



2009 Air Quality Updating and Screening Assessment for *Isle of Wight Council*

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

A report produced for Isle of Wight Council

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Executive Summary

An assessment of the current air quality situation within the administrative area of Isle of Wight Council has been undertaken in line with the Defra LAQM Technical Guidance TG (09). The report has assessed all available air quality monitoring data from the Island against the air quality objectives as well as any significant changes on the Island since the last round of review and assessment that could impact on local air quality. These can include changes to the local road network, new industrial installations or new local development which would result in increased human exposure to the pollutants listed in the Air Quality Strategy 2007.

Assessment of the 2008 air quality monitoring data set showed there to be one site showing an exceedence of the nitrogen dioxide (NO₂) annual mean objective. Further analysis of the site with the appropriate facade calculations, identified that both the annual mean and 1 hour air quality objectives for nitrogen dioxide were unlikely to be exceeded. No other likely exceedences of the air quality objectives were identified.

Five new industrial processes with Part B (LAPPC) authorisations have been identified as new since the Updating and Screening Assessment (USA) 2006. These are two mobile crushing processes and three waste oil burners. The road junction of Medina Way and Forest Road was also identified as requiring assessment.

The report considers these installations unlikely to lead to significant increases in any pollutant prescribed in the Air Quality Strategy 2007. No exceedences were predicted at the junction of Medina Way and Forest Road.

The overall results of this USA indicate that a Detailed Assessment is therefore not required for any pollutant.

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are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

1.4.1 First Round of Review and Assessment

Unlike the current format of the Updating and Screening Assessment, Detailed Assessment and Further Assessment, round one of the Review and Assessment process was split into four staged reports, with each being more detailed than the last. The Isle of Wight Council completed its first round of Review and Assessment in 2000 and concluded it was likely that all air quality objectives would be met.

1.4.2 Second Round of Review and Assessment

The 2004 Updating and Screening Assessment, concluded that the Council needed to move to a Detailed Assessment for both benzene and sulphur dioxide.

Possible exceedences of the benzene annual mean objective were identified at receptors adjacent to a fuel storage depot in East Cowes, which had a throughput of 50 million litres of petrol per annum. Possible exceedences of the sulphur dioxide were identified at receptors near to the three main ferry ports, as there were more than 5,000 car ferry movements per year.

The subsequent Detailed Assessment concluded that the sulphur dioxide 15-minute mean objective will not be exceeded in East Cowes, Fishbourne and Yarmouth in 2004/2005. The highest predicted 15 minute concentration (89 µg/m³ in East Cowes) was well below the objective. Predicted concentrations in Fishbourne were lower than those predicted to occur in East Cowes, with concentrations in Yarmouth lower still.

The annual mean benzene concentrations predicted to occur in East Cowes in 2004 and 2010 were also well below both the 2003 and 2010 air quality objectives.

In line with the relevant Defra guidance the council was therefore required to produce an Air Quality Progress Report in April 2004 and April 2005. Progress Reports are required in years when local authorities are not carrying out their statutory three yearly Updating and Screening Assessment or carrying out Detailed Assessments. This ensures that air quality is continually being assessed and reviewed.

The 2004 and 2005 Progress Reports concluded that there had been no changes since the previous USA significant enough to result in exceedences of the air quality objectives.

1.4.3 Third Round of Review and Assessment

The results of the 2006 USA indicated that a Detailed Assessment for NO₂ was required, due to identified exceedences of the annual mean objective at two monitoring sites in the area over the previous three years. The exceedences were considered to be as a result of road traffic emissions.

The Council then conducted NO₂ diffusion tube analysis at these two locations as part of its Detailed Assessment. The results concluded that there was no need at this stage to declare an Air Quality Management Area.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

There are no automatic air quality monitoring sites on the Island.

2.1.2 Non-Automatic Monitoring

The Council currently operates three NO₂ diffusion tube sites on the Island (IOW 4, 11 and 10). These locations are shown in Figures 2 and 3, with site details given in Table 2.2. Site IOW 8 was discontinued in 2007.

Figure 2: NO₂ Tube Locations- Fairlee Road

Note: the OS licence number for the maps used in Figures 2, 3 and B 1 is 100019229.

