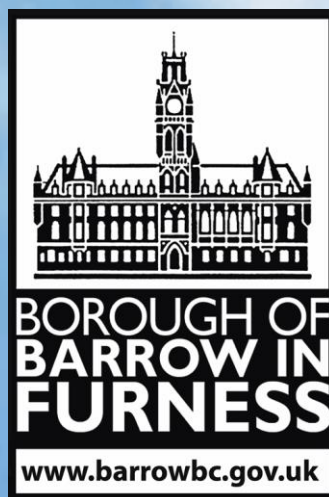


BARROW-IN-FURNESS
BOROUGH COUNCIL

Air Quality Review and Assessment

Updating and
Screening Assessment

2015



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

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Executive Summary

In common with other local authorities Barrow-in-Furness Borough Council is required to review and assess air quality for specified pollutants in its area. This report details the Updating and Screening Assessment as carried out in 2015 and looks at sources of pollutants to identify significant changes since the last round of review and assessment. It also shows monitoring data for 2014.

The measured annual mean concentrations for NO₂ indicate that the objective of 40 µg/m³ was not exceeded at any of the monitoring locations.

Background NO₂ concentrations increased from 7.9 µg/m³ in 2007 to 10.7 µg/m³ in 2009 and reduced to 8.7 µg/m³ in 2014.

The Boroughs highest annual mean NO₂ concentration identified at Lindal 1 was 33.3 µg/m³ and is below the objective. The two 'new' roadside monitoring locations have annual mean NO₂ concentrations also below the objective, those being 'Dalton 1' of 27.2 µg/m³ and 'Walney Road' of 16.8 µg/m³.

The impacts of transport, industrial and biomass sources have been assessed in this report. All of the assessments require no further action at this time.

The existing monitoring programme will continue for the foreseeable future unless any other areas of possible relevant exposure above air quality objective thresholds are identified.

The air quality objectives are judged likely to be achieved in respect of all pollutants and there is no need to proceed to a detailed assessment for any pollutant.

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1 Introduction

1.1 Description of Local Authority Area

The Borough of Barrow-in-Furness covers about 70 square km at the seaward end of the Furness peninsula which is bounded by the Irish Sea, the Duddon Estuary and Morecambe Bay. The main settlement is the town of Barrow-in-Furness, the next largest settlement is Dalton-in-Furness. There are numerous villages and hamlets.

The major sources of atmospheric pollution relate to combustion processes, natural gas terminals and road traffic.

A map of the Borough showing A1 installations included in the Environmental Permitting regime is attached at Appendix B.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedence's are considered likely, the local authority must then 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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to the risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.0 This table shows the objectives in units of micrograms per cubic metre $\mu\text{g}/\text{m}^3$ (milligrams per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.0: Air Quality Objectives included in Regulations for the purpose of LAQM 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 (PM ₁₀) (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

Stage 1 R & A 2000

The report concluded the air quality objectives were not likely to be exceeded but there was lack of air quality information about a large combustion process (Smite) operated intermittently but being refurbished at the time. A Stage II R&A was therefore proposed for NO₂, SO₂ and PM₁₀.

Stage 2 R & A 2001

The operator of the combustion process carried out a modelling exercise for the above-mentioned pollutants. The report formed the basis of this R & A which concluded there would be no exceedences of AQ objectives.

USA 2003

The report concluded AQ objectives were not being exceeded and indicated passive diffusion tubes would be used to check NO₂ concentrations where predicted levels were of concern (all traffic related).

Progress Report 2005

Further to information about notional benzene releases from onshore natural gas processing and storage prior to this report, and concerns about predicted NO₂ concentrations (although results were less than the objective) at a busy road junction, Detailed Assessments were proposed to monitor both pollutants and monitoring was initiated prior to the 2005 Progress Report.

Upgrading to triplicate diffusion tubes and a new monitoring location were proposed and initiated at the busy road junction.

Detailed Assessment 2006

The report concluded AQ objectives for benzene and NO₂ would not be exceeded.

USA 2006

Although the report concluded AQ objectives were not likely to be exceeded there were concerns about the effects on air quality from the change in operation of a gas-

fuelled power station from continuous to diurnal peak load operation due to increased NO₂ emissions during start-up and shut-down. Additionally, monitoring associated with the operation of a recent gas terminal was due.

Progress Report 2007

The report concluded AQ objectives were still being achieved. Other roadside locations would be monitored for NO₂ following on from the Detailed Assessment. A proposed marina and retail complex were not expected to cause AQ objectives to be exceeded and the operator of the gas-fired power station and gas terminals will be implementing a monitoring programme for NO₂, SO₂, benzene (and other pollutants) to validate a modelling exercise they had carried out. This would address concerns over levels of NO₂ near a public footpath running alongside the site boundaries.

Progress Report 2008

AQ objectives were still being achieved. Monitoring to validate air quality modelling for gas terminals and gas power station was implemented by the operator and early results indicated there would be no exceedence of AQ objectives. NO₂ diffusion tube monitoring at the roadside location is to be kept in place to assess new one-way gyratory traffic system.

USA 2009

NO₂ annual mean concentrations in the Borough were continuing to decrease. No existing or envisaged potential exceedences at relevant locations were deemed as likely for any pollutants. No new areas of concern were identified although data is awaited for emissions from a proposed biomass combustion installation.

Three new monitoring locations to screen roadside NO₂ concentrations were planned to replace current triplicate diffusion tube monitoring which demonstrated NO₂ annual mean concentrations have decreased since the introduction of a gyratory traffic system.

Monitoring for the gas terminals/gas power station was completed and the results showed no AQ objectives would be exceeded.

Progress Report 2010

Monitoring indicated that there is a decreasing trend in NO₂ levels in the Borough, although the recent long-term background increase was attributed to nearby construction works and possibly meteorological conditions. Three new monitoring locations to screen NO₂ concentrations at roadside locations were implemented during 2009, two on the A590 trunk road and one in Dalton town centre.

A number of local developments that might affect air quality were identified and will be assessed during the next Updating and Screening Assessment in 2012.

Progress Report 2011

Monitoring of nitrogen dioxide concentrations in 2010 indicates there are no exceedences of the relevant Air Quality Objectives for this pollutant although measured concentrations at one roadside location, on the A590 trunk road at Lindal-in-Furness, are of sufficient concern for monitoring to continue to confirm trends in annual mean concentrations.

