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Annual Status Report 2022

Bureau Veritas

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Contact Details		
Company Name	Bureau Veritas UK Limited	Isle of Wight Council
Contact Name	[redacted]	
Position	Consultant	Senior Environmental Health Practitioner
Address	Bureau Veritas Atlantic House, Atlas Business Park Manchester M22 5PR	Isle of Wight Council Jubilee Stores The Quay Newport Isle of Wight PO30 2EH
Telephone	[redacted]	
e-mail	[redacted]	
Websites	www.bureauveritas.co.uk	www.iow.gov.uk

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2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

Information	Isle of Wight Council
Local Authority Officer	[redacted]
Department	Environmental Health
Address	Isle of Wight Council Jubilee Stores The Quay Newport Isle of Wight PO30 2EH
Telephone	[redacted]
E-mail	
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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 continue to demonstrate that annual mean NO_2 concentrations on the Island are below the Air Quality Objective of 40µg/m^3 for NO_2. Concentrations of NO_2 across the island have slightly increased in 2021 at most monitoring locations. This is most likely due to the reduced effects of COVID-19 and associated lockdowns with road traffic numbers increasing to more representative levels in 2021 compared to 2020. This is commonly seen across the UK in 2021 monitoring data across the UK when compared to 2020[5].

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 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

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

The 2019 Clean Air Strategy[6] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[7] 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 the Isle of Wight has continued to demonstrate that annual mean NO_2 concentrations across the island have been below the AQO of 40µg/m^3, no Air Quality Management Areas (AQMA's) have been declared. As such no Air Quality Action Plans (AQAP's) have been developed, however the Isle of Wight declared a climate emergency in July 2019 and aimed to achieve net zero emissions across the Island by 2030. In September 2021 the Mission Zero Climate and Environment Strategy 2021 – 2040[8] was developed. Although this is a strategy to address the climate emergency, many of the measures detailed within the strategy will help to improve local air quality including NO_2, PM_{10} and $PM_{2.5}$.

The strategy details the importance of improving local air quality and understands that not only do there need to be a push towards electric vehicles used on the island but also sustainable travel to reduce the number of private vehicles used. Currently the Isle of Wight have implemented the following measures as part of the strategy

- Funding received for 10 on-street charge points;
- Ryde transport hub project is ongoing;
- Active travel project Newport Quay to Mews Lane is underway;
- A New Local Transport Plan is currently being drafted. This will reflect the change in transport planning tying in national strategies. This is expected to be in place by the end of 2022;
- The draft Island Planning Strategy contains policies to promote sustainable and active transport across the island including:

[6] Defra. Clean Air Strategy, 2019

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

[8] Isle of Wight Mission Zero Climate and Environment Strategy 2021-2040 https://www.iow.gov.uk/azservices/documents/2570-Mission-Zero-Climate-and-Environment-Strategy-2021-2040-final.pdf

    - Multi-user routes to help facilitate sustainable modes of transport and new cycle routes
    - Disused rail lines to be used for sustainable travel routes
    - Provision of new cycling routes
    - Encourage and promote the railway route on the island
    - Facilitating introduction of EV charging points.
- Local Walking and Cycling Improvements plans underway in Ryde and Newport.

In addition to the above, the strategy details more sustainable transport measures to improve and encourage the movement of people through walking or cycling.

Conclusions and Priorities

Overall, Air Quality on the Isle of Wight has continued to be below the annual mean AQO for NO_2, with no significant changes in air quality in those areas currently monitored when compared to recent years. As such there is no justification for further detailed assessment or the designation of any air quality management areas at this time. The priority for 2022 will be to continue monitoring NO_2 in hotspot locations where there is potential for exceedances of the AQO and continue to develop a public facing web-based portal to allow the public to be able to view local air quality data.

Additionally progress on measures within the Climate and Environment strategy will continue with an aim to further reduce concentrations of NO_2, PM_{10} and $PM_{2.5}$.

Local Engagement and How to get Involved

As the main source of local air quality pollution on the Isle of Wight derives from transport sources, the public can get involved in helping to reduce the level of pollutants and improving air quality on the Island by looking at alternative, sustainable, means of travel. The following are possible alternatives to private vehicle travel that would help to contribute improving air quality on the Isle of Wight.

<u>Walk or cycle:</u>

- 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.

- The Isle of Wight are introducing and improving many of the current walking and cycling facilities on the Island. The Island has over 825km of walking and cycling routes in place providing urban links to countryside access with cycle routes recognised as among the top 10 routes in the world.
- The councils PedalAid App maps 32km of the Islands cycling routes with more to be included in the next year.

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.
- 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.

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.

The Isle of Wight are continuously working with local businesses, charities, developers, tourism bodies, supermarkets, local bus operators and many more to develop measures to improve air quality across the Island.

Local Responsibilities and Commitment

This ASR was prepared by Matthew Northard (Senior Environmental Health Practitioner) Environmental Health of the Isle of Wight Council.

This ASR has not been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Matthew Northard at:

Isle of Wight Council, County Hall, High Street, Newport, Isle of Wight, PO30 1UD
Tel. 01983 823000, Email. matthew.northard@iow.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality on the Isle of Wight 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 the Isle of Wight 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 currently does not have any declared AQMAs.

Table 2.1 – Declared Air Quality Management Areas

The Isle of Wight during 2021 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 last year's 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 %. To annualise the tubes, the background automatic monitors only need >85% data capture. Please use the Defra provided Annualisation tool: https://laqm.defra.gov.uk/tools-monitoring-data/annualisation.html. Or the data processing tool:https://laqm.defra.gov.uk/tools-monitoring-data/dtdp.html

b. The ASR excel table was not submitted. This needs to be submitted even though there are no AQMAs, AQAPs or automatic monitors. The processing tool was helpful and commended.

