2017 Annual Air Quality Progress Report for Bridgend County Borough Council

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

August 2017

Local Authority Officer	Craig Lewis
Department	Shared Regulatory Services
Address	Public Protection Legal and Regulatory Services Bridgend County Borough Council Civic Offices Angel Street Bridgend CF31 4WB
Telephone	
e-mail	Craig.Lewis2@bridgend.gov.uk
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Executive Summary

This Annual Progress Report (APR) 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.

This document is part of Bridgend County Borough Council's sixth round of Review and Assessment. Results from monitoring by the Council are presented and sources of air pollution identified. The Progress Report determines those changes since the last assessment, which could lead to the risk of an air quality objective being exceeded.

This Progress Report confirms that air quality within Bridgend County Borough continues to meet the relevant air quality objectives as prescribed in the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002.

The 2016 datasets collected for this report have been examined and treated in line with best practise guidance outlined in Local Air Quality Management (LAQM) Technical Guidance (TG16), April 2016.

The Ewenny Cross Roundabout Automatic Monitoring Station (AMS) used to measure NO2 and PM10 has unfortunately been subjected to some quality and technical issues. The chemiluminescent NOx Analyser had a total data capture of 99.1%, however calibration requirements outlined in LAQM (TG16), 7.170, highlight that calibrations for roadside/ kerbside located monitors should be undertaken **every two weeks** by LAs. Unfortunately due to staffing requirements this was not adhered to. As a best practise approach, due to the inconsistency of LA Calibrations an nitrogen dioxide (NO_2) co-location study was not undertaken and alternatively a national bias adjustment factor was obtained and applied from the DEFRA website, based on an average of 38 co-location studies, undertaken by various Local Authorities around the UK who had appointed the same analytical laboratory and analysis method as Bridgend County Council for the NO_2 diffusion tubes.

Due to mechanical issues, the Met One E PM10 Sampler was removed from site start of July and replaced start of November, however it is evident that the sampler was under reading significantly and therefore the data has been rejected between the install and end of 2016. The total data capture for the year was 49.7%. As outlined in LAQM (TG16) the data from the

sampler has been annualised in accordance with box 7.9 and the 90.4th Percentile value has been given to examine the 24 hour objective.

In addition to the issues faced at Bridgend Council's Ewenny Roundabout AMS, Rockwool Ltd have encountered communication errors with their sulphur dioxide (SO_2) analyser. Rockwool were only able to provide a dataset from the 13th July 2016. The total data capture for 2016 was 47.1%. There were no exceedences of the objectives during this time period. With regards to the 15 minute SO_2 objective, Rockwool has provided 10 minute sampling periods, therefore please be aware that the result stipulated in Table 2.5 gives the 10 minute 99.9th Percentile result. At the time of writing this report, Rockwool has had the Analyser serviced and it is now recording data effectively.

For 2016, NO_2 diffusion tube sites DT30 OBC-096 (Tremains Road) and DT11 OBC-076 (A48 Bypass) have been removed due to continued compliance and location review. At the time of writing this report, the Council's network of NO_2 diffusion tubes has been assessed and 10 new monitoring locations have been assigned. The new locations have been allocated based on known areas of particularly elevated traffic flows, introduction of traffic management systems and foreseeable development, all with nearby relevant exposure. These newly monitored road networks are Park Street, Coity Road, Cowbridge Road and Bridgend Town Centre's Market Street. Based on consecutive compliance with the national air quality objectives, if it is feasible and levels continue to show compliance, the Ewenny Roundabout AMS location may be reviewed in 2018.

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1 Introduction

1.1 Description of Local Authority Area

1.1.1 The County Borough is a Unitary Authority which lies on the coast at the geographical heart of South Wales. It is bordered by Neath Port Talbot County Borough to the west and north, Rhondda Cynon Taff County Borough to the north and north east, and by the Vale of Glamorgan Council to the east. It has an area of about 25,500 hectares, and in 2011 had a Census population of 139,178.

1.1.2 While Bridgend County Borough is geographically, one of the smaller Unitary Authorities in Wales; it is the 10th largest in terms of its total population. In 2011, its population density averaged 5.6 people per hectare, compared with an average of 1.5 for Wales, reflecting its relatively urban nature. Despite this, about 50% of the County Borough's area is countryside which includes agricultural uses and Common Land.

1.1.3 The largest settlement and administrative centre of the County Borough is the town of Bridgend. The two other largest towns are Maesteg and Porthcawl.

1.1.4 The County Borough is an area of contrasting topography and landscape ranging from the elevated plateau of the South Wales coalfield which is cut by the northern valleys of the Llynfi, Ogmore and Garw rivers, to the southern coastal plain and its heritage coastline. The centre of the County Borough is traversed by the M4 motorway corridor and the main South Wales railway line, where many of the area's major employment sites are situated (including those mainly to the east of Bridgend), and which therefore enjoy excellent communications links with Cardiff to the east and Swansea to the west.

1.2 Purpose of Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 exceedences 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 latest Policy Guidance from Welsh Government(2) details a new streamlined approach in terms of the reporting requirements for Local Authorities in Wales. Previous guidance required the submission of Progress Reports, in the intervening years between a three-yearly Updating and Screening Assessment report. The new Policy Guidance removes the need for these separate reports and local authorities are now only required to submit an Annual Progress Report. These reports incorporate monitoring results for the previous calendar year, a progress report on action plan implementation, and an update on any new policies or developments likely to affect local air quality.

Where an Annual Progress Report (APR) indicates an area exceeds or likely to exceed an air quality standard the new Policy Guidance removes the requirement for a local authority to undertake a Detailed or Further Assessment before declaring an Air Quality Management Area (AQMA). Where the local authority does declare an AQMA the Policy Guidance requires that a local authority produce an action plan with 18 months of the declaration of the AQMA.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in Wales** are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138), Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre µg/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).

Table 1.1 – Air Quality Objectives included in Regulations for the purpose of LAQM in Wales

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003
	5.00 µg/m^3	Annual mean	31.12.2011
1,3-butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate matter (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/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

First Round of Review and Assessment

Between 1999 and 2001, Bridgend County Borough Council published reports corresponding to stages 1, 2 and 3 of the first round of review and assessment of air quality. Seven key pollutants were examined (carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide, fine particles (PM_{10}) and sulphur dioxide). These assessments predicted no exceedences of any of the objectives. It concluded that in order to fulfil the requirements of the Environment Act 1995, air quality should be reviewed and assessed again in 2003.

Second Round of Review and Assessment

Following new technical and policy guidance issued by Defra, Bridgend County Borough Council published its first Updating and Screening Assessment in June 2003. Of the seven pollutants subjected to the updating and screening assessment process, it was concluded that the likelihood of the air quality objectives for carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide being exceeded was negligible and that it was not necessary to carry out a detailed assessment of any of these pollutants. However, the updating and screening assessment for nitrogen dioxide and PM_{10} revealed gaps in the data gathered and concluded that there was evidence to suggest non-compliance with the air quality objectives for PM_{10} and NO_2 at three locations resulting from road traffic emissions. It was suggested that there was a requirement to continue to a Detailed Assessment for the following locations;

- A48 Ewenny Cross, Bridgend
- The western end of Cowbridge Road, Bridgend
- The western end of the Bridgend Cross Valley Link Road.

In addition it was also recommended to carry out a co-location exercise to determine the bias correction for the passive nitrogen dioxide detector tubes provided and analysed by Severn Trent Laboratories.

In July 2005, Bridgend County Borough Council's Local Air Quality Management Progress Report recommended that;

-All currently held data should be, as far as possible, ratified.

-Data shall continue to be gathered from the three sites identified in the June 2003 USA to enable conclusions to be drawn on the current and future air quality at these locations. The results will be presented in a Detailed Assessment of Air Quality at these locations by 31st December 2005.

-The mobile PM_{10} and NO_x monitoring station should be added to the Welsh Air Quality Forum Network of sites and receive appropriate Quality Assurance and Quality Control (QA/QC) to validate any data gathered.

In March 2006 a Detailed Assessment for Nitrogen Dioxide and Particles (PM_{10}) was produced in March 2006 and concluded that the current air quality objectives for nitrogen dioxide and particles PM_{10} are being met and that the 2010 Air Quality Daughter Directive limit value for nitrogen dioxide will also be achieved at the three road junctions assessed. However, it also recommended that monitoring data from the three road junction sites identified in the June 2003 USA should continue to be gathered to enable assessment of future air quality at these locations.