A number of local developments that might affect air quality are identified in the report. These will be examined further in the Updating and Screening Assessment in 2012.

USA 2012

The measured annual mean concentrations for NO₂ indicate that the objective was not exceeded at any of the monitoring locations.

Background NO₂ concentrations increased from 7.9 µg/m³ in 2007 to 10.7µg/m³ in 2009 and reduced to 8.6 µg/m³ in 2011. It is likely that the increase was influenced by construction work at the monitoring location and also meteorological conditions as no local sources of NO₂ have been identified.

Due to concerns identified in the 2011 Progress report on the A590 trunk road at Lindal from a single monitoring location, monitoring at an additional location was implemented. The annual mean NO₂ concentrations at the two monitoring locations in Lindal were 32.6 µg/m³ and 24.8 µg/m³ which are below the objective. The

remaining roadside location at Walney Road was also below the objective (23.5 µg/m³).

Progress Report 2013

Monitoring of nitrogen dioxide concentrations in 2012 indicates there are no exceedences of the relevant Air Quality Objectives for this pollutant. However, measured concentrations of 36.3 µg/m³ at one roadside location in Lindal-in-Furness is close to the objective, and of sufficient concern for monitoring to continue to confirm trends in annual mean concentrations.

Progress Report 2014

Monitoring of Nitrogen Dioxide concentrations in 2013 indicates there are no exceedences of the relevant Air Quality Objective for this pollutant. Previously reported concerns about NO₂ concentrations at one road side location, in Lindal In Furness have been addressed and withdrawn as annual mean concentrations show a decline.

Table 1.1 Summary of previous Review and Assessment Reports

	Monitoring	AQ objectives satisfactory	Need for Det. Ass'm't	Concerns	Actions
2000 Stage 1	NO ₂	Y	NA	More data needed for combustion process	Request operators to provide data & progress to Stage 2
2001 Stage2	NO ₂	Y	NA	N	N
2003 USA	NO ₂	Y	N	N	Pro-active diffusion tube screening of NO ₂ proposed
2005 Progress Report	NO ₂	Y	Y – benzene & NO ₂	Benzene and NO ₂	Detailed Assessment monitoring initiated
2006 USA	NO ₂ Benzene	Y	N	Change to peak load operation of gas power station	Request to operator for air quality information
2006 Detailed Assessment	NO ₂ Benzene	Y	NA	N	N

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2007 Progress Report	NO ₂	Y	N	Concern over NO ₂ levels near gas terminal/ gas power station boundary	Operator implementing monitoring programme. Future screening of traffic NO ₂ proposed
2008 Progress Report	NO ₂	Y	N	N	N
2009 USA	NO ₂	Y	N	N	Traffic related monitoring locations to be changed during 2009
2010 Progress Report	NO ₂	Y	N	Downward trend but increase in background level	Implement three new NO ₂ monitoring locations to screen traffic sources
2011 Progress Report	NO ₂	Y	N	Lindal roadside NO ₂ levels of slight concern	Increase roadside NO ₂ monitoring @ Lindal
2012 USA	NO ₂	Y	N	N	N
2013 Progress Report	NO ₂	Y	N	N	Decrease roadside NO ₂ monitoring @ Lindal and implement two new monitoring locations to screen traffic sources
2014 Progress Report	NO ₂	Y	N	N	N

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

There is no automatic NO₂ monitoring carried out by Barrow-in-Furness Borough Council.

2.1.2 Non Automatic Monitoring Sites

Monitoring of background and roadside NO₂ concentrations was carried out at 4 locations within the Borough using passive diffusion tubes (1 background and 3 roadside).

Two new NO₂ monitoring locations were introduced in 2014 and monitoring at Lindal-in-Furness (LIND 2) & Walney Road (WALN) was ceased. New locations can be found; 1) adjacent the A590 main trunk road (Hindpool Road) and, 2) in the centre of Dalton in Furness adjacent to Ulverston Road. (See figures 2.1.2- 2.2.3).

The three roadside monitoring locations are as follows:-

- A590 Ulverston Road, Lindal In Furness (LIND 1)- (see figure 2.1.1)
- Hindpool Road, Barrow-in-Furness (WALN 1)– dwellings adjacent A590 trunk road (see figure 2.1.2)
- Ulverston Road, Dalton-in-Furness (DALT 1)– (see figure 2.1.3)

Further details of these non automatic monitoring sites can be found in Table 2.0 below and in Appendices A, C and D.

Figure 2.1.1 Map of Non Automatic Roadside Monitoring Site- Ulverston Road, Lindal In Furness (LIND 1),- Monitoring site.