2. Robust and accurate QA/QC procedures were applied with exception of point 1(a). Calculations for bias adjustment were shown, and distance-correction was not needed.

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 PM2.5 or how these link to the Public Health Outcomes Framework. It is expected that local authorities work towards reducing emissions of PM2.5 and address links to Public Health Outcomes framework. 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."

Following review of the 2021 ASR appraisal, the 2022 ASR has been prepared ensuring all comments have been addressed. In particular, annualisation of data where data capture is below 75% has been undertaken. Additionally, the ASR data table has also been included.

There are no Air Quality Management Areas currently on the Isle of Wight and as such no Air Quality Action Plans developed.

However, the Isle of Wight declared a climate emergency in July 2019 and aimed to achieve net zero emissions across the Island by 2030. In September 2021 the Mission Zero Climate and Environment Strategy 2021 – 2040[8] was developed. Although this is a strategy to address the climate emergency, many of the measures detailed within the strategy will help to improve local air quality including NO_2, PM_{10} and $PM_{2.5}$.

The strategy details the importance of improving local air quality and understands that not only does there need to be changes in fuel type of the vehicles used on the island, with more of a push towards electric vehicles, but also sustainable travel to reduce the number of private vehicles used on the island. Currently the Isle of Wight have implemented the following measures:

- Funding received for 10 on-street charge points;
- Ryde transport hub project is ongoing;
- Active travel project Newport Quay to Mews Lane is underway;
- A New Local Transport Plan is currently being drafted. This will reflect the change in transport planning tying in national strategies. This is expected to be in place by the end of 2022;
- The draft Island Planning Strategy contains policies to promote sustainable and active transport across the island including:
    - Multi-user routes to help facilitate sustainable modes of transport and new cycle routes
    - Disused rail lines to be used for sustainable travel routes
    - Provision of new cycling routes
    - Encourage and promote the railway route on the island
    - Facilitating introduction of EV charging points.
- Local Walking and Cycling Improvements plans underway in Ryde and Newport.

In addition to the above, the strategy details more sustainable transport measures to improve and encourage the movement of people through walking or cycling.

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 10.3µg/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%. It should be noted that 2020 is currently the latest year of data available.

The Isle of Wight is not taking any specfic measures to address $PM_{2.5}$, however as mentioned above within the Climate and Environment strategy to help the Isle of Wight achieve net zero carbon emissions by 2040, many of the measures also address local Air quality including $PM_{2.5}$.

The strategy details the health concerns of air quality and understands that the move to electric vehicles is not the only solution due to particulate matter including $PM_{2.5}$ sourced from break and tyre wear. As such many of the measures within the strategy look to focus on the encouragement and enhancement of sustainable travel. these measures include developments of transport hubs, enhancement of multi-user routes to facilitate sustainable modes of transport including cycling. Cycling routes to be proposed on disused railway routes and general walking and cycling improvements.

[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

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

This section sets out the monitoring undertaken within 2021 by 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 2017 and 2021 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

Isle of Wight Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 14 sites during 2021 including a triplicate diffusion tube site (IOW1, IOW2 and IOW3). Table A.2 in Appendix A: Monitoring Results presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D: Maps of Monitoring Locations and AQMAs. 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 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.

During 2021 no monitoring location on the Isle of Wight exceeded the annual mean AQO for NO_2 of 40µg/m^3. Monitoring at Fairlee Road Newport, which has previously exceeded the AQO for NO_2 prior to distance correction, has been below the AQO for the last 3 years.

Monitoring data in 2021 shows a slight increase when compared to 2020, however this is likely due to the effects of COVID-19 and associated lockdowns and reduction in road traffic on 2020 monitoring data. In 2021 it is considered that road traffic number on the Isle of Wight have increased since 2020 and are at more representative levels[5].

As there are no monitoring locations that exceed 60µg/m^3 on the Isle of Wight, it is highly unlikely that the 1-hour mean objective for NO_2 has been exceeded.

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	Newport Fairlee	Kerbside	450377	89557	NO_2	No	11.0	0.5	No	3.0
IOW2	Newport Fairlee	Kerbside	450377	89557	NO_2	No	11.0	0.5	No	3.0
IOW3	Newport Fairlee	Kerbside	450377	89557	NO_2	No	11.0	0.5	No	3.0
IOW4	Brading	Roadside	460613	87197	NO_2	No	0.0	3.0	No	3.0
IOW5	Newport St James Square	Urban Centre	449862	89110	NO_2	No	5.0	1.0	No	3.0
IOW8	Newport Traflagar Road	Roadside	449354	88682	NO_2	No	10.0	1.0	No	3.0
IOW9	Lake	Roadside	459008	83715	NO_2	No	23.0	2.0	No	3.0
IOW10	Newport Coppins Bridge	Kerbside	450297	89227	NO_2	No	0.0	1.0	No	3.0
IOW12	East Cowes	Kerbside	450277	95678	NO_2	No	0.0	0.5	No	3.0
IOW13	Wooton (Crossways High St)	Roadside	453959	91937	NO_2	No	13.0	4.0	No	3.0
IOW14	Wootton 119 High Street	Kerbside	454098	91982	NO_2	No	0.0	1.0	No	3.0
IOW15	St Johns Road (Traffic Lights)	Kerbside	459193	92154	NO_2	No	3.0	1.0	No	3.0
IOW16	St Johns Road (Scouts)	Kerbside	459199	92141	NO_2	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)
IOW17	St Johns Road (No23)	Kerbside	459199	92141	NO_2	No	5.0	1.0	No	3.0
IOW18	Newport 30 Fairlee Road	Roadside	450419	89646	NO_2	No	0.0	5.0	No	3.0
IOW19	Newport Flat 5 Carson Mews Fairlee Road	Roadside	450494	89765	NO_2	No	0.0	5.0	No	3.0

Notes:

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

(2) N/A if not applicable.