Third Round of Review and Assessment

Bridgend County Council published its second USA in May 2006. The assessment concluded that there was no requirement to proceed to a detailed assessment for any pollutant in Bridgend County Borough.

The Council published Progress Reports in 2007 and 2008. Both reports coincided with one another, issuing similar conclusions and recommendations. They indicated that no air quality objectives prescribed in the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002 will be breached at any relevant locations.

In terms of monitoring locations, the reports highlighted the following;

-Data on NO_2 concentrations will continue to be gathered at relevant locations adjacent to A48 Ewenny Cross, the western end of Cowbridge Road and at Tondu Road on the western end of the Bridgend Cross Valley Link Road.

-Monitoring of PM_{10} and NO_2 will continue at Kenfig Hill adjacent to the opencast coal site operated by Celtic Energy Ltd.

-Monitoring of NO_2 and sulphur dioxide (SO_2) will take place at relevant locations adjacent to Rockwool Ltd, Wern Tarw, Pencoed when the new factory extension becomes operational.

Fourth Round of Review and Assessment

The Bridgend County Council published its third USA in June 2009. There was no evidence of any significant breaches of the air quality objectives prescribed in the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002, at any relevant locations. The report did however draw attention upon an ongoing trend for NO_2 concentrations at Ewenny Cross, Bridgend, and Tondu Road, Bridgend, at the façade of the nearest houses, to be at or close to the air quality objective for NO_2 for 2007.'' It was decided that monitoring would continue at the two highlighted sites as part of an ongoing Detailed Assessment to be produced later that year.

The 2010 Progress Report stated the following;

The conclusions for the new monitoring data in relation to Ewenny Cross and Tondu Rd show that Ewenny Cross has exceeded the annual mean National Air Quality Objective for nitrogen dioxide (NO_2) and this will be reported in depth in the Detailed Assessment to be produced later this year.

The results for nitrogen dioxide at Tondu Rd show that the annual mean National Air Quality Objective for nitrogen dioxide (NO_2) has not been exceeded. However, in view of the results which are very close to the objective, monitoring will continue at this location for at least another year.

There are no new local developments likely to give rise to a significant impact on air quality within the County Borough.

There are no other issues that give rise to concern in terms of impact on air quality within the County Borough.

The Detailed Assessment for Ewenny Cross is near completion and will be produced in May 2010.

A further progress report will be produced early in 2011.

The 2010 Detailed Assessment for Ewenny Cross was subsequently submitted and stated:

This Detailed Assessment of Air Quality has shown that the current air quality objectives for nitrogen dioxide (NO_2) are not being met at the south western sector of Ewenny Cross, Bridgend but are being met at the Bridgend Cross Valley Link, Tondu Road, Bridgend.

In view of the above, the following recommendations have been made:

-Monitoring should continue at its present level at the Bridgend Cross Valley Link, Tondu Road and at Ewenny Cross, Bridgend.

-A continuous monitor, together with a meteorological station, should be installed at or as near to the south western sector of Ewenny roundabout as is practical.

Following discussions with Welsh Assembly Government and UWE it was decided that the Detailed Assessment should remain ongoing and that any decision to declare an AQMA for Ewenny Cross should be delayed until continuous monitoring data for 2010 has been collated and analysed.

The 2011 Progress report stated the following:

Following the Detailed Assessment submitted in June 2010 and the response from WAG, the Authority decided, in consultation with WAG and UWE to defer a decision to declare an AQMA for Ewenny Cross until a full calendar year of continuous monitoring data had been collated and analysed.

Due to equipment failure and contractual issues, continuous monitoring at Ewenny Cross has been significantly delayed. Continuous sampling commenced in March 2011 as did a diffusion tube co-location study.

The conclusions from annualised monitoring data obtained since the last report show that one sampling point at Ewenny Cross has exceeded the annual mean National Air Quality Objective for nitrogen dioxide (NO_2). The other nine around the Cross remain within the annual mean National Air Quality Objective.

The results for nitrogen dioxide diffusion tube monitoring at Tondu Rd show that the National Air Quality Objective's annual mean for nitrogen dioxide (NO_2) has not been exceeded. However, results are very close to the objective and monitoring will continue at this location for another year.

No continuous PM_{10} data could be retrieved for South Cornelly or Kenfig Hill due to equipment failure.

The nitrogen dioxide diffusion tube sampling locations in Maesteg town centre which were set up in July 2010 following local concerns have shown to date, an exceedance at one sampling point. As a result, more monitoring location points have been put in place and will be reported upon in the next USA report.

Fifth Round of Review and Assessment

Bridgend County Council published its fourth USA May 2012. In addition a Detailed Assessment was submitted for Ewenny Cross. The reports identified;

-There were no indications of any significant breaches of the air quality objectives prescribed in the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002.

-There was an exceedence of the objective for Nitrogen Dioxide at one location in Maesteg. However, this was marginal and the other sample points in the immediate vicinity were below the National Objectives for Nitrogen Dioxide. Monitoring continued at this site and extra sample sites, in addition to those already in place were set up where practicable. The data so far for this location, in view of the above, does not suggest that a Detailed Assessment is necessary at this time, although this will be subject to review as more data is collected and analysed.

-The positioning of an Automated Continuous NOx Analyser and co-location study at Ewenny Cross has provided robust information as to the air quality situation and indicates that Nitrogen Dioxide levels do not exceed the National Air Quality Objectives. This Automated Continuous NOx Analyser will be retained at this site to gather more data over the coming year.

-The Detailed Assessment 2012 completed in tandem with this Report concluded that it is not necessary at this point in time to proceed with declaring an Air Quality Management Area at Ewenny Cross. The situation will continue to be monitored by way of the co-location study utilising the Automated Continuous NOx Analyser and the numerous Nitrogen Dioxide Diffusion Tube sites situated at the Cross

The 2013 Progress report provided the following findings and recommendations;

The Report has not identified a need to proceed to a Detailed Assessment for any pollutant.

The Report has identified a need to continue monitoring for Nitrogen Dioxide in Maesteg Town Centre.

Monitoring of Nitrogen Dioxide and PM_{10} will continue at the same sites as at the end of 2012.

The Automated Continuous NOx Analyser and co-location study will continue at Ewenny Cross Roundabout for this year to acquire more robust data. In the light of the acquired data, the positioning and possible relocation of the Automatic Monitoring Station will be decided at the end of 2013.

Bridgend County Borough Council will submit a Progress Report in May 2014.

The 2014 Progress report stated the following:

With the exception of Ewenny Cross Roundabout as highlighted above, the Progress Report has not identified a need to consider proceeding to a Detailed Assessment for any other pollutant.

Monitoring of Nitrogen Dioxide and PM_{10} will continue at the same sites as at the end of 2013.

Bridgend County Borough Council will submit a progress report in May 2015.

Sixth Round of Review and Assessment

Bridgend County Council published its fourth USA September 2015. The assessment identified no need to proceed to a Detailed Assessment for any pollutant.

2016 Annual Progress Report highlighted no concerns and no objectives were exceeded.

10 new monitoring locations have been added to the network of NO_2 diffusion tubes for 2017.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Site

Within the County Borough, there are two automatic monitoring location sites. These are Rhiwceilog, and Ewenny Cross Roundabout.

The Rhiwceilog monitoring site is managed and maintained by Rockwool Ltd. Within the monitoring unit is an API AMX monitor capable of giving continuous fifteen minute averages of sulphur dioxide (SO_2) concentrations. The location of the site is shown in **Figure 2.3** and details of the site are contained in **Table 2.1**. The equipment is calibrated by an Environment Officer at Rockwool on a fortnightly basis and serviced and maintained by Enviro Technology on a six monthly basis. Data obtained is checked for validation and ratified by Rockwool's Environment Officer.

The Ewenny Cross Roundabout unit has been located at this site since 2011 following elevated levels of nitrogen dioxide recorded via diffusion tubes located within the area. The location of the site is shown in **Figure 2.1** and details of the site are contained in **Table 2.1**. Within the mobile station is an API NOx analyser capable of providing continuous fifteen minute averages of nitrogen dioxide (NO_2) concentrations and a Met One E-Sampler PM_{10} monitor.

The mobile station is also equipped with a meteorological station so that local weather data can be gathered for use in conjunction with the air quality data. The Ewenny Cross Roundabout air quality monitoring station is calibrated by a Local Authority Officer on a fortnightly basis and serviced and maintained by an approved authorised contractor on a six monthly basis. Data obtained is checked for validation and ratified by a Local Authority Officer.