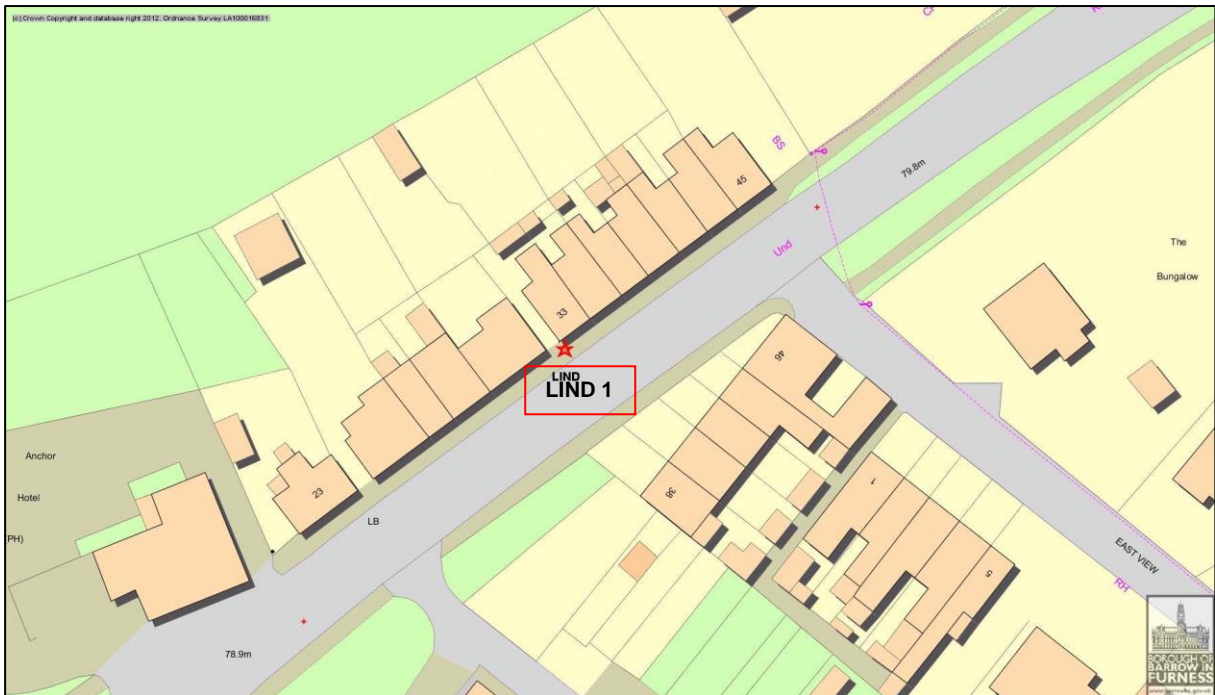


Figure 2.1.2 Map of Non Automatic Roadside Monitoring Site- New Hindpool Road (WALN 1) - A590



Figure 2.1.3 Map of Non Automatic Roadside Monitoring Site- Dalton In Furness (DALT 1)- Ulverston Road.



Table 2.0: Details of Non-Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser	Relevant Exposure?	Distance to kerb of nearest road	Does this location represent worst-case exposure?
LINDAL Ulverston Road (LIND 1)	Roadside	X325229	Y475856	NO ₂	N	N	Y	2m	Y
DALTON Ulverston Road (DALT 1)	Roadside	X323235	Y474138	NO ₂	N	N	Y	2m	Y
HINDPOOL ROAD, Barrow (WALN 1)	Roadside	X319246	Y469502	NO ₂	N	N	Y	3m	Y
DALTON Dowdales School (BKGN)	Urban background	X322732	Y474429	NO ₂	N	N	NA	NA	NA

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

The measured annual mean concentrations for NO₂ indicate that the objective of 40 µg/m³ was not exceeded at any of the monitoring locations in the Borough.

The Dalton-in-Furness roadside location was removed in December 2010 because levels were nearly 40% below the objective; however a specific spot was identified where residential properties were in close proximity to a major road, therefore a new sampling point was installed in Dalton approximately 337 metres from the original sampling point removed in 2010. (Please see figure 2.1.3)

Monitoring will continue at all 3 current roadside locations in 2015 to obtain additional information on NO₂ concentrations.

Diffusion Tube Monitoring Data

Table 2.1 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.97)
								2014 ($\mu\text{g}/\text{m}^3$)
LIND 1	Lindal, A590 Ulverston Rd	Roadside	N	NA	12 months	NA	N	33.6
DALT 1	Dalton In Furness, A590, Ulverston Rd	Roadside	N	NA	12 months	NA	N	27.2
WALN 1	Hindpool Road A590	Roadside	N	NA	12 months	NA	N	16.8
BKGD	Dowdales School	Urban background	N	NA	12 months	NA	N	8.7

NOTES

The bias adjustment of 0.97 was obtained from Diffusion Tube Bias Adjustment Spreadsheet version 03/15 and has been applied to the entire dataset for these sites.

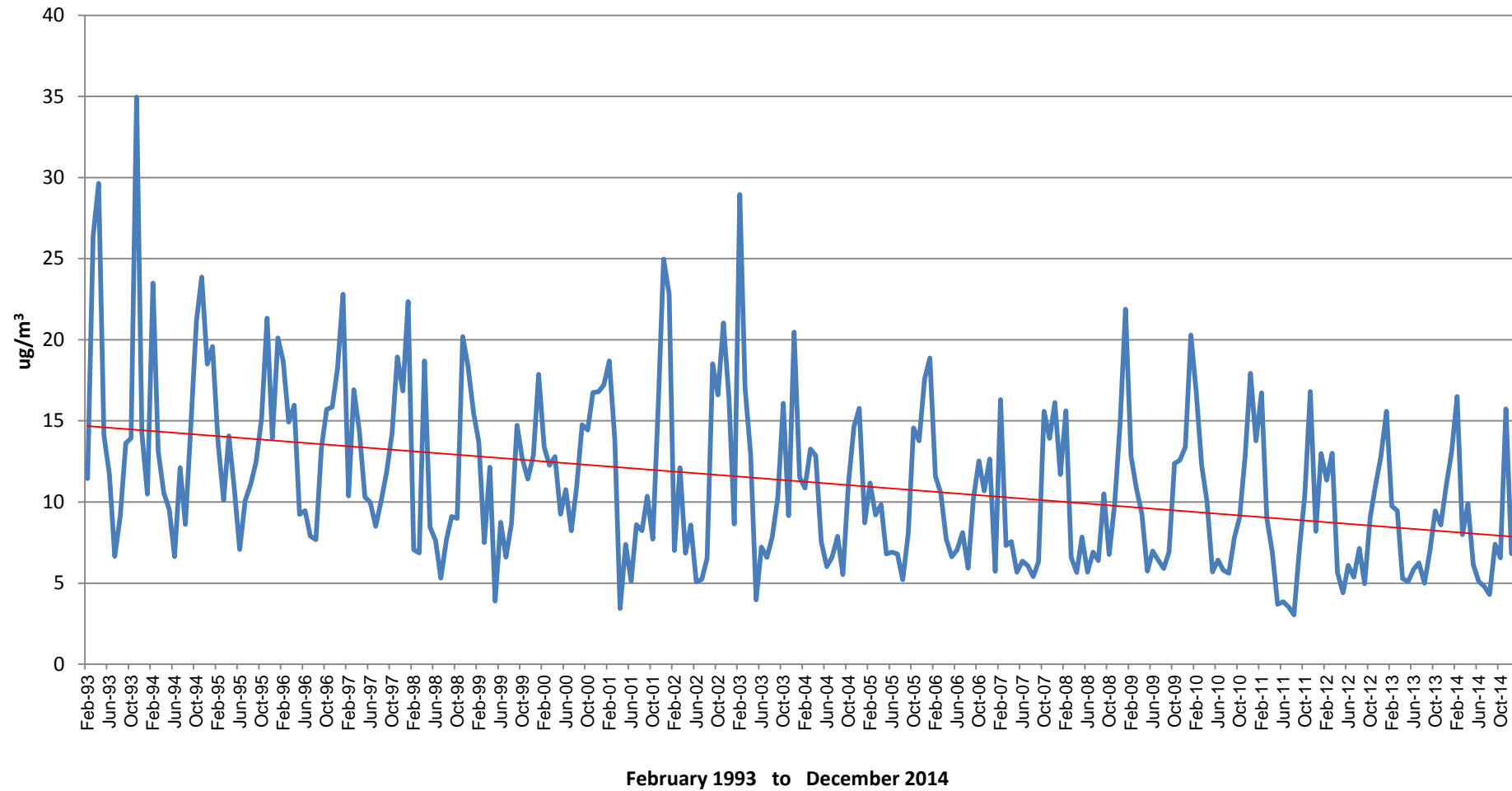
Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2010 (Bias Adjustment Factor = 0.75)	2011 (Bias Adjustment Factor = 0.82)	2012 (Bias Adjustment Factor = 1.01)	2013 (Bias Adjustment Factor = 1.01)	2014 (Bias Adjustment Factor = 0.97)
LIND	Roadside	N	32.3	32.6	36.3	32.3	33.6
LIND2	Roadside	N	NA	24.8	29.7	31.4	N/A
WALN	Roadside	N	22.1	23.5	25.0	23.5	N/A
WALN 1*	Roadside	N	NA	NA	N/A	N/A	16.8
DALT	Roadside	N	24.5	NA	N/A	N/A	N/A
DALT 1*	Roadside	N	N/A	N/A	N/A	N/A	27.2
BKGD	Urban Background	N	9.7	8.6	8.7	8.2	8.7