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

There are no automatic (continuous) 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 2021 (%) [2]	2017	2018	2019	2020	2021
IOW1, IOW2, IOW3	450377	89557	Kerbside	100.0	100.0	37.0	38.1	36.5	29.0	33.1
IOW4	460613	87197	Roadside	100.0	100.0	20.8	20.1	20.2	15.7	17.5
IOW5	449862	89110	Urban Centre	58.2	58.2	22.9	25.0	21.6	16.7	21.4
IOW6	449413	89005	Roadside	-	-		16.4	14.9		
IOW7	449702	88865	Roadside	-	-		17.1	14.6		
IOW8	449354	88682	Roadside	90.9	90.9	28.8	26.0	25.3	21.8	23.0
IOW9	459008	83715	Roadside	65.9	65.9	21.6	22.0	20.7	19.9	24.8
IOW10	450297	89227	Kerbside	58.2	58.2	37.0	34.2	33.2	21.5	19.0
IOW11	456536	77653	Roadside	-	-		21.0	20.4		
IOW12	450277	95678	Kerbside	73.4	73.4		18.6	22.3	18.0	21.5
IOW13	453959	91937	Roadside	100.0	100.0		29.5	30.9	29.0	31.3
IOW14	454098	91982	Kerbside	75.0	75.0		29.8	33.2	31.8	29.4
IOW15	459193	92154	Kerbside	100.0	100.0			21.9	18.2	20.8
IOW16	459217	92146	Kerbside	66.8	66.8			24.2	24.1	28.5
IOW17	459199	92141	Kerbside	74.5	74.5			29.8	28.4	29.7
IOW18	450419	89646	Roadside	74.5	74.5				24.3	27.7
IOW19	450494	89765	Roadside	65.4	65.4				17.8	21.9

☒ **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**.

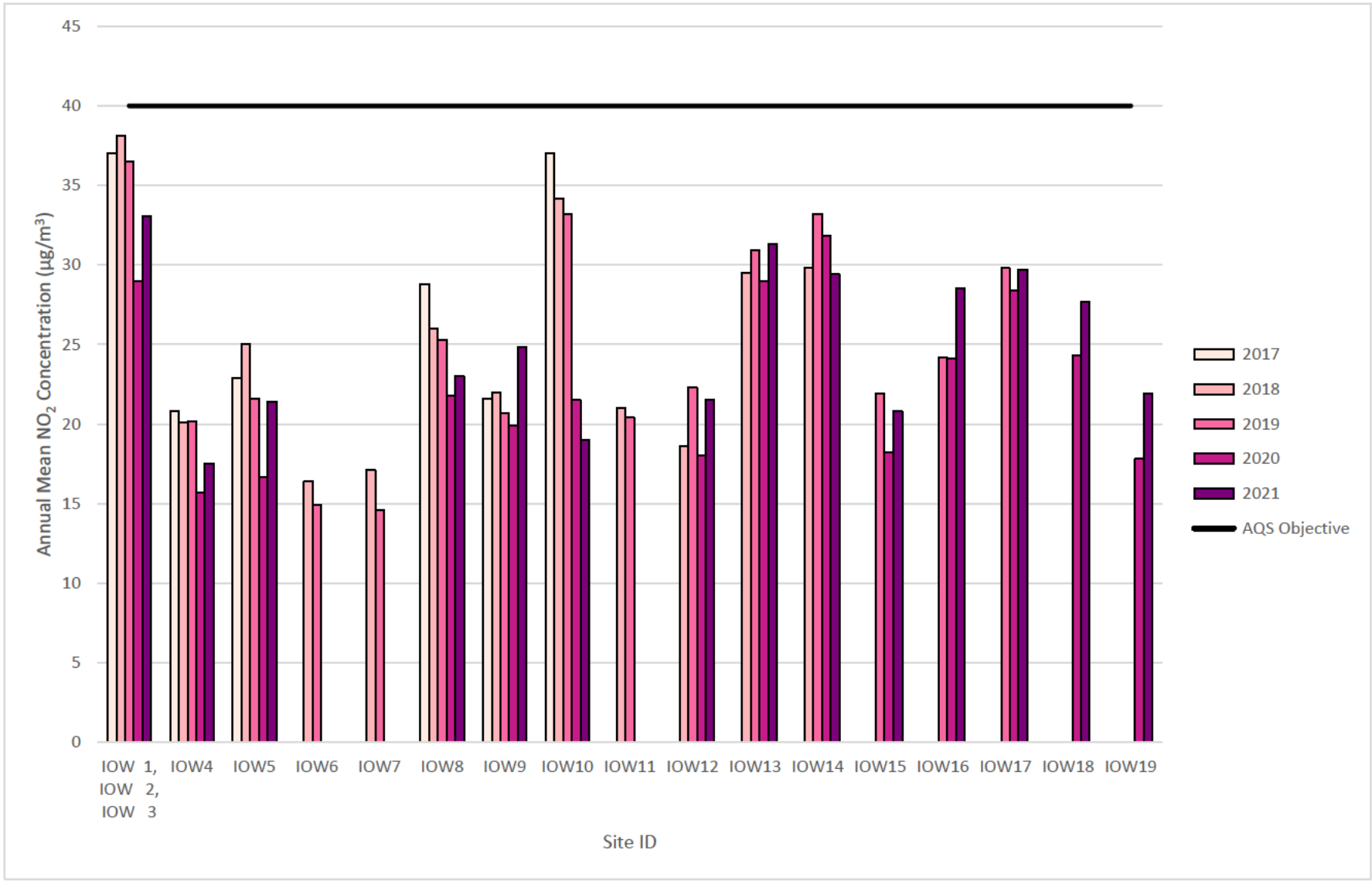
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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