As discussed previously, due to technical issues encountered at both the Ewenny Cross and Rhiwceilog sites, data capture for 2016 has been low for PM_{10} & SO_2.

In addition to the above, it is also important to note that whilst the monitoring equipment obtained automatic data, it was not connected to the Automatic Urban & Rural Network

(AURN) or Welsh Air Quality Network and no external QA/QC monitoring is currently being carried out at any of the sites.

Figure 2.1 Map of Ewenny Cross Roundabout Automatic Monitoring Site

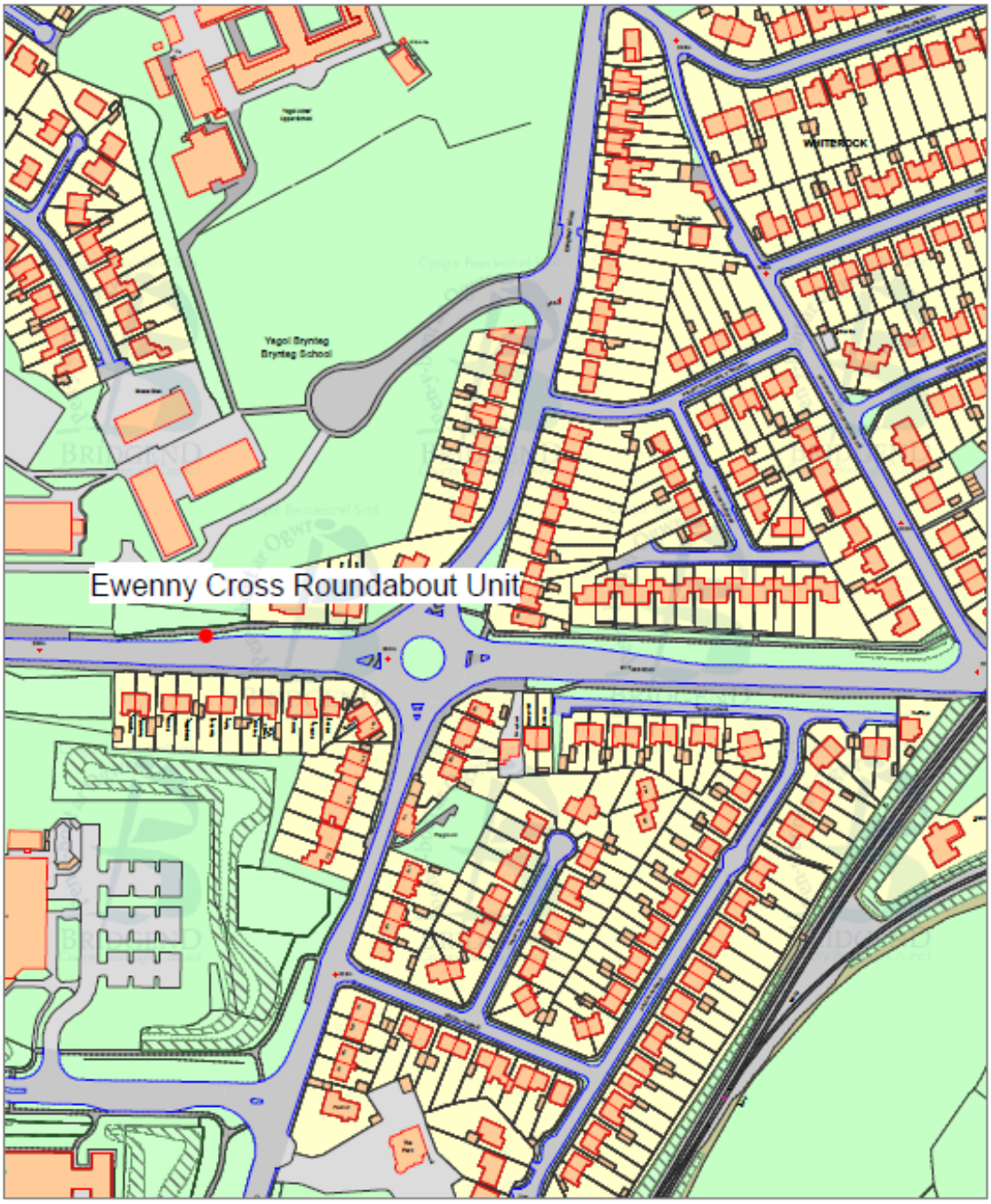


Figure 2.2 Map of Rockwool Automatic Monitoring Site

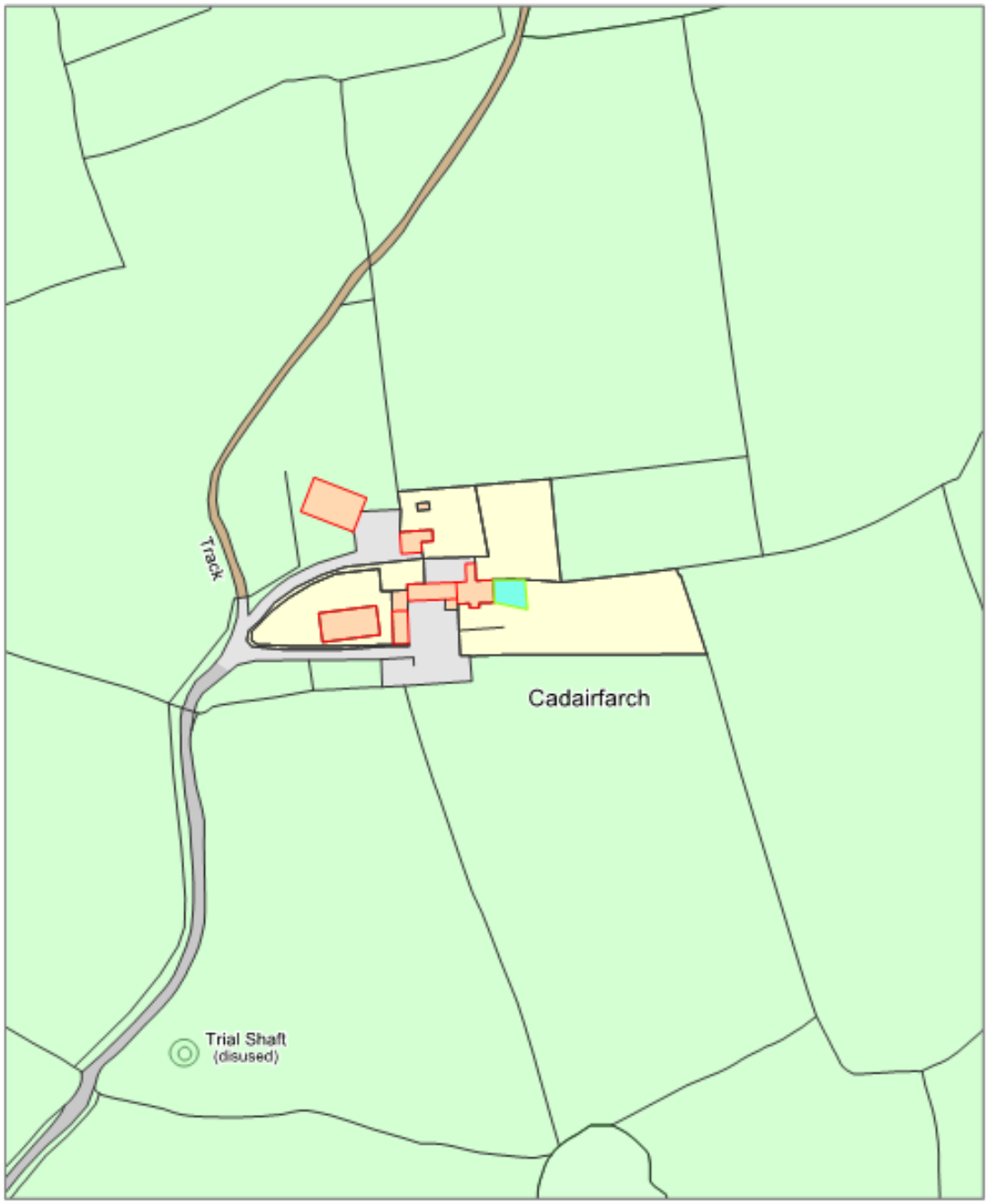


Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
CM1	Ewenny Cross Roundabout	Roadside	290565	178567	2.0	NO_2 PM_{10}	N	Automated continuous NOx Analyser Met One E-Sampler PM_{10} monitor	Y (8.8m)	2.22m	Y
CM2	Rockwool	Industrial	297512	184539	4.0	SO_2	N	Automated continuous SO_2 Analyser	1700m	N/A	Y

2.1.2 Non-Automatic Monitoring Sites

Shared Regulatory Services on behalf of Bridgend County Borough Council carries out monitoring of ambient air quality for nitrogen dioxide (NO_2). During the period since the Progress Report in 2016, monitoring of NO_2 using passive diffusion tubes has been carried out at 23 locations throughout the County Borough.

