Isle of Wight Council

Annual Status Report 2021

Bureau Veritas

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Prepared By			
Approved By			

2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: October 2022

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Executive Summary: Air Quality in Our Area

Air Quality on the Isle of Wight

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

The Isle of Wight Council have continued to demonstrate that annual mean NO_2 concentrations across the local authority at all monitoring locations are below the Air Quality Objective for NO_2.

Following a review of the 2021 ASR appraisal, this updated 2021 ASR has addressed all concerns of the previously issued 2021 ASR including annualisation of current and historic data, clarification of bias adjustment factors and details of measures to reduce $PM_{2.5}$ emissions.

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.

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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 2020

[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

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements 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.

Although the Isle of Wight does not have any Air Quality Management Areas due to the continued levels of annual mean NO_2 being below the Air Quality Objective of 40µg/m^3 the Climate and Environment Strategy[7] developed at the end of December 2020 provide key measures that will not only help to improve greenhouse gas emissions, particularly CO_2 on the Island but also NO_2, PM_{10} and $PM_{2.5}$.

The strategy includes encouraging participation in Cycle to Work schemes, encourage walking to work, seeking funding for new bike storage facilities, and promoting staff discounts for public transport. Additionally, when discussing transport-based measures, the Isle of Wight are looking to install more EV charging points with an aim to have 72 charging points by 2030. Currently, a Scooter Scheme is being trailed in Newport and Ryde to encourage more sustainable modes of transport. Review of busy roads on the island is to be undertaken to determine where bike lanes are feasible. The majority of these measures are ongoing or due to being in the next few years.

Monitoring concentrations within the local authority have fluctuated with some monitoring locations having increases in NO_2 concentrations and others decreases. However, due to the effect of the COVID-19 pandemic during 2020, traffic levels have yet to return to baseline levels and as such the monitoring results in 2020 are not representative of the effectiveness of measures implemented to improve air quality[8].

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[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

[7] Climate and Environment Strategy 2021-2030 Isle of Wight Council https://iow.moderngov.co.uk/documents/s1870/Climate%20and%20Environment%20Strategy.pdf

[8] Department for Transport Road Traffic Estimates October 2020 to September 2021

Conclusions and Priorities

The Conclusions for the 2021 ASR indicates no significant increase or changes in air quality at those areas currently monitored. In view of this there is no justification for further detailed assessment or the designation of any air quality management areas at this time. The priority for the coming year will be to continue hotspot monitoring for NO_2 exceedances and continue to develop a public facing web-based portal to allow public viewing of Air quality data.

Local Engagement and How to get Involved

Due to the main source of air pollution on the Isle of Wight being from transport sources, the public can get involved in helping reduce the release of air pollution and thus improving air quality within the district by looking at alternative means of travel. The following are possible alternatives to private travel that would contribute to improving air quality within the district:

Walk or cycle:

• Replacing a car journey by walking or cycling helps reduce traffic and traffic emissions. It has proven health and mental health benefits too. Walking or cycling to school can improve a child's concentration and makes children more alert, fit and healthy.

Take public transport or car share:

• For longer journeys, why not use public transport or car share? Car sharing can help combat congestion and help reduce pollution within urban areas, as well as save you money.

Smart Cycling Corridor

PedalAid- pedalaid.org – An app that captures cycle data along the Red Squirrel Trail (Cycle Network 23) to raise money for charity. – Download to understand how this works if you are unsure. Available on App Store etc.

Electric Cargo Bike Programme – Funding was given to a local business to use a cargo bike for last mile deliveries – Data is not available as bike was delivered late March.

Electric Bikes in Domiciliary Care – Electric Bikes were used in Freshwater to deliver domiciliary care services in Freshwater.

Access to Employment

Workplace Engagement Programme (Connect2Work) – Information about the programme is on the website below, however to discuss please contact the number or email above .

Website: connect2work.info

Twitter: https://twitter.com/connect2workiow

Facebook: https://www.facebook.com/connect2workiow/

Access to Visitor Experiences – To find out more about these projects, please visit http://www.visitwight.org/

Tourism Business Engagement Programme – Businesses can earn a 'Green Star' award based on the actions they achieve to promote and encourage sustainable transport. https://visitwightpro.com/green-star-scheme/ - Has included businesses giving out Key cards to encourage bus use.

Travel Ambassador Volunteers – Volunteers help visitors to find alternative transport methods to the car. Usually deployed at tourist attractions, ferry ports and terminals during the season or significant events. e.g. Beer and Buses.

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality on the Isle of Wight during 2020. 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 the Isle of Wight during 2020 to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

The Isle of Wight during 2020 currently does not have any declared AQMAs.

However as detailed within the Climate and Environment Strategy there are a number of measures being proposed to improve not only carbon emissions but also local air quality. These include;

- Encouraging participation in Cycle to Work schemes;
- Encourage walking to wok;
- Seeking funding for new bike storage facilities;
- Promoting staff discounts for public transport;
- Installation of more EV charging points with an aim to have 72 charging points by 2030;
- Scooter Scheme is being trailed in Newport and Ryde to encourage more sustainable modes of transport; and,
- Review of busy roads on the island is to be undertaken to determine where bike lanes are feasible.

Many more measures are being implemented over the next 10 years.

Table 2.1 – Declared Air Quality Management Areas

The Isle of Wight during 2020 currently does not have any declared AQMAs.

2.2 Progress and Impact of Measures to address Air Quality on the Isle of Wight

Defra's appraisal of the 2020 ASR concluded:

1. *"The following significant issues regarding the report structure are highlighted:*
    a. *No evidence of annualisation. Annualisation is required where data capture for 2019 <75 %. Please use the Defra provided tool: https://laqm.defra.gov.uk/tools-monitoring-data/annualisation.html*
    b. *The comments of the previous Appraisal of the ASR and how they were addressed are not shown. It is noted that similar issues were also present in the previous appraisal of 2019 ASR; these issues were not addressed with a resubmission.*
    c. *Please could the bias adjustment factor be added to Table B.1.*
2. *Robust and accurate QA/QC procedures were applied with exception of point 1(a). Calculations for bias adjustment, and distance-correction factors were outlined in detail.*
3. *The Council has included discussion and review of its monitoring strategy. It was pleasing to see the trends being shown and discussed.*
4. *The council do not detail any measures to address $PM_{2.5}$ or how these link to the Public Health Outcomes Framework. It is expected that local authorities work towards reducing emissions of $PM_{2.5}$ and address links to Public Health Outcomes framework (Section 2.3). This is highlighted as a requirement and **must** be included in all future reports.*
5. *Council have provided a clear map of the diffusion tube monitoring network.*
6. *Overall, once the changes outlined in point 1 above are made and the relevant updates are made, the report will satisfy the criteria of relevant standards."*

This 2021 ASR has been re-submitted as the original ASR submitted in June 2021 was not approved due to the above information.