Appendix B: Full Monthly Diffusion Tube Results for 2021

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
IOW1	450377	89557	37.8	37.9	37.5	39.5	38.5	46.2	41.8	41.9	46.1	37.0	62.6	33.4	41.7	34.1		
IOW2	450377	89557	34.8	34.6	34.8	37.1	33.9	45.6	42.9	41.1	47.1	37.8	62.2	41.8	41.1	33.8		
IOW3	450377	89557	37.7	31.4	37.2	34.9	33.2	41.5	35.0	34.9	46.5	33.5	56.2	38.7	38.4	31.4		
IOW4	460613	87197	19.4	18.8	22.2	21.9	16.1	23.0	23.3	19.7	23.3	18.5	28.7	19.5	21.0	17.5		
IOW5	449862	89110	28.5	21.6	25.7	27.6					32.9	29.1	47.0		29.8	21.4		
IOW8	449354	88682	27.7	24.5	31.7	34.5	21.6	30.4	30.2	26.2	27.2	21.5	29.9		27.7	23.0		
IOW9	459008	83715	30.0	21.4	29.1	30.6	23.2				47.5	33.3	52.3		33.0	24.8		
IOW10	450297	89227	23.9	23.5	29.3	31.8					29.1	18.9	31.8		26.4	19.0		
IOW12	450277	95678	19.9	24.5	24.9	23.7	21.1	26.3	25.0				53.8	20.1	25.9	21.5		
IOW13	453959	91937	32.4	37.4	37.8	36.7	35.0	43.1	38.8	37.8	49.9	33.0	37.8	35.3	37.7	31.3		
IOW14	454098	91982	32.7	29.4	30.7	42.2	39.3				43.8	33.2	42.4	27.0	35.4	29.4		
IOW15	459193	92154	19.6	23.3	23.1	26.2	17.6	25.1	24.8	31.8	36.7	21.0	34.5	21.0	25.0	20.8		
IOW16	459199	92141	34.5	34.0	35.2	37.2	32.5	34.5	34.0					41.9	35.6	28.5		
IOW17	459199	92141	29.8	32.3	36.4	42.5	32.3	37.2	44.7	36.0				28.3	35.8	29.7		
IOW18	450419	89646	24.0	34.7	33.4	39.8	33.9	38.6	35.8	24.5				33.7	33.4	27.7		
IOW19	450494	89765	20.4	25.7	24.2	31.8	23.9	28.8	26.9	21.8					25.7	21.9		

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

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

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

☒ **Isle of Wight Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified on The Isle of Wight During 2021

The Isle of Wight Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Isle of Wight Council During 2021

The Isle of Wight Council has not completed any additional works within the reporting year of 2021

QA/QC of Diffusion Tube Monitoring

The supplier used for diffusion tubes within 2021 was Gradko International Ltd.

Gradko 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 NO_2.

Monitoring was completed in adherence with the 2021 diffusion tube monitoring calendar (±2 days) other than monitoring period 10 (October 2021). During October 2021, diffusion tubes were over exposed for the recommended time (+4 days). As this period was over exposed for +4 days a time weighted average was calculated for all the diffusion tubes in this period.

Diffusion Tube Annualisation

Five monitoring locations required annualisation during 2021. These included, IOW5, IOW9, IOW10, IOW16 and IOW19. All these monitoring locations had a data capture of less than 75% during 2021, and due to the data capture of nearby AURN background

stations, have been annualised to two AURN background stations, Andover Chilbolton Observatory and Brighton Preston Park.

Details of the annualisation and the calculation method undertaken provided in Table C.1.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Andover-Chilbolton Observatory	Annualisation Factor Brighton Preston Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
IOW5	0.8552	0.8740	0.8646	29.8	25.8
IOW9	0.8968	0.9134	0.9051	33.0	29.8
IOW10	0.8552	0.8740	0.8646	26.4	22.9
IOW16	0.9409	0.9870	0.9639	35.6	34.3
IOW19	0.9965	1.0617	1.0291	25.7	26.4

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 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 have applied a national bias adjustment factor of 0.83 to the 2021 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.2 and an illustration of the National Bias Adjustment factor in Figure C.1

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	04/22	0.83
2020	National	04/22	0.84
2019	National	09/20	0.87
2018	National	06/19	0.89
2017	National	09/18	0.96

