Worthing

N18A Kinnall Court, Worthing (ceased October 2021)

The following tube sites were added during 2021:

(i) Adur

S50 High Street, Shoreham (replacing S49)

S51 Sussex Pad, Lancing (September 2021) added in response to concerns about air quality in the vicinity of a forthcoming roundabout to service a new development.

(ii) Worthing

N71 King Street

N72 New Street

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and

annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

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

A. Adur

Automatic Monitoring

The measured annual mean at the continuous monitoring site in Shoreham High Street was 19.6µg/m^3. This is almost the same as the value measured in 2020 and comfortably below the objective of 40µg/m^3. This is the third full year of data since the site was recommisioned in May 2018.

There were no recorded exceedances of the one hour mean objective of 200µg/m^3. Data capture was 90%.

Non-Automatic Monitoring

27 diffusion tubes were used during 2021, two of which were sited at new locations. Of the other 25 tubes, 22 showed an increase over 2020 levels, ranging from just 0.2 µg/m^3 (S7) to 6.2 µg/m^3 (S25). Importantly no monitoring sites exceeded the annual mean objective of 40µg/m^3 during 2021.

In and around AQMA1, Shoreham High Street:

S17/18/19 are collocated tubes alongside the continuous analyser in the High Street. These recorded an average of 24.8µg/m^3, almost identical to the level recorded in 2020, but 5µg/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. When predicted back to the nearest receptor this level drops to 19. 8µg/m^3.

Tubes in West Street Shoreham, S46 (just inside the AQMA) and S47 (just outside the AQMA), showed very slight increases of 0.4 and 0.5µg/m^3 respectively. Measured levels were well below the objective at 18.8 and 16.8µg/m^3 respectively. West Street is regularly used by vehicles trying to avoid congestion along the High Street (A259). The measured

levels will have undoubtedly have been affected by the coronavirus lockdown in the early part of 2021.

Site S36 Victoria Road Footpath Shoreham, just to the north of AQMA1 showed an increase of 1.1µg/m^3 to 19.4µg/m^3.

S37 Humphrey's Gap Shoreham showed a slight increase of 0.4µg/m^3 to 23.8µg/m^3.

Site S50 is a newly located facade mounted tube within the AQMA. It replaced site S49 near the continuous monitoring site as this tube was regularly going missing and was deemed too exposed to prevailing winds off the river, hence why it was removed. The recorded level was 22.2µg/m^3.

We are now seeing year on year reductions in measured levels of NO_2. Increased local awareness of the effects of poor air quality alongside the local carbon reduction/sustainability agenda is likely to be driving some behaviour change, albeit small, with greater local cycling, walking, eco-friendly driving, etc. alongside the national trend of a cleaner vehicle fleet.

West Sussex County Council (WSCC) reinstated the automatic traffic counter (ATC) in Shoreham High Street in November 2021. This will enable us to review traffic data through the AQMA in future years.

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 were delayed by Covid and have either just started 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 in Southwick within AQMA2 increased slightly to 22.9µg/m^3 and 26.2µg/m^3 respectively, 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. In previous Adur ASR's we committed to consider revoking AQMA2 as measured levels had been below the annual mean objective for a many years. Unfortunately this was again delayed in 2021. We aim to review this in 2022/23.

Other Sites:

Site S25 Mash Barn Lane in Lancing showed the highest increase in the District, an increase of 6.2µg/m^3. Unfortunately there is no traffic data available at tis location to see if the increase was a result of increased traffic.

S45 Dolphin Mews, Shoreham increased slightly to 17.2µg/m^3. This site is adjacent to a level crossing where vehicles often queue and idle for prolonged periods.

Site S44 Upper Brighton Road, Lancing remained largely unchanged at 31.5µg/m^3. This site remains the highest level recorded in the District, located adjacent to the eastbound A27 dual carriageway and with the closest receptor just over 5m away.

New site S51 close to the Sussex Pad on the A27 Lancing produced an annual mean of 23.1µg/m^3. This site was added in September 2021 in response to concerns about air quality in the area where a roundabout is to be constructed to service a new mixed development adjacent to the A27 (New Monks Farm). The tube is not located at a site of relevant exposure.

B. Worthing

Automatic Monitoring

The annual mean recorded at the continuous monitoring site WT2 Grove Lodge was 27.6µg/m^3, an increase of 1.6µg/m^3 from 2020. This is below the national objective of 40µg/m^3.

There were no recorded exceedances of the one hour mean objective of 200µg/m^3. Data capture was 97%.

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 51.4µg/m^3 in 2014, decreased in 2015 and then increased again in 2016 to 48µg/m^3. The nearest relevant receptor (a residential facade) is 18m away, meaning the level at the façade reduces further still.

Traffic increased within the AQMA by 10% (A27 westbound) and 13% (A27 eastbound) over 2020 levels and it is this increase that is likely to have resulted in the increase in measured NO_2.

Non-Automatic Monitoring

32 diffusion tubes were used during 2021. Of those that also existed in 2020 12 showed an increase in measured levels, 15 decreased and one showed no change. The increases ranged from 0.1µg/m^3 to 2.7µg/m^3 at Site N54 near the Aquarena .

As in 2019 and 2020 only one monitoring site exceeded the annual mean objective of 40µg/m^3 – N30A Grove Lodge Cottages.

No site exceeded 60µg/m^3, used as an indicator of a likely exceedance of the 1-hour mean objective at that site.

In and around AQMA No.2:

N30A Grove Lodge Cottages continued to show the highest levels of any monitoring site. Measured levels actually reduced again by 0.7µg/m^3 to 44.4µg/m^3, still above the 40µg/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 when predicted back (43.7µg/m^3).

The tubes N44A/B/C collocated with the continuous monitor again recorded a reduction in levels with the average of the three being 29.8µg/m^3, a reduction of 1.3µg/m^3 over 2020 levels. Predicted back to the nearest façade levels drop to 20.5µg/m^3.

Site N24 close to Lyons Farm on the A27 showed an increase of 1.7µg/m^3 to 20.1µg/m^3, still well below the 40µg/m^3 objective.

Site N29 Downlands Parade, close to the Lyons Farm junction of the A27/Sompting Road, showed a decrease of 1.3µg/m^3 to 24.2µg/m^3.

All but one of the other monitoring sites in the AQMA showed small increases, but all were below 25µg/m^3, well below the objective of 40µg/m^3.

Other Sites

N57 Lyndhurst Road increased very slightly to 20.8µg/m^3, well below the annual mean objective. There are a number of major development sites close by that have either been granted permission or are earmarked for development, so we continue to closely monitor any changes here.

The site new in 2020, N66 Sompting Lane, Worthing (located at a site of traffic queuing to access the A27) showed almost no change at 24.9µg/m^3.

The two new sites for 2021, N71 King Street and N72 New Street showed levels of 11.7µg/m^{3}and 12.0µg/m^3, well below the objective.

5 year trend graphs are included in Appendix A.

We believe the actions listed in Section 2 are assisting the fall in measured levels, alongside the national trend towards a cleaner vehicle fleet. Increased awareness of air quality and climate change will still be driving a lot of behaviour change – low emission vehicles, cycling and walking, eco-friendly driving, etc.

3.1.4 Particulate Matter (PM_{10})

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

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

The annual mean measured in Shoreham High Street (**Adur**) in 2021 was 24.2µg/m^3 an increase of 2.2µg/m^3 but well below the objective of 40µg/m^3. There were two recorded exceedances of the 24 hour mean of 50µg/m^3. The limit is 35 times/year.

As PM_{10} monitoring ceased in August 2021 there is less than 85% data capture for the entire year, so we must report the 90.4th percentile for 24-hour PM_{10}. If the 90.4th percentile is greater than 50µg/m^3 then this means that if there had been 100% data capture, then there have been greater than 35 exceedances of 50µg/m^3 per calendar year.

The **90.4th percentile is 30.4µg/m^3**, less than the 50µg/m^3 limit.

No PM_{10} monitoring is carried out in the Worthing Borough.

3.1.5 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

A. **Worthing** - 2021 is our fourth full year of $PM_{2.5}$ monitoring at Grove Lodge (A27). The measured and ratified level for 2021 was 8.7µg/m^3, up slightly on 2020 levels but still well below the EU Limit Value of 25µg/m^3 and also below the World Health Organisation (WHO) annual mean guideline limit of 10µg/m^3 (currently not a legal limit in the UK).

B. Adur – $PM_{2.5}$ monitoring commenced in Shoreham High Street in August 2021. As a result the measured level has been annualised. The result is 16.2µg/m^3. This is up from the estimated level of 15.4µg/m^3 in 2020. This is well below the EU Limit Value of 25µg/m^3 but above the World Health Organisation (WHO) annual mean guideline limit of 10µg/m^3.

Next year will give us a full year of $PM_{2.5}$ monitoring and will allow us to identify trends in the measured levels and allow us to explore this in more detail.

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	NO2; PM10	YES Adur AQMA1	Chemiluminescence	4.0	1.6	2.0
WT2	Grove Lodge, Worthing	Roadside	514184	104963	NO_2; $PM_{2.5}$	YES Worthing AQMA No.2	Chemiluminescence	18.3	2.9	1.8

Notes:

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

(2) N/A if not applicable

Table A.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	NO2	No	3.5	1.5	No	2.5
S3	St. Aubyns Crescent Fishersgate	Urban Background	525562	105313	NO2	No	5.1	2.4	No	2.5
S7	Queens Road Southwick	Urban Background	524139	106321	NO2	No	3.0	2.5	No	3.0
S8	Underdown Road Southwick	Roadside	524018	106070	NO2	AQMA2	4.3	2.3	No	2.5
S9	Old Shoreham Road Southwick	Roadside	523784	106081	NO2	AQMA2	1.6	2.8	No	2.3
S10	Holmbush Roundabout Shoreham	Roadside	523343	106111	NO2	No	27.0	1.7	No	2.7
S11	Lancing Manor Lancing	Roadside	518820	105584	NO2	No	14.8	2.0	No	3.0
S12	Boundstone Lane Lancing	Roadside	517731	105505	NO2	No	N/A	1.8	No	3.0
S13	Upper Brighton Road Sompting	Roadside	517291	105550	NO2	No	8.6	4.6	No	2.5
S14	West Street Sompting	Urban Background	516057	105190	NO2	No	3.6	1.2	No	2.0
S15	Western Road Lancing	Roadside	517512	103367	NO2	No	6.4	1.5	No	2.7

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)
S17	High Street AQMS 1 Shoreham	Kerbside	521400	105040	NO2	AQMA1	5.0	0.9	Yes	2.6
S18	High Street AQMS 2 Shoreham	Kerbside	521400	105040	NO2	AQMA1	5.0	0.9	Yes	2.6
S19	High Street AQMS 3 Shoreham	Kerbside	521400	105040	NO2	AQMA1	5.0	0.9	Yes	2.6
S25	Mash Barn Lane Lancing	Roadside	519117	105710	NO2	No	N/A	6.0	No	2.5
S26	Loose Lane Sompting	Suburban	516536	104783	NO2	No	12.0	0.8	No	2.5
S36	Victoria Road Footpath Shoreham	Roadside	521282	105254	NO2	No	5.8	1.9	No	2.8
S37	Humphrey's Gap Shoreham	Roadside	522103	105126	NO2	No	0.5	1.7	No	2.8
S39	Brighton Road Kingston	Kerbside	523329	104960	NO2	No	4.0	1.2	No	2.8
S43	Brunswick Road Shoreham	Roadside	521733	105251	NO2	No	0.0	2.7	No	2.5
S44	Upper Brighton Road Lancing	Roadside	518494	105464	NO2	No	5.4	2.0	No	2.5
S45	Dolphin Mews Shoreham	Roadside	522300	105258	NO2	No	0.0	4.7	No	3.0
S46	West Street 1 Shoreham	Roadside	521363	105082	NO2	AQMA1	0.0	1.3	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S47	West Street 2 Shoreham	Roadside	521375	105101	NO2	No	0.0	1.3	No	2.5
S48	Grinstead Lane Lancing	Roadside	518590	105463	NO2	No	4.0	3.3	No	2.5
S50	High Street Shoreham	Roadside	521478	105002	NO2	AQMA1	0.0	5.2	No	2.0
S51	Sussex Pad Lancing	Kerbside	520042	106054	NO2	No	44.5	0.4	No	1.8
WORTHING										
4N	Heene Way (UK02)	Urban Background	513609	102556	NO2	No	5.3	1.7	No	1.5
5N	Cleveland Road (UK01)	Urban Background	512701	105562	NO2	No	6.2	2.5	No	2.0
N1C	High Street East	Urban Centre	515114	102670	NO2	No	0.0	3.3	No	2.0
N5	First Avenue	Roadside	514495	105020	NO2	Worthing AQMA No.2	15.2	2.2	No	1.5
N8	Littlehampton Road	Roadside	513236	104651	NO2	No	14.1	1.5	No	3.5
N11	Dawes Close	Urban Background	515812	103309	NO2	No	8.4	1.4	No	1.5
N18A	Kinnall Court, Upper Brighton Road	Suburban	515315	105141	NO2	Worthing AQMA No.2	0.0	12.0	No	2.0
N21	Forest Lane	Suburban	510611	105595	NO2	No	14.5	60.5	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
N22	Falmer Close, C-Dust monitor	Urban Background	511010	102226	NO2	No	14.6	2.2	No	1.5
N24	152 Upper Brighton Road	Roadside	515151	105109	NO2	Worthing AQMA No.2	0.0	8.0	No	2.0
N25	Warren Court	Suburban	513845	105191	NO2	No	0.0	17.3	No	2.0
N27	Tarring Road, Crossing	Roadside	513380	103352	NO2	No	0.0	3.2	No	2.5
N28	Chapel Road / Teville Road	Roadside	514740	103173	NO2	No	1.6	3.0	No	2.5
N29	Downlands Parade	Roadside	515014	105099	NO2	Worthing AQMA No.2	0.5	6.5	No	3.0
N30A	Grove Lodge Cottages	Roadside	514183	104948	NO2	Worthing AQMA No.2	0.2	2.2	No	2.5
N31	South Farm Road, Roundabout	Kerbside	514317	103329	NO2	No	4.0	0.9	No	2.5
N39	SW of Roundabout, Grove lodge	Roadside	514088	104906	NO2	Worthing AQMA No.2	47.8	2.2	No	3.0
N42	Norfolk House, 122 Chapel Road	Roadside	514742	103234	NO2	No	0.0	3.4	No	2.0
N43	23 Upper Brighton Road	Suburban	514199	104982	NO2	Worthing AQMA No.2	0.0	19.2	No	2.0
N44A, N44B, N44C	AQMS O/S 21 Upper Brighton Road	Roadside	514184	104963	NO2	Worthing AQMA No.2	18.4	2.8	Yes	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
N48	Shaftesbury Avenue	Roadside	512063	103385	NO2	No	14.8	2.2	No	2.0
N52	Newland Road, outside 63	Kerbside	514973	103335	NO2	No	4.5	0.4	No	2.0
N53	Offington Corner	Roadside	513278	105623	NO2	Worthing AQMA No.2	20.5	6.0	No	2.0
N54	Aquarena	Roadside	515595	102725	NO2	No	30.2	3.7	No	3.0
N57	Lyndhurst Road	Roadside	515114	102975	NO2	No	0.0	3.5	No	2.5
N64	South Street, outside Starbucks	Urban Centre	514946	102541	NO2	No	2.8	2.4	No	2.5
N65	Teville Road (opposite Unleashed)	Kerbside	514543	103220	NO2	No	4.7	0.8	No	2.5
N66	Sompting Road	Roadside	515067	105082	NO2	Worthing AQMA No.2	3.7	4.7	No	2.5
N71	King Street	Roadside	514548	103843	NO2	No	4.0	1.8	No	2.5
N72	New Street	Urban Centre	514558	102416	NO2	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 NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
AD1	521399	105039	Kerbside	90	90	n/a	29.2	26.0	20.0	19.6
WT2	514184	104963	Roadside	96.9	97	35.8	36.8	32.9	26.0	27.6