Within this updated 2021 ASR the above comments have been addressed. Comments from previous ASR's have also been addressed, this includes annualising all previous data where annualisation has not been undertaken (2019 and 2018 monitoring data), providing bias adjustment factors and details of measures towards reducing PM2.5.

No specific measures have been identified as there are no air quality management areas on the Isle of Wight.

Table 2.2 – Progress on Measures to Improve Air Quality

No specific measures have been identified as there are no air quality management areas on the Isle of Wight.

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

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

The current Defra 2021 background maps for Isle of Wight Council (2018 reference year[9]) show that all background concentrations of $PM_{2.5}$ are well below the annual mean objective for $PM_{2.5}$. The highest concentration is 10.46µg/m^3 within the 1km x 1km grid square with the centroid grid reference of 449500, 95500.

The Public Health Outcomes Framework data tool[10] compiled by Public Heath England (PHE) quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2020 fraction of mortality attributable to $PM_{2.5}$ pollution across England is 5.6%. in the South East Region it is 6.0% and on the Isle of Wight it is slightly lower at 5.5%.

The Isle of Wight Council is not taking any specific measures to address $PM_{2.5}$, as no specific problem has been identified. However the measures detailed above, will all have beneficial effects on improving $PM_{2.5}$.

- Encouraging participation in Cycle to Work schemes;
- Encourage walking to work;
- Seeking funding for new bike storage facilities;
- Promoting staff discounts for public transport;
- Installation of more EV charging points with an aim to have 72 charging points by 2030;
- Scooter Scheme is being trailed in Newport and Ryde to encourage more sustainable modes of transport; and,

[9] Defra Background Mapping data for local authorities (2018-based), available online a: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

[10] Public Health Outcomes Framework, Public Health England. data tool available online at: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/0/gid/1000043/pat/6/par/E12000004/ati/401/iid/30101/age/230/sex/4/cid/4/tbm/1

- Review of busy roads on the island is to be undertaken to determine where bike lanes are feasible.

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

This section sets out the monitoring undertaken within 2020 by the Isle of Wight Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

There are no automatic (continuous) monitoring sites on the Isle of Wight.

3.1.2 Non-Automatic Monitoring Sites

The Isle of Wight Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 14 sites during 2020. Table A.2 in Appendix A presents the details of the non-automatic sites.

In January 2020 the following monitoring sites were introduced within the Isle of Wight monitoring network.

- IOW18 – Newport, 30 Fairlee Road
- IOW19 – Newport Flat 5 Carson Mews, Fairlee Road

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

3.2 Individual Pollutants

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

3.2.1 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 2020 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.

3.2.2 Particulate Matter (PM_{10})

Particulate Matter (PM_{10}) is not monitored on the Isle of Wight.

3.2.3 Particulate Matter ($PM_{2.5}$)

Particulate Matter ($PM_{2.5}$) is not monitored on the Isle of Wight.

3.2.4 Sulphur Dioxide (SO_2)

Sulphur Dioxide (SO_2) is not monitored on the Isle of Wight.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

There are no automatic (continuous) monitoring sites on the Isle of Wight.

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)
IOW1, IOW2, IOW3	Newport Fairlee	Kerbside	450377	89557	NO2	No	11.0	0.5	No	3.0
IOW4	Brading	Roadside	460613	87197	NO2	No	0.0	3.0	No	3.0
IOW5	Newport St James Square	Urban Centre	449862	89110	NO2	No	5.0	1.0	No	3.0
IOW8	Newport Traflagar Road	Roadside	449354	88682	NO2	No	10.0	1.0	No	3.0
IOW9	Lake	Roadside	459008	83715	NO2	No	23.0	2.0	No	3.0
IOW10	Newport Coppins Bridge	Kerbside	450297	89227	NO2	No	0.0	1.0	No	3.0
IOW12	East Cowes	Kerbside	450277	95678	NO2	No	0.0	0.5	No	3.0
IOW13	Wooton (Crossways High St)	Roadside	453959	91937	NO2	No	13.0	4.0	No	3.0
IOW14	Wootton 119 High Street	Kerbside	454098	91982	NO2	No	0.0	1.0	No	3.0
IOW15	St Johns Road (Traffic Lights)	Kerbside	459193	92154	NO2	No	3.0	1.0	No	3.0
IOW16	St Johns Road (Scouts)	Kerbside	459199	92141	NO2	No	5.0	1.0	No	3.0
IOW17	St Johns Road (No23)	Kerbside	459199	92141	NO2	No	5.0	1.0	No	3.0

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)
IOW18	Newport 30 Fairlee Road	Roadside	450419	89646	NO2	No	0.0	5.0	No	3.0
IOW19	Newport Flat 5 Carson Mews Fairlee Road	Roadside	450494	89765	NO2	No	0.0	5.0	No	3.0

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

There are no automatic monitoring sites on the Isle of Wight.

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 2020 (%) [2]	2016	2017	2018	2019	2020
IOW1, IOW2, IOW3	450377	89557	Kerbside	83	84.6	33.7	37.3	42.6	30.0	29.1
IOW4	460613	87197	Roadside	83	84.6		20.8	20.1	20.2	15.7
IOW5	449862	89110	Urban Centre	83	84.6		22.9	25.0	21.6	16.7
IOW6	449413	89005	Roadside	-	-		13.7	16.4	14.9	
IOW7	449702	88865	Roadside	-	-		16.7	17.1	14.6	
IOW8	449354	88682	Roadside	83	84.6		28.8	26.0	25.3	21.8
IOW9	459008	83715	Roadside	83	84.6	20.4	21.6	22.0	20.7	19.9
IOW10	450297	89227	Kerbside	83	84.6		33.0	34.2	33.2	21.5
IOW11	456536	77653	Roadside	-	-			21.0	20.4	
IOW12	450277	95678	Kerbside	66	69.2			18.6	22.3	18.0
IOW13	453959	91937	Roadside	66	84.6			29.5	30.9	29.0
IOW14	454098	91982	Kerbside	66	67.3			29.8	33.2	31.8
IOW15	459193	92154	Kerbside	66	76.9				21.9	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 2020 (%) (2)	2016	2017	2018	2019	2020
IOW16	459199	92141	Kerbside	83	84.6				24.2	24.1
IOW17	459199	92141	Kerbside	83	84.6				29.8	28.4
IOW18	450419	89646	Roadside	75	76.9					24.3
IOW19	450494	89765	Roadside	75	76.9					17.8