* WALN 1 & DALT 1 represent two new locations for 2014 (See Section 2.1.2)

Figure 2.2 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Background Site (Dowdales School 1993-2014 [Bias Adjusted])

NO₂ Background Trend



The chart relates to background monitoring at the only location remaining from the original monitoring programme. All the other monitoring locations are recent and therefore have no trend history. The graph indicates a decreasing trend in annual mean background NO₂ concentrations in the Borough. Background concentrations increased to 10.7µg/m³ in 2009 from 7.9µg/m³ in 2007 and 8.6µg/m³ in 2008, but reduced to 9.7µg/m³ in 2010 and 8.6µg/m³ in 2011. Post 2011- the background concentrations stabilise with recorded concentrations of 8.7µg/m³ in 2012, 8.2µg/m³ in 2013 and 8.7µg/m³ in 2014, thus giving a 4 year average of 8.5µg/m³ which is similar to recorded concentration levels before the 2009 annual mean spike.

However, although the increase in 2009 has been attributed to construction works during development of the school site (2008) and perhaps meteorological conditions (2009), the subsequent concentrations in recent years are still above the 2007 level of 7.9µg/m³.

2.2.2 PM₁₀

There is no monitoring of PM₁₀ concentrations carried out by Barrow-in-Furness Borough Council.

2.2.3 Sulphur Dioxide

There is no automatic or non-automatic monitoring of SO₂ concentrations carried out by Barrow-in-Furness Borough Council.

2.2.4 Benzene

There is no current automatic or non-automatic monitoring of benzene concentrations carried out by Barrow-in-Furness Borough Council.

2.2.5 Other pollutants monitored

There is no current automatic or non-automatic monitoring of other pollutant concentrations carried out by Barrow-in-Furness Borough Council.

2.2.6 Summary of Compliance with AQS Objectives

Barrow-in-Furness Borough Council has examined the results from monitoring in the borough district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

No roadside locations have been identified as at risk of causing an exceedance of the NO₂ annual mean objective. A duplicate NO₂ monitoring location was introduced in 2011 at Lindal In Furness due to the 2009 annual mean concentration at Lindal being within 25% of the objective and this was further justified in 2012 where annual mean concentration for LIND 1 were within 10% of the objective. The new location was adjacent the A590 main trunk road from Barrow to Ulverston at Lindal-in-Furness approximately 207 metres from the existing location (LIND 1) in the village. However, levels of 24.8µg/m³ and 29.7µg/m³ 31.4µg/m³ were measured at this second location in 2011-13 indicating that the air quality objective of 40 µg/m³ is not at risk for residents in the locality.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Barrow-in-Furness Borough 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

Although it is considered there are no locations in the Borough where people might spend one hour close to traffic where the annual mean concentration of 40µg/m³ NO₂ is likely to be exceeded, monitoring was introduced in one location – Market Street, Dalton-in-Furness - following the 2009 USA. An Annual Mean NO₂ concentration of 24.5µg/m³ was measured in 2010. Monitoring was discontinued at this location in December 2010 because it was below the relevant objective. Monitoring was reintroduced in Dalton on Ulverston Road in January 2014 showing an annual mean NO₂ concentration of 27.2µg/m³.

No further locations have been identified as of concern at this time.

Barrow-in-Furness Borough 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.

Barrow-in-Furness Borough Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Barrow-in-Furness Borough Council confirms that there are no new/newly identified busy junctions/busy roads.

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

The current Cumbria County Council Local Transport Plan does not identify any proposals for new roads in the Borough.

Barrow-in-Furness Borough Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

Barrow-in-Furness Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Barrow-in-Furness Borough Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

There is a small airfield in the Borough - Walney Airfield - this has been previously assessed and is not a significant source affecting air quality.

Barrow-in-Furness Borough Council confirms that there are no airports in the Local Authority area affecting air quality.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Emissions of pollutants from stationary trains have been assessed previously. There are no locations where relevant exposure is likely.

Barrow-in-Furness Borough 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

The Carlisle to Barrow and Barrow to Lancaster rail routes are not heavily trafficked. Emissions of pollutants from moving trains have been assessed previously. There are no locations where relevant exposure is likely.

Barrow-in-Furness Borough 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)

There has been an increase in the number of ships using the port over the last 5 years as a result of the construction of off-shore windfarms and increased export of quarried materials. During 2010 there were 478 ship movements which is well below the threshold of 5000 stated in LAQM TG(09). However, subsequent years have shown a steady stream of vessel movements i.e. 2011(254), 2012(290),2013(324) & 2014(315). In addition no relevant exposure is likely.

Barrow-in-Furness Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

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

5.1.1.1 BAE Redevelopment Programme

As previously identified & discussed in the 2014 Progress Report, a new class of submarine will replace the current 'Vanguard Class', and has been projected to enter service post 2028, albeit a decision to build this new class of submarine will be made in 2016. Despite this awaited decision, BAE received £300m of funding to allow redevelopment and refurbishment of the current facilities to allow work on the new larger successor class submarine to begin.