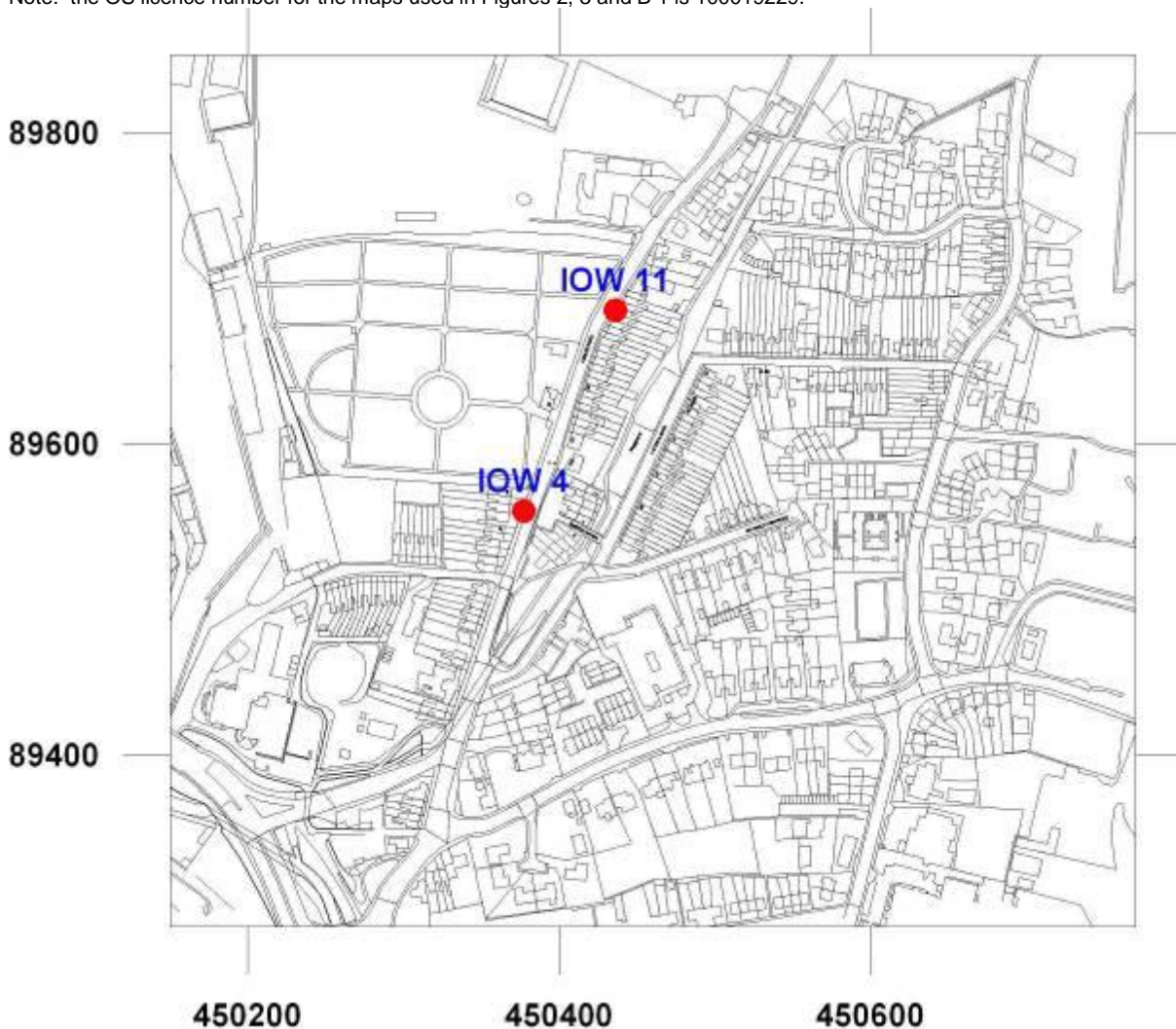


Figure 3: NO₂ Tube Locations- Lake Hill



Table 2.2 Details of Non- Automatic Monitoring Sites

Site ID	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
IOW4	kerbside	450377 089557	NO ₂	N/A	N (11)	0	Y (kerbside)
IOW8	kerbside	459118 083738	NO ₂	N/A	N (19 m)	0	Y (kerbside)
IOW10	kerbside	459101 083717	NO ₂	N/A	N (23 m)	2	Y (kerbside)
IOW11	roadside	450436 089686	NO ₂	N/A	Y	11	Y (Facade)

2.2 Comparison of Monitoring Results with AQ Objectives

In order to assess the measured concentrations against the annual mean nitrogen dioxide air quality objective, both the tubes and the data need to be subject to quality assurance/quality control protocols. These allow for inherent uncertainty in the measured concentrations to be minimised.

All details of the QA/QC procedures that have been applied to the diffusion tube monitoring are given in Appendix A.

The overall purpose of the USA is to identify any possible exceedences of the Air Quality Objectives that are therefore required to be considered as part of a Detailed Assessment. In doing so it is vital to consider not only the measured concentrations against the objectives but also relevant exposure. In cases where monitoring locations do not represent exposure, the façade distance calculation method as described in LAQM.TG (09), has been used. This has been clearly stated in the report.

2.2.1 Nitrogen Dioxide

The two air quality objectives that ambient concentrations of NO₂ need to be assessed against are as follows:

- An annual mean of 40 µg/m³; and
- The number of exceedences of the 1 hour mean of 200 µg/m³ (18 allowable exceedences in total).

It should be noted that it is only possible to directly assess against the 1 hour objective if hourly monitoring data is available. As all local monitoring on the Island is conducted with diffusion tubes the approach suggested in LAQM. TG(09) has been adopted. The approach, based on empirical studies suggests that where the annual mean is less than 60 µg/m³, exceedences of the short term objective are unlikely.

Automatic Monitoring Data

There are no automatic air quality monitoring sites on the Island.

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Diffusion Tube Monitoring Data

Up to the end of 2004, the Council had been monitoring NO₂ using passive diffusion tubes at 9 locations on the Island. At the end of 2004, 7 of the 9 sites were discontinued due to consistently showing annual means well below the air quality objective. During 2005 monitoring only took place at Sites IOW4 and IOW8 (see Table 2.2) with Site 8 being discontinued at the end of 2006, due to its kerbside location not being representative of relevant exposure. Monitoring continues in this area (Lake Hill) via Site 10.