☒ **Annualisation has been conducted where data capture is <75% and >33% 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

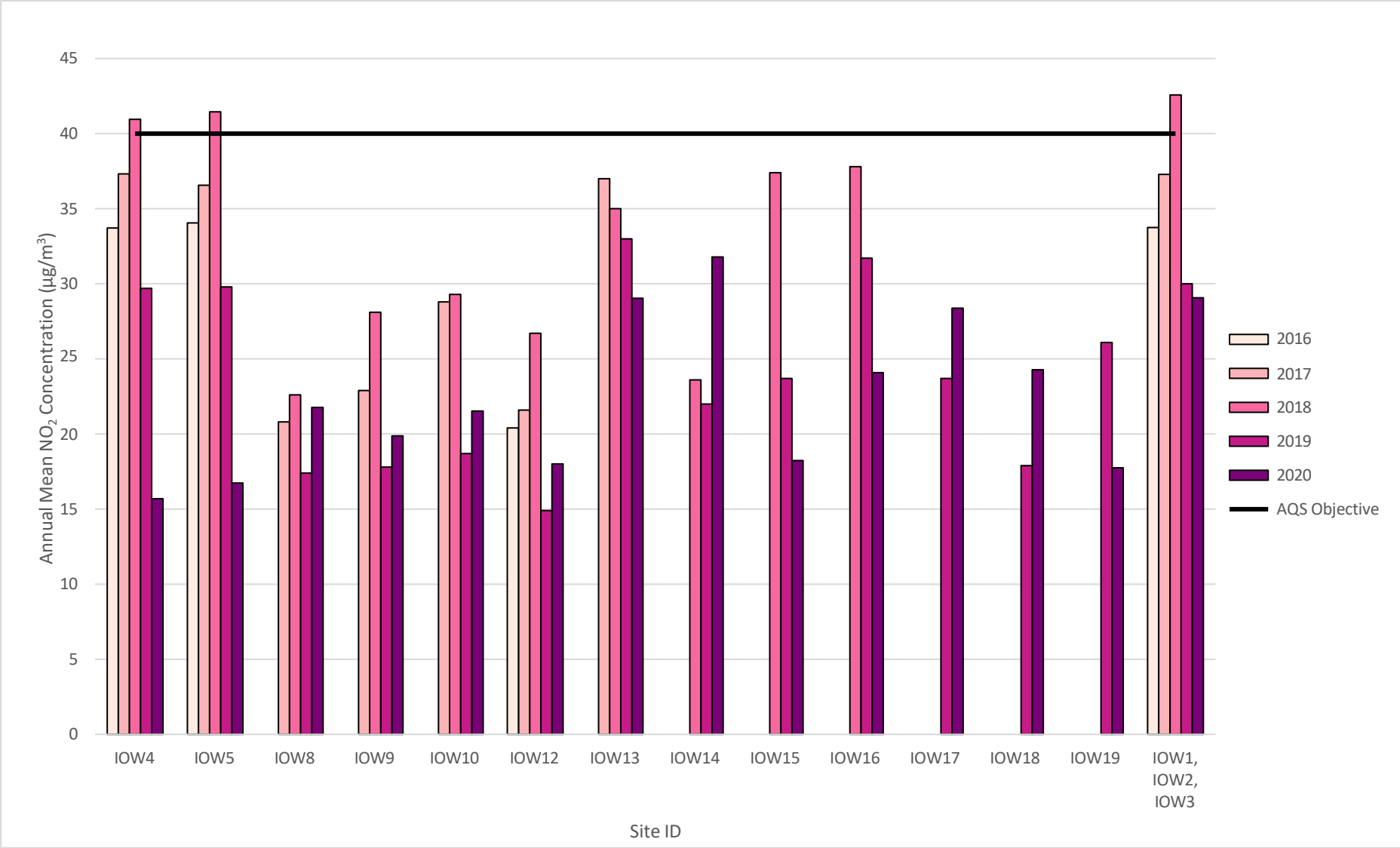


Figure A.1 presents NO2 annual mean concentrations for sites IOW1 to IOW19 between years 2016 to 2020. With the exception of triplicate site IW1 to IW3 Fairlee Road Newport and IW9 Lake all other sites have been added since 2016 with monitoring locations IOW6, IOW7 and IOW11 decommissioned at the end of 2019 and monitoring locations IOW 15, IOW16 and IOW17 introduced at the end of 2019 and IOW18 and IOW19 in January 2020. The graph above demonstrates that the highest monitoring location, IOW1-IOW3 triplicate monitoring location has been within 10% of the Air Quality Objective for the Annual Mean for NO_2.No other monitoring location on the Island has been within 10% of the AQO for NO_2 and trends in the data show general decreases in NO_2 concentrations across the last 5 years.

There are no exceedances of the annual mean objective in 2020 and there is a general trend of reduction experienced across the sites.