This involves an eight year programme of works which will involve construction of new buildings and facilities, as well as refurbishment of current equipment. In total, there is 32 separate projects incorporating five key new facilities: Primary Build Capability, Paint Facility, Central Yard Complex, Nuclear Submarine Berth, Crew Accommodation and New Car Parking Facilities.

Work has already begun and planning applications have been received for a number of small developments such as the new car parking facilities:

Jute Road- 231 Spaces

Buccleuch Dock Road- 436 Spaces

Cornmill Crossing- 509 Spaces

An air quality assessment is required for parking facilities given to be more than 100 spaces outside an AQMA. It should be noted that existing parking facilities within the BAE installation exist and will be decommissioned as part of the redevelopment works, therefore there is a justifiable need for new parking within the installation boundary.

An air quality assessment was commissioned for the 'site redevelopment programme' which has looked at any potential changes in pollutant concentrations at nearby sensitive receptors as a result of construction and operational phases.

An 'Atmospheric Dispersion Modelling System for Roads' (DMRB) was used to assess local air quality impacts from vehicle exhaust emissions for NO₂ and PM₁₀ at identified receptor locations adjacent to assessed road networks.

Descriptors for the magnitude of change and significance have been taken from established guidance- 'Development Control: Planning for Air Quality [2010 Update]'.

Construction Phase: The predicted increase annual mean NO₂ concentrations from the 'impact of construction' was deemed as a 'negligible' significance across all sites with the greatest magnitude of (change) increase of 0.47µg/m³. The greatest concentration of 30.73µg/m³ was predicted at one location.

The predicted 24 hour mean PM₁₀ concentrations were assessed and the potential impact was also deemed as a 'negligible' significance across all sites of interest with a maximum (change) increase of 0.04µg/m³ and a maximum concentration prediction of 17.85µg/m³ at one location.

Operational Phase: Predicted annual NO₂ Concentrations from the 'impact of the scheme' was deemed as a negligible significance across all sites with the greatest magnitude of increase of 0.25µg/m³ at one location. The greatest concentration of 31.25µg/m³ was predicted at one location.

The predicted 24 hour mean PM₁₀ concentrations were assessed and the potential impacts were deemed as a negligible significance across all sites of interest with no increase in PM₁₀ and a maximum concentration prediction of 17.89µg/m³ was predicted at one location based on the operational phase scenario and criteria based on the year- 2025.

Annual Mean concentrations of PM₁₀ are predicted to be 'well below' the air quality objective in 2025 while short term PM₁₀ concentrations are also predicted to be met at all locations while predicted changes are deemed to be imperceptible between 'without scheme' and 'with scheme' scenarios.

The potential impact on local air quality of the proposed scheme is therefore considered to be negligible.

Further Operations: Associated operations related to the new Central Yard Paint Facility (CYC) will emit particulate matter and VOC's, this will be regulated by a variation of their existing 'LAPPC Part B Environmental Permit' and a separate air quality dispersion modelling assessment will be required.

The redevelopment of BAE is in its infancy and funding still needs to be secured for the 'Successor Class Submarine', therefore no further action is deemed necessary at this time but this will be reviewed in the 2016 Progress Report.

5.1.1.2 Waste Resource Park, Bouthwood Road

An application for a Waste Resource Park (containing a mechanical and biological treatment plant - MBT) at Bouthwood Road, Barrow was received in Dec 2009 and received planning consent. The process operates on the principle of biodrying where the waste is dried within a contained building for approximately two weeks before the removal of recyclable materials. The remaining fraction is stabilised and used as a fuel. Emissions from this process will pass through a large biofilter before being emitted into the open air. This installation is classed as A1, under the Environmental Permitting Regulations, and is therefore permitted by the Environment Agency (EA) under licence XP3839F. An air quality/odour report accompanied the original application and stated the following:-

- Odour emissions were modelled and this predicted that no residential properties would be situated in an area that would receive greater than 1.5 OU_E/m^3 . Therefore there would be no significant impact on residential receptors.

However, complaints regarding perceivable odour beyond the site boundary were received from local residents during 2013 and the facility had therefore ceased operations. These issues were dealt with under the EA permit and no further odour issues have been logged with the Local Authority.

The plant received it's new environmental permit from the Environment Agency in January 2014, and recent enforcement action has seen the facility suspend

operations again for improvements to their odour management. No further action is deemed necessary at this time.

Barrow-in-Furness Borough Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

Barrow-in-Furness Borough Council has assessed industrial installations with substantially increased emissions or new relevant exposure and concluded that it will not be necessary to proceed to a detailed assessment.

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

5.1.3.1 Proposed Extension to Walney Offshore Wind Farm

It was reported in the 2013 Progress Report that Dong Energy were applying for development consent to extend the offshore wind farm which would occupy an area of up to 149km², with a capacity of up to 750MW, approximately 19km off the coast of Barrow.

Subsequent approval for the development was issued by the 'Secretary of State for Energy and Climate Change' on 7th November 2014.

A broad range of potential air quality impacts were identified in a Preliminary Environmental Information Report (PEI) ranging from- insignificant, negligible to minor.

It was concluded that no significant operational air quality impacts were anticipated. Further more, increased vessel movements associated with the wind farm construction should be well below the threshold of 5000 stated in LAQM TG(09). The offshore construction of the wind farms will begin in April 2017.

Therefore no further action is deemed necessary at this time

Barrow-in-Furness Borough 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.

5.2 Major Fuel (Petrol) Storage Depots

Barrow-in-Furness Borough Council confirms that there are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Barrow-in-Furness Borough Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

5.4.1 Sinkfall Poultry Farm

The planning application for this poultry farm was passed in 2009, however it never operated and was subsequently dismissed as a business venture. No further action is necessary.

Barrow-in-Furness Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

6.1.1 Sloop, Ship, Brig & Barque Street Biomass 2x 199Kw Communal Heating System

This is a proposed development to upgrade tenement blocks that have associated 'listed building' consent. As part of the refurbishment, two new biomass boilers each producing 199Kw will be installed as part of an efficient communal heating system.

These boilers have a maximum fuel consumption rate of 50kg/hr and are exempt appliances in accordance with the clean Air Act 1993 and have been tested and certified accordingly. Total particulate matter is calculated at 45g/hr or 16G/j.

Air Quality has been considered and predicted levels of particulate matter and NO₂ have been calculated to have a negligible impact on local air quality.

Therefore no further consideration is necessary.