Figure C.1 – National Bias Adjustment Factor 2021

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[5] (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[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2021	UC	Falkirk Council	12	35	34	3.5%	G	**0.97**
Gradko	50% TEA in acetone	2021	UB	Falkirk Council	12	16	13	22.5%	G	**0.82**
Gradko	50% TEA in acetone	2021	SU	Redcar & Cleveland Borough Council	11	14	11	29.2%	G	**0.77**
Gradko	50% TEA in acetone	2021	R	Royal Borough of Windsor and Maidenhead	12	29	26	9.3%	G	**0.91**
Gradko	50% TEA in acetone	2021	R	Royal Borough of Windsor and Maidenhead	11	26	25	7.2%	G	**0.93**
Gradko	50% TEA in acetone	2021	R	Sandwell MBC	12	37	28	31.4%	G	**0.76**
Gradko	50% TEA in Acetone	2021	UB	Sandwell Metropolitan Borough Council	11	23	19	22.2%	G	**0.82**
Gradko	50% TEA in acetone	2021	UB	Middlesbrough	12	18	14	32.6%	G	**0.75**
Gradko	50% TEA in acetone	2021	R	London Borough of Richmond upon Thames	12	24	21	15.1%	G	**0.87**
Gradko	50% TEA in acetone	2021	B	London Borough of Richmond upon Thames	9	16	13	21.5%	G	**0.82**
Gradko	50% TEA in acetone	2021	KS	Marylebone Road Intercomparison	10	52	41	24.2%	G	**0.81**
Gradko	50% TEA in acetone	2021	R	Reading Borough Council	12	30	26	15.9%	G	**0.86**
Gradko	50% TEA in acetone	2021	R	Merton Council	9	50	32	55.4%	G	**0.64**
Gradko	50% TEA in acetone	2021	UB	Wandsworth Council	11	29	26	9.8%	G	**0.91**
Gradko	50% TEA in acetone	2021		**Overall Factor[7] (14 studies)**				Use		**0.83**

A national bias adjustment factor had been used as there are no co-location studies undertaken in the Isle of Wight.

NO_2 Fall-off with Distance from the Road

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

No diffusion tube NO_2 monitoring locations within The Isle of Wight required distance correction during 2021.

QA/QC of Automatic Monitoring

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

Table C.3 – Local Bias Adjustment Calculation

A National bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

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

No NO2 Fall off With Distance Calculations have been used to on the 2021 diffusion tube results.