☒ **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/m^3.

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

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

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

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

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

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
ADUR										
S2	525330	105085	Roadside	92.2	92.2	26.1	27.0	23.6	17.9	18.8
S3	525562	105313	Urban Background	100	100.0	17.0	18.1	16.7	13.9	14.4
S7	524139	106321	Urban Background	100	100.0	14.9	15.9	14.1	11.5	11.7
S8	524018	106070	Roadside	100	100.0	32.5	30.4	27.5	21.1	22.9
S9	523784	106081	Roadside	100	100.0	35.4	35.0	31.1	25.6	26.2
S10	523343	106111	Roadside	100	100.0	24.4	27.0	23.2	19.2	20.1
S11	518820	105584	Roadside	100	100.0	35.9	35.1	32.5	26.9	25.7
S12	517731	105505	Roadside	100	100.0	31.1	30.2	25.8	20.7	20.8
S13	517291	105550	Roadside	100	100.0	39.9	39.0	36.3	29.5	28.4
S14	516057	105190	Urban Background	92.2	92.2	19.3	19.5	23.7	19.1	21.2
S15	517512	103367	Roadside	100	100.0	30.2	32.5	27.7	23.2	24.0
S17	521400	105040	Kerbside	100	100.0	37.7	33.7	30.4	24.3	25.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
S18	521400	105040	Kerbside	100	100.0	37.4	32.8	30.9	24.2	25.0
S19	521400	105040	Kerbside	100	100.0	37.4	32.4	29.6	23.5	24.1
S25	519117	105710	Roadside	100	100.0	28.6	30.4	26.2	21.5	27.8
S26	516536	104783	Suburban	100	100.0	14.2	16.5	13.4	11.8	13.3
S36	521282	105254	Roadside	100	100.0	25.8	26.6	24.3	18.3	19.4
S37	522103	105126	Roadside	100	100.0	36.2	32.6	29.1	23.4	23.8
S39	523329	104960	Kerbside	100	100.0		26.1	21.9	17.4	17.4
S43	521733	105251	Roadside	100	100.0			22.5	16.6	18.4
S44	518494	105464	Roadside	100	100.0			38.4	31.4	31.5
S45	522300	105258	Roadside	100	100.0			19.1	15.9	17.2
S46	521363	105082	Roadside	100	100.0				18.3	18.8
S47	521375	105101	Roadside	100	100.0				16.3	16.8
S48	518590	105463	Roadside	100	100.0				25.7	26.8
S50	521478	105002	Roadside	100	100.0					22.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
S51	520042	106054	Kerbside	100	34.9					23.1
WORTHING										
4N	513609	102556	Urban Background	92	92.0	14.5	14.1	12.7	10.8	10.2
5N	512701	105562	Urban Background	100	100.0	15.9	16.9	15.7	11.8	12.5
N1C	515114	102670	Urban Centre	100	100.0	26.8	28.5	26.2	19.8	22.2
N5	514495	105020	Roadside	100	100.0	31.0	25.6	28.3	24.5	23.0
N8	513236	104651	Roadside	100	100.0	30.7	29.6	28.6	22.8	22.3
N11	515812	103309	Urban Background	100	100.0	15.6	15.7	13.4	11.8	11.9
N18A	515315	105141	Suburban	73.6	73.6	24.5	23.9	21.7	17.4	17.0
N21	510611	105595	Suburban	90.9	90.9	14.8	13.5	10.8	8.7	9.1
N22	511010	102226	Urban Background	100	100.0	13.3	12.8	11.6	10.2	10.3
N24	515151	105109	Roadside	82.6	82.6	25.9	34.5	23.5	18.4	20.1
N25	513845	105191	Suburban	100	100.0	20.7	20.3	17.8	14.8	15.4
N27	513380	103352	Roadside	47.4	47.4	24.7	26.2	22.7	19.7	18.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
N28	514740	103173	Roadside	100	100.0	36.0	33.4	27.2	17.3	17.3
N29	515014	105099	Roadside	90.1	90.1	32.4	23.6	29.9	25.6	24.2
N30A	514183	104948	Roadside	91.5	91.5	**68.2**	**60.1**	**56.6**	**45.1**	**44.4**
N31	514317	103329	Kerbside	100	100.0	26.8	27.1	25.8	20.8	20.2
N39	514088	104906	Roadside	92	92.0	32.0	32.7	28.5	24.1	23.7
N42	514742	103234	Roadside	100	100.0	25.1	26.6	24.2	18.1	17.3
N43	514199	104982	Suburban	100	100.0	23.1	22.3	19.9	17.6	17.2
N44A, N44B, N44C	514184	104963	Roadside	100	100.0	**41.2**	**40.8**	36.3	31.1	29.8
N48	512063	103385	Roadside	84.6	84.6	27.0	27.7	25.8	18.9	20.0
N52	514973	103335	Kerbside	91.5	91.5	24.8	26.4	22.4	20.2	19.2
N53	513278	105623	Roadside	100	100.0	34.9	33.9	30.7	25.4	23.7
N54	515595	102725	Roadside	100	100.0	24.6	22.8	19.3	14.4	17.1
N57	515114	102975	Roadside	100	100.0	27.6	25.0	23.4	20.1	20.8
N64	514946	102541	Urban Centre	76.6	76.6			27.9	20.0	20.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
N65	514543	103220	Kerbside	83.5	83.5			27.5	22.2	23.6
N66	515067	105082	Roadside	92.3	92.3				25.0	24.9
N71	514548	103843	Roadside	100	100.0					11.7
N72	514558	102416	Urban Centre	100	100.0					12.0

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

☒ **Diffusion tube data has been bias adjusted**

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

Notes:

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

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

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

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

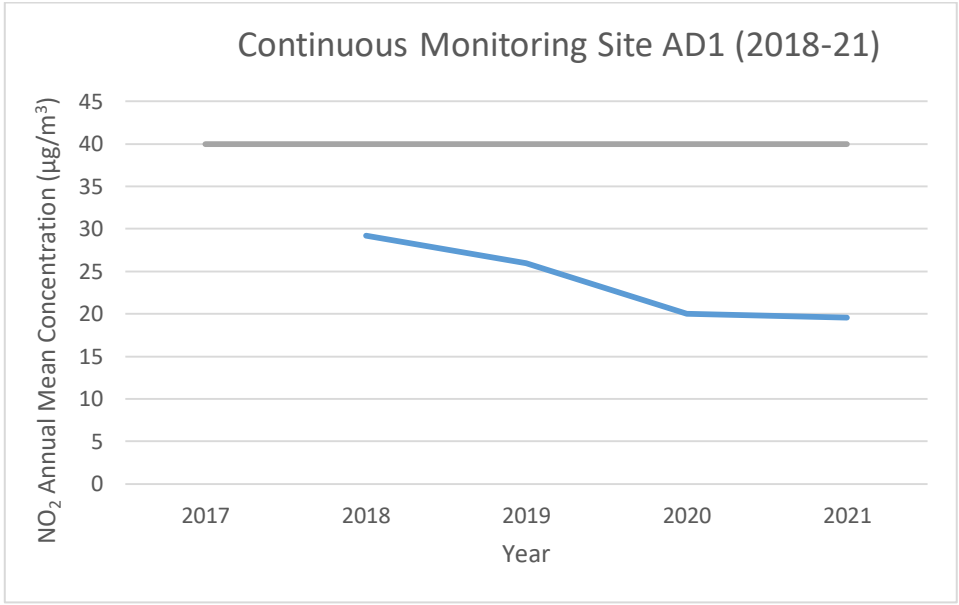
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

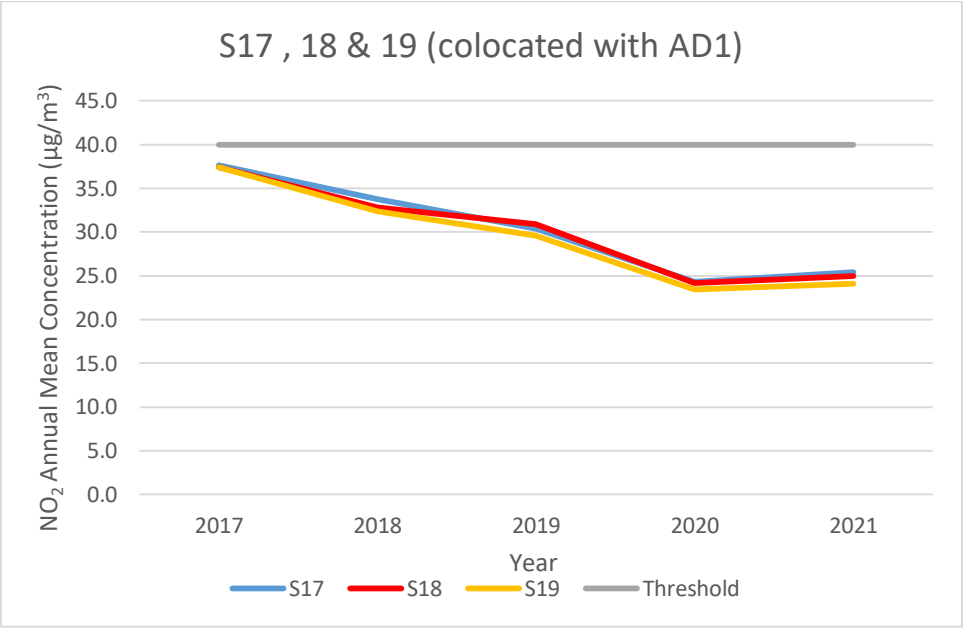
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

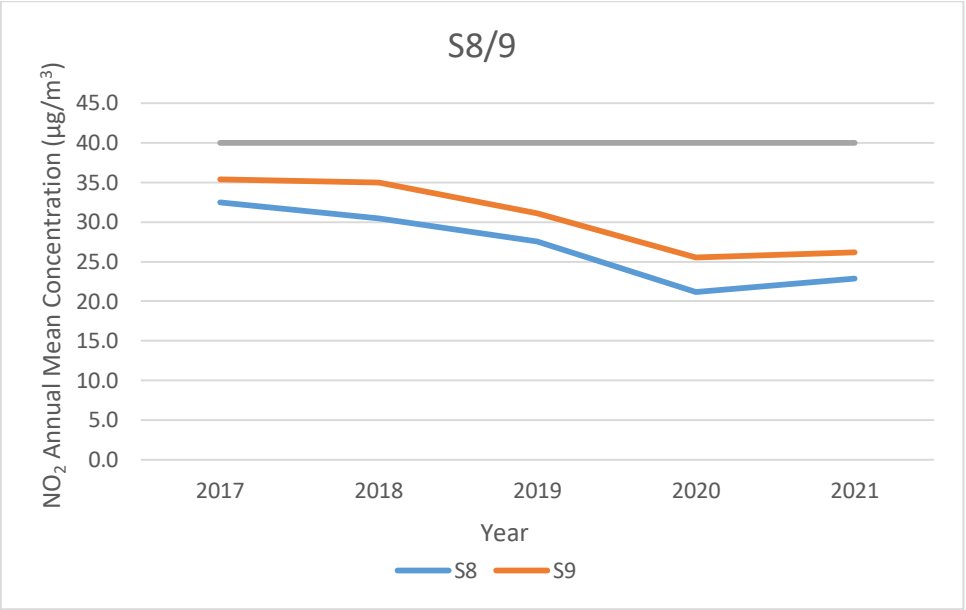
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