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted 0.84	Annual Mean: Distance Corrected to Nearest Exposure	Comment
IOW1	450377	89557	38.2	35.1			30.4	33.0	34.4	42.8	36.4	36.5	38.6	20.6	-	-	-	Triplicate Site with IOW1, IOW2 and IOW3 - Annual data provided for IOW3 only
IOW2	450377	89557	43.4	35.7			35.8	29.0	31.7	42.0	38.6	33.6	37.2	22.0	-	-	-	Triplicate Site with IOW1, IOW2 and IOW3 - Annual data provided for IOW3 only
IOW3	450377	89557	40.6	29.6			33.6	31.6	32.3	43.2	36.1		40.9	20.2	34.6	29.1	-	Triplicate Site with IOW1, IOW2 and IOW3 - Annual data provided for IOW3 only
IOW4	460613	87197	24.7	12.9			17.9	16.3	17.1	23.7	19.8	19.6	22.4	12.3	18.7	15.7	-	
IOW5	449862	89110	25.9	17.4			18.4	17.9	16.2	24.4	19.9	19.5	25.4	14.4	19.9	16.7	-	
IOW8	449354	88682	23.1	24.4			23.2	21.8	26.7	30.1	32.2	30.7	33.5	13.4	25.9	21.8	-	
IOW9	459008	83715	29.1	18.3			23.6	19.9	22.4	28.4	27.5	22.2	30.9	14.2	23.7	19.9	-	
IOW10	450297	89227	26.7	23.8			17.7	22.6	26.5	34.3	29.1	31.1	29.7	15.0	25.6	21.5	-	
IOW12	450277	95678		18.0			20.0		17.2	26.7	20.9	22.2	26.6	12.1	20.4	18.0	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted 0.84	Annual Mean: Distance Corrected to Nearest Exposure	Comment
IOW13	453959	91937	35.8	36.5			37.2	32.5	30.9	44.5	34.2	34.6	40.7	18.9	34.6	29.0	-	
IOW14	454098	91982	34.2				34.4	24.5	36.0	46.0	35.8	35.9	41.1		36.0	31.8	-	
IOW15	459193	92154	37.8				21.4	19.1	15.8	26.5	22.5	17.0	23.8	11.3	21.7	18.2	-	
IOW16	459199	92141	34.4	26.0			25.5	26.8	26.6	33.1	32.1	30.5	34.6	17.2	28.7	24.1	-	
IOW17	459199	92141	42.2	27.3			28.1	30.5	35.0	44.7	37.3	36.5	41.1	15.2	33.8	28.4	-	
IOW18	450419	89646		23.9			31.8	29.2	25.0	36.9	32.3	28.3	35.0	17.9	28.9	24.3	-	
IOW19	450494	89765		23.7			23.3	17.8	16.2	27.1	23.7	19.0	25.5	13.8	21.1	17.8	-	

☒ **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 >33% in line with LAQM.TG16.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **Isle of Wight Council confirm that all 2020 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 on the Isle of Wight During 2020

The Isle of Wight Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by the Isle of Wight Council During 2020

The Isle of Wight Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

The supplier used for diffusion tubes within 2020 was Gradko International Ltd. For the month of May only SOCOTEC needed to be used due to Gradko being unable to process the tubes.

Both laboratories used the method of preparation: 50% TEA v/v in Acetone and the Analytical Method: U.V. Spectrophotometry.

The method used had an uncertainty of measurement of ± 9.7% and a limit of Detection of 0.040 µg NO2.

Both Gradko International Ltd and SOCOTEC have UKAS accreditation. If the diffusion tube supplier has been changed part way through the year (if so provide the previous two points for both suppliers).

Monitoring was completed in adherence with the 2020 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

With the exception of IOW12 and IOW14 all other diffusion tube monitoring locations on the Isle of Wight recorded data capture of 75%. 3 background monitoring sites within the AURN network, within 50 miles have been identified for annualisation of IOW12 and IOW14. Details of Annualisation can be seen in Table C.2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

The Isle of Wight Council have applied a national bias adjustment factor of 0.84 to the 2020 monitoring data. A summary of bias adjustment factors used by the Isle of Wight council over the past five years is presented in Table C.1 and Figure C.1.

Figure C.1 – National Bias Adjustment Factor 2020

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/22

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2022

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data [2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor [3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote [4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By [1]	Method (To undo your selection, choose (All) from the pop-up list)	Year [2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision [4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in Acetone	2020	UC	Falkirk Council	10	33	26	24.9%	G	**0.80**
Gradko	50% TEA in Acetone	2020	UB	Falkirk Council	11	16	12	33.6%	G	**0.75**
Gradko	50% TEA in acetone	2020	UB	Middlesbrough Council	10	18	12	46.1%	G	**0.68**
Gradko	50% TEA in acetone	2020	R	Royal Borough of Windsor and Maidenhead	12	29	25	17.3%	G	**0.85**
Gradko	50% TEA in acetone	2020	R	Royal Borough of Windsor and Maidenhead	12	24	22	11.7%	G	**0.90**
Gradko	50% TEA in acetone	2020	SU	Redcar & Cleveland Borough Council	11	16	13	23.4%	P	**0.81**
Gradko	50% TEA in acetone	2020	R	Newham	10	29	24	18.2%	G	**0.85**
Gradko	50% TEA in acetone	2020	R	Sandwell MBC	12	34	27	26.9%	G	**0.79**
Gradko	50% TEA in acetone	2020	B	Sandwell MBC	9	14	11	23.0%	S	**0.81**
Gradko	50% TEA in acetone	2020	R	Sandwell MBC	11	25	23	9.4%	S	**0.91**
Gradko	50% TEA in acetone	2020	UB	Sandwell Metropolitan Borough Council	11	21	19	9.4%	G	**0.91**
Gradko	50% TEA in acetone	2020	KS	Marylebone Road Intercomparison	12	57	43	33.0%	G	**0.75**
Gradko	50% TEA in acetone	2020	R	London Borough of Richmond upon Thames	12	22	20	9.4%	G	**0.91**
Gradko	50% TEA in acetone	2020	B	London Borough of Richmond upon Thames	9	19	16	20.3%	G	**0.83**
Gradko	50% TEA in acetone	2020	UB	Reading Borough Council	12	14	15	-7.7%	G	**1.08**
Gradko	50% TEA in acetone	2020	R	Reading Borough Council	12	30	25	20.2%	G	**0.83**
Gradko	50% TEA in acetone	2020	UB	Norwich City Council	10	12	10	14.4%	G	**0.87**
Gradko	50% TEA in acetone	2020	SU	Reigate and Banstead BC (RG1)	10	19	14	33.3%	G	**0.75**
Gradko	50% Tea in Acetone	2020	KS	Slough Borough Council	12	34	27	23.5%	G	**0.81**
Gradko	50% TEA in Acetone	2020	SU	Slough Borough Council	11	21	17	29.2%	G	**0.77**
Gradko	50% TEA in Acetone	2020	KS	Slough Borough Council	12	29	25	17.9%	G	**0.85**
Gradko	50% TEA in acetone	2020	R	East Herts District Council	11	25	26	-4.2%	G	**1.04**
Gradko	50% TEA in acetone	2020		**Overall Factor [3] (22 studies)**				**Use**		**0.84**

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	04/22	0.84
2019	National	09/20	0.87
2018	National	06/19	0.89
2017	National	09/18	0.96
2016	National	06/17	1.01

NO_2 Fall-off with Distance from the Road

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

No diffusion tube NO_2 monitoring locations on the Isle of Wight required distance correction during 2020.