Monitoring has continued at the three road junctions of Ewenny Cross Roundabout, Tondu Road Roundabout and the Western end of Cowbridge Road, Bridgend.

As a result of the 2010 Detailed Assessment Report which identified NO_2 levels above the National Objectives at the A48 Bypass Rd (Ewenny Rd Roundabout), a total of fourteen NO_2 passive diffusion tubes have now been placed at this location. At the Western end of Cowbridge Road, Bridgend, there are two diffusion tube monitoring sites, whilst at the western end of the Bridgend Cross Valley Link Road (Tondu Roundabout) there are a total of four.

Following concerns received in 2010 regarding traffic congestion within and around Maesteg Town Centre, nitrogen dioxide (NO_2) levels were monitored utilising passive diffusion tubes.

National background concentrations provided by Defra are now utilised for the purpose of bias correcting and annualising data obtained via the website link:
https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013

NO_2 Diffusion Tube Locations

The location of the 4 areas where NO_2 monitoring has taken place;

a. Tondu Road Roundabout at the Western End of the Bridgend Cross Valley Link Road (Map A).
b. Ewenny Cross Roundabout, Bridgend (Map B).
c. The Western End of Cowbridge Road, Bridgend (Map C).
d. Maesteg Town Centre (Map D)

The location, site description and data gathered since January 2016 are given in **Table 2.2**. The data has been gathered over a period of 12 months between January and December 2016.

Laboratory Methods and Analysis of Diffusion Tubes

Analysis of the exposed tubes is carried out by Environmental Scientifics Group Didcot operating procedure HS/GW1/1015, issue 10. The tubes are prepared by spiking acetone:triethanolomine (50:50) on the grids prior to the tubes being assembled. The tubes are desorbed with distilled water and the extract analysed using a segmented flow auto analyser with ultraviolet detection. As set out in the practical guidance the results were initially calculated assuming an ambient temperature of 11^{o}C and then adjusted to 20^{o}C to allow direct comparison with EU limits. The national bias correction factor for this laboratory was utilised as opposed to our own local co-location data. The reason for this was due to an inconsistent calibration record, whereby calibrations of the NOx analyser were not undertaken every two weeks, as outlined in LAQM (TG16). Adopting best practice, no local co-location was carried out and a bias correction factor of 0.78 was obtained and applied using the DEFRA website, available using the following link; https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Where valid data capture for the year is less than 75% (9 months), the continuous and NO_2 diffusion tube monitoring data have been ‘’annualised’’ following the methods as described in Box 7.9 & 7.10 of LAQM (TG16).

Where an exceedance is measured at a monitoring site not representative of public exposure, NO_2 concentration at the nearest relevant exposure has been estimated based on

the "NO_2 fall-off with distance" calculator (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html). The procedure is described in LAQM. TG16 Section 7.77-7.79.

Figure 2.2a – AREA A – Tondu Roundabout NO_2 Diffusion Tube Locations

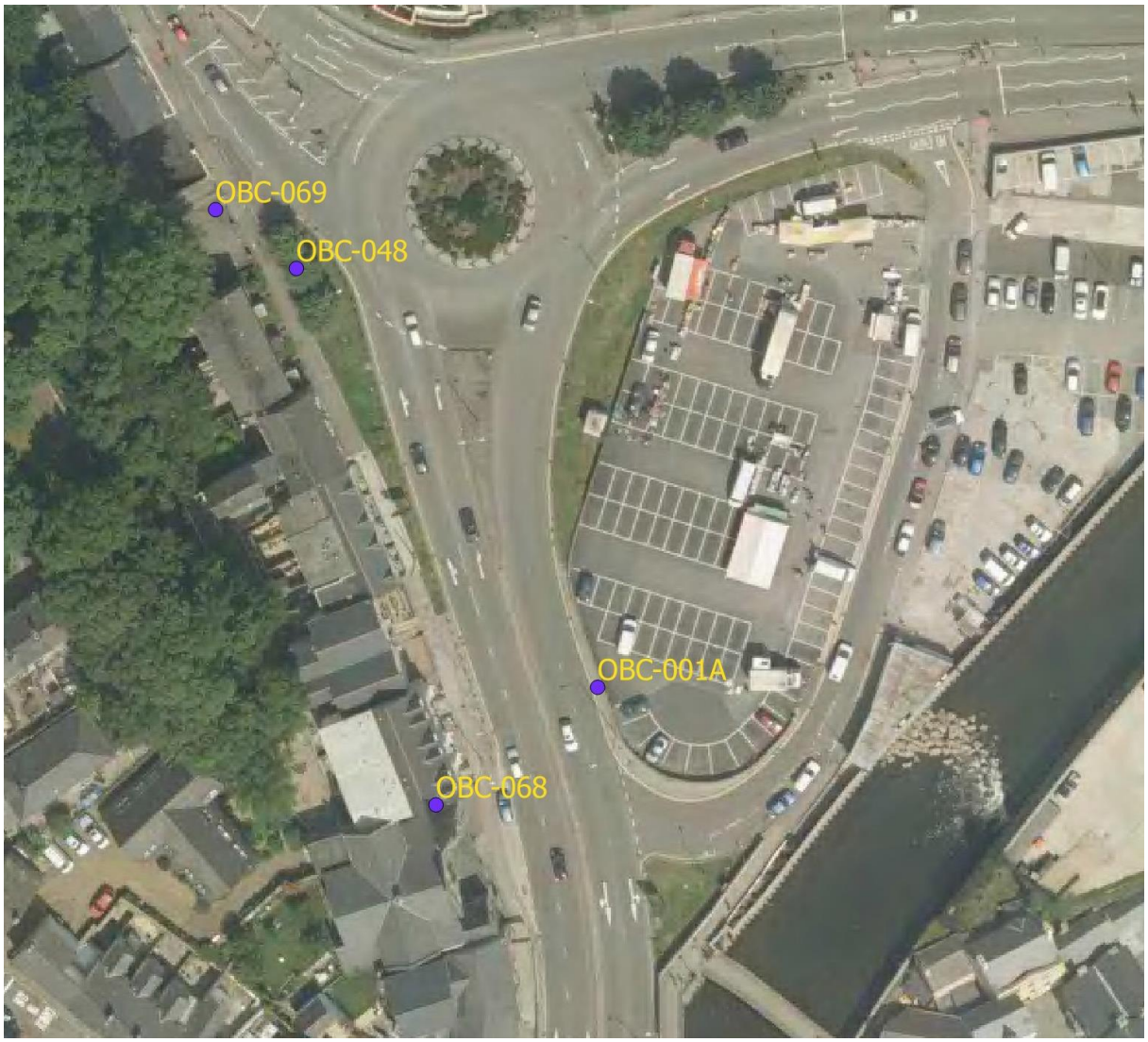


Figure 2.2b – AREA B – Ewenny Cross Roundabout, A48 By-Pass NO_2 Diffusion Tube Locations

Figure 2.2c – AREA C – Nolton Street / Ewenny Rd NO_2 Diffusion Tube Locations (The Western End of Cowbridge Road)