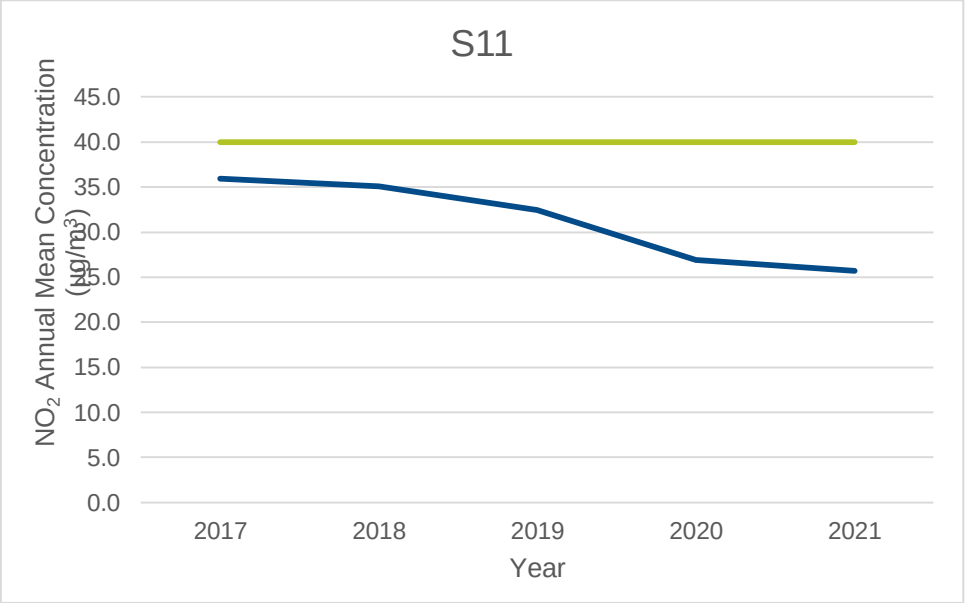
Figure A.1 – Trends in Annual Mean NO_2 Concentrations 2017-21 (Grey horizontal lines indicate the Annual Mean Objective (threshold))

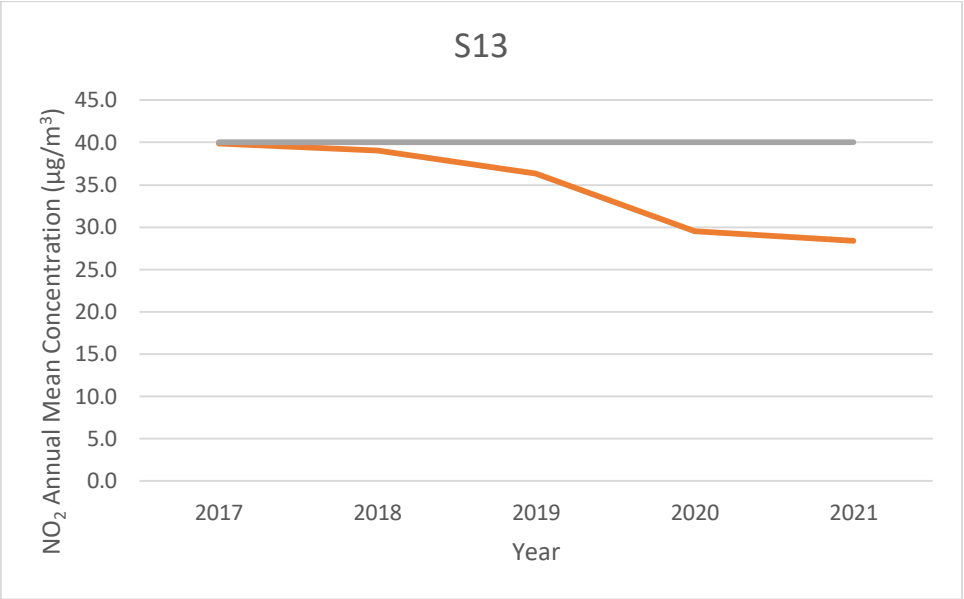
ADUR

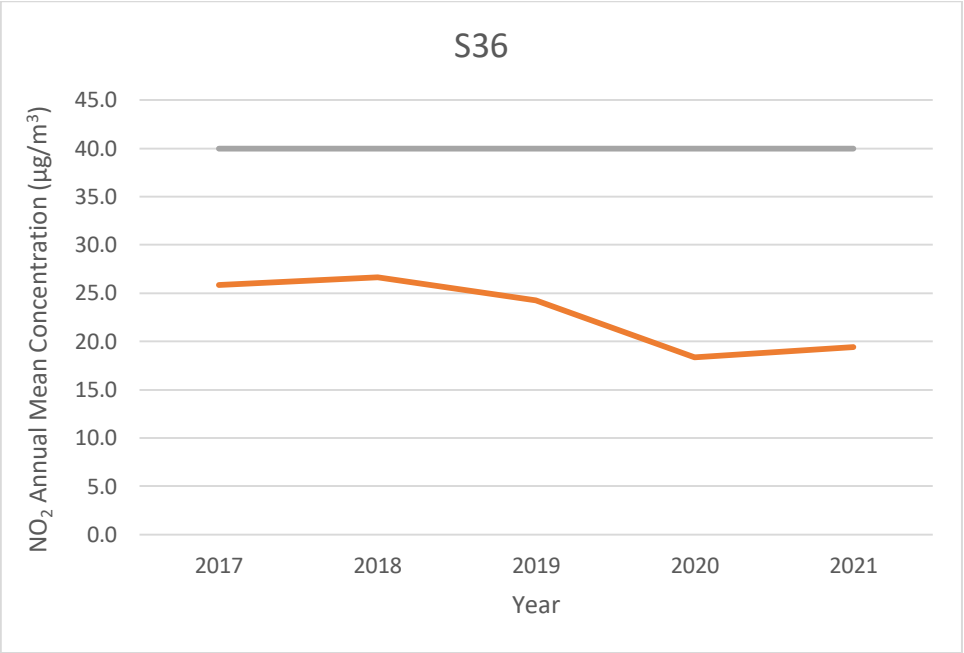


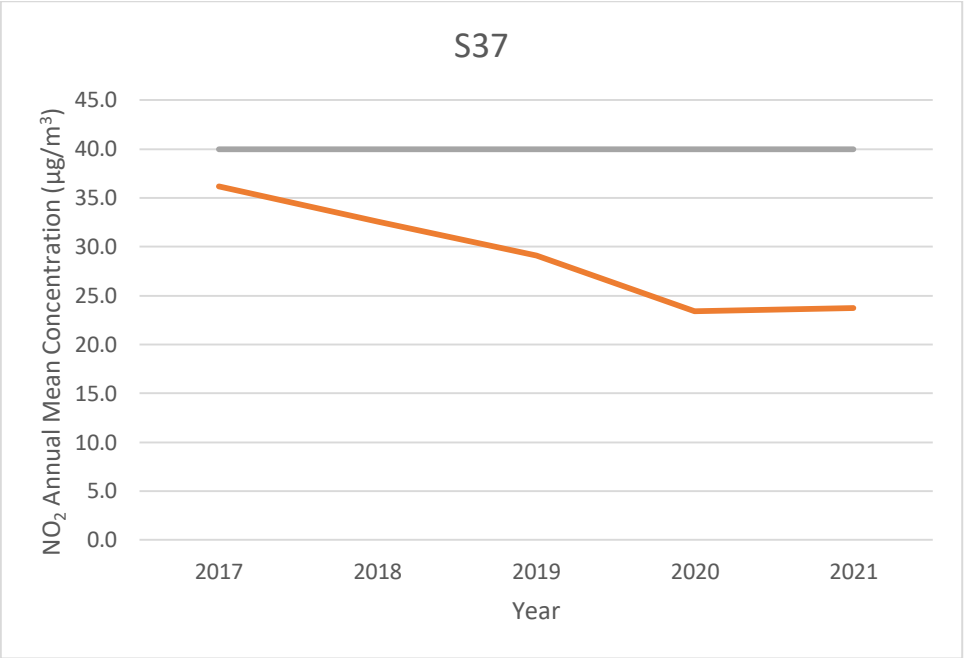

S17 , 18 & 19 (colocated with AD1)
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year
S17
S18
S19
Threshold


S8/9
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year
S8
S9

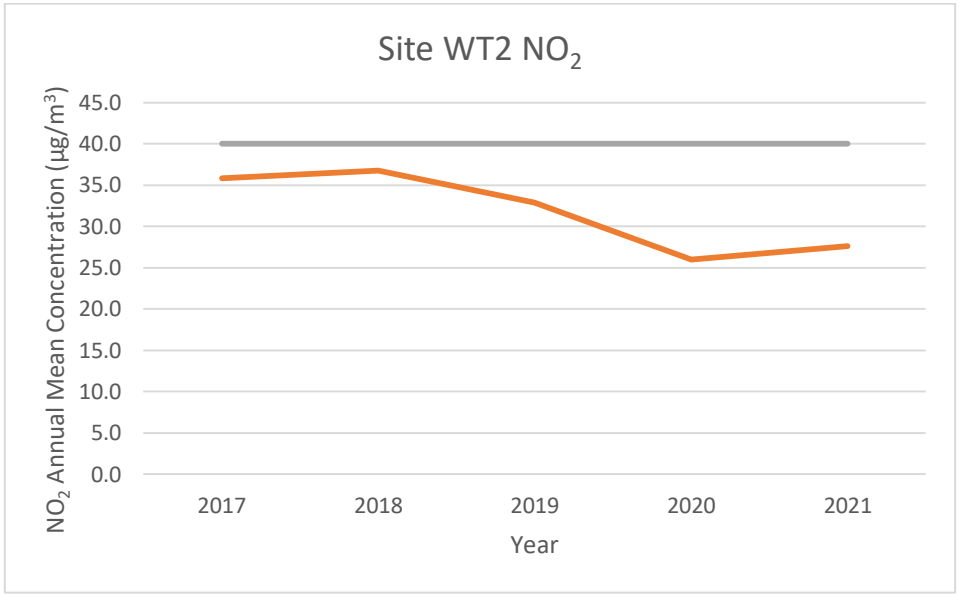

S11
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year

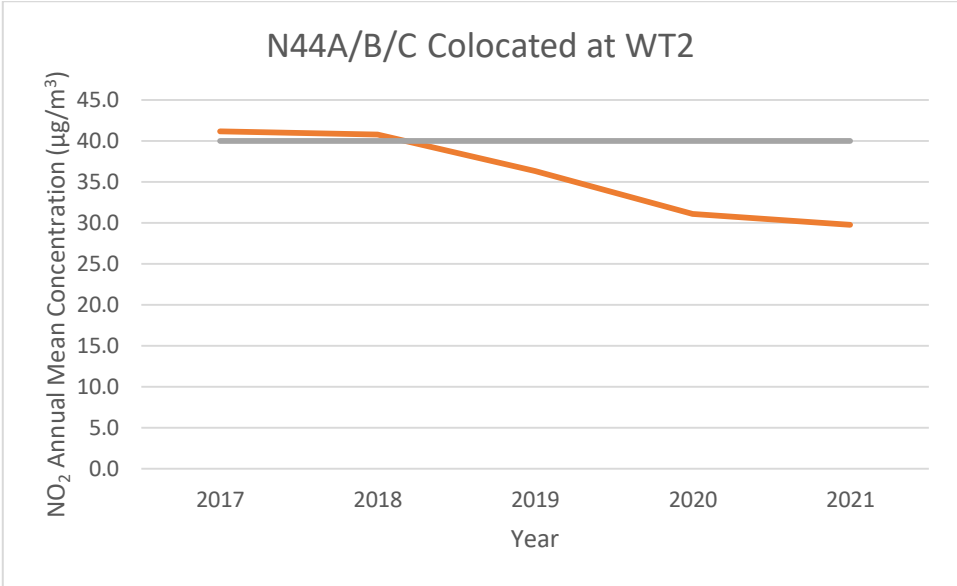

S13
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
NO2 Annual Mean Concentration (µg/m3)
2017
2018
2019
2020
2021
Year

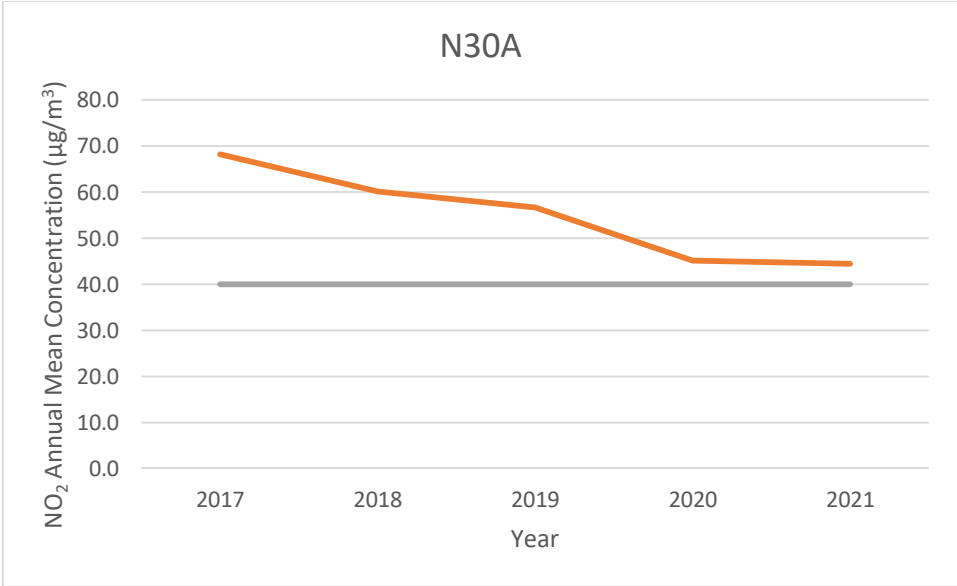

S36
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
NO2 Annual Mean Concentration (µg/m3)
2017
2018
2019
2020
2021
Year