6.1.2 9MW Wood Fuelled Biomass Plant at Anchor Basin, Barrow

Planning permission was granted in 2009 for this plant however development did not commence and permission expired in April 2013. A further application was submitted on 19th August 2014 to increase the capacity from 9MW to 10MW, (enabling 86,000 tonnes of waste-wood to be processed each year), extend the life of the original permission and increase the height of the chimney stack.

Planning permission was granted on 17th November 2014, but a condition requires that work must be started on or before the 27th April 2015.

As part of the new application, a stack height assessment was completed and showed that a proposed stack height of 38.5m should be sufficient for adequate dilution and dispersion of residual emissions from the plant, and any impact on local

air quality is deemed as 'not significant' with a high confidence level in the dispersion modelling undertaken.

In addition, no application for an environmental permit has been submitted to the Environment Agency and no works have begun on site at this stage and it is assumed that planning consent will be withdrawn; with the view that a new application will be submitted.

As a result no further action is deemed necessary at this time, but this will be considered further in the 2016 Progress Report.

6.1.3 80MW Roosecote Biomass Power Station

In the 2012 Updated Screening Assessment, it was reported that Centrica RPS Ltd applied for a Development Consent Order to develop a biomass power station with a net output of 80MW of electricity on the site of the existing operational gas-fired Roosecote Power Station. This application was submitted to the National Infrastructure Directorate (NID) in London along with an environmental assessment and was accepted for examination on 31st July 2012. This was subsequently withdrawn in October 2012 and demolished in late 2014.

Therefore no further consideration is necessary.

Barrow-in-Furness Borough Council has assessed the biomass combustion plant in its area and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

Taking into account the location of the above individual biomass installations, it is not thought that their combined impact will lead to unacceptably high PM₁₀ concentrations. In addition local knowledge suggests that domestic biomass burning

is not particularly widespread in the Borough. Therefore a combination of the individual installations and domestic biomass burning is not thought to be significant enough to require an assessment of pollutants.

Barrow-in-Furness Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

Domestic fuel burning in the Borough has been previously assessed and has no significant effect on SO₂ concentrations. It is not thought that there has been a significant change to this, although this will be kept under review and included in future reports.

Barrow-in-Furness Borough Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Barrow-in-Furness Borough Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The measured annual mean concentrations for NO₂ indicate that the objective of 40µg/m³ was not exceeded at any of the monitoring locations.

Background NO₂ concentrations increased from 7.9µg/m³ in 2007 to 10.7µg/m³ in 2009 and reduced to 8.7µg/m³ in 2014. It is likely that the increase was influenced by construction work at the monitoring location and also meteorological conditions as no local sources of NO₂ have been identified.

The Boroughs highest annual mean NO₂ concentration identified at Lindal 1 (LIND 1) was 33.3µg/m³ and is below the objective. The remaining roadside locations have annual mean NO₂ concentrations also below the objective, those being 'Dalton 1' (DALT 1) of 27.2µg/m³ and 'Hindpool Road (WALN 1)' of 16.8µg/m³.

Background NO₂ data measured at Dowdales School (BKGD) is similar to that of previous years results of 8.7µg/m³.

8.2 Conclusions from Assessment of Sources

Each transport, industrial and biomass source has been assessed for its potential impact on air quality within the Borough. All of the assessments require no further action at this time.

8.3 Proposed Actions

This Updating and Screening Assessment has not identified a need to proceed to a Detailed Assessment for any pollutant.

The existing monitoring programme will continue for the foreseeable future unless any other areas of possible relevant exposure above air quality objective thresholds are identified.

The Borough will submit a Progress Report in 2016 and proceed to a Detailed Assessment should this prove necessary.

9 References

- Technical Guidance LAQM.TG(09)
- Stage 1 Air Quality Review & Assessment 2000 (Barrow-in-Furness B C)
- Stage 2 Air Quality Review & Assessment 2001 (Barrow-in-Furness B C)
- Air Quality Updating and Screening Assessment 2003 (Barrow-in-Furness B C)
- Air Quality Progress Report 2005 (Barrow-in-Furness B C)
- Air Quality Detailed Assessment 2006 (Barrow-in-Furness B C)
- Air Quality Updating and Screening Assessment 2006 (Barrow-in-Furness B C)
- Air Quality Progress Report 2007 (Barrow-in-Furness B C)
- Air Quality Progress Report 2008 (Barrow-in-Furness B C)
- Air Quality Updating and Screening Assessment 2009 (Barrow-in-Furness B C)
- Air Quality Progress Report 2010 (Barrow-in-Furness B C)
- Air Quality Progress Report 2011 (Barrow-in-Furness B C)
- Air Quality Updating and Screening Assessment 2012 (Barrow-in-Furness B C)
- Air Quality Progress Report 2013 (Barrow-in-Furness B C)
- Air Quality Progress Report 2014 (Barrow-in-Furness B C)
- EPUK Guidance: Development Control-Planning for Air Quality (2010)

Appendices

Appendix A: QA/QC Data

Appendix B: Map of Borough of Barrow-in-Furness Showing A1 Installations

Appendix C: Results of Nitrogen Dioxide Diffusion Tubes Monitoring 2014

Appendix D: Laboratory WASP Results & Gradko NO₂ Proficiency Scheme 2014

Appendix E: Previous Monitoring Locations by Year

Appendix A: QA:QC Data

Factor from Local Co-location Studies (if available)

There are no local co-location studies therefore the national NO₂ bias factor has been used (see below).

Diffusion Tube Bias Adjustment Factors

- The laboratory supplying and analysing the nitrogen dioxide diffusion tubes is Gradko Ltd.
- The preparation method used by the laboratory is 50% TEA v/v in acetone and analyses are carried out using UV spectrophotometry.
- The current bias factor of 0.97 has been applied to the annual mean values of diffusion tube analyses for each monitoring location. The factor was obtained from the Review and Assessment web-site:
http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_15-Final.xls
- The spreadsheet version number is 03/15.

Discussion of Choice of Factor to Use

The national NO₂ bias factor was obtained from the National Diffusion Tube Bias Adjustment Spreadsheet provided by Defra LAQM, as there is no co-location study.

PM Monitoring Adjustment

Barrow-in-Furness Borough Council does not undertake any particulate matter monitoring.

Short-term to Long-term Data adjustment

No short-term to long-term data adjustments are necessary as datasets for the diffusion tube monitoring were for a complete 12 month period.