Appendix D: Maps of Monitoring Locations and AQMAs

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

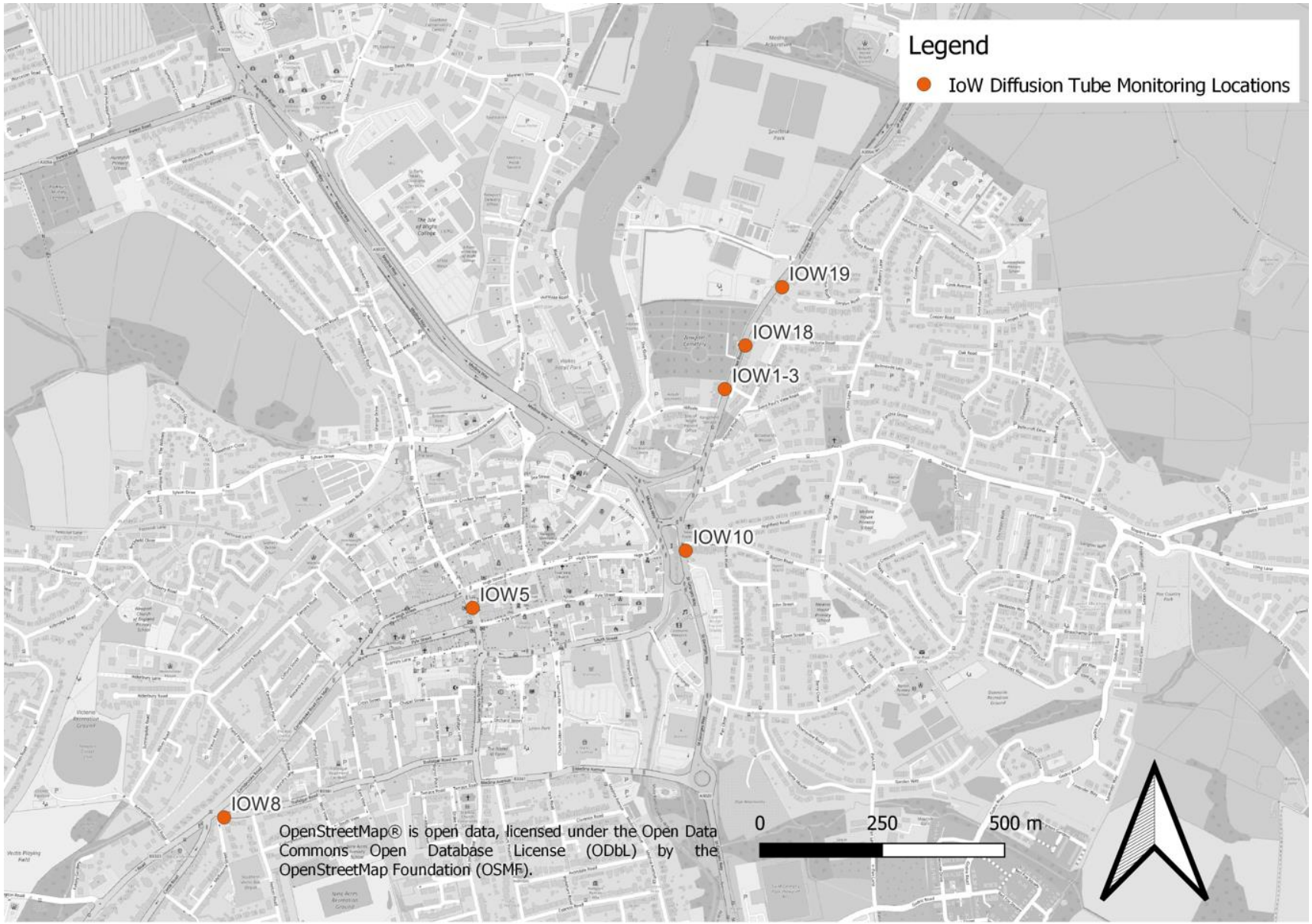


Figure D.2 – Map of Non-Automatic Monitoring Site – East Cowes

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

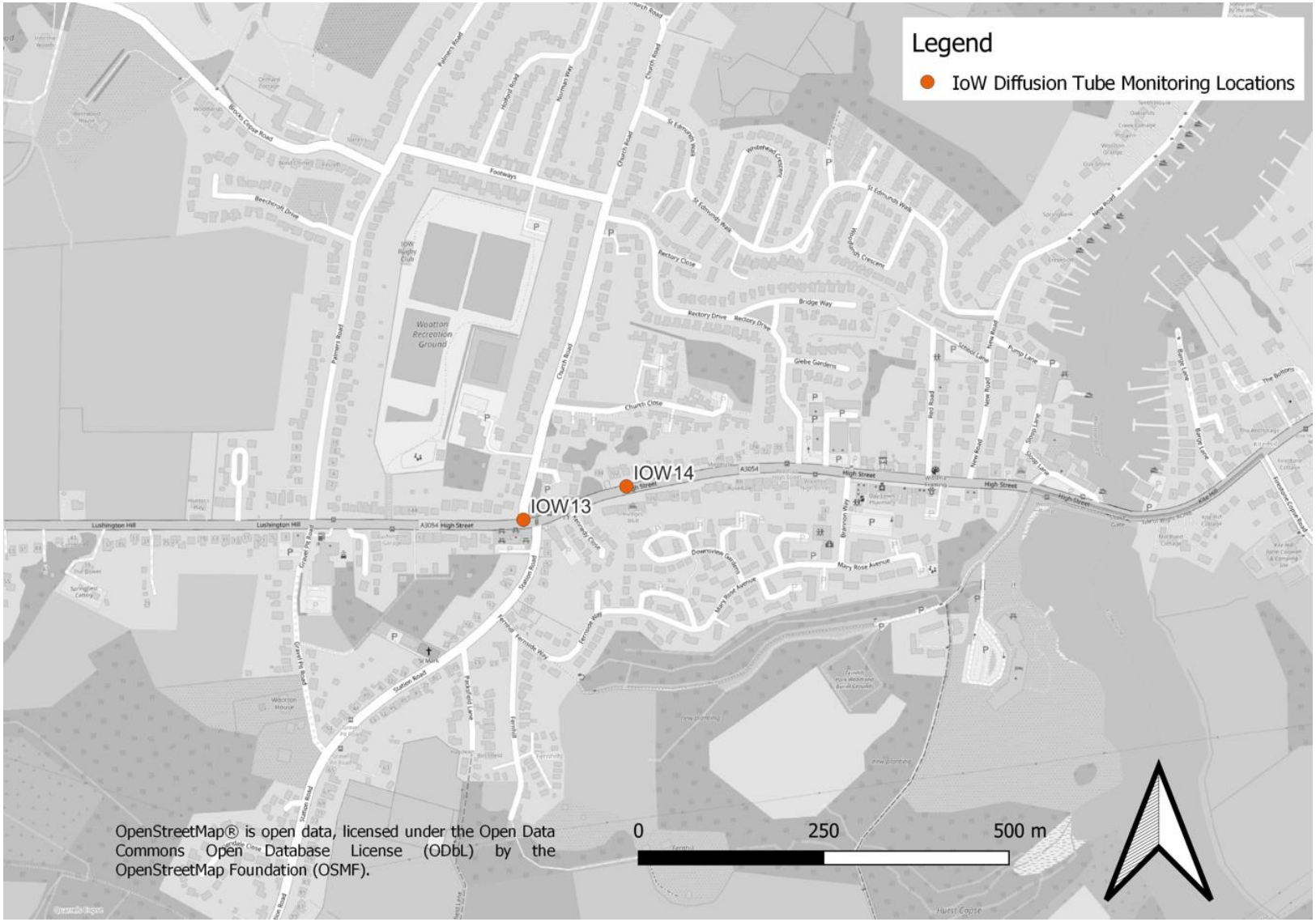