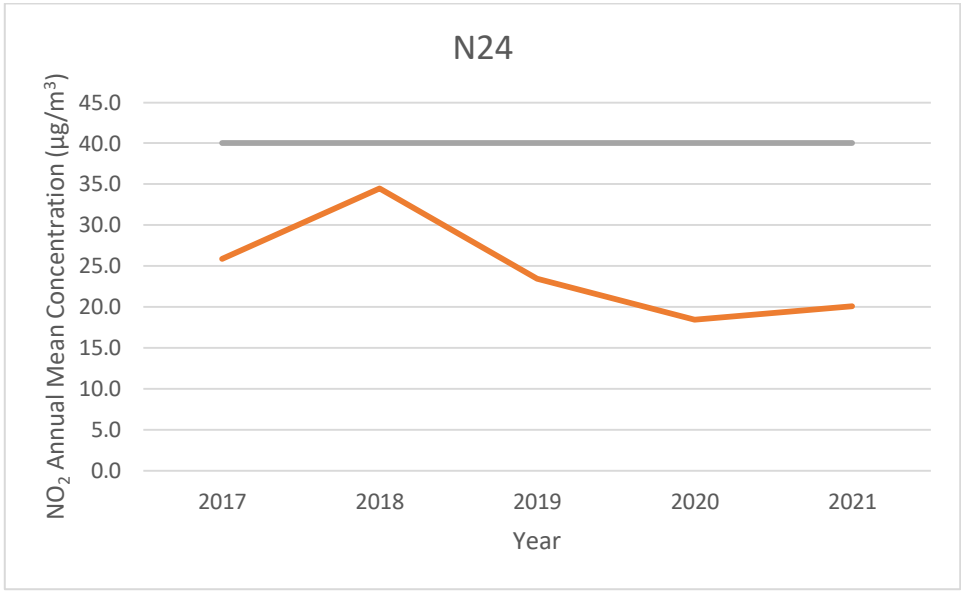

S37
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
NO2 Annual Mean Concentration (µg/m3)
2017
2018
2019
2020
2021
Year

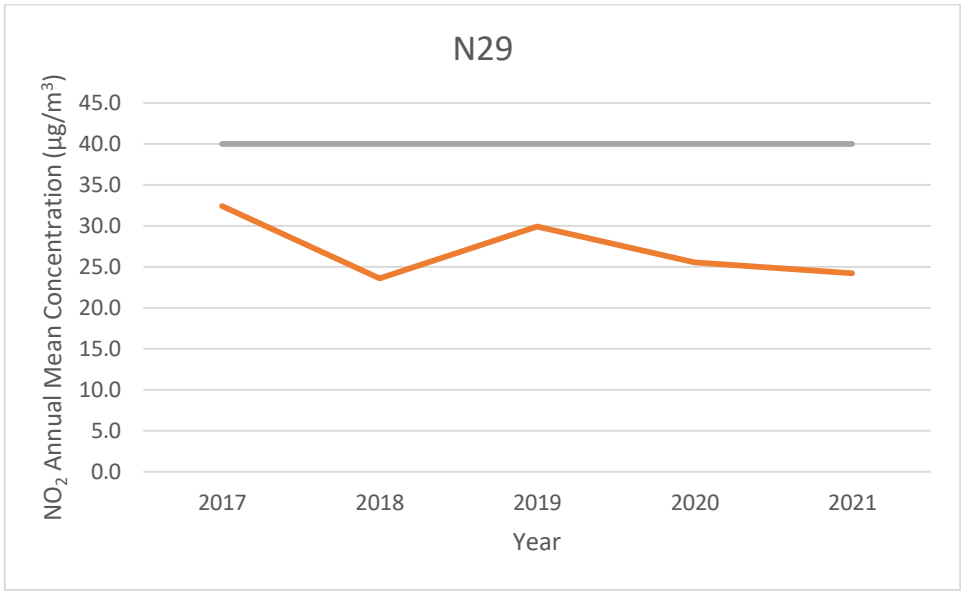
WORTHING


Site WT2 NO2
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year


N44A/B/C Colocated at WT2
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year


N30A
NO2 Annual Mean Concentration (µg/m3)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2017
2018
2019
2020
2021
Year


N24
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year


N29
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year

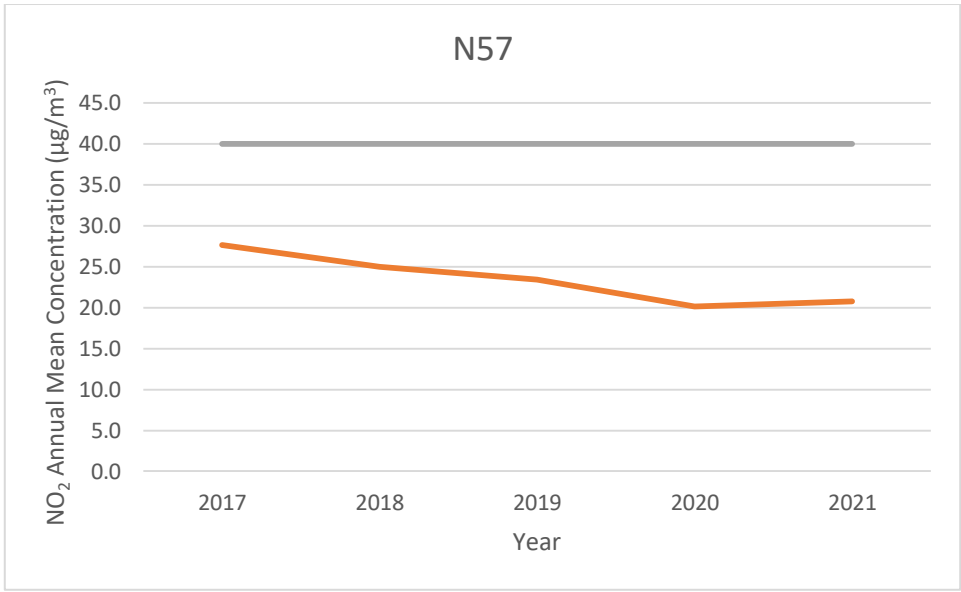

N57
NO2 Annual Mean Concentration (µg/m3)
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2017
2018
2019
2020
2021
Year

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
AD1	521399	105039	Kerbside	90	90	n/a	0	0	0	0
WT2	514184	104963	Roadside	97	97	0	0	0	0	0

Notes:

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

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

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

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

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

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
AD1	521399	105039	Kerbside	97	61	n/a	23.0	24.3	22.0	24.2

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

Notes:

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

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

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

(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_{10} Concentrations

ADUR

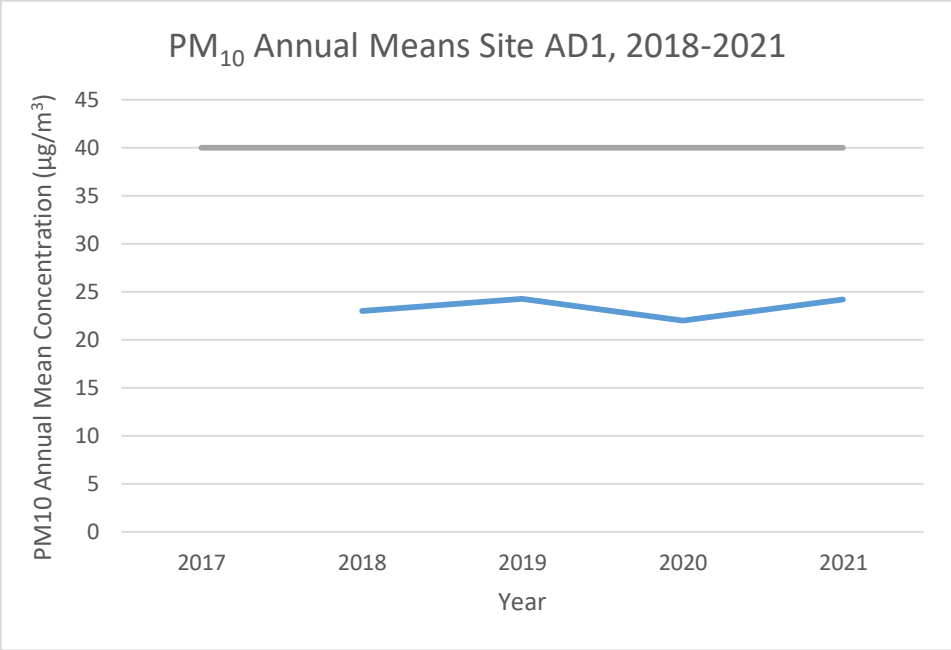


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
AD1	521399	105039	Kerbside	97	61	n/a	0	8	0	2 (30.4)

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-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%).

Figure A.3 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3

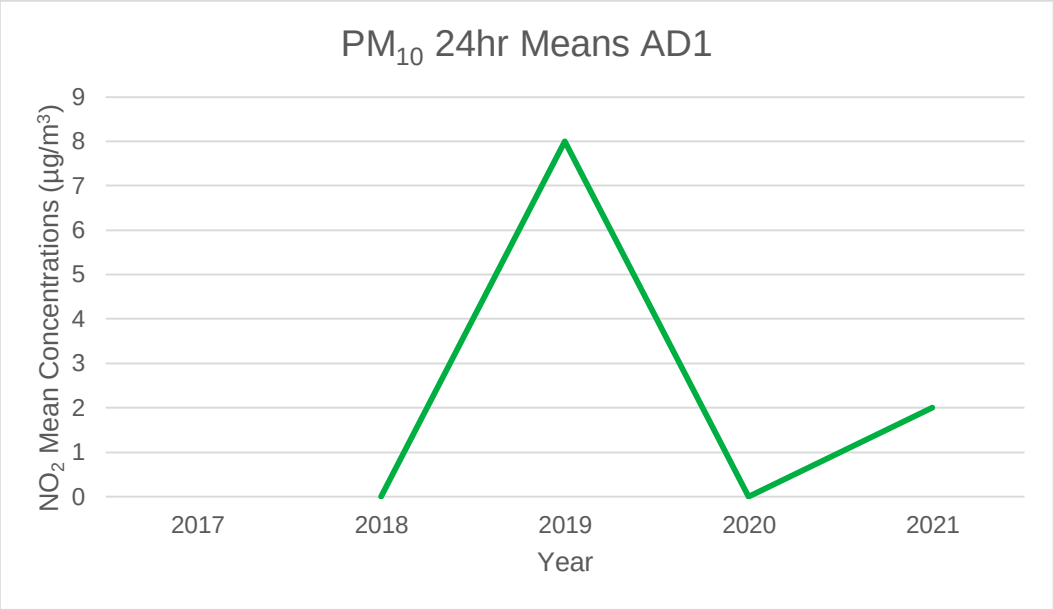


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
AD1	521399	105039	Kerbside	96	34	n/a	n/a	n/a	n/a	16.2
WT2	514184	104963	Roadside	95.6	96	n/a	10.6	9.9	8.0	8.7

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

Notes:

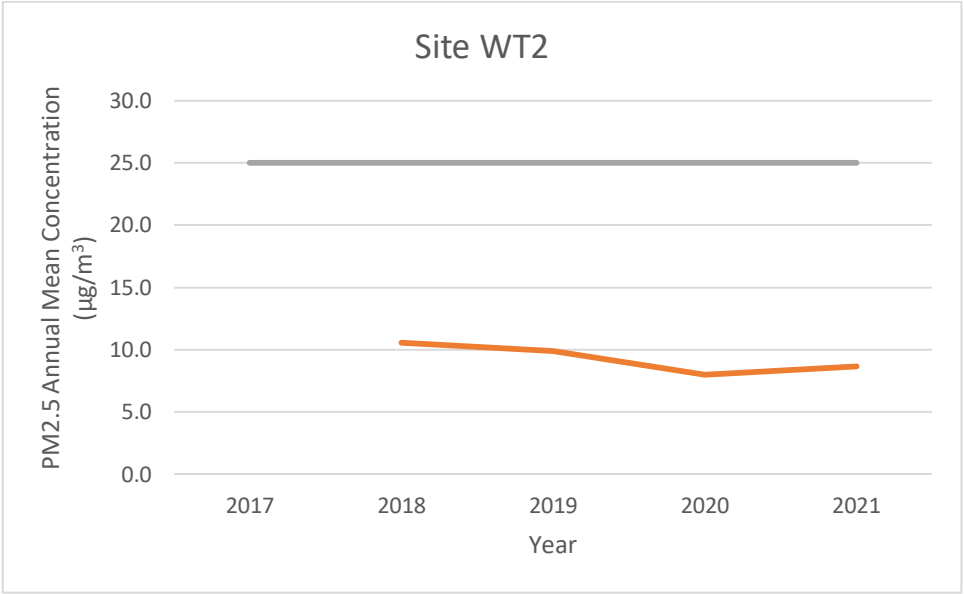
The annual mean concentrations are presented as µg/m^3.