QA/QC of automatic monitoring

Barrow-in-Furness Borough Council does not undertake any automatic monitoring.

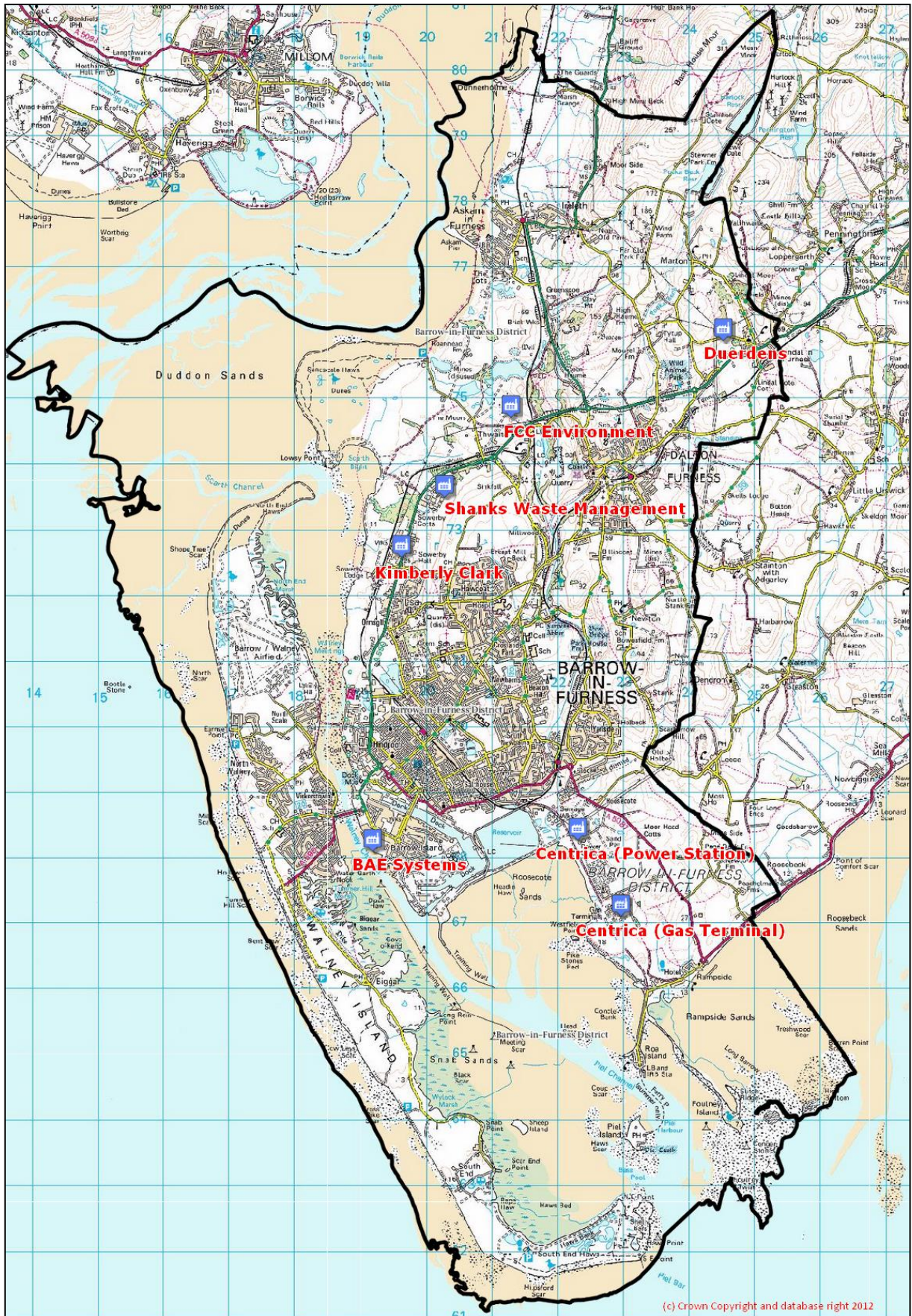
QA/QC of diffusion tube monitoring

- **Tube Precision**
The precision results for Gradko Environmental (A division of Gradko International Ltd.) are stated as GOOD on the following website:
http://laqm.defra.gov.uk/documents/Tube_Precision_2015_version_03_15-Final.pdf

- **WASP Results**

Information obtained from Gradko Environmental states the laboratory has taken part in the WASP proficiency scheme since it's inception, and has maintained the highest ranking of 'Satisfactory'. See Appendix D for more information.

Appendix B: Map of Barrow-in-Furness Borough Council Boundary Showing A1 Installations



Appendix C: Results of Nitrogen Dioxide Diffusion Tubes Monitoring 2014

2014	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	AV'GE	BIAS X 0.97
LIND 1	35.51	38.81	36.6	37.61	35.54	35.16	31.6	27.87	36.58	32.39	40.47	28.1	416.24	34.69	33.6
DALT 1	31.86	37.5	29.21	28.58	25.65	25.08	24.32	21.08	27.92	24.46	31.58	29.06	336.3	28.03	27.2
WALN 1	26.87	27.53	17.14	16.48	13.94	12.61	10.83	9.35	14.66	17.15	24.79	16.84	208.19	17.35	16.8
BKGD	13.5	17.02	8.23	10.19	6.36	5.25	4.95	4.42	7.63	6.76	16.23	7.02	107.56	8.96	8.7

Appendix D: Laboratory WASP Results & Gradko NO₂ Proficiency Scheme 2014

Laboratory summary performance for WASP NO₂ PT Rounds 121-124 and AIR NO₂ PT rounds AR001, 3, 4 and 6

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent WASP/AIR NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be satisfactory based upon a z-score of $\leq \pm 2$ as defined above.