From the beginning of 2006, Site 10 was set up in triplicate, with Site 11 also being set up in triplicate from the beginning of 2008, to monitor at Lake Hill, Sandown and Fairlee Road, Newport respectively. Despite historic monitoring taking place on Fairlee Road at Site 4, Site 11 was set up to better represent relevant exposure at that location.

The 2008 results for the three current monitoring locations including data capture percentage, are given in Table 2.4a. The full bias adjusted data set for all sites from 2006 are given in Table 2.4b.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes (2008)

Site ID	Location	Type	Within AQMA?	Data Capture 2008 %	Annual mean concentrations 2008 (µg/m ³) Adjusted for bias
IOW4	On lamppost outside 51 Fairlee Road	Kerbside	N	62	42.8**
IOW8	Kerb outside 23 Lake Hill	Kerbside	N	100	discontinued
IOW10*	Pedestrian refuge at junction of the Fairway and Lake Hill	Kerbside	N	92	24.1
IOW11*	On facade of 48 Fairlee Road	Roadside	N	58	31.1**

Note bias adjustment factors are provided in Appendix A

*triplicate results

** results below 90% data capture have been period adjusted (Appendix A)

The results in the table show that of the three sites only Site IOW 4 measured an annual mean above the NO₂ objective, with an annual mean concentration 42.8 µg/m³.

In terms of relevant exposure, Site IOW 4 is a kerbside location outside 51 Fairlee Road, Newport. The nearest relevant exposure is set back approximately 11m from this location, and will therefore experience lower concentrations than that measured by the tube. To demonstrate this a façade correction, (as set out in LAQM. TG(09)) has been applied. Using a background NO₂ concentration of 12.5 µg/m³, the correction method shows the facade concentration to be 21.8 µg/m³, which is significantly below and annual mean objective.

The second diffusion tube location on Fairlee Road, Site IOW11 on the facade of number 48, shows an annual mean of 31.1 µg/m³ for 2008. Taking into account that Site IOW 11 is approximately 10 m closer to the road than the façade location calculated for Site 4, the Council is confident that the facade result for Site IOW 4 is representative of actual concentrations at this location.

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Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes (2006-2008)

Site ID	Location	Type	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias		
				2006	2007	2008
IOW4	On lamppost outside 51 Fairlee Road	kerbside	N	38.3	41.0	42.8
IOW8	Kerb outside 23 Lake Hill	kerbside	N	38.5	*	*
IOW10	Pedestrian refuge at junction of the Fairway and Lake Hill	kerbside	N	25.0	24.6	24.1
IOW11	On facade of 48 Fairlee Road	roadside	N	*	*	31.1

*site discontinued

The results in Table 2.4b show there to have been no exceedences at Site IOW 8, 10 and 11 in the last three years. Site IOW 4 has shown exceedences in years 2007 and 2008, however given the façade correction calculated for Site 4 for the 2008 data set, actual exceedences of the objective are considered unlikely.

Annual ratified data sets as shown in Table 2.4b are useful for assessing directly against the NO₂ annual mean objective for that given year, but do not give any indication of concentration patterns over time. Figure 4 shows the annual results since 2000 for all sites. The results demonstrate a slightly erratic pattern in the first three years of monitoring, with some sites showing a general downward trend in measured annual mean concentrations and others showing an increase between the first and second years.

Ambient measurements increased at all sites in 2003 which was largely attributable to the metrological conditions experienced during that year¹. The 2004 results show concentrations again dropping off. As previously stated a number of the sites were then discontinued due to measured concentrations being consistently below the NO₂ annual mean air quality objective. Of the remaining sites and those subsequently set up only Site IOW 11 has shown an exceedence in the last two years. As previously discussed exceedences at locations of relevant exposure are considered unlikely.

¹Air Pollution in the UK: 2003, A report prepared by the National Environmental Technology Centre (Netcen) for the Department for Environment, Food and Rural Affairs and the Devolved Administrations.

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Figure 4: Nitrogen Dioxide Annual Mean Concentrations 2000-2008



Assessment of the monitoring data shows no exceedences of either the annual mean or short term NO₂ objective, there is therefore no requirement to move to a Detailed Assessment.

2.2.2 PM₁₀

There are no PM₁₀ monitoring sites on the Island.

2.2.3 Sulphur Dioxide

There are no sulphur dioxide monitoring sites on the Island.

2.2.4 Benzene

There are no benzene monitoring sites on the Island.

2.2.5 Other pollutants monitored

The Isle of Wight Council does not monitor for any other pollutant other than that previously stated.

3 Road Traffic Sources

Since the 2006 USA the Council has gathered a further two years traffic count data for a number of sites across the Island. The full data set is given in Appendix C. For the purpose of this report the data has been assessed in line with the new LAQM. (TG.09) Defra guidance. This includes taking account of the new assessment criteria (changes from the old LAQM. TG (03)), as well as any significant road traffic changes since the 2006 USA, that may impact on local air quality.

Assessment of all new traffic data only identified the Medina Way/Forest Road junction as requiring assessment (Section 3.4). All remaining sites for which traffic data has been collected and details as to why assessments are not required are given in Appendix C.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Isle of Wight Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Isle of Wight Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Isle of Wight Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Assessment of traffic count data for 2008 identified the junction of Medina Way and Forest Road as requiring assessment for both NO₂ and PM₁₀.