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

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

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

Figure A.4 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
ADUR																		
S2	525330	105085	28.7	30.0	24.5	18.6		21.5	18.9	14.3	25.9	20.2	29.3	20.7	22.9	18.8	-	
S3	525562	105313	20.5	24.3	19.0	16.2	15.6	15.9	15.3	11.3	17.0	15.1	18.8	21.2	17.5	14.4	-	
S7	524139	106321	18.8	19.3	16.6	12.0	11.1	14.3	12.0	9.7	13.7	12.4	14.8	16.3	14.3	11.7	-	
S8	524018	106070	29.9	30.9	29.5	25.1	26.2	27.9	23.2	20.0	31.7	27.0	33.7	29.4	27.9	22.9	-	
S9	523784	106081	34.3	36.2	30.3	31.7	28.3	30.2	27.9	22.1	36.5	33.0	40.5	31.8	31.9	26.2	-	
S10	523343	106111	24.3	27.0	26.9	26.7	16.6	24.3	21.3	18.1	28.9	22.2	34.8	23.6	24.6	20.1	-	
S11	518820	105584	37.0	28.9	35.2	34.8	26.9	31.2	28.2	9.8	38.7	33.0	41.9	30.8	31.4	25.7	-	
S12	517731	105505	30.6	26.1	28.7	24.5	21.0	23.0	18.6	14.3	32.2	24.6	33.0	27.4	25.3	20.8	-	
S13	517291	105550	34.4	32.8	32.7	30.2	36.7	41.4	37.5	27.7	41.5	34.6	32.6	33.9	34.6	28.4	-	
S14	516057	105190	23.2	24.4	18.2	22.6	21.5	24.9	44.3		27.2	25.7	28.2	24.3	25.8	21.2	-	
S15	517512	103367	30.2	31.9	26.6	24.5	23.9	32.7	29.1	28.2	34.3	27.8	36.1	25.6	29.2	24.0	-	
S17	521400	105040	36.7	30.0	34.4	29.2	28.5	31.9	27.8	25.3	33.2	31.0	33.8	30.2	31.0	25.4	-	
S18	521400	105040	33.0	31.2	30.4	29.9	29.5	31.5	29.2	25.4	34.0	29.9	32.2	29.6	30.5	25.0	-	
S19	521400	105040	28.6	33.0	31.6	28.8	28.6	27.8	27.6	22.0	34.3	29.1	34.0	27.0	29.4	24.1	-	
S25	519117	105710	38.5	35.0	32.0	36.5	28.4	29.6	30.1	44.5	35.3	32.0	32.4	32.0	33.9	27.8	-	
S26	516536	104783	18.0	17.4	15.7	12.7	11.8	12.9	11.7	33.8	14.5	12.8	17.9	15.1	16.2	13.3	-	
S36	521282	105254	22.9	29.8	26.0	23.4	21.0	23.6	21.3	16.7	28.2	21.6	29.6	20.2	23.7	19.4	-	
S37	522103	105126	30.1	33.9	31.9	29.4	28.4	28.2	27.8	25.4	30.8	26.9	28.8	26.1	29.0	23.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S39	523329	104960	30.6	23.2	20.7	23.9	15.4	21.3	15.9	10.5	25.3	18.0	27.5	22.2	21.2	17.4	-	
S43	521733	105251	26.4	23.8	25.2	19.8	14.7	19.9	17.1	28.1	22.3	22.4	27.5	22.7	22.5	18.4	-	
S44	518494	105464	34.5	39.6	38.9	43.5	39.6	41.7	38.4	11.3	52.6	41.6	43.8	35.2	38.4	31.5	-	
S45	522300	105258	24.0	23.7	23.8	21.0	15.3	19.9	15.5	21.8	20.7	19.2	27.2	20.2	21.0	17.2	-	
S46	521363	105082	22.4	23.5	23.3	19.3	21.7	23.9	19.6	17.1	23.0	23.5	32.6	24.7	22.9	18.8	-	
S47	521375	105101	23.7	18.8	22.2	18.2	19.4	21.7	19.8	14.8	22.6	19.9	22.6	22.2	20.5	16.8	-	
S48	518590	105463	41.8	34.0	33.4	33.6	28.2	29.5	28.8	18.1	33.7	35.6	46.5	29.8	32.7	26.8	-	
S50	521478	105002	31.5	25.2	29.6	20.8	27.9	27.0	22.0	21.4	31.0	27.5	36.3	25.3	27.1	22.2	-	
S51	520042	106054									28.9	25.3	28.4	27.7	27.6	23.1	-	
WORTHING																		
4N	513609	102556	15.8		17.3	11.1	9.1	9.2	11.5	8.4	12.1	10.1	17.6	15.0	12.5	10.2	-	
5N	512701	105562	18.2	21.0	17.1	12.0	10.6	14.5	12.2	9.6	13.8	15.6	20.2	17.8	15.2	12.5	-	
N1C	515114	102670	28.0	27.4	30.6	29.8	22.3	16.8	28.2	23.9	31.5	27.9	34.8	23.9	27.1	22.2	-	
N5	514495	105020	35.9	30.4	27.6	21.4	26.2	20.0	27.3	26.3	29.5	30.6	32.8	29.4	28.1	23.0	-	
N8	513236	104651	32.0	31.6	29.8	26.7	23.3	13.9	26.4	21.3	28.4	27.9	34.4	30.6	27.2	22.3	-	
N11	515812	103309	20.2	20.4	16.2	13.3	10.6	9.0	12.1	9.6	12.8	15.0	18.1	16.1	14.5	11.9	-	
N18A	515315	105141	22.2	22.1	26.3	24.5	15.0	13.6	19.5	20.4	23.5				20.8	17.0	-	
N21	510611	105595	13.3	14.6	10.9	10.3	7.7	8.5	9.6	7.6	10.9		16.2	12.6	11.1	9.1	-	
N22	511010	102226	17.4	18.5	18.1	11.4	7.9	7.6	11.2	8.1	10.4	12.1	14.8	13.1	12.5	10.3	-	
N24	515151	105109	25.4	25.5	22.6	20.9	19.0	15.1	19.9		21.9		42.5	32.2	24.5	20.1	-	
N25	513845	105191	23.2	22.8	21.4	17.9	16.0	13.8	16.4	14.5	18.3	18.9	22.6	20.2	18.8	15.4	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
N27	513380	103352	27.7		26.1		19.1	17.1	22.6	20.8					22.3	18.2	-	
N28	514740	103173	24.5	26.1	21.3	24.2	16.3	12.7	22.2	16.6	21.7	18.9	26.9	22.1	21.1	17.3	-	
N29	515014	105099	35.3	35.7	29.5		31.5	8.4	32.7	27.1	33.0	33.4	29.5	29.2	29.6	24.2	-	
N30A	514183	104948	58.1	50.5	54.9	49.7	59.4	32.3		51.7	68.3	59.4	58.2	53.2	54.2	**44.4**	**43.7**	
N31	514317	103329	26.5	28.7	26.0	23.5	21.8	14.4	24.1	21.8	26.6	26.6	28.9	26.0	24.6	20.2	-	
N39	514088	104906	34.4		32.0	34.1	22.5	17.6	29.2	26.8	36.8	23.5	35.6	25.5	28.9	23.7	-	
N42	514742	103234	20.3	25.1	24.2	23.5	18.1	12.7	19.1	15.5	24.9	22.8	24.9	21.8	21.1	17.3	-	
N43	514199	104982	24.0	25.1	25.2	21.7	16.6	11.9	18.4	16.6	21.1	23.1	25.5	22.6	21.0	17.2	-	
N44A	514184	104963	35.1	38.4	43.3	35.7	34.3	19.8	39.0	35.2	40.4	36.0	41.3	37.3	-	-	-	Triplicate Site with N44A, N44B and N44C - Annual data provided for N44C only
N44B	514184	104963	39.2	39.4	37.8	34.9	35.1	19.1	39.0	39.4	37.0	34.6	40.5	32.9	-	-	-	Triplicate Site with N44A, N44B and N44C - Annual data provided for N44C only
N44C	514184	104963	41.6	40.4	39.8	38.4	35.9	24.3	39.8	34.4	40.8	35.1	38.8	34.1	36.3	29.8	-	Triplicate Site with N44A, N44B and N44C - Annual data provided for N44C only
N48	512063	103385		31.5	20.4	23.1	23.0	13.4	28.7	20.8	32.5	27.2		23.6	24.4	20.0	-	
N52	514973	103335	30.0	26.8	27.6	22.4	17.1	9.4		17.3	22.4	27.7	32.7	24.5	23.4	19.2	-	
N53	513278	105623	27.7	34.5	31.7	26.3	31.0	16.3	30.6	23.3	31.2	34.7	29.2	30.5	28.9	23.7	-	
N54	515595	102725	23.3	24.0	22.4	22.1	14.7	17.6	18.2	14.7	24.2	17.8	28.5	23.2	20.9	17.1	-	
N57	515114	102975	28.8	27.3	26.3	27.9	18.9	15.4	23.1	21.9	26.8	29.0	34.0	24.5	25.3	20.8	-	
N64	514946	102541			21.5	28.5	24.2	14.0	29.1	25.2	35.4	26.7		24.9	25.5	20.9	-	
N65	514543	103220	59.1		29.3	25.9	23.9	14.3		17.6	26.9	31.1	32.8	27.5	28.8	23.6	-	
N66	515067	105082	40.0	31.9	33.3	27.1	25.9	17.1	29.2	27.7	35.2	34.4		32.1	30.3	24.9	-	
N71	514548	103843	20.4	18.5	15.0	14.7	10.2	9.4	12.5	10.3	13.6	13.7	17.3	15.6	14.3	11.7	-	
N72	514558	102416	15.7	19.7	16.0	12.9	10.3	9.5	15.1	10.2	15.0	15.5	19.3	15.8	14.6	12.0	-	

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

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

☒ **National bias adjustment factor used**

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

☒ **Adur District & Worthing Borough Councils confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Adur and Worthing During 2021

Adur District and Worthing Borough Councils have not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Adur and Worthing During 2021

Adur District Council commissioned specialist consultants Bureau Veritas to help develop a new air quality Action Plan for Adur towards the end of 2021. The draft will be published for consultation in 2022.

QA/QC of Diffusion Tube Monitoring

NO_2 diffusion tubes are provided and analysed by Gradko laboratory. The NO_2 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 PT NO2 diffusion tube scheme, which uses artificially spiked diffusion tubes to test each participating laboratory's analytical performance on a quarterly basis. The scheme is designed to help laboratories meet the European Standard. Gradko demonstrated "good" laboratory performance in 2020 for 50% TEA in Acetone.

The laboratory follows the procedures set out in the Harmonisation Practical Guidance and participates in the AIR proficiency-testing (AIR-PT) scheme. Previously to the Air-PT scheme, Gradko participated in the Workplace Analysis Scheme for Proficiency (WASP) for NO2 diffusion tube analysis. Defra advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme.

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

UKAS TESTING

2187

Accredited to ISO/IEC 17025:2017

Gradko International Ltd
(Trading as Gradko Environmental)

Issue No: 024 **Issue date:** 15 April 2020

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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	Chemical Tests	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

2187

Accredited to ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Gradko International Ltd
(Trading as Gradko Environmental)

Issue No: 024 **Issue date:** 15 April 2020

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)	Chemical Tests (cont'd)	
	Qualitative Analysis and Estimation of Volatile Organic Compounds on diffusion (sorbent) tubes and monitors	GLM 13 by Thermal Desorption GC-Mass Spectrometry with estimations in accordance with ISO standard 16000-6
	Naphthalene	GLM 13-1 by Thermal Desorption GC-Mass Spectrometry
	Tetrachloroethylene Trichloroethylene	GLM 13-2 by Thermal Desorption GC-Mass Spectrometry
	trans-1,2-Dichloroethene cis-1,2-Dichloroethene	GLM 13-3 by Thermal Desorption GC-Mass Spectrometry
	Indane Styrene	GLM 13-4 by Thermal Desorption GC-Mass Spectrometry
	1,2,3-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	GLM 13-5 by Thermal Desorption GC-Mass Spectrometry
	1,3-Butadiene	GLM 13-6 by Thermal Desorption GC-Mass Spectrometry
	Carbon Disulphide	GLM 13-7 by Thermal Desorption GC-Mass Spectrometry
	Vinyl Chloride	GLM 13-8 by Thermal Desorption GC-Mass Spectrometry
	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	LWI 47 by Thermal Desorption GC-Mass Spectrometry
END		

Certificate of Accreditation

UKAS
UNITED KINGDOM ACCREDITATION SERVICE

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.

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

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

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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).

All monitoring was completed in adherence with the 2021 Diffusion Tube Monitoring Calendar.

Data from the NO_2 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

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. details of the calculation method undertaken provided in Table C.2.

In Adur District site S51 and in Worthing Borough site N27 had data capture rates of less than 75%. Therefore the data for these sites has been annualised in Table C2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Adur District and Worthing Borough have applied a national bias adjustment factor of 0.82 to the 2021 monitoring data. A summary of bias adjustment factors used by Adur and Worthing over the past five years is presented in Table C.1. The National Factor was used as we had concerns the national lockdown during the early part of 2021 had again impacted on traffic volumes and patterns to such an extent that we should continue to use the national bias adjustment factor. We will continue to look at using a local bias adjustment factor in future years.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	06/22	0.82
2020	National	09/21	0.84

2019	National	03/20	0.87
2018	National	03/19	0.92
2017	National	09/18	0.96

NO_2 Fall-off with Distance from the Road

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

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account).