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

Site ID	Annualisation Factor Andover-Chilbolton Observatory	Annualisation Factor Bournemouth	Annualisation Factor Brighton Preston Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
IOW12	1.0676	1.0464	1.0301	1.0480	20.4	21.4	
IOW14	1.0454	1.0512	1.0581	1.0516	36.0	37.8	

Table C.3 – Local Bias Adjustment Calculation

A National bias adjustment factor has been used to bias adjust the 2020 diffusion tube results.

Table C.4 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

No NO2 Fall off With Distance Calculations have been used to on the 2020 diffusion tube results.

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

Figure D.1 – Map of Non-Automatic Monitoring Site – Newport

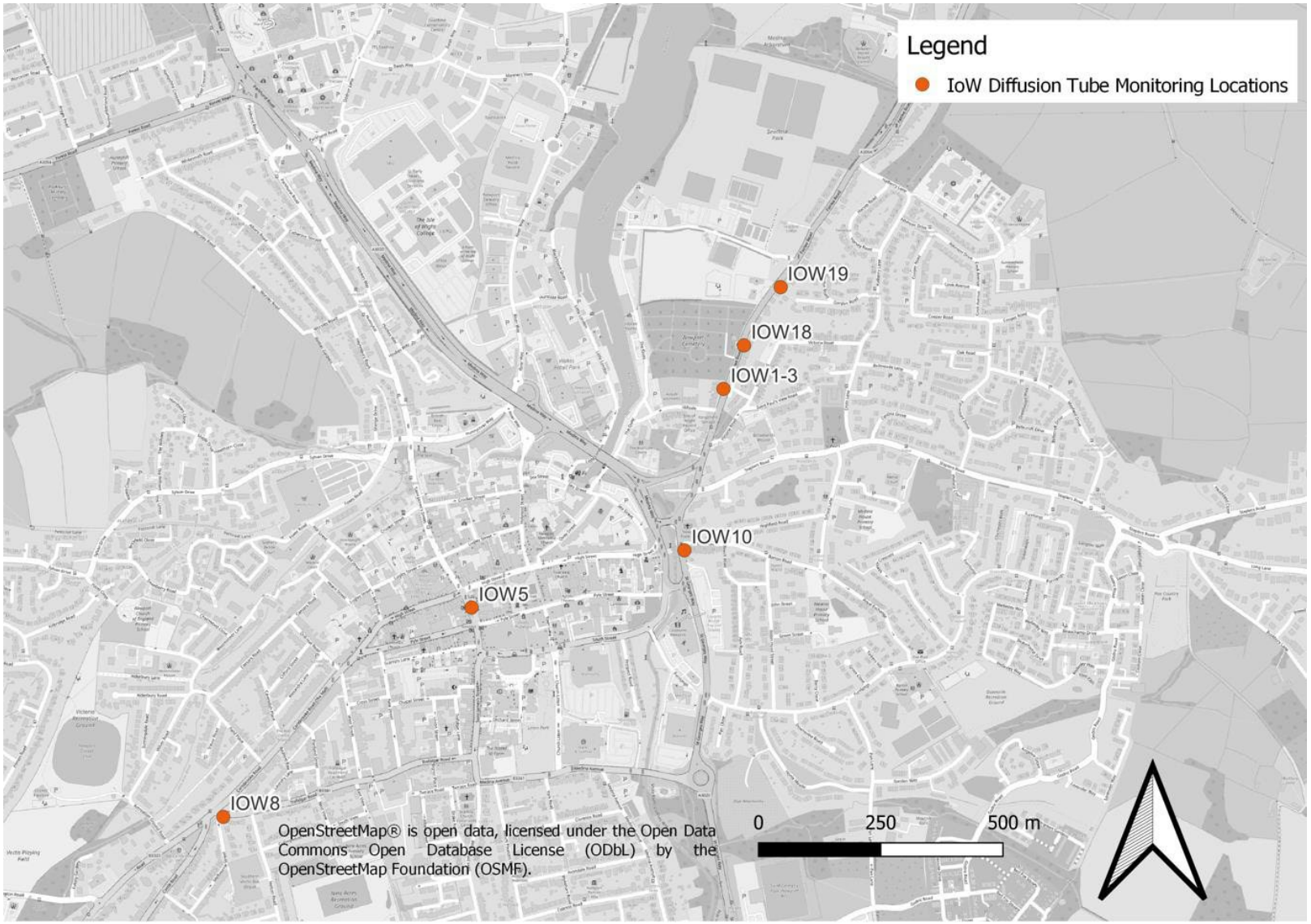


Figure D.2 – Map of Non-Automatic Monitoring Site – East Cowes