Traffic count data for 2008 showed Annual Average Daily Traffic (AADT) flows for 32,087 and 8,480 for Medina Way and Forest Road respectively. This gives a total AADT flow at the junction of 40,567. TG (09) states that all junctions with flows in excess of 10,000 vehicles per day with receptors 10 m from the kerb (20 m in major conurbations) should be assessed. The nearest receptors in this case are 15 m from the kerb. However given that the AADT is far greater than 10,000 (40,567) and there is no local air quality monitoring, it was considered prudent to perform a DMRB screening assessment.

The nearest monitoring station to the assessment site is IOW6 (Newport Road) adjoining Medina Way to the north. However the site was discontinued at the end of 2004 as the annual mean results were consistently below the annual mean NO₂ objective (Figure 4). Therefore as it is not possible to verify

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these results against the current local monitoring data a comparison with the older data set (2004) from Site IOW 6 has been made.

The annual average results of the assessment are given in Table 3.4 with all inputs show in Appendix B.

Table 3.4 DMRB screening model results for the Medina Way/Forest Road junction.

Site	OS Grid Ref	Assessment Year	NO₂ annual mean	PM₁₀ annual mean
Medina Way/ Forest Road junction	449384/90145	2008	22.3	19.0

3.4.1 Changes to the NO_x to NO₂ relationship.

The method to convert roadside NO_x to NO₂ within the DMRB model was based on measurements made between 1999 and 2001. Recent evidence shows that the proportion of primary NO₂ in vehicle emissions has increased. This means that the relationship between NO_x and NO₂ at the roadside has changed from that currently used in the DMRB model.

To compensate for this the model has been run as normal with the NO_x output then inputted into the new NO_x/NO₂ conversion tool as given on the review and assessment website. This road NO₂ fraction was then added to the background to give the total modeled result as given in Table 3.4.

As previously stated it was not possible to verify the results as no current local monitoring data exists, therefore a comparison has been made with the 2004 annual mean from Site IOW 4, which was located on a lamppost on Horsebridge Hill (Medina Way turns in to Horsebridge Hill to the north of the DMRB assessment site). Although slightly lower traffic flows would be expected at the 2004 monitoring location the Medina Way/Forest Road junction, the IOW 4 site was significantly closer to the road than the modeled receptor in Table 3.4. Therefore the 2004 annual mean for the monitoring site of 26.4 µg/m³ compares well with the results given by the DMRB screening model.

Further to this and in line with national trends, it is likely that the ambient road side concentrations will have decreased since 2004, and would now be likely to show concentrations in the region of that given by the DMRB assessment.

As the DMRB assessment for NO₂ and PM₁₀ at this receptor shows annual mean concentrations well below the relevant objective a Detailed Assessment is not required.

Isle of Wight Council has assessed new/newly identified junctions meeting the criteria in Section A.4 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Isle of Wight Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

The updated data set in Appendix C shows that there have been two roads which have seen an increase of greater than 25% traffic volume since the 2006 USA. These are Rolls Hill, Thorness which has seen an increase of 38% since 2005 and Military Road, Freshwater, which has seen an increase of 57% since 2005.

Despite these increases both roads have AADT flows of < 3,000 and are therefore not required to be assessed any further.

Isle of Wight Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

The only potentially significant bus station on the Island identified for possible assessment was the Newport Bus Station. Data collected for this USA shows peak bus movements to be in the 80 per hour with less during the night time period. Taken as a worst case scenario of 80 per hour over the entire day, the total vehicle movements are shown to be 1950 vpd (80 x 24hrs). Therefore in line with the TG(09) criteria, despite there being relevant exposure within 10 m of the station, exceedences of either the 1 hour and annual mean objectives are unlikely.

Further to this, Southern Vectis (the main bus company) confirms that of the regular bus fleet, (excluding coaches and open tops), 30 meet the Euro 3 standard, 28 meet Euro 4, and 7 meet Euro 5. None are pre Euro.

Isle of Wight Council has assessed new/newly identified bus stations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

4 Other Transport Sources

4.1 Airports

Isle of Wight Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Isle of Wight Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Isle of Wight Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Isle of Wight Council confirms that there are ports or shipping that meets the specified criteria within the Local Authority area. However, sulphur dioxide emissions from cross-solent car ferries were subject to a Detailed Assessment in 2004, which demonstrated that concentrations were well below the air quality objectives. As there have been no significant change to the fleet since then, no additional work is required.

5 Industrial Sources

5.1 Industrial Installations

The new Part B processes (authorised under LAPPC) identified since the 2006 USA, are two mobile crushers and three waste oil burners. (See 5.1.3).

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Isle of Wight Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have increased Substantially or New Relevant Exposure has been Introduced

Isle of Wight Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

The new Part B processes (authorised under LAPPC) identified since the 2006 USA, are two mobile crushers and three waste oil burners.

The two mobile crusher processes are Cheverton Chalk and Gravel, Cheverton Shute, Shorwell, Newport and JPC Demolition, Pritchetts Way, Rookley. For the purpose of this screening assessment these can be considered as fugitive sources which can then be assessed against the emissions nomograms in TG (09). However there are number of complications and unquantifiable factors that make direct comparison with the guidance nomogram tools unworkable. These are as follows:

- The mobile nature of the units. There are no clear identifiable locations for the equipments which can be used for the purpose of assessing relevant receptor locations.
- It is not possible with any degree of accuracy to isolate annual emissions from the use of the crushers.
- The erratic use of the crushers mean that there is no way of identifying through put of rock for the purpose of assessing PM₁₀ and dust release.