The only site that fulfilled this criteria was site N30A Grove Lodge Cottages, within the Worthing AQMA No.2. The calculation is contained within Table C.3.

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 6 months and Local Site Operator (LSO) routine calibrations are completed by Adur District Council every 2 weeks. Data ratification is carried out via the Sussex-air data management contract, which for 2021 was with Imperial College London's Environmental Research Group.

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 6 months and Local Site Operator (LSO) routine calibrations are completed by Worthing Borough Council every 2 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

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of PM_{10} 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

Annualisation is required for any site with data capture less than 75% but greater than 25%.

In August 2021 Adur site AD1 ceased measurements of PM_{10} and commenced measurements of $PM_{2.5}$. Therefore data capture for the year was 61% for PM_{10} and 34% for $PM_{2.5}$, so annualisation is required.

Details are contained in Table C.2.

NO_2 Fall-off with Distance from the Road

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

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure.

No automatic sites monitoring locations within Adur and Worthing required distance correction during 2021.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Chichester - A27	Annualisation Factor Horsham - Park Way	Annualisation Factor Lewes - Newhaven	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
AD1	1.00	0.97	0.96		0.98	24.8	24.2	PM_{10}
Site ID	**Annualisation Factor** Crawley – Gatwick Airport	**Annualisation Factor** Eastbourne - Holly Place	**Annualisation Factor** Worthing – Grove Lodge	**Annualisation Factor**	**Average Annualisation Factor**	**Raw Data Annual Mean**	**Annualised Annual Mean**	**Comments**
AD1	1.04	1.01	1.15		1.07	15.2	16.2	$PM_{2.5}$
Site ID	**Annualisation Factor WT2**	**Annualisation Factor AD1**	**Annualisation Factor**	**Annualisation Factor**	**Average Annualisation Factor**	**Raw Data Annual Mean**	**Annualised Annual Mean**	**Comments**
ADUR								
S51	1.0363	1.0082			1.0222	27.6	28.2	
WORTHING								
N27	1.0326	0.9665			0.9996	22.3	22.2	

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

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
N30A	2.2	2.4	44.4	11.9	43.7	*Predicted concentration at Receptor above AQS objective.*

Table C.4b - NO_2 Fall off With Distance Calculations for selected sites within Adur AQMA's (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
S17/18/19	0.9	5.9	24.8	11.4	19.8	Within Adur AQMA1. Average of the three tubes
S9	2.8	4.4	26.2	13.5	24.7	Within Adur AQMA2
N44A/B/C	2.8	21.6	29.8	11.9	20.5	Within Worthing AQMA2. Average of the three tubes

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

Figure D.1 – Map of Non-Automatic Monitoring Site- - Adur District and Worthing Borough

See next page

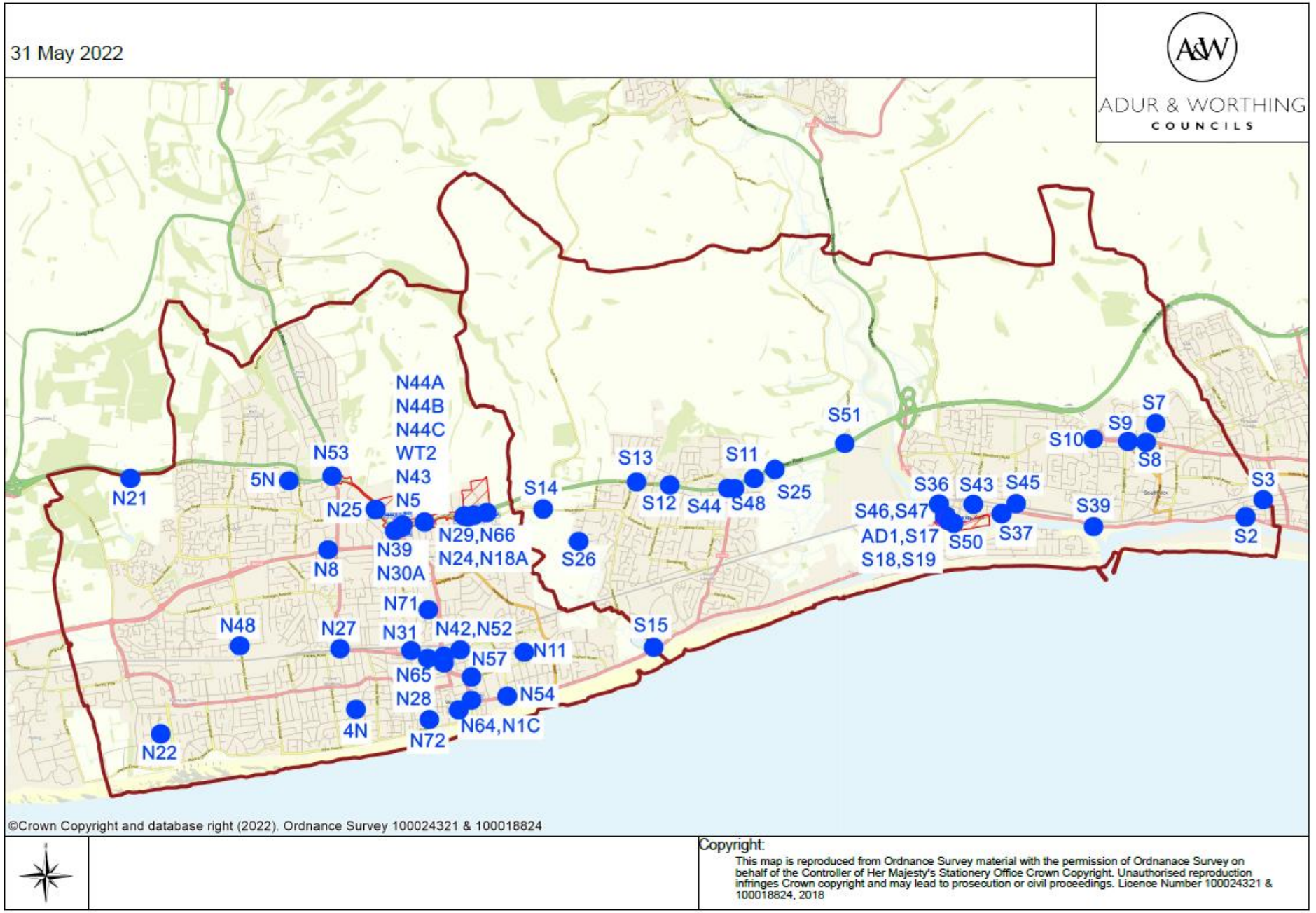
31 May 2022
ADUR & WORTHING
COUNCILS
N44A
N44B
N44C
WT2
N43
N5
N53
5N
N21
N25
N8
N39
N30A
N29,N66
N24,N18A
S14
S26
S13
S12
S11
S44
S48
S25
S51
S36
S43
S45
S46,S47
AD1,S17
S18,S19
S50
S37
S39
S10
S9
S7
S8
S3
S2
N71
N48
N27
N31
N42,N52
N57
N11
N65
N28
N54
N64,N1C
N72
4N
N22
S15
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Figure D.2 – Map of Non-Automatic Monitoring Sites – Adur - Shoreham