Figure 2.2d – AREA D – Maesteg Town Centre NO_2 Diffusion Tube Location

Table 2.2 Details of Non-Automatic Monitoring Sites 2016

Site Id	Area	Site Name	Site Type	X OS Grid Ref.	Y OS Grid Ref.	Site Height (m)	Pollutants Monitored	In AQMA	Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with (m) to relevant exposure)	Distance to kerb of nearest road in metres	Worst-case Location?
TONDU ROAD ROUNDABOUT												
DT1-OBC-001A	A	Tondu Road, Bridgend	Kerbside	290378	179940	2.0	NO_2	N	N	(N) 6.74	0.46	N
DT5-OBC-048	A	Tondu Road Roundabout, Bridgend	Roadside	290337	179997	2.0	NO_2	N	N	(N) 9.60	2.23	N
DT2-OBC-068	A	Bridgend United Club	Roadside	290356	179924	2.0	NO_2	N	N	(Y) 0.00	3.83	Y
DT3-OBC-069	A	Tondu Rd Steps	Roadside	290326	180005	2.0	NO_2	N	N	(N)10.44	2.89	N
EWENNY CROSS ROUNDABOUT												
DT9-OBC-041	B	Priory Avenue, Bridgend	Roadside	290733	178535	2.0	NO_2	N	N	(N) 7.38	1.29	N
DT12-OBC-043	B	A48 Bypass, Bridgend	Roadside	290609	178567	2.0	NO_2	N	N	(N) 9.79	2.04	N
DT8-OBC-044	B	Ewenny Road, Bridgend	Roadside	290680	178582	2.0	NO_2	N	N	(N) 10.38	13.66	N
DT6-OBC-055	B	Ewenny Road	Roadside	290583	178371	2.0	NO_2	N	N	(N) 6.48	3.18	N
DT7-OBC-056	B	Ewenny Road	Kerbside	290596	178361	2.0	NO_2	N	N	(N)11.83	0.47	N
DT14-OBC-075	B	A48 Bypass, Bridgend	Urban Background	290606	178583	2.0	NO_2	N	N	(Y) 0.00	18.51	Y
DT15-OBC-078	B	Corner of Ewenny Roundabout	Roadside	290662	178533	2.0	NO_2	N	N	(N) 4.40	1.85	N
DT17-OBC-085	B	A48 Bypass, Bridgend	Roadside	290524	178541	2.0	NO_2	N	N	(Y) 0.00	10.28	Y
DT19-OBC-087	B	A48 Bypass, Bridgend	Roadside	290606	178572	2.0	NO_2	N	N	(Y) 0.00	9.40	Y
DT20-OBC-088	B	A48 Bypass, Bridgend	Roadside	290566	178566	2.0	NO_2	N	Y	(Y) 0.00	2.20	Y
DT21-OBC-089	B	A48 Bypass, Bridgend	Roadside	290566	178566	2.0	NO_2	N	Y	(Y) 0.00	2.20	Y
DT22-OBC-090	B	A48 Bypass, Bridgend	Roadside	290566	178566	2.0	NO_2	N	Y	(Y) 0.00	2.20	Y
DT16-OBC-091	B	A48 Bypass, Bridgend	Roadside	290610	178533	2.0	NO_2	N	N	(Y) 0.00	13.39	Y
NOLTON STREET/ EWENNY CROSS LINK												
DT23-OBC-049	C	Nolton Street, Bridgend	Roadside	290700	179305	2.0	NO_2	N	N	(Y) 0.00	4.25	Y
DT24-OBC-050	C	Ewenny Road, Bridgend	Roadside	290665	179293	2.0	NO_2	N	N	(Y) 0.00	7.33	Y
MAESTEG TOWN CENTRE												
DT26-OBC-080	D	Commercial Street, Maesteg	Urban Centre/ Kerbside	285131	191284	2.0	NO_2	N	N	(Y)1.21	0.58	N
DT27-OBC-081	D	Talbot Street, Maesteg	Urban Centre / Roadside	285229	191331	2.0	NO_2	N	N	(Y) 0.00	1.26	Y
DT28-OBC-082	D	Castle Street, Maesteg	Urban Centre / Roadside	285296	191398	2.0	NO_2	N	N	(Y) 0.00	2.72	N
DT29-OBC-083	D	Castle Street, Maesteg	Urban Centre / Roadside	285370	191382	2.0	NO_2	N	N	(N) 6.9	2.04	N

2.2 Comparison of Monitoring Results with Air Quality Objectives

During 2016 monitoring was carried out for Nitrogen Dioxide, Particulate Matter (PM_{10}) and Sulphur Dioxide. There was no monitoring undertaken for benzene or 1-3-butadiene.

2.2.1 Nitrogen Dioxide

Nitrogen Dioxide was measured during 2016 at one site equipped with an automatic NOx analyser and by a network of 23 passive diffusion tubes.

In order to ratify the 2016 diffusion tube dataset, a bias adjustment factor of 0.78 was applied to the readings. The factor was derived from the DEFRA website which gave the average correction factor from 38 co-location studies across the UK, whereby the analytical laboratory and method used was the same as Bridgend Council.

Automatic Monitoring Data

Monitoring of NO_2 has continued to be carried out at the Ewenny Cross Roundabout Automatic Monitoring Site.

Table 2.3 – Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2016 %	Annual Mean Concentration (µg/m^3)				
					2012	2013	2014	2015	2016
CM1	Roadside	N	100	99.1	26.6	**42**	NR[1]	30.49[2]	32.37

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

[1] NO RESULT "NR". No data recorded for 2014 due to technical faults incurred with Automatic Monitoring Station
[2] Annualised Result

Table 2.4 – Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2015 %	Number of Hourly Means > 200µg/m^3				
					2012	2013	2014	2015	2016
CM1	Roadside	N	100	99.1	0	0	NR[3]	0 (30.44)[4]	0

[3] NO RESULT "NR". No data recorded for 2014 due to technical faults incurred with Automatic Monitoring Station
[4] Data capture for full calendar year is less than 85%, results given in brackets is the 99.8th percentile of hourly means

Diffusion Tube Monitoring Data

Tondu Road Roundabout

The diffusion tube results for Tondu Road Roundabout, Bridgend show that there are no exceedences of the National Air Quality Objectives for Nitrogen Dioxide (NO_2).

Ewenny Cross Roundabout

The diffusion tube results for Ewenny Cross Roundabout, Bridgend show that there are no exceedences of the National Air Quality Objectives for Nitrogen Dioxide (NO_2).

Maesteg Town Centre

The diffusion tube results for Maesteg Town Centre show that there are no exceedences of the National Air Quality Objectives for Nitrogen Dioxide (NO_2).

Other Areas within Bridgend County Borough Council

All other diffusion tube results from around the Borough are in compliance with the National Air Quality Objectives

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2016

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2016 (%)	Confirm if data has been distance corrected (Y/N)	2016 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.78
TONDU ROAD ROUNDABOUT							
DT1-OBC-001A	Tondu Road, Bridgend	Kerbside	N	N	83	Y	37.6/ **26.5**[2]
DT5-OBC-048	Tondu Road Roundabout, Bridgend	Roadside	N	N	92	Y	41.6/ **30.7**[2]
DT2-OBC-068	Bridgend United Club	Roadside	N	N	92	N	26.7
DT3-OBC-069	Tondu Rd Steps	Roadside	N	N	67	Y	33.97/ **26.3**[1&2]
NOLTON STREET, BRIDGEND – WESTERN LINK							
DT23-OBC-049	Nolton Street, Bridgend	Roadside	N	N	75	N	26.8
DT24-OBC-050	Ewenny Road, Bridgend	Roadside	N	N	67	N	21.88[1]
EWENNY CROSS ROUNDABOUT							
DT9-OBC-041	Priory Avenue, Bridgend	Roadside	N	N	100	Y	26.1/ **20.2**[2]
DT12-OBC-043	A48 Bypass, Bridgend	Roadside	N	N	100	Y	38.7/ **27.5**[2]
DT8-OBC-044	Ewenny Road, Bridgend	Roadside	N	N	92	Y	26.6/ **23.0**[2]
DT6-OBC-055	Ewenny Road	Roadside	N	N	92	Y	20.2/**17.7**[2]
DT7-OBC-056	Ewenny Road	Kerbside	N	N	92	Y	32.3/ **20.5**[2]
DT14-OBC-075	A48 Bypass, Bridgend	Urban Background	N	N	100	N	17.8
DT15-OBC-078	Corner of Ewenny Roundabout	Roadside	N	N	75	Y	31.1/**25.6**[2]

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2016 (%)	Confirm if data has been distance corrected (Y/N)	2016 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.78
DT17-OBC-085	A48 Bypass, Bridgend	Roadside	N	N	100	N	21.9
DT19-OBC-087	A48 Bypass, Bridgend	Roadside	N	N	100	N	20.2
DT20-OBC-088	A48 Bypass, Bridgend	Roadside	N	Y	83	N	21.2
DT21-OBC-089	A48 Bypass, Bridgend	Roadside	N	Y	83	N	23.4
DT22-OBC-090	A48 Bypass, Bridgend	Roadside	N	Y	92	N	21.3
DT16-OBC-091	A48 Bypass, Bridgend	Roadside	N	N	100	N	24.4
MAESTEG TOWN CENTRE							
DT26-OBC-080	Commercial Street, Maesteg	Urban / Kerbside	N	N	92	Y	23.2/ **20.4**[2]
DT27-OBC-081	Talbot Street, Maesteg	Urban / Roadside	N	N	92	N	24.1
DT28-OBC-082	Castle Street, Maesteg	Urban / Roadside	N	N	75	N	28.0
DT29-OBC-083	Castle Street, Maesteg	Urban / Roadside	N	N	83	Y	29.2/**22.4**[2]

Notes

[1] Data capture less than 75%. Result shall be "annualised" in accordance with Boxes 7.9 and 7.10 of LAQM.TG16.