Figure D.4 – Map of Non-Automatic Monitoring Site – Brading

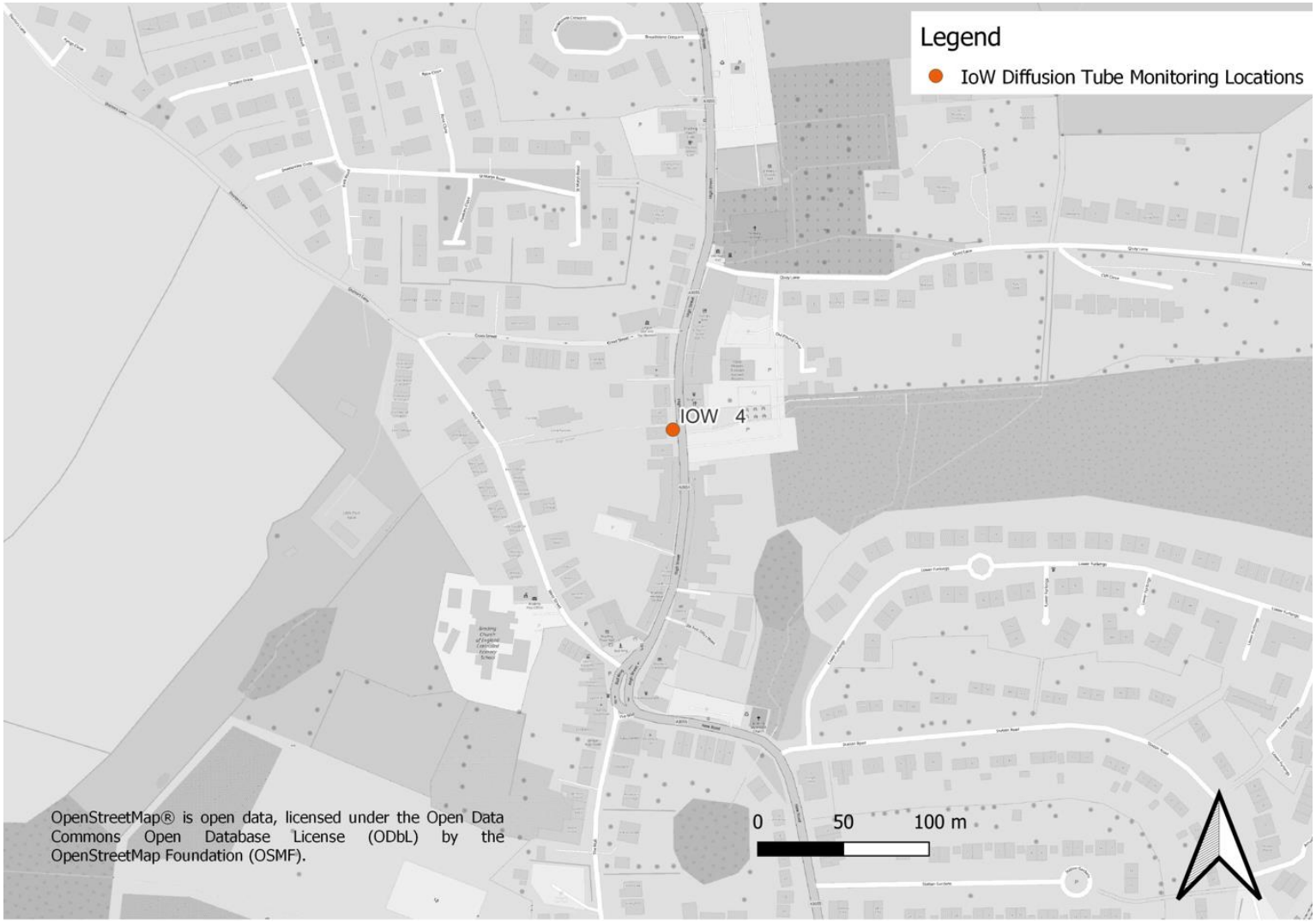


Figure D.5 – Map of Non-Automatic Monitoring Site – Ryde

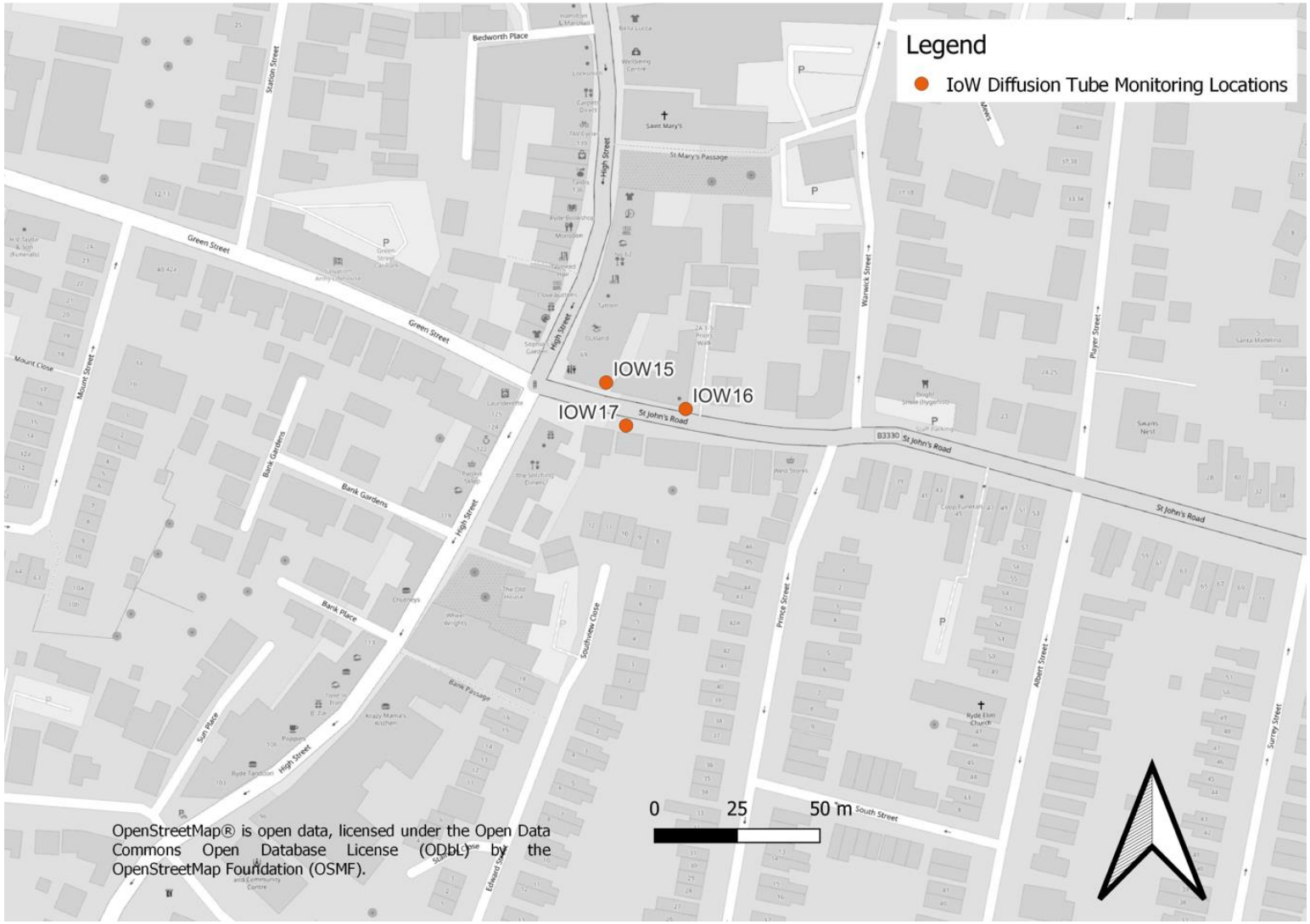
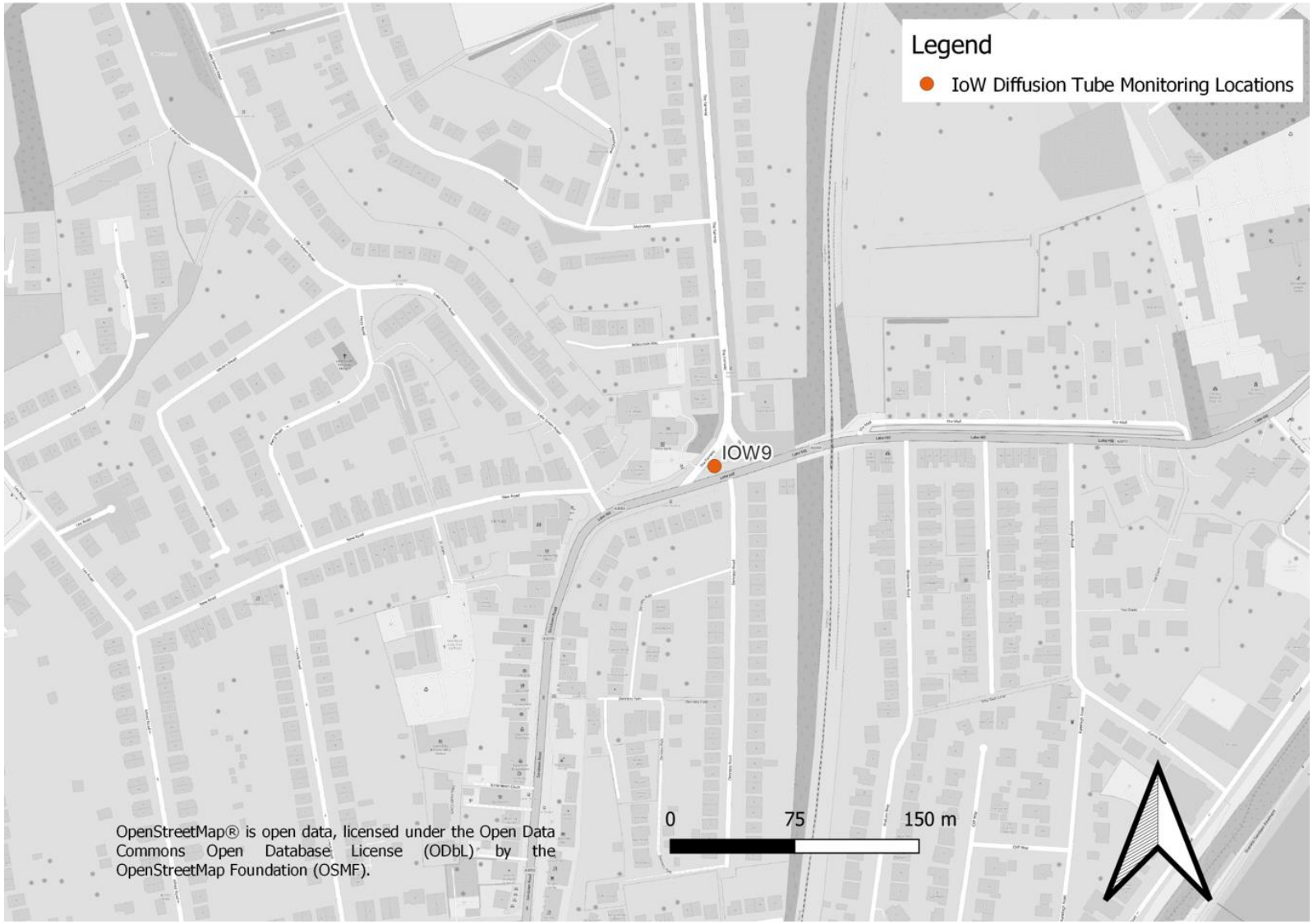


Figure D.6 – Map of Non-Automatic Monitoring Site – Lake



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
IoW	Isle of Wight
DFT	Department For Transport
AQO	Air Quality Objective
AQS	Air Quality Strategy
AURN	Automatic Urban and Rural Network
EV	Electric Vehicle

References

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