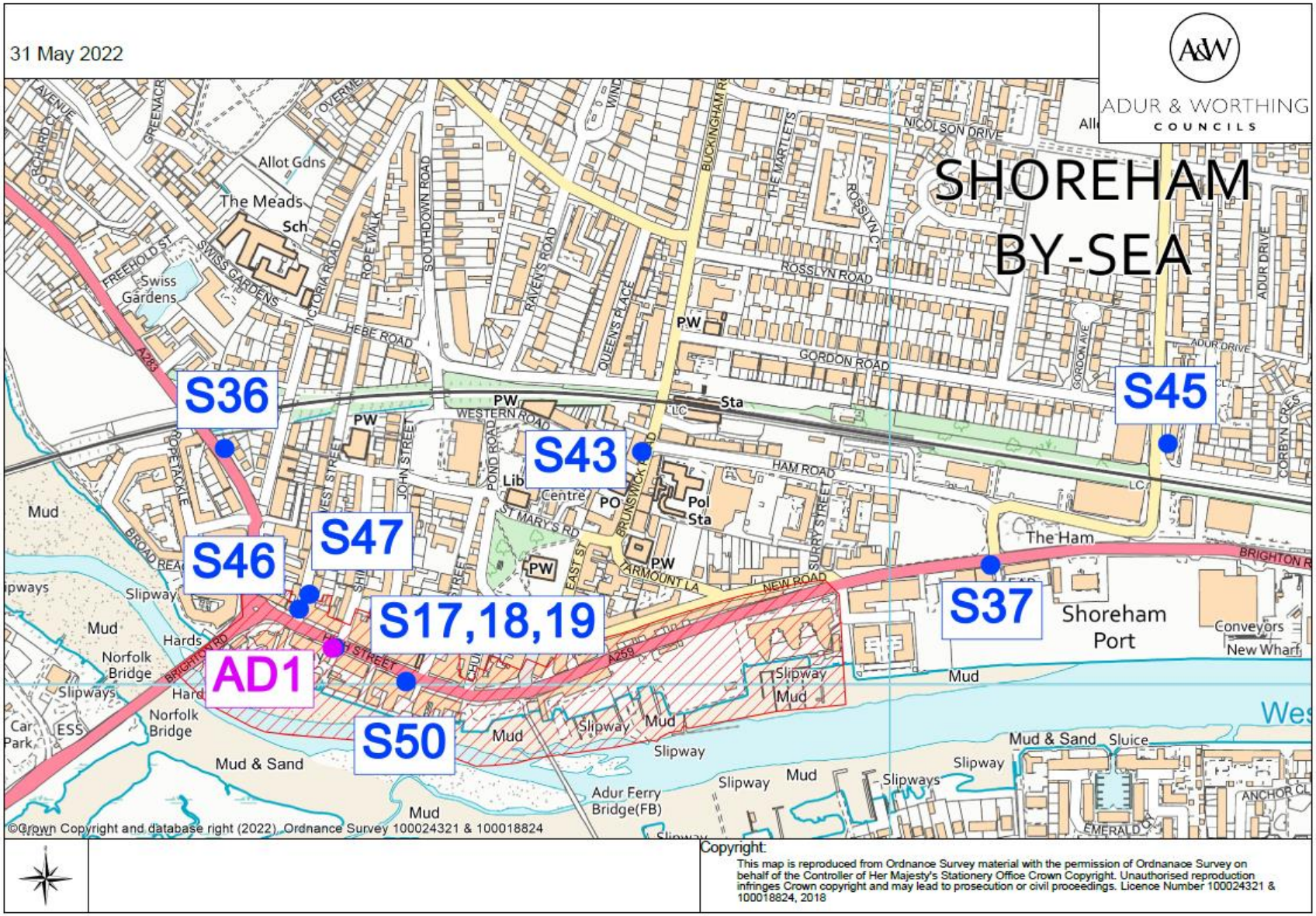


Figure D.3 – Map of Non-Automatic Monitoring Sites – Adur - Southwick & AQMA2

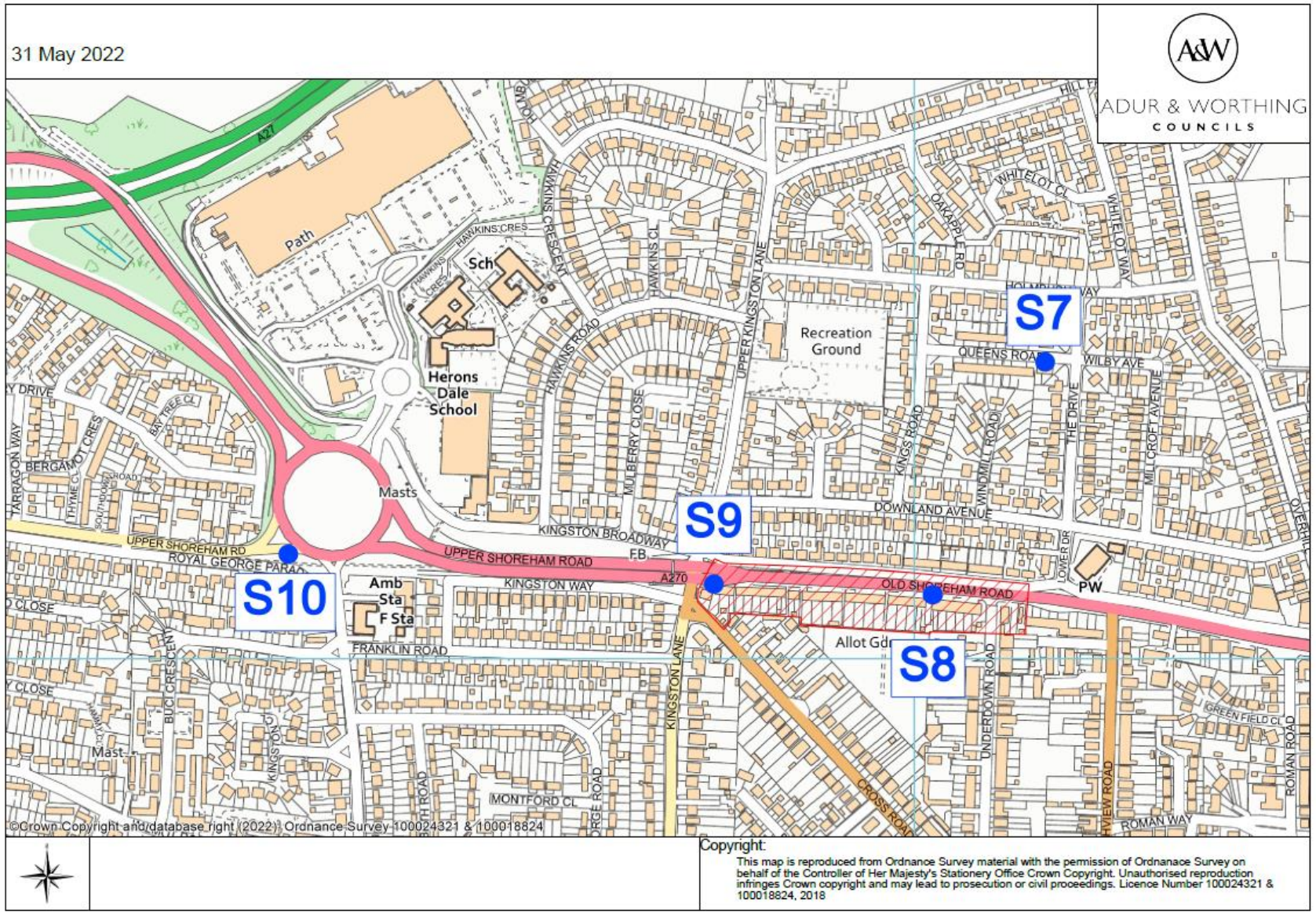


Figure D.3 – Map of Non-Automatic Monitoring Sites – Adur - Lancing

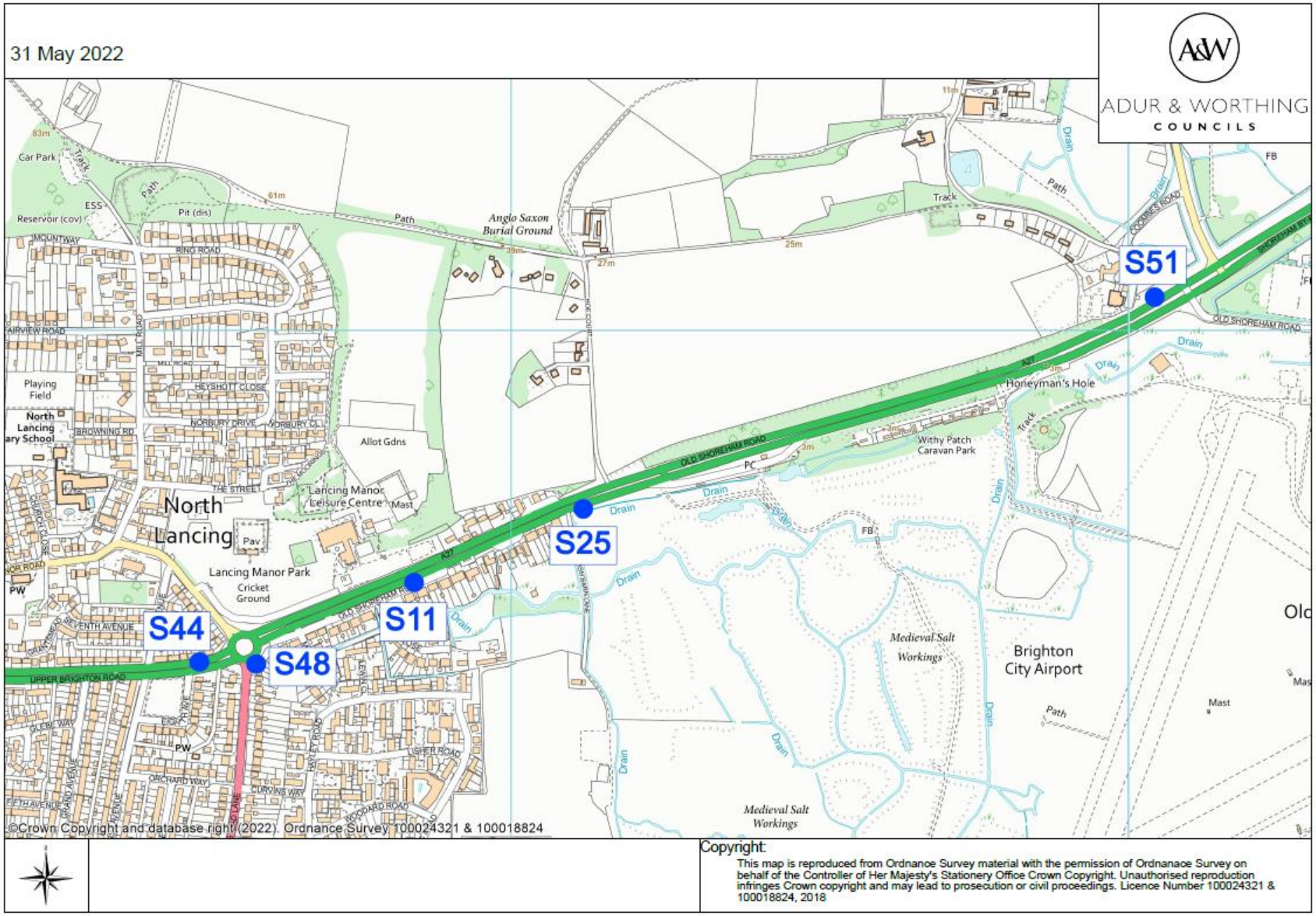


Figure D.4 – Map of Non-Automatic Monitoring Sites – Adur – Fishersgate

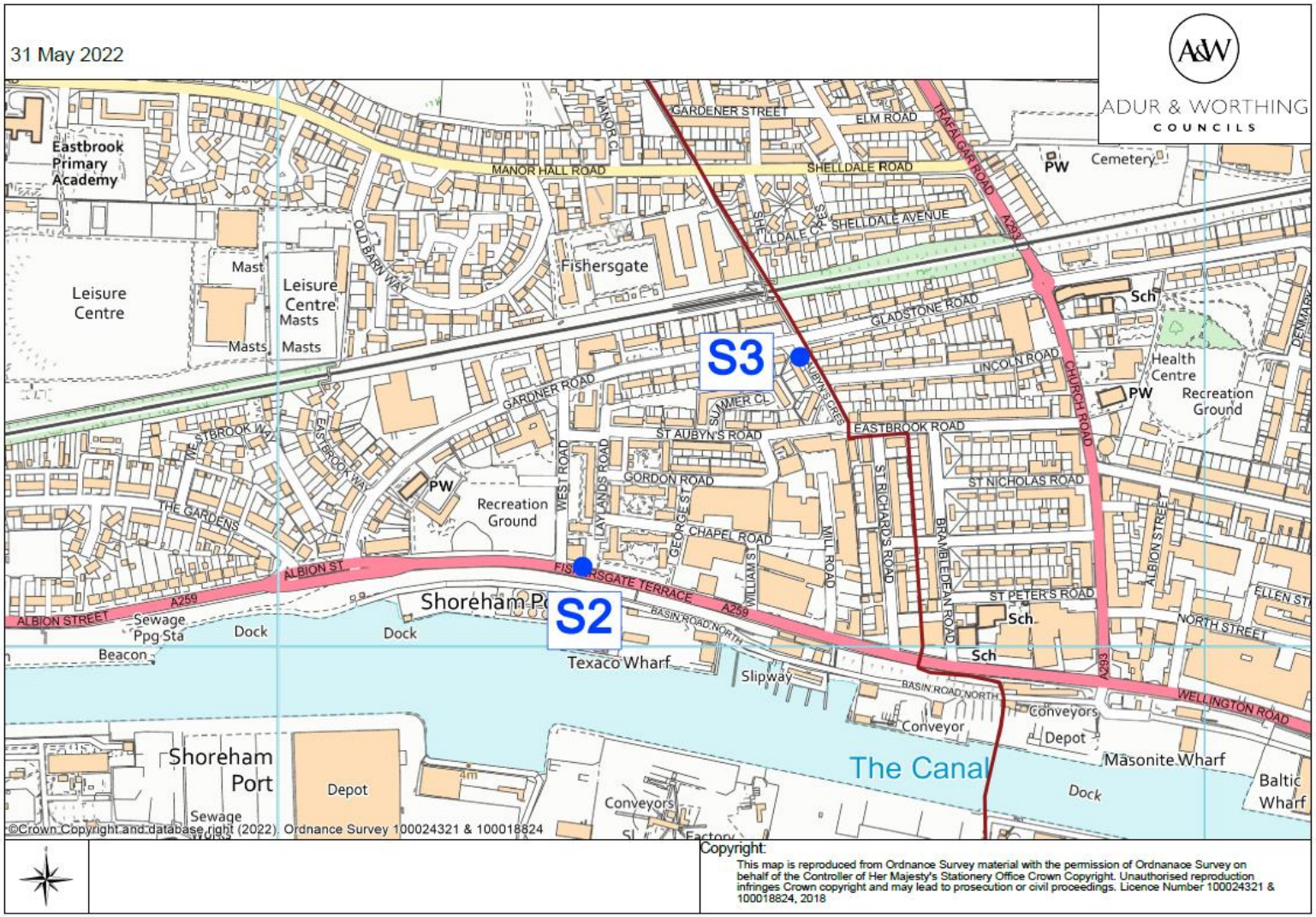


Figure D.5 – Map of Non-Automatic Monitoring Sites - Worthing

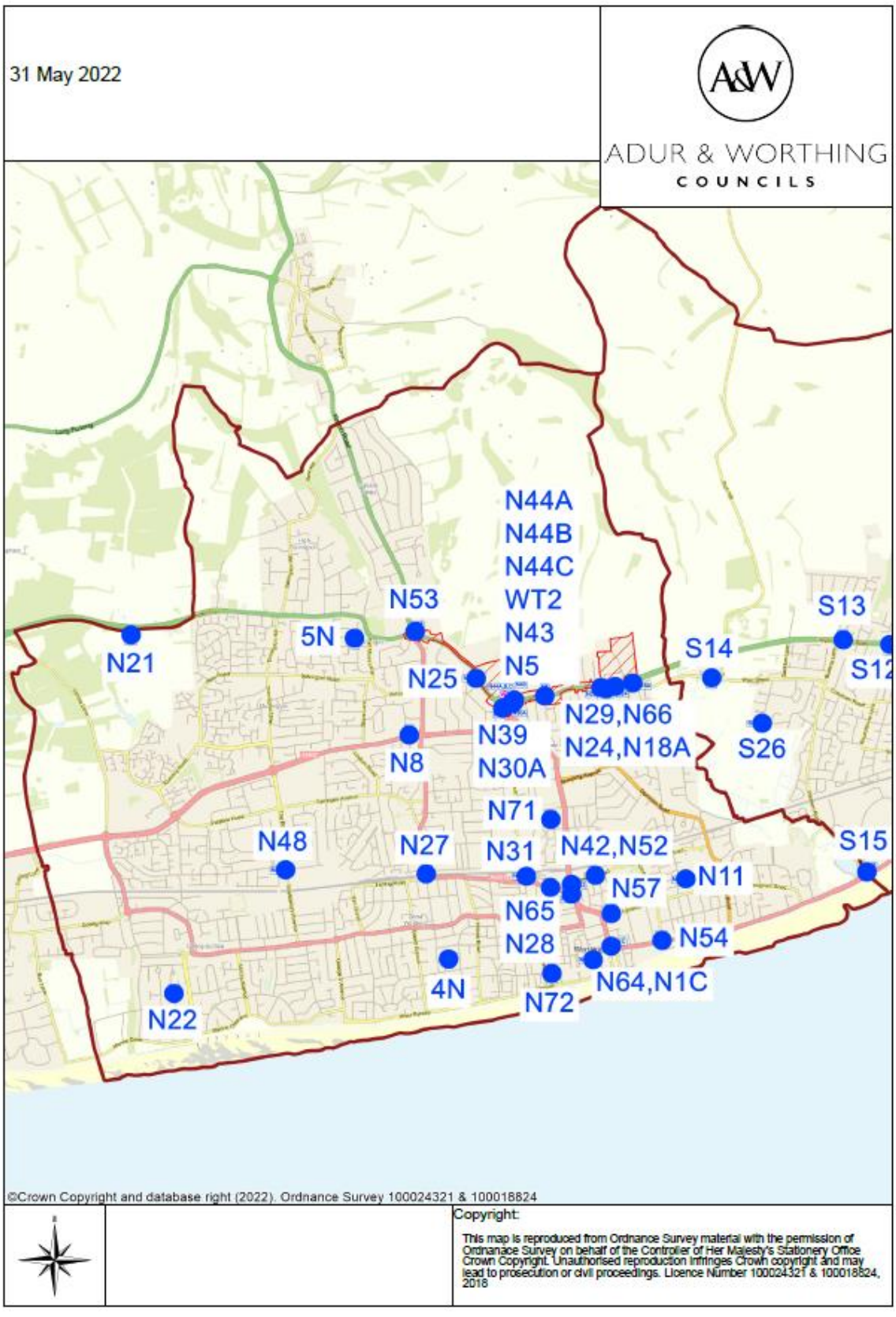


Figure D.6 – Map of Non-Automatic Monitoring Sites – Worthing AQMA No.2 and A27

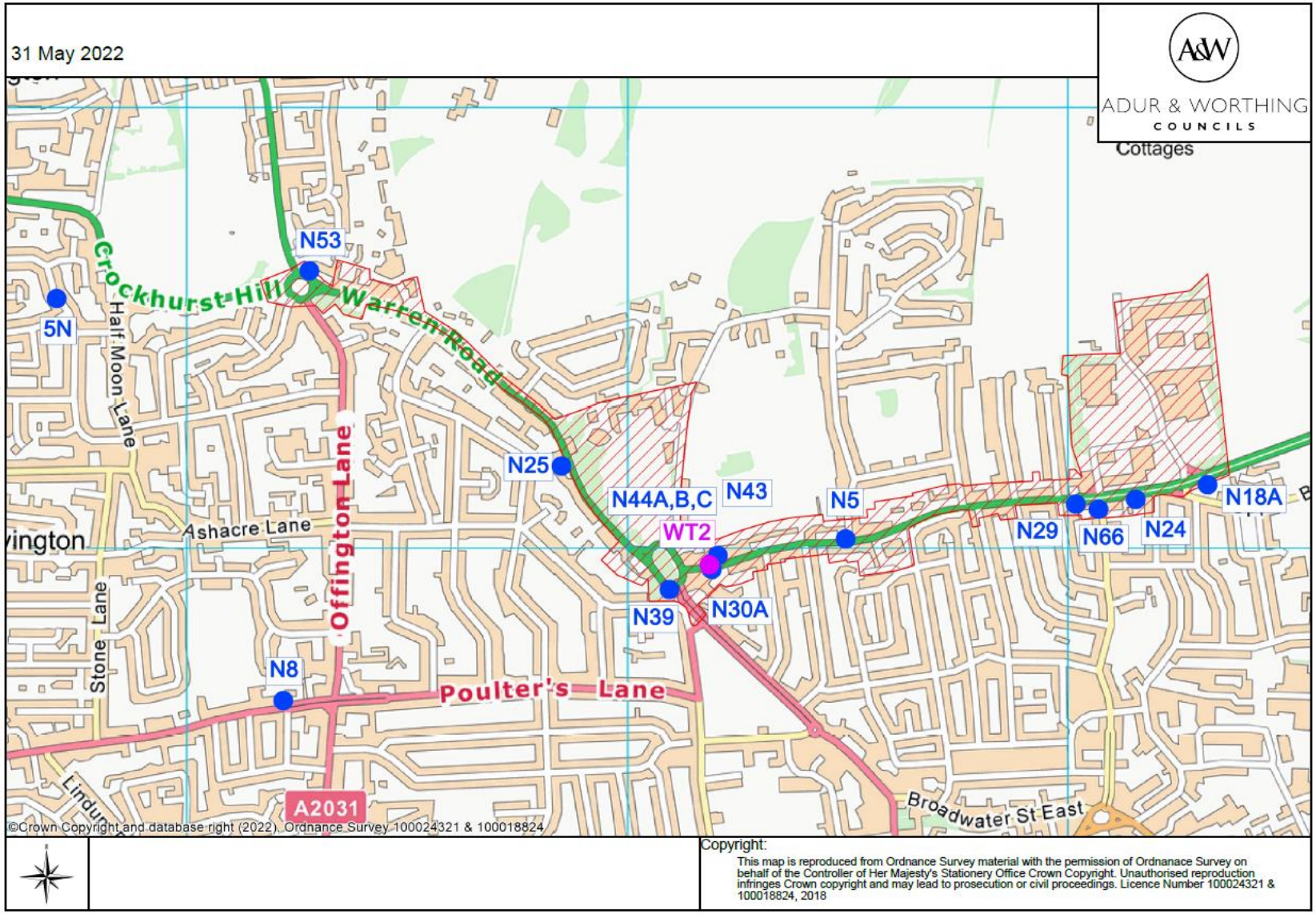


Figure D.7 – Map of Non-Automatic Monitoring Sites – Worthing Central

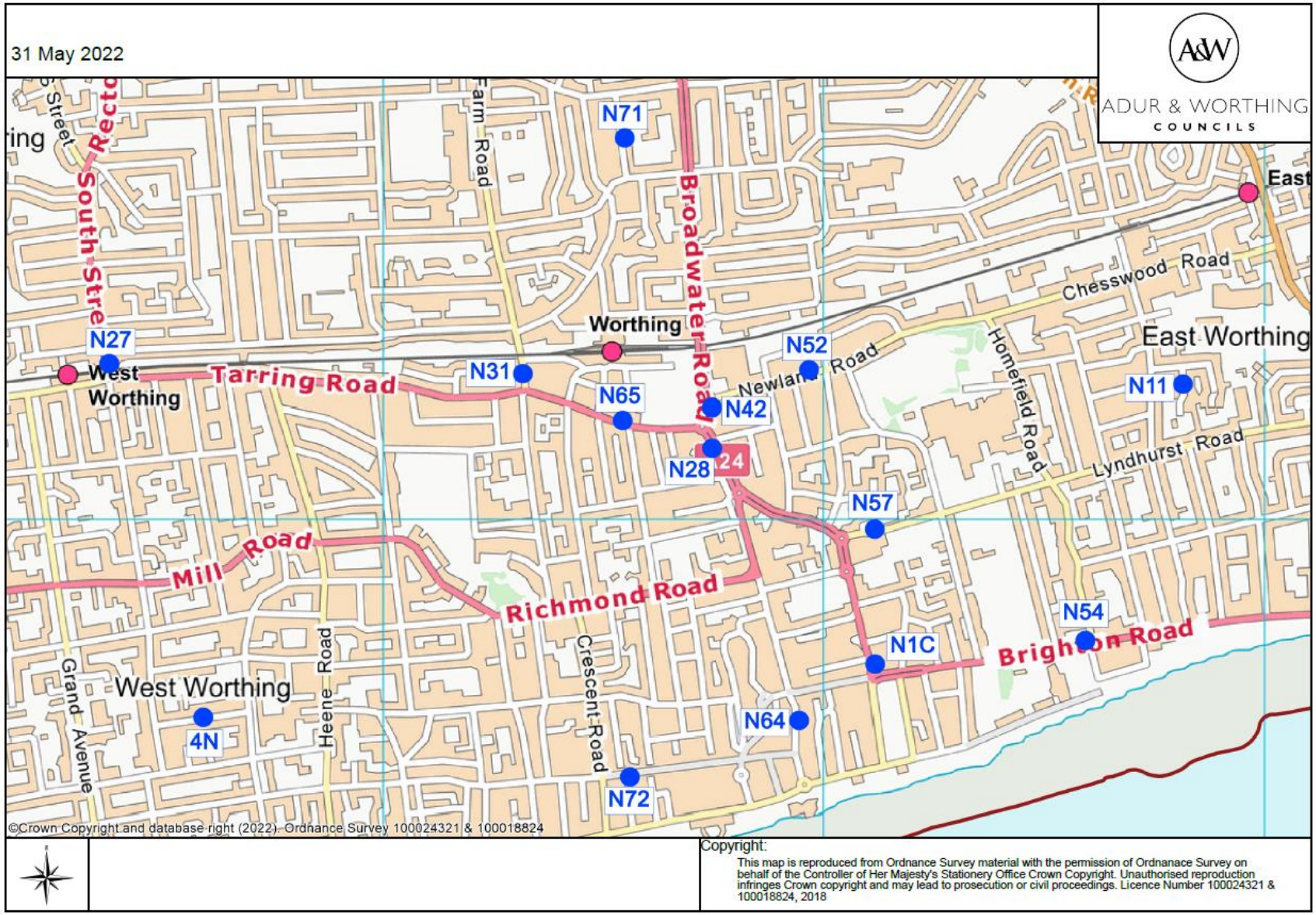
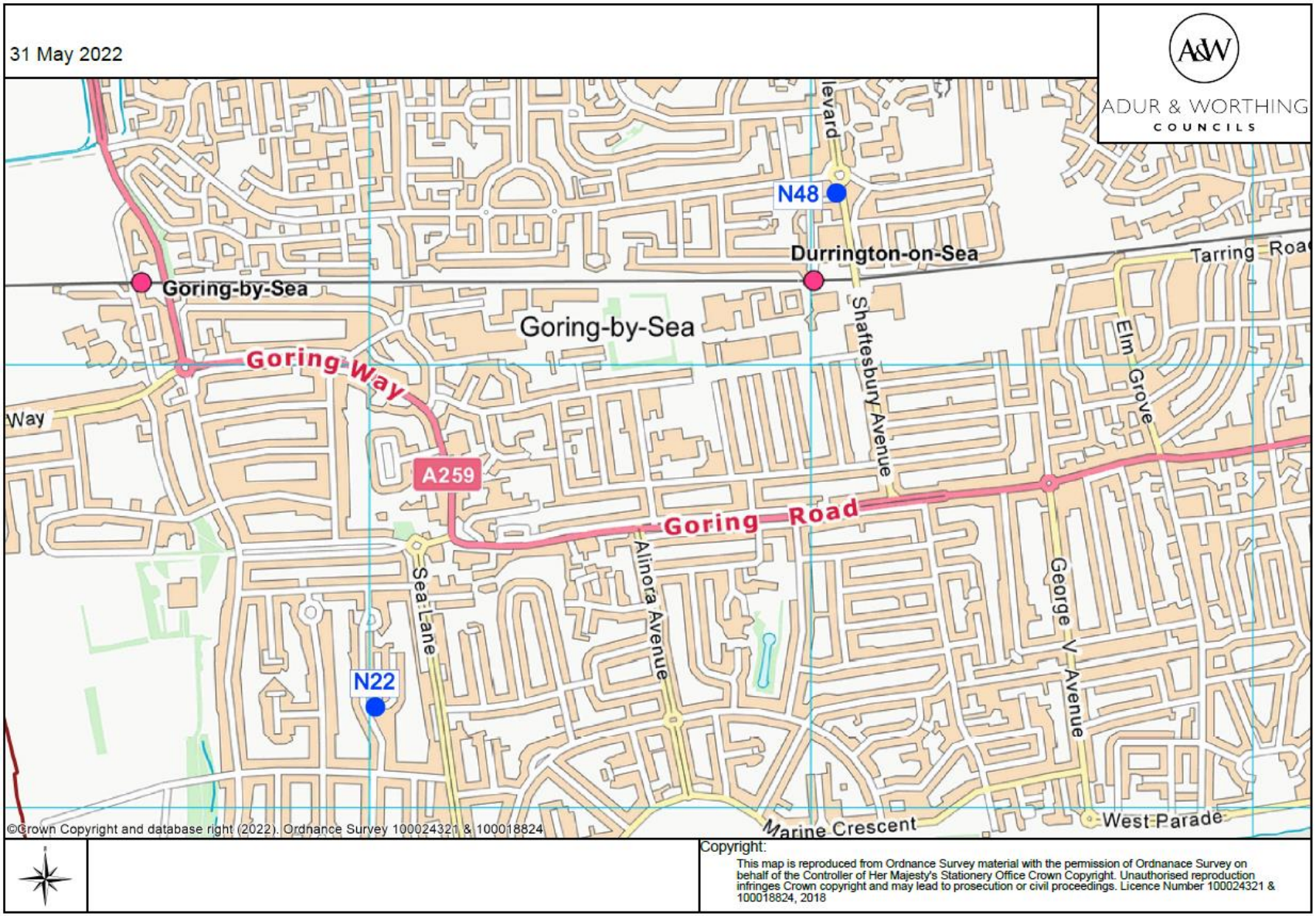


Figure D.8 – Map of Non-Automatic Monitoring Sites – Worthing West/Goring



Appendix E: TRAFFIC DATA

- Traffic data has been obtained from West Sussex County Council (WSCC) for three locations in Adur, allowing a comparison of traffic numbers. The table below shows Annual Average Daily Traffic (AADT) data for these sites. Volumes increased from 2020 levels by between 6 and 10% around AQMA1 after dropping due to the pandemic in the previous year. The traffic counter in Shoreham High Street (within AQMA1) was only reinstated in November 2021, so no meaningful data is available.

Table E.1 – Shoreham Traffic Data 2016-21

		AADT						Difference	% Difference
Site no.	Location	2016	2017	2018	2019	2020	2021	2020-21	