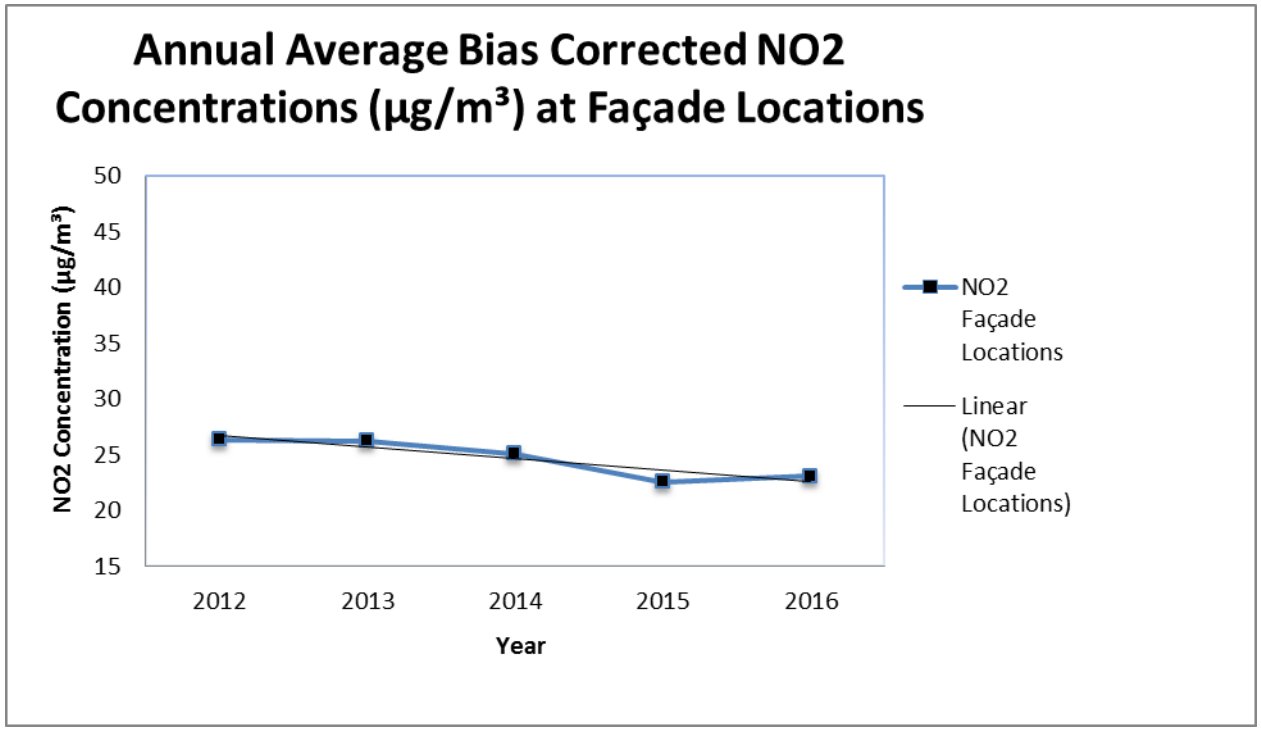
[2] NO2 exceedence is measured at a monitoring site not representative of public exposure, NO_2 concentration at the nearest relevant exposure calculated based on the "NO_2 fall-off with distance" calculator (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html).

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2012 to 2016)

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias				
			2012 (Bias Adjustment Factor = 0.79)	2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.81)	2015 (Bias Adjustment Factor = 0.81)	2016 (Bias Adjustment Factor = 0.78)
TONDU ROAD ROUNDABOUT							
DT1-OBC-001A	Kerbside	N	36	33	40	27	38
DT5-OBC-048	Roadside	N	41	**41**	36	34	**42**
DT2-OBC-068	Roadside	N	29	32	28	26	27
DT3-OBC-069	Roadside	N	35	40	29	27	34
NOLTON STREET/ EWENNY CROSS LINK							
DT23-OBC-049	Roadside	N	36	18	28	27	27
DT24-OBC-050	Roadside	N	28	24	19	16	22
EWENNY CROSS ROUNDABOUT							
DT9-OBC-041	Roadside	N	27	27	24	24	26
DT12-OBC-043	Roadside	N	41	**43**	38	35	39
DT8-OBC-044	Roadside	N	28	28	27	26	27
DT6-OBC-055	Roadside	N	19	22	18	16	20
DT7-OBC-056	Kerbside	N	31	30	31	29	32
DT14-OBC-075	Urban Background	N	18	20	18	18	18
DT15-OBC-078	Roadside	N	32	33	31	29	31
DT17-OBC-085	Roadside	N	24	27	21	23	21
DT19-OBC-087	Roadside	N	21	19	21	22	20
DT20-OBC-088	Roadside	N	23	24	22	21	21

Site ID	Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias				
			2012 (Bias Adjustment Factor = 0.79)	2013 (Bias Adjustment Factor = 0.80)	2014 (Bias Adjustment Factor = 0.81)	2015 (Bias Adjustment Factor = 0.81)	2016 (Bias Adjustment Factor = 0.78)
DT21-OBC-089	Roadside	N	22	24	22	21	23
DT22-OBC-090	Roadside	N	22	24	23	23	21
DT16-OBC-091	Roadside	N	26	28	25	23	24
MAESTEG TOWN CENTRE							
DT26-OBC-080	Urban / Kerbside	N	37	36	34	24	23
DT27-OBC-081	Urban / Roadside	N	27	38	26	25	24
DT28-OBC-082	Urban / Roadside	N	40	37	**48**	26	28
DT29-OBC-083	Urban / Roadside	N	28	33	26	26	29

Figure 2.3 – Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



The graph represents annual average bias corrected NO_2 data since 2012. The locations examined represent worst case exposure due to the fact monitoring was undertaken at façade locations. The displayed dataset indicates compliant NO_2 results for Bridgend in general since 2012. The results are stable with a somewhat decreasing trend.

2.2.2 PM_{10}

As described in previous sections, monitoring of PM_{10} has continued to be carried out at Ewenny Cross Roundabout. However, due to mechanical issues, the Met One E PM10 Sampler was removed from site start of July and replaced start of November, however it is evident that the sampler was under reading significantly and therefore the data has been rejected between the install and end of 2016. The total data capture for the year was 49.7%. As outlined in LAQM (TG16) the data from the sampler has been annualised in accordance with box 7.9 and the 90.4th Percentile value has been given to examine the 24 hour objective.

Table 2.7 – Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2016 %	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m^3)				
						2012	2013	2014	2015	2016
CM1	Roadside	N	100	49.7	N/A	12.14[5]	14.30	NR[6]	NR[6]	15.18[5]

[5] Annualised result
[6] NO RESULT "NR". No data recorded for 2014 due to technical faults incurred with Automatic Monitoring Station

Table 2.8 – Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period %	Valid Data Capture 2016 %	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m^3				
						2012	2013	2014	2015	2016
CM1	Roadside	N	100	49.7	N/A	0 (14.27)[7]	0	NR[8]	NR[8]	2 (24.66)[7]

[7] Annual data capture is less than 85%, result given in brackets is 90.4th percentile of 24 hour means

[8] NO RESULT "NR". No data recorded for 2014 due to technical faults incurred with Automatic Monitoring Station

2.2.3 Sulphur Dioxide

Monitoring of Sulphur Dioxide SO_2 has continued to be carried out by Rockwool Ltd in the Rhiwceilog area of Bridgend. Monitoring has been carried out using an API AMX monitor capable of giving continuous fifteen minute averages of Sulphur Dioxide SO_2 concentrations. The equipment is calibrated by an Environment Officer at Rockwool and serviced and maintained by an approved contractor on a six monthly basis. Data obtained is checked for validation and ratified by Rockwool's Environment Officer.

Rockwool Ltd encountered communication errors with their sulphur dioxide (SO_2) analyser. Rockwool were only able to provide a dataset from the 13th July 2016. The total data capture for 2016 was 47.1%. There were no exceedences of the objectives during this time period. With regards to the 15 minute SO_2 objective, Rockwool has provided 10 minute sampling periods, therefore please be aware that the result stipulated in Table 2.5 gives the 10 minute 99.9th Percentile result. At the time of writing this report, Rockwool has had the Analyser serviced and it is now recording data effectively.