WASP Round	WASP R121	WASP R122	WASP R123	WASP R124	AIR PT AR001	AIR PT AR003	AIR PT AR004	AIR PT AR006
Round conducted in the period	April – June 2013	July – September 2013	October – December 2013	January – March 2014	April – May 2014	July – August 2014	October – November 2014	January – February 2015
Aberdeen Scientific Services	100 %	100 %	NR [2]	75 %	100 %	100 %	100 %	100 %
Cardiff Scientific Services	100 %	100 %	100 %	100 %	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100 %	75 %	100 %	100 %	100 %	100 %	100 %	75 %
Environmental Services Group, Didcot [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	87.5 %
Exova (formerly Clyde Analytical)	NR [2]	NR [2]	NR [2]	50 %	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	25 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Gradko International [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	75 %	100 %	100 %	100 %	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75 %
Lambeth Scientific Services	0 %	50 %	75 %	25 %	50 %	100 %	100 %	25 %
Milton Keynes Council	100 %	75 %	75 %	75 %	100 %	100 %	75 %	100 %
Northampton Borough Council	100 %	100 %	100 %	100 %	100 %	0 %	0 %	100 %
Somerset Scientific Services	100 %	75 %	100 %	100 %	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Staffordshire County Council	100 %	100 %	100 %	100 %	100 %	25 %	100 %	100 %
Tayside Scientific Services (formerly Dundee CC)	100 %	100 %	100 %	100 %	NR [2]	100 %	100 %	100 %
West Yorkshire Analytical Services	100 %	50 %	100 %	75 %	75 %	100 %	75 %	100 %

[1] Participant subscribed to two sets of test samples (2 x 4 test samples) in each WASP/AIR PT round.

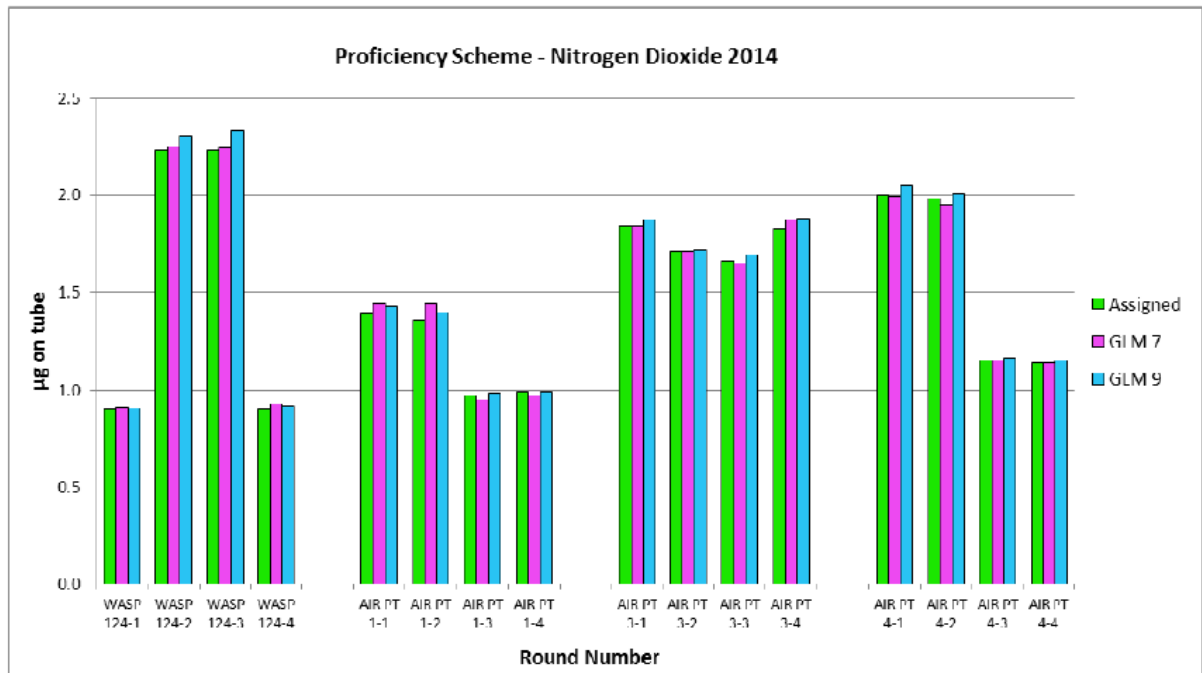
[2] NR No results reported

[3] Kent Scientific Services, Cardiff Scientific Services and Exova (formerly Clyde Analytical) no longer carry out NO₂ diffusion tube monitoring and therefore did not submit results.

Nitrogen Dioxide Proficiency Scheme 2014

Methods: GLM 7 – Camspec M550 Spectrophotometer, GLM 9 – QuAAtro Continuous Flow analyser

Proficiency Scheme - Nitrogen Dioxide 2014								
Date	Round	Assigned value	Camspec M550 - GLM 7			QuAAtro - GLM 9		
			Measured concentration	z-Score	% Bias	Measured concentration	z-Score	% Bias
Feb-14	WASP 124-1	0.90	0.91	0.14	1.2%	0.91	0.06	0.6%
Feb-14	WASP 124-2	2.24	2.25	0.09	0.5%	2.31	0.41	2.9%
Feb-14	WASP 124-3	2.24	2.25	0.07	0.4%	2.33	0.58	4.2%
Feb-14	WASP 124-4	0.90	0.93	0.46	2.9%	0.92	0.32	1.9%
May-14	AIR PT 1-1	1.39	1.44	0.48	3.6%	1.43	0.38	2.9%
May-14	AIR PT 1-2	1.36	1.44	0.78	5.9%	1.40	0.39	2.9%
May-14	AIR PT 1-3	0.97	0.95	-0.27	-2.1%	0.98	0.14	1.0%
May-14	AIR PT 1-4	0.99	0.97	-0.27	-2.0%	0.99	0.0	0.0%
Aug-14	AIR PT 3-1	1.84	1.84	0.0	0.0%	1.87	0.22	1.6%
Aug-14	AIR PT 3-2	1.71	1.71	0.0	0.0%	1.72	0.08	0.6%
Aug-14	AIR PT 3-3	1.66	1.65	-0.08	-0.6%	1.69	0.24	1.8%
Aug-14	AIR PT 3-4	1.83	1.87	0.29	2.2%	1.88	0.36	2.7%
Nov-14	AIR PT 4-1	2	1.99	-0.07	-0.5%	2.05	0.33	2.5%
Nov-14	AIR PT 4-2	1.98	1.95	-0.2	-1.5%	2.01	0.2	1.5%
Nov-14	AIR PT 4-3	1.15	1.15	0	0.0%	1.16	0.12	0.9%
Nov-14	AIR PT 4-4	1.14	1.14	0	0.0%	1.15	0.12	0.9%



Appendix E: Previous Monitoring Locations by Year

Lindal 1 (LIND/ [LIND 1]): 2008- Present.



Lindal 2 (LIND 2): 2010- 2013.



Walney Road (WALN): 2008- 2013



Bankground, Dowdales School (BKGD): 1993- Present