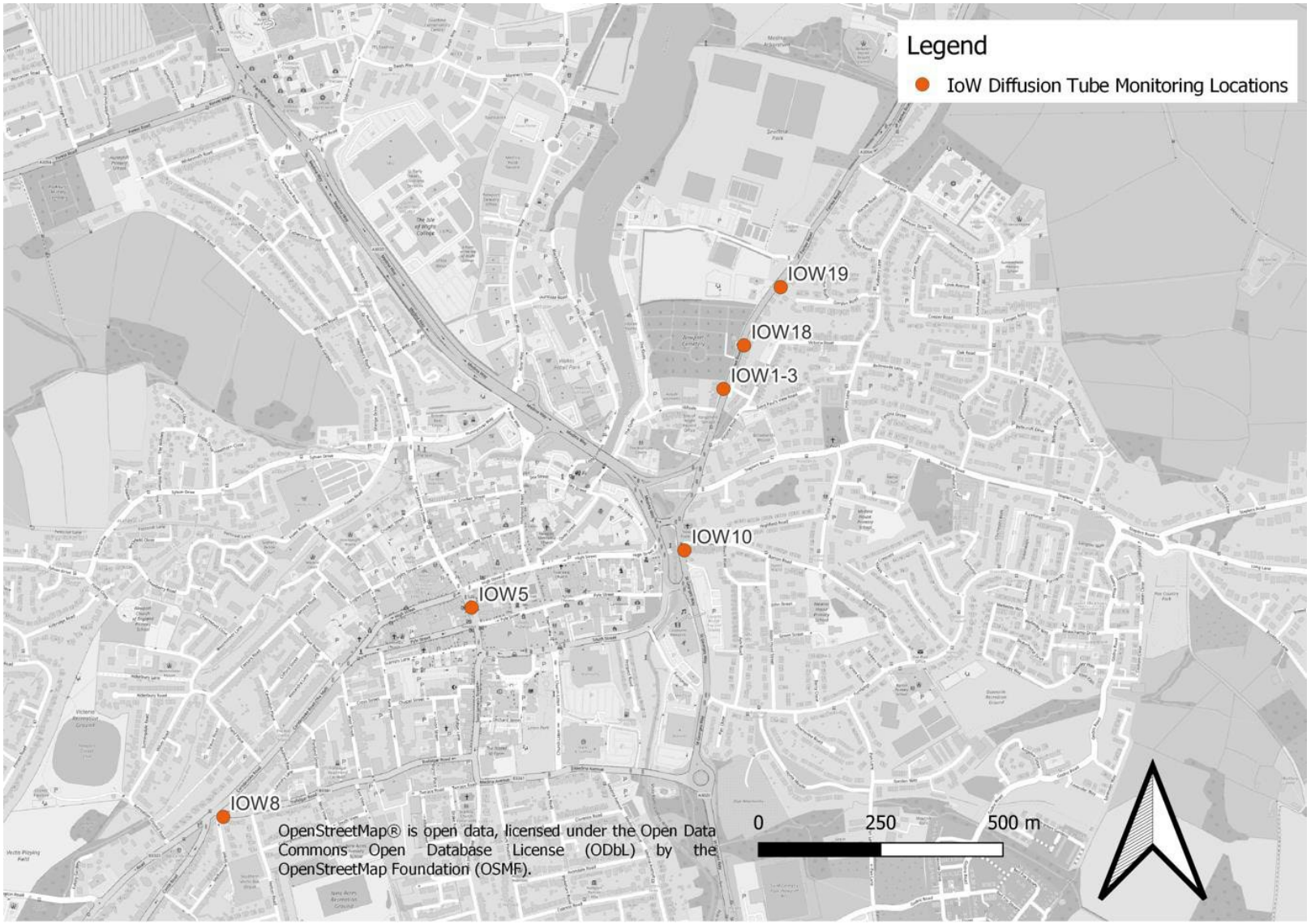


Figure D.3 – Map of Non-Automatic Monitoring Site – Wooton

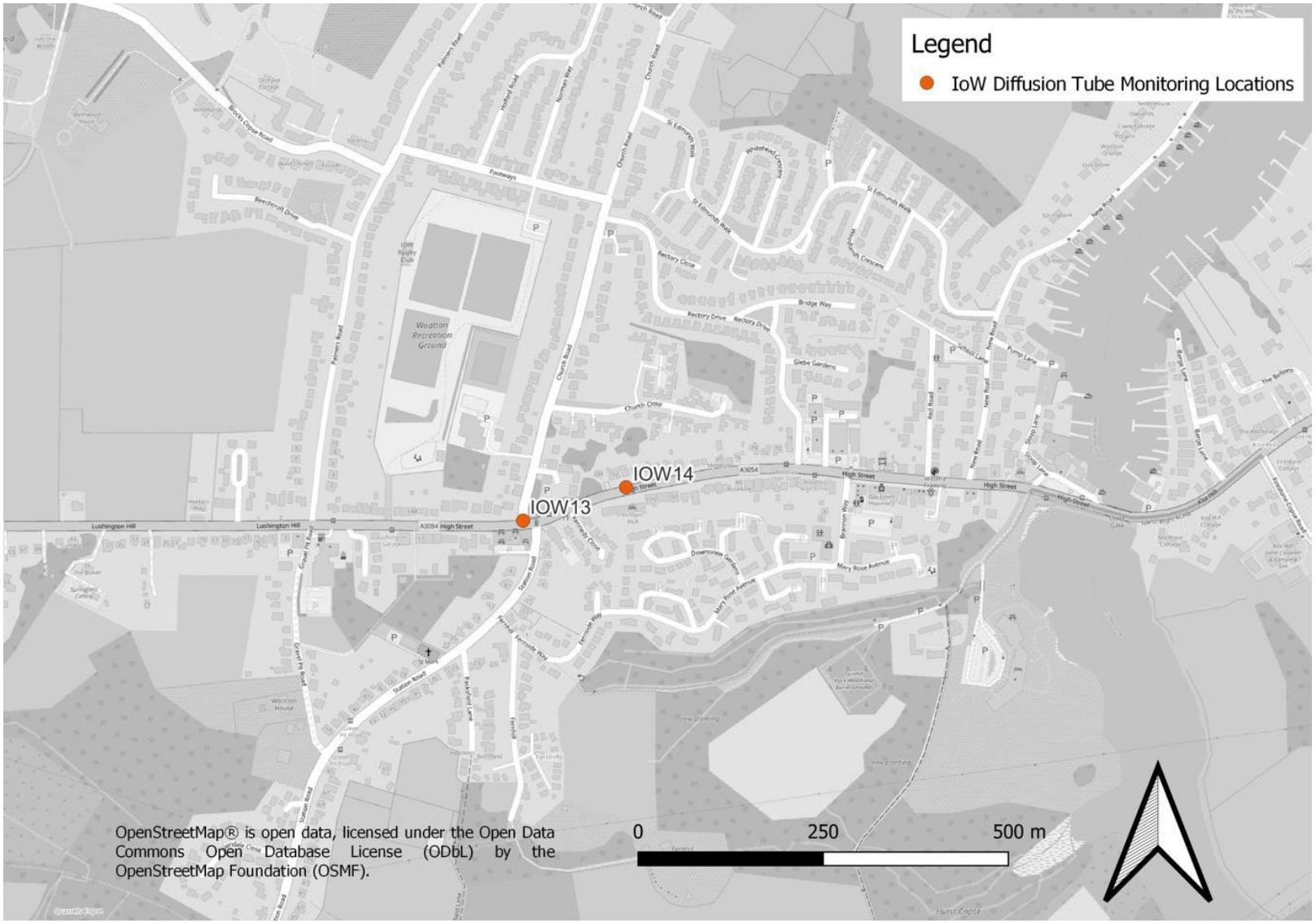


Figure D.4 – Map of Non-Automatic Monitoring Site – Brading

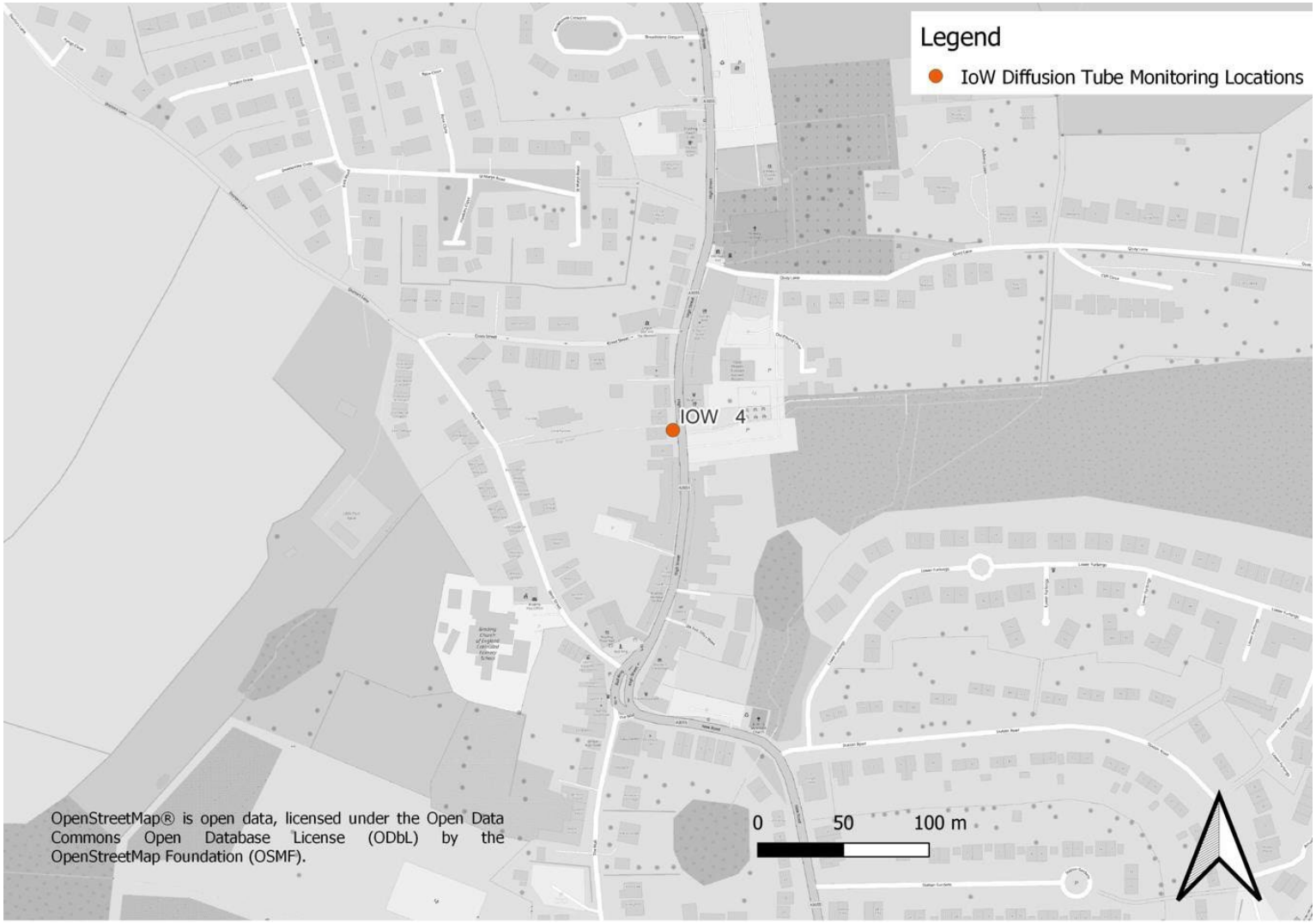


Figure D.5 – Map of Non-Automatic Monitoring Site – Ryde

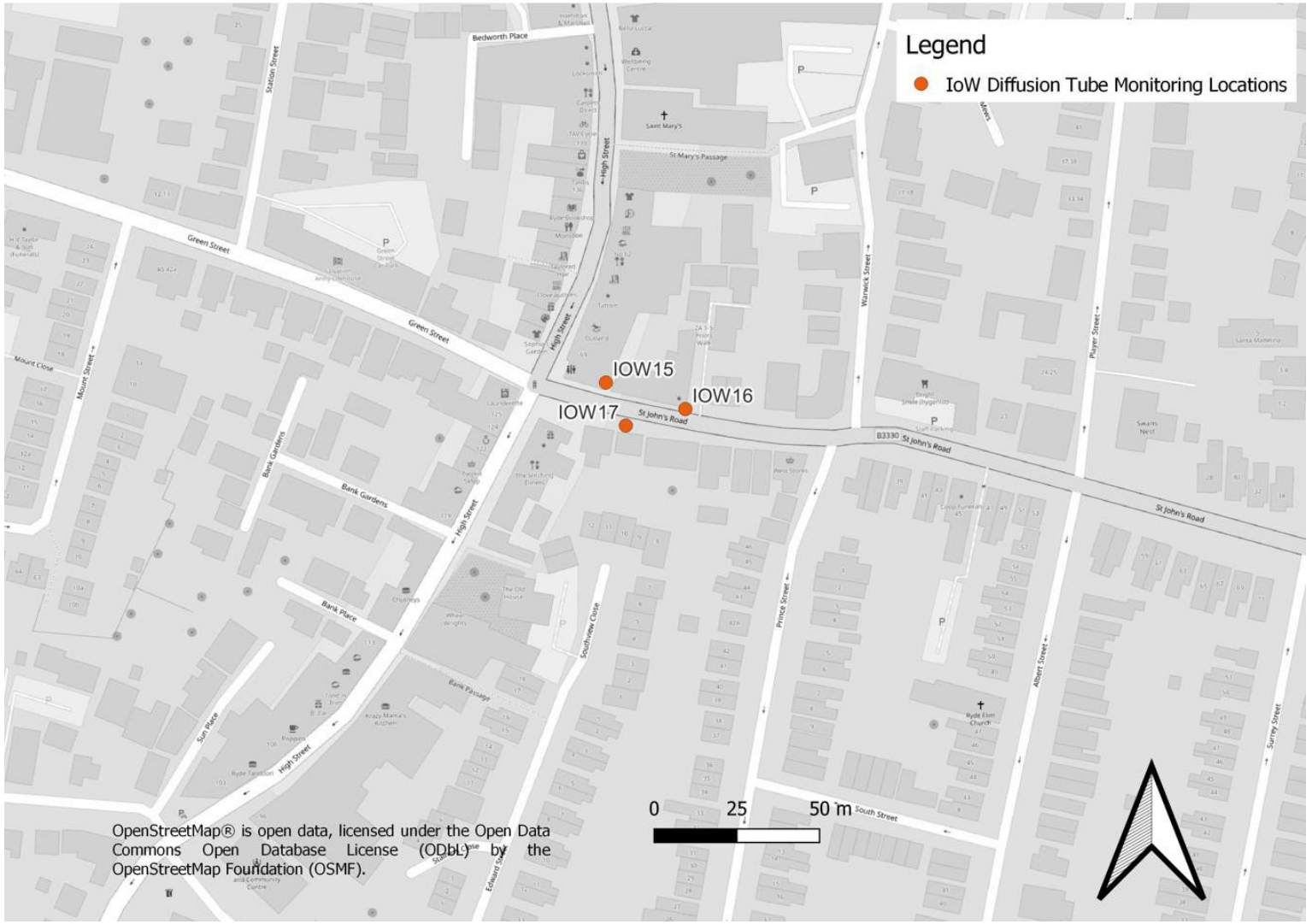
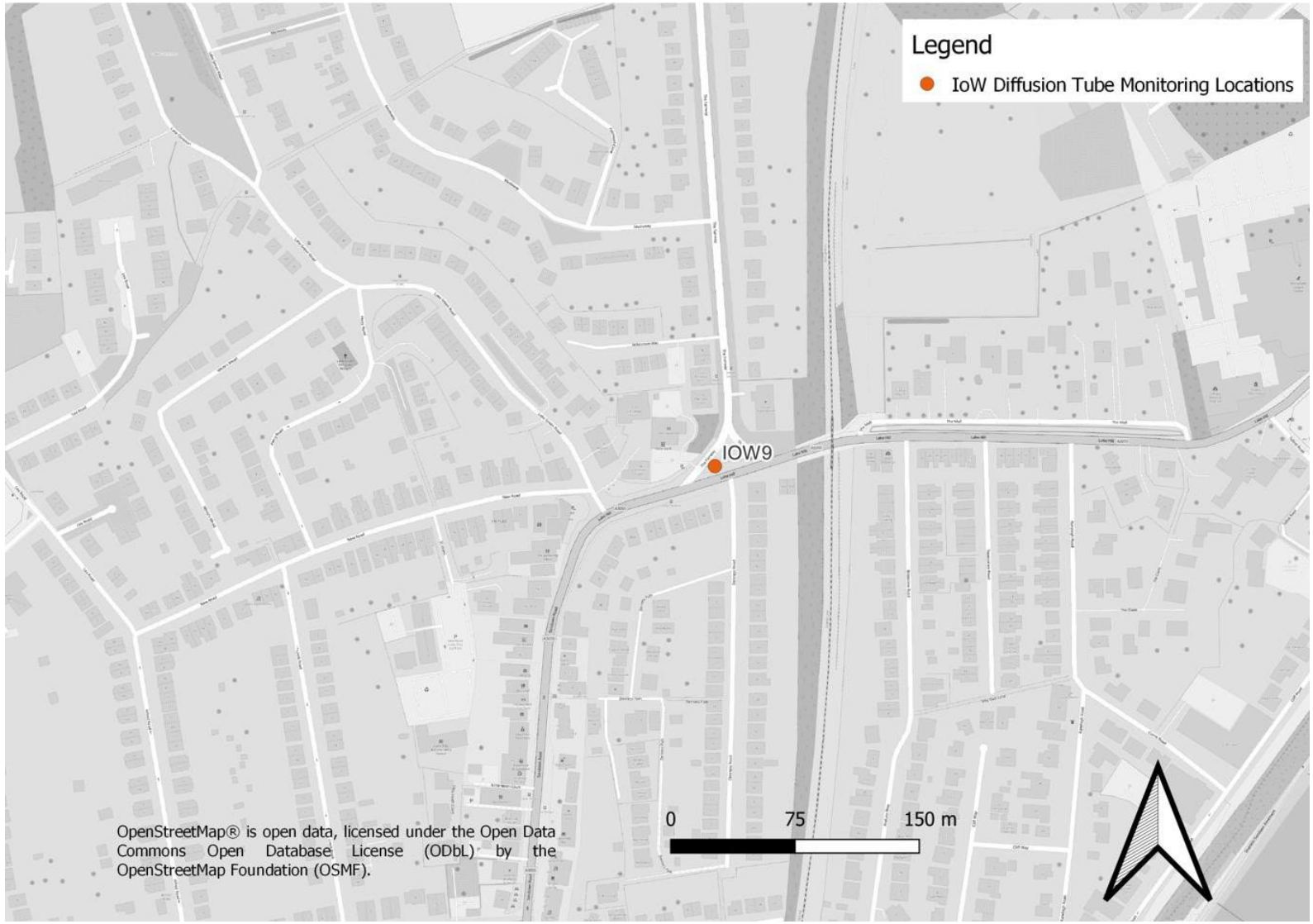


Figure D.6 – Map of Non-Automatic Monitoring Site – Lake



Appendix E: Summary of Air Quality Objectives in England

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

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[12] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[13] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

[12] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[13] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality on the Isle of Wight