With this in mind guidance was sought from the review and assessment help desk. The help desk confirmed that the use of crushers such as this has not previously been identified as an issue in LAQM and that it would be very difficult to identify specific emissions for the purpose of assessing against the TG (09) nomograms.

With this in mind the advice was to assess the history of dust complaints in order to judge the requirement to move on to a Detailed Assessment. To date the Council has not received any dust complaints relating to the use of mobile crushers at these two sites, therefore it has been concluded

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that PM₁₀ exceedences are unlikely and that a Detailed Assessment is therefore not required. The Council will keep this under review and respond accordingly should complaints be received.

Assessment of the oil waste oil burners (the details of which are given in Appendix F) did not identify any receptors within 100 m meters of the emissions release point. This coupled with the small size of the units (approximately 0.03 MW input) and restricted winter usage, means that exceedences of the objectives are considered unlikely.

Isle of Wight Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

A Detailed Assessment was carried out in 2004, examining SO₂ concentrations arising from emissions from ferries in East Cowes, Fishbourne and Yarmouth ports, and benzene concentrations arising from emissions from a petrol storage depot in East Cowes.

The petrol storage depot was identified during the first round of review and assessment, as a new housing estate had been built adjacent to the site. Dispersion modelling for benzene supplemented with benzene diffusion tube monitoring for a short period (The results of which were reported in the 2005 Progress Report), identified that exceedences of the benzene objective were unlikely at the worse case receptors. There was therefore no need to declare an Air Quality Management Area for benzene.

As there have been no significant changes to the site in terms of either exposure or emissions since the 2004 Detailed Assessment, there is no need to reassess the depot again in this report.

There are major fuel (petrol) storage depots within the Local Authority area, but these have been considered in previous reports.

5.3 Petrol Stations

Isle of Wight Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Isle of Wight Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Presently there are no biomass units on the Island. However a plant is currently going through Planning. Should this be given permission, details of the installation along with any identified air quality impacts, will be included in subsequent LAQM reports.

Isle of Wight Council confirms that there is no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

Isle of Wight Council confirms that there is no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

Isle of Wight Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

The only possible fugitive source identified in this assessment, are the mobile crushers discussed in 5.1.3.

Isle of Wight Council has assessed potential sources of fugitive particulate matter, and concluded that it will not be necessary to proceed to a Detailed Assessment.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The Isle of Wight Council only monitors for the pollutant NO₂ and only with diffusion tubes. From the monitoring and review and assessment reports to date no exceedences of any of the air quality objectives have been identified. Therefore the council has no AQMA at present.

The 2008 results show that of the three current sites only Site IOW 4 measured an annual mean above the NO₂ objective, with an annual mean concentration 42.8 µg/m³. However subsequent façade calculations suggest that the annual mean at the nearest relevant receptor would be 21.8 µg/m³, well below the objective. This result was in agreement with the results from Site 11 (31.1 µg/m³) which is approximately 10 m closer to the road.

Therefore based on local monitoring data, a Detailed Assessment is not required for NO₂.

The long term trends in Figure 4 (2000-2008) show a slightly erratic pattern in the first three years of monitoring with some sites showing a general downward trend in measured annual mean concentrations with others showing an increase between the first and second years.

Ambient measurements increased at all sites in 2003 which was largely attributable to the metrological conditions experienced in that year. The 2004 results show concentrations again dropping off. As previously stated a number of the sites were then discontinued due to the annual mean measurements being consistently well below the NO₂ annual mean air quality objective. Of the remaining sites and those subsequently set up, only site IOW 4 has shown exceedences in the last two years. However façade corrections at this location suggest that exceedences are unlikely.

8.2 Conclusions from Assessment of Sources

Since the 2006 USA the Council has identified three key areas which in line with the TG (09) were required to be assessed in this report. These were:

- The Medina Way/Forest Road junction, which showed an AADT of 40,567 and receptors within 15 metres;
- Two road links showing increases of greater than 25% since the 2005 traffic data set; and
- Five new authorised processes which included two mobile crushers and three waste oil burners.

Assessment of all the above has not identified any likely exceedences of any of the prescribed air quality objectives, therefore a Detailed Assessment is not required.

8.3 Proposed Actions

In line with in LAQM.TG(09) guidance, no potential exceedences of the air quality objectives have been identified. Therefore there is no need for the Council to move to a Detailed Assessment at this time.

The Council has historically identified the busiest road links and either set up local monitoring or performed DMRB screening assessments to assess ambient concentrations. With consideration to the current air quality monitoring that takes place on the Island and the annual mean results, no requirement for new monitoring locations have been identified.

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The Council is committed to continue to monitor air quality on the Island as well as any new or altered development that may have implications for local air quality. The Council will update and report these findings in its 2010 Air Quality Progress Report.

9 References

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Appendices

- Appendix A: QA/QC Data
- Appendix B: DMRB Calculations
- Appendix C: Traffic data
- Appendix D: Diffusion Tube Results Close to the Annual Mean Objective
- Appendix E: Monthly Nitrogen Dioxide Concentrations 2008
- Appendix F: LAPPC Authorised Processes

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Bias adjustment is effectively a calculated factor which shows whether diffusion tubes are over or under reading ambient concentrations and therefore allows for a correction to be made.