.

Table 2.9 Results of Automatic Monitoring of SO_2: Comparison with Annual Mean Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2016 %	Number of Exceedences (percentile in bracket μg/m^3)		
					15-minute Objective (266 μg/m^3)	1-hour Objective (350 μg/m^3)	24-hour Objective (125 μg/m^3)
CM2	Industrial	N	100	47.1	0 (57.5)[9]	0 (37.12)[10]	0 (28.74)[11]

[9] In accordance with LAQM TG(16), due to the fact data capture is <85% it is a requirement to report the 99.9th percentile for 15 minute SO_2, however in this instance it is the 99.9th percentile for 10 minute SO_2.
[10] In accordance with LAQM TG(16), due to the fact data capture is <85% it is a requirement to report the 99.7th percentile for 1 hour SO_2
[11] In accordance with LAQM TG(16), due to the fact data capture is <85% it is a requirement to report the 99.2nd percentile for 24 hour SO_2

2.2.3 Benzene

Previous air quality reviews have eliminated the need to monitor benzene and there are no new sources within the County Borough since the last submission.

2.2.4 Other pollutants monitored

Previous air quality reviews have eliminated the need to monitor other pollutants and there are no new sources within the County Borough since the last submission. Bridgend County Borough Council does not carry out monitoring of any other pollutants at the present time.

2.2.5 Summary of Compliance with AQS Objectives

SRS on behalf of Bridgend Council has examined the results from monitoring in the Bridgend Borough. There are no exceedences of any applicable air quality objectives.

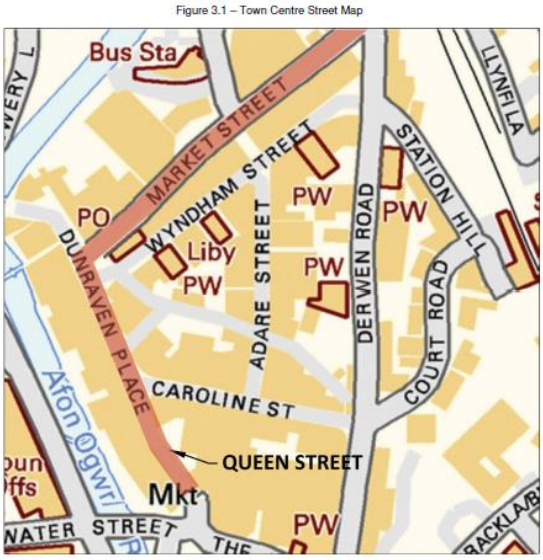
3 New Local Developments

3.1 Road Traffic Sources

SRS on behalf of Bridgend County Borough Council can confirm that there are no new significant developments since the Progress Report in 2016, however it must be noted that there is currently on going consultation works for proposed increased vehicular access to parts of Bridgend Town Centre.

The beginning of 2016 saw Bridgend County Borough Council (BCBC) commission an approved contractor (Capita) to undertake a study to review methods and assess risks of increasing vehicular access to parts of Bridgend Town Centre. The area under consideration commences at the southern end of Queen Street, continues along Dunraven Place and Market Street up to the junction with Quarella Road. These roads are to remain one-way north bound to the Cenotaph and then one way eastbound to its junction with Quarella Road. The report was completed in April 2016 by Capita and addresses four potential proposals.

Figure 3.1- Figure 3.1 taken from Capita's April 2016 Report "Queen Street, Dunraven Place, Market Street Access Study" showing the study area.



Air Quality and associated potential impacts arising from increased vehicle flows will be considered at the required stage of the proposal.

3.1.1 Narrow Congested Streets with Residential Properties Close to the Kerb

For 2016 SRS on behalf of Bridgend County 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.

At the time of writing this report SRS have commissioned 10 extra NO_2 monitoring locations with monitoring commencing in 2017. Certain road networks whereby it is known for elevated levels of traffic flows and nearby relevant exposure have been identified and monitoring datasets will be considered in Bridgend Council's 2018 Air Quality Progress Report. These newly monitored road networks are Park Street, Coity Road and Cowbridge Road.

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

With the exception of Maesteg Town Centre, SRS confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic. Nitrogen Dioxide Monitoring via the utilisation of passive diffusion tubes has continued to be carried out within Maesteg Town Centre.

As previously detailed, there are currently on going consultations surrounding a proposal for increased vehicular access to Bridgend's Town Centre. With the possibility of this proposal NO_2 monitoring has been established on Bridgend City Centre's Market Street for 2017 which will provide a dataset that can be used for a baseline validation check for any future detailed air quality assessment.

3.1.3 Roads with a High Flow of Buses and/or HGV's

SRS on behalf of Bridgend County Borough Council confirms that there are no newly identified roads with high flows of buses/HGVs.

3.1.4 Junctions

SRS on behalf of Bridgend County Borough Council confirms that there are no new/newly identified busy junctions/busy roads

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

SRS on behalf of Bridgend County Borough Council confirms that there are no new/proposed roads.

3.1.6 Roads with Significantly Changed Traffic Flows

SRS on behalf of Bridgend County Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows

3.1.7 Bus and Coach Stations

SRS on behalf of Bridgend County Borough Council confirms that there are no relevant bus stations in the Local Authority area.

3.2 Other Transport Sources

3.2.1 Airports

SRS on behalf of Bridgend County Borough Council confirms that there are no airports in the Local Authority area. However a small quantity of air traffic now traverses the south eastern part of the County Borough prior to its final approach to Cardiff International airport, Rhoose. It is unlikely that the emissions from the aircraft, in view of this small number, will have a significant effect on air quality in Bridgend.

3.2.2 Railways (Diesel and Steam Trains)

Stationary Trains

SRS on behalf of Bridgend County 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.

Moving Trains

SRS on behalf of Bridgend County 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.

3.2.3 Ports (Shipping)

SRS on behalf of Bridgend County Borough Council confirms that there are no ports or shipping that meets the specified criteria within the Local Authority area.

3.3 Industrial Sources

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

SRS on behalf of Bridgend County Borough Council has assessed new/proposed industrial installations, and concluded that no further air quality analysis via a detailed air quality assessment is necessary.

3.3.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been introduced

SRS on behalf of Bridgend County Borough 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.

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

SRS on behalf of Bridgend County Borough Council has assessed new/proposed industrial installations, and concluded that no further air quality analysis via a detailed air quality assessment is necessary.

3.3.4 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

3.3.5 Petrol Stations

SRS on behalf of Bridgend County Borough Council confirms that there are no petrol stations meeting the specified criteria

3.3.6 Poultry Farms

SRS on behalf of Bridgend County Borough Council confirms there are no poultry farms meeting the specified criteria.

3.4 Commercial and Domestic Sources

3.4.1 Biomass Combustion – Individual Installations

As previously identified in the 2011 Progress Report, planning consent had been granted for the installation of a Bio Gas Plant with gas pipeline and in vessel composting facility. It has however been established that the proposed development will not have a significant impact on air quality.

The 2016 Progress Report highlighted that planning consent has been granted for the installation of a bio-mass plant within the Llynfi Valley. However the plant has not yet been installed.

At the time of writing this report, subject to the fulfillment of conditions sanctioned by criteria detailed within the consent application and requirements highlighted within the Clean Air Act legislation, consent under the Clean Air Act, 1993 has been granted for the operation of a Novalux Energy Solutions Ltd 999kWt Wood Chip Biomass System and its emissions at Pentre Hwnt Farm, Llampha, Bridgend.

3.4.2 Biomass Combustion – Combined Impacts

SRS on behalf of Bridgend County Borough Council has assessed the proposed biomass combustion plant, and concluded that no further air quality analysis via a detailed air quality assessment is necessary

3.4.3 Domestic Solid-Fuel Burning

SRS on behalf of Bridgend County Borough Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

3.5 New Developments with Fugitive or Uncontrolled Sources

SRS on behalf of Bridgend County Borough Council confirms that there are no new potential sources of fugitive particulate matter emissions in the Local Authority area since the last Progress Report produced in 2016.

4 Planning Applications

Bridgend Council continue to monitor the impact of proposed developments and recent developments already underway or in use.