There were no identifiable impacts as a consequence of COVID-19 upon air quality on the Isle of Wight.

Opportunities Presented by COVID-19 upon LAQM on the Isle of Wight

No LAQM related opportunities have arisen as a consequence of COVID-19 on the Isle of Wight.

Challenges and Constraints Imposed by COVID-19 upon LAQM on the Isle of Wight

No challenges or constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19 on the Isle of Wight.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

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
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG(16). February 2018. 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.PG(16). May 2016. Published by Defra in partnership with the Scottish Government, Welsh.
- Isle of Wight Council 2020 Annual Status Report
- Air Quality Impact Assessment Report for Isle of Wight Council by Ricardo Energy & Environment
- Transforming Travel on the Isle of Wight: Transition to Transformation Access Fund Programme Evaluation 2018/19
- Isle of Wight 2021 ASR Appraisal Letter (July 2021)
- Isle of Wight 2020 ASR (Appraisal Letter (August 2020)
- Isle of Wight 2019 ASR
- Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017
- Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
- Defra. Air quality appraisal: damage cost guidance, July 2021
- Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018
- Defra. Clean Air Strategy, 2019
- DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018
- Isle of Wight Mission Zero Climate and Environment Strategy 2021-2040
- Defra Background Mapping data for local authorities (2018-based)
- Public Health Outcomes Framework, Public Health England