As there is no local automatic monitoring, Isle of Wight Council uses a national factor as given on the review and assessment help desk website² for Bureau Veritas (Gradko 50% TEA in acetone).

Factor from Local Co-location Studies (if available)

As the council does not carry out any continuous monitoring on the Island the national bias adjustment factor for Bureau Veritas (Gradko 50% TEA in acetone) has instead been used. The factors used in this assessment are as follows:

2000-	1.2
2001-	1.45
2002-	1.27
2003-	1.11
2004-	1.1
2005-	1.1
2006-	1.01
2007-	0.98
2008-	0.93

Discussion of Choice of Factor to Use

The Council has used the national factor for Bureau Veritas (Gradko 50% TEA acetone) as no local continuous monitoring is carried out.

PM Monitoring Adjustment

The Council does not carry out any local monitoring for PM₁₀.

Short-term to Long-term Data adjustment

Of the NO₂ diffusion tube datasets for 2008 Sites 4 and Site 11 have a data capture of less than 90% (62% and 58% respectively). The period mean adjustment for Site 4 2007 and Sites 4 and 11 for 2008 are given below.

Table A1. 2007 August to December (Site 4)

Site	Site Type	Annual Mean	Period Mean	Ratio
Preston Park	Background	21.7	23.8	0.91
Portsmouth	Background	22.8	26.9	0.85
			Average	0.88

Table A2. 2008 May to December (Site 4)

Site	Site Type	Annual Mean	Period Mean	Ratio
Preston Park	Background	19.8	18.1	1.09
Portsmouth	Background	21.5	21.2	1.01
			Average	1.05

² Air Quality Management Resource Centre, University of the West of England
http://www.uwe.ac.uk/aqm/review/guidance_05.html

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Table A3. 2008 July to December (Site 11)

Site	Site Type	Annual Mean	Period Mean	Ratio
Preston Park	Background	19.8	19	1.04
Portsmouth	Background	21.5	22.5	0.95
			Average	1.00

QA/QC of automatic monitoring

No automatic monitoring is carried out on the Island.

QA/QC of diffusion tube monitoring

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL). WASP formed a key part of the former UK NO₂ Network's QA/QC, and remains an important QA/QC exercise for laboratories supplying diffusion tubes to Local Authorities for use in their Local Air Quality Management work.

Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the WASP scheme.

Out of a rating of GOOD, ACCEPETABLE, WARNING AND FAILURE, the results for 2008 show that Bureau Veritas (Gradko) were rated as GOOD. This is classified as follows:

GOOD: Results obtained by the participating laboratory, Bureau Veritas (Gradko 50% TEA in acetone) are on average within 13% of the assigned value. This equates to an **RPI of 169 or less.**

Appendix B: DMRB Calculations

The input data into the DMRB calculations are shown below.

Table B1. DMRB Input Data (1)

Location/ Receptor	Grid Ref	Background Concentrations			
		Year	NO _x	NO ₂	PM ₁₀
Corner of Medina Way and Forest Road	449384/90145	2008	14.7	12.5	16.3

Table B2. DMRB Input Data (2)

Link	Distance to receptor (m)	Traffic flow & speed		Traffic composition		
		AADT	Speed (km/h)	Road type (A,B,C,D)	Total % LDV (<3.5t GVW)	Total % HDV (>3.5t GVW)
1	15	8480	32	A	93.7	6.3
2	45	32087	48	A	93	7