5035	A270 Old Shoreham Road, west of Southview Road, Southwick	23,667	23,671	23,288	23,541	N/A	21,229	N/A	N/A
257	A259 east of New Salts Farm Roundabout, Shoreham	25,915	25,415	25,194	24,730	20,991	22,266	+1,275	+6.1
5037	A283 Old Shoreham Road, o/p no.138, Shoreham	13,665	13,659	13,775	12,087	10,324	11,261	+937	+9.1

- Traffic data from Highways England for the A27 through Worthing shows AADT volumes increased by 10 and 13% in 2021. Data for 2016 - 2021 for both carriageways of the A27 near Grove Lodge is shown below.

Table E.2 – Worthing Traffic Data 2016-21

NTIS Link ID	NTIS Link Location Name	AADT 2016	AADT 2017	AADT 2018	AADT 2019	AADT 2020	AADT 2021	Difference 2020-21	% Difference
103024103	A27 westbound between A2025 and A24 near Worthing (east)	15,334	14,511	14,994	16,354	14,350	15,819	+1,469	+10.2
125021201	A27 eastbound between A24 near Worthing (east) and A2025	18,454	15,849	15,527	16,642	14,622	16,539	+1,917	+13.1

Appendix F: Summary of Air Quality Objectives in England

Table F.2 – Air Quality Objectives in England[9]

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

[9] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
EV	Electric Vehicle
FDMS	Filter Dynamics Measurement System
NH	National Highways
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
ULEV	Ultra-Low Emission Vehicles
WSCC	West Sussex County Council

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Air Quality and Emission Mitigation Guidance for Sussex (2021) - Available from https://www.sussex-air.net/