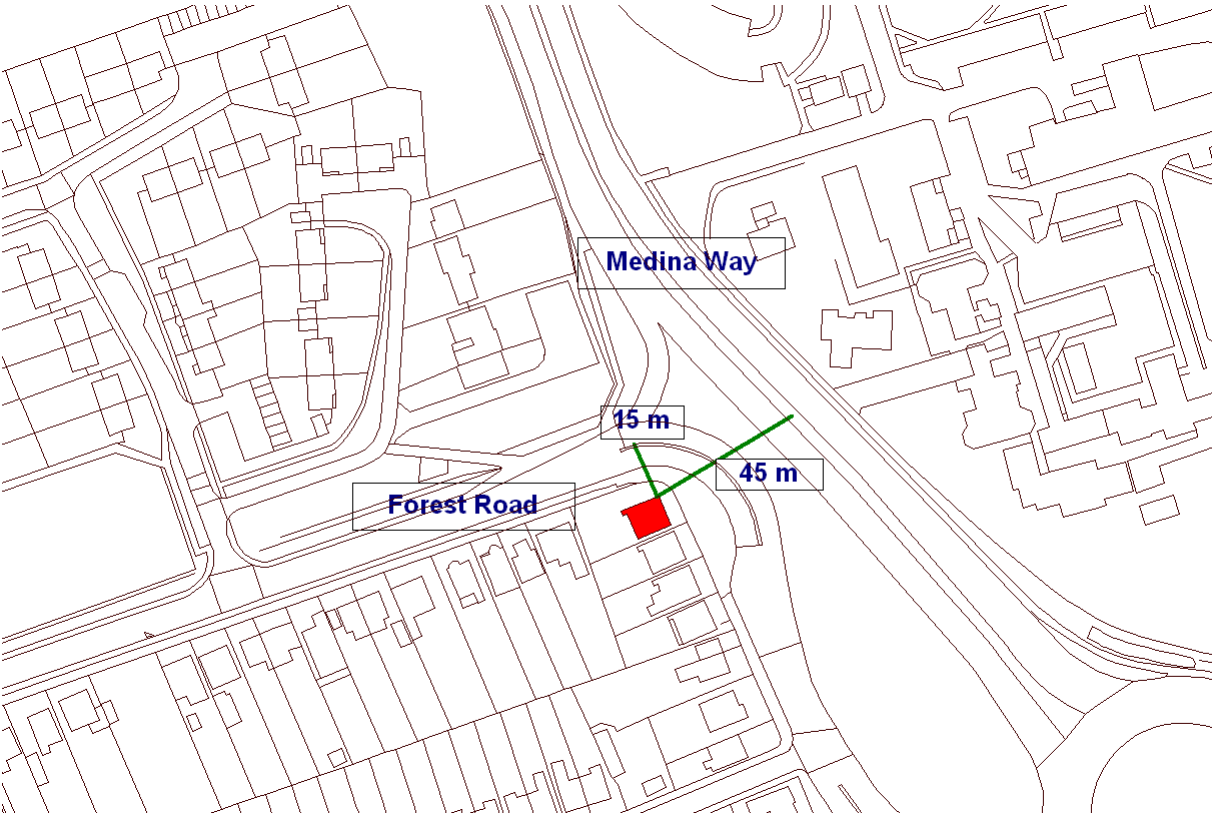
As stated in the report it was not possible to verify the results as no current local monitoring data exists, therefore a comparison was made with the 2004 annual mean from Site IOW 4. The close correlation in modelled and monitored results as discussed in Section 3.4.1 gave confidence in the modelled result.

Table B3. DMRB Results

Pollutant	Annual mean			
	Background concentration	Road traffic component	Total	Units
NO _x	14.7	24.6	39.3	µg/m ³
NO ₂	N/A	11.2	22.3	µg/m ³
PM ₁₀	16.3	2.69	19.0	µg/m ³
PM ₁₀ Days >50mg/m ³	N/A	N/A	2	µg/m ³

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Figure B1. DMRB Receptor Location



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Appendix C: Traffic data

Location	AADT			Annual change (AADT)			Annual % change (AADT)			Reviewed in USA 06?	Reviewed in 2009 USA?
	2005	2006	2007	05-06	06-07	05-07	05-06	06-07	05-07		
Rolls Hill, Thorness	1,892	2,524	2,607	632	83	715	33	3	38	N	No as very low traffic flow.
Fairlee Road, Newport	17,086	19,593	20,488	2,507	895	3,402	15	5	20	Y	No as previously assessed.
Whippingham Road, East Cowes	13,617	13,945	14,106	328	161	489	2	1	4	Y	No as previously assessed.
Eleanors Grove, Wootton	16,790	16,080	17,330	-710	1,250	540	-4	8	3	N	No as non canyon-like with large front gardens.
Brading Road, Rowborough	12,040	11,850	11,954	-190	104	-86	-2	1	-1	Y	No as previously assessed.
Lake Hill, Lake	19,386	18,756	17,957	-630	-799	-1,429	-3	-4	-7	N	No as local monitoring results show annual mean below NO ₂ AQO.
Newport Road, Apse Heath	15,359	15,978	17,821	619	1,843	2,462	4	12	16	Y	No as previously assessed.
Victoria Avenue, Shanklin	5,890	6,076	6,234	186	158	344	3	3	6	Y	No as previously assessed.
Bonchurch Road, Luccombe	6,081	6,792	6,441	711	-351	360	12	-5	6	N	No as non canyon-like.
Military Road, Freshwater	1,683	1,944	2,640	261	696	957	16	36	57	N	No as very low traffic flow.
Colwell Road, Totland	4,712	3,675	3,851	-1,037	176	-861	-22	5	-18	N	No as very low traffic flow.
Yarmouth Road, Shalfleet	6,867	7,694	7,692	827	-2	825	12	0	12	N	No as location is rural with scattered cottages.
Forest Road, Newport	9,207	11,451	10,222	2,244	-1,229	1,015	24	-11	11	N	Has been assessed. Not previously assessed as junction with Medina Way.
Horsebridge Hill, Newport	19,085	20,858	20,556	1,773	-302	1,471	9	-1	8	Y	No as previously assessed.
Blackwater Road, Newport	18,569	18,806	18,883	237	77	314	1	0	2	N	No as historic monitoring shows annual mean NO ₂ AQO.
Medina Way, Newport	26,878	27,418		540	-27,418	-26,878	2	-100	-100	N	Has been assessed. Not previously assessed as junction with Forest Road.
Briddlesford Road.	5,817	5,843	6,036	26	193	219	0	3	4	N	No as rural and non canyon-like.

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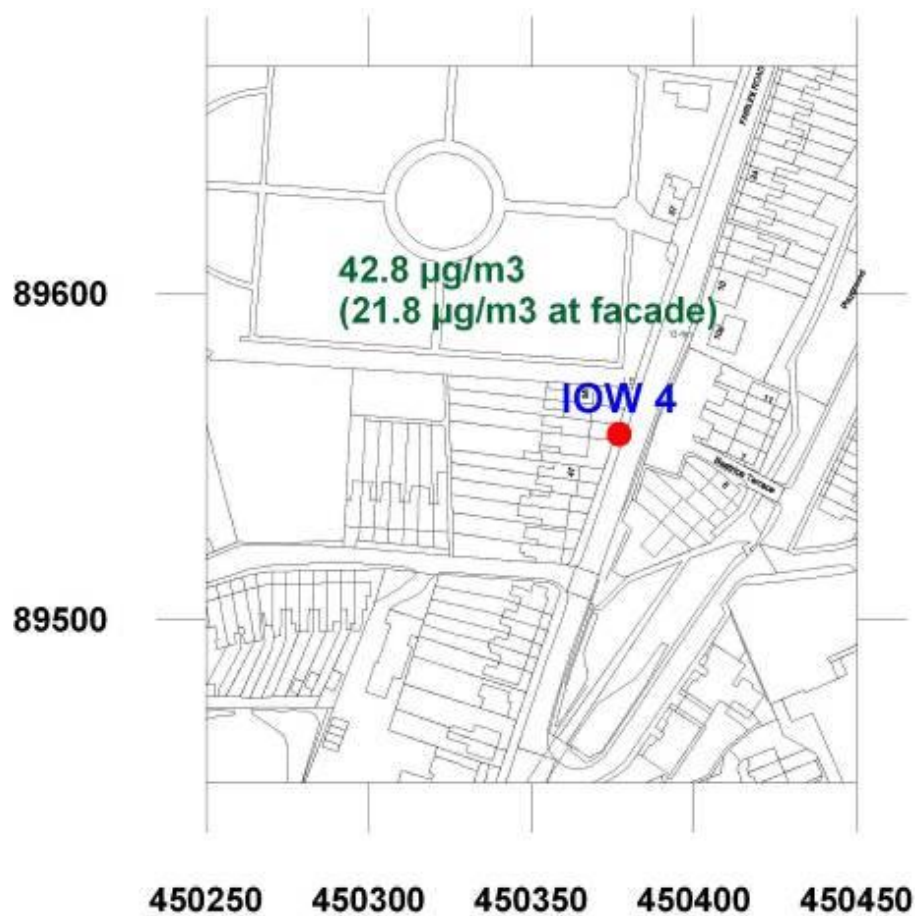
Newport Road, Godshill	8,095	7,990	8,428	-105	438	333	-1	5	4	N	No as rural and non canyon-like. Some adjoining tea gardens - AADT <10,000.
Ashey Downs Road, Ashey	9,107	10,501	10,641	1,394	140	1,534	15	1	17	N	No as rural and non canyon-like.
Newport Road, Afton	3,515	3,795	3,780	280	-15	265	8	0	8	N	No as very low traffic flow.
Bowcombe Road, Bowcombe	2,485	2,626	2,666	141	40	181	6	2	7	N	No as very low traffic flow.

Appendix D: Diffusion Tube Results Close to the Annual Mean Objective

Maps of Locations

The maps for all monitoring location are given in Section 2. Assessment of the 2008 annual mean nitrogen dioxide diffusion tube results, suggest that prior to facade correction, only Site 10 was above the objective ($42.8\mu\text{g}/\text{m}^3$). The subsequent facade correction assessment indicates the site to be below the annual mean objective. Site IOW 4 is shown in Figure D1.

Figure D1. NO_2 Diffusion Tube Locations (Sites IOW4)



Appendix E: Monthly Nitrogen Dioxide Concentrations 2008

Table E1. 2008 Monthly Diffusion Tube Results (non adjusted)

Site Number	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IOW4(a)					51.2	45.1	39.5	32.7	45.7	47.6	44.2	47.3
IOW4(b)					55.6	43.2	39.6	37.3	43.6	43.8	47.0	44.7
IOW4(c)	22.0	57.4			51.1	48.6	43.7	38.8	41.2	44.5	42.7	50.0
IOW10	36.1	34.3	17.9	21.3	32.5	22.2	23.6	21.4	24.5	26.1	22.7	28.8
IOW11(a)							36.4	27.9	38.1	30.5	30.1	32.5
IOW11(b)							37.5	30.1	39.2	31.3	31.8	35.3
IOW11(c)							36.4	30.5	38.8	32.0	30.2	36.5

Appendix F: LAPPC Authorised Processes

Table F1. Part B Authorised Processes since the 2006 USA

Process	Address	Grid Location	Date of Initial Authorisation	Process Guidance Note
Mobile Crusher	*Cheverton Chalk and Gravel, Cheverton Shute, Shorwell, Newport	445183 84235	9/1/08	PG 3/16 (04)
Mobile Crusher	*JPC Demolition, Pritchetts Way, Rookley	451190 84086	30/9/08	PG 3/16 (04)
Waste Oil Burner	CS Vehicle Repairs, Gatcombe	449345 84673	6/1/09	PG1/1 (04)
Waste Oil Burner	On/Off Road Repairs, Newport	452181 87941	5/12/08	PG1/1 (04)
Waste Oil Burner	Rookley Car Centre, Rookley	451102 084058	19 March 2009	PG1/1 (04)

*this is the company address and does not necessarily refer to the location of the crushing activities.