Since the publication of the 2016 Progress Report, at the time of writing this report a major planning application (P/16/549/OUT) has been recently approved subject to discharge of conditions for a development of up to 71,441sq.m of B1, B2 and B8 employment floor space, including access, car parking, diversion of public rights of way, site remediation, drainage, landscaping and associated engineering operations. The site is located on land east of the A48 (Crack Hill) Brocastle, Bridgend. In terms of air quality, following correspondence with SRS specialist officers, the following air quality conditions have been implemented;

-No development shall commence until a 'Construction Environmental Management Plan' (CEMP) to minimise dust emissions arising from construction activities on the site has been submitted to and agreed in writing by the Local Planning Authority. The scheme shall include details of dust suppression measures and the methods to monitor emissions of dust arising from the development and shall include the control measures as detailed in section 5.4.2 of Chapter 5 of the Air Quality Assessment contained in the Environmental Statement 'Land at Brocastle, Bridgend. Environmental Statement Volume II. The construction phase shall be implemented in accordance with the agreed scheme with the approved dust suppression measures being maintained in a fully functional condition for the duration of the construction phases. Reason: In the interests of safeguarding the amenities of existing residents.

-No development shall commence until a revised Air Quality Assessment (AQA) has been submitted to and agreed in writing by the Local Planning Authority. The AQA should address the following additional scenario which would encapsulate a cumulative air quality impact: Year of 2026 (projected year of opening for Parc Ewenni), providing projected concentration levels for traffic derived N02 & PM10 (both from the natural increase in traffic and the increase that will be generated as a result of this development) at the already designated sensitive receptors. The 2026 scenario should look to examine a cumulative effect whereby both the Parc Ewenni and Brocastle developments will be in place. Where the Air Quality objectives are indicated to be exceeded, mitigation measures shall be included in the revised report. The mitigation measures and a program of implementation shall be submitted to and agreed in writing by the Local Planning Authority prior to any development commencing. Reason: In the interests of limiting air pollution resulting from the development.

5 Air Quality Planning Policies

Local Development Plan (LDP) 2006- 2021. The document provides a framework for sustainable development within the County Borough of Bridgend, outlining strategies and policies for future land use and development.

One of the main strategic LDP objectives is highlighted in Strategic Policy 4 (SP4) which promotes the conservation and enhancement of the natural environment. SP4 illustrates that development proposals will not be permitted where they have an adverse impact upon the quality of natural resources, including water air and soil.

Also highlighted within the LDP document is Policy ENV 7 (Natural Resource Protection and Public Health);

"Development proposals will only be permitted where it can be demonstrated that they would not cause a new, or exacerbate an existing, unacceptable risk of harm to health, biodiversity and/or local amenity due to: air pollution"

Where proposed developments indicate negative impacts, measures and mitigation methods must be detailed to enable impacts to be minimised to an acceptable level. For example, in terms of air quality, measures can include the production of an Air Quality Assessment and the implementation of conditions.

The LDP documentation for Bridgend County Council is available at http://www1.bridgend.gov.uk/media/174812/ldp_text.pdf

6 Local Transport Plans and Strategies

The Local Transport Plan (LTP) 2015- 2030. The Welsh Government now requires local authorities in Wales to prepare and adopt Local Transport Plan (LTPs) as the framework for identifying local transport schemes for improvements. LTPs therefore replace Regional Transport Plans.

Under guidance from the Welsh Government, local authorities have the choice to develop and adopt either joint LTPs with neighbouring local authorities or a stand-alone LTP for their own geographical area.

Bridgend County Borough Council has opted for the latter approach in view of the uncertainty of the future of local authority boundaries and structures amid discussions of reorganisation of local government.

The LTP looks to tackle growing traffic levels (and hence air quality impacts) by providing strategies which focus upon providing efficient and effective transport networks.

"The Council is mindful of the broader negative impact of transport related emissions on health and the natural environment"

"To reduce the environmental impact of transport, the LTP includes measures and interventions that will increase opportunities for active travel, encourage the use of public transport and promote modal integration."

The LTP policy recognises the Council's objective to achieving sustainable travel (alternatives to using cars) and reducing negative impacts on the environment. The policy suggests that through improved transport infrastructure and transport services this can be achieved.

The LTP policy is available at http://www1.bridgend.gov.uk/media/352797/bridgend-ltp-wg-approved-version-may-2015.pdf

7 Climate Change Strategies

The Authority's Climate Change Strategy was approved in April 2010.

Policy PLA4
Climate Change and Peak Oil

All development proposals will be required to make a positive contribution towards tackling the causes of, and adapting to the impacts of Climate Change and Peak Oil issues. Means of achieving this may include:

1) Having lower carbon energy requirements by reducing energy demand, and promoting energy efficiency;
2) Utilising local materials and supplies wherever feasible;

3) Encouraging the development of renewable energy generation;

4) Having a location and layout which reflects sustainable transport and access principles, thereby reducing the overall need to travel;

5) Having a design, layout and landscaping which:

   (i) helps wildlife and habitats to adapt to the changing climate;
   (ii) assists cooling of the urban environment, including the use of passive building techniques where appropriate;

6) Using resources more efficiently and minimising waste water use and pollution;

7) Avoiding or minimising the risk from flooding and/ or adapting to the increased risk of flooding, coastal erosion and warmer annual mean temperatures; and

8) Promoting sustainable building methods and drainage systems where appropriate.

8 Implementation of Action Plans

Bridgend County Borough Council has not declared any Air Quality Management Areas therefore it has not been necessary to produce any action plans to date.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Based on the new air quality monitoring data and information gathered on new and proposed developments since the 2016 Progress Report produced by SRS on behalf of Bridgend County Borough Council in 2016, there were no exceedences of any air quality objective prescribed in the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002.

The Authority is disappointed that limited PM_{10} & SO_2 continuous data could be gathered in 2016 due to mechanical faults and communication errors. These faults have since been rectified and data is currently being gathered this year.

Monitoring for NO_2 will continue at all the current locations throughout the Borough.

9.2 Conclusions from Assessment of Sources

The assessment of likely impacts from local development, transport industrial, commercial/domestic and fugitive/uncontrolled sites concludes that there are no new/newly identified sources likely to give rise to a significant impact on air quality within the County Borough

9.3 Proposed Actions

As discussed, the Council's network of NO_2 diffusion tubes has been assessed and 10 new monitoring locations have been assigned for 2017. The new locations have been allocated based on known areas of particularly elevated traffic flows, introduction of traffic management systems and foreseeable development, all with nearby relevant exposure. These newly monitored road networks are Park Street, Coity Road, Cowbridge Road and Bridgend City Centre's Market Street.

Based on consecutive compliance with the national air quality objectives, if it is feasible and levels continue to show compliance, the Ewenny Roundabout AMS location may be reviewed in 2018.

Bridgend County Borough Council will submit an Annual Progress Report in 2018.

10 References

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Appendices

Appendix A: Diffusion Tube Monitoring Data 2016

Site No	Nitrogen Dioxide Sites, Bridgend CBC	Grid Ref	Class	Distance of measurement from Kerb (m)	Distance from Kerb to Receptor	Relevant Exposure in m	Background Concentration	08/01/2016- 05/02/2016	05/02/2016- 03/03/2016	03/03/2016- 30/03/2016	30/03/2016- 29/04/2016	29/04/2016- 25/05/2016	25/05/2016- 28/06/2016	28/06/2016- 26/07/2016	26/07/2016- 26/08/2016	26/08/2016- 26/09/2016	26/09/2016- 25/10/2016	25/10/2016- 28/11/2016	28/11/2016- 07/01/2017	AVERAGE SINCE JAN 16	Bias Corrected (Correction Factor 0.78)	Distance corrected to Façade	Percentage of Data Capture
TONDU ROAD ROUNDABOUT																							
OBC-001A	13 Tondu Road, Bridgend	SS 290347 179955	Kerbside	0.46	7.20	6.74	14.51	49.9	99.4			45.3	38.2	29.6	32.7	43.6	44.5	38.6	60.6	**48.2**	37.63	**26.5**	83
OBC-048	Tondu Road Roundabout, Bridgend	SS 290337 179997	Roadside	2.23	11.83	9.60	14.51	57.3	89.9	57.3		53.7	45.3	38.2	40.4	46.7	50.8	54.4	52.9	**53.4**	41.62	**30.7**	92
OBC-068	Bridgend United Club	SS 290356 179924	Roadside	3.83	3.83	0.00	14.51	31.8	43.6	33.9		34.9	30.5	22.7	25.1	30.5	37.9	41.6	44.6	**34.3**	26.74	**26.7**	92
OBC-069	Tondu Rd Steps	SS 290326 180005	Roadside	2.89	13.33	10.44	14.50	46.5	82.5			44.8			33.0	29.6	35.5	43.9	55.6	**46.4**	33.97	**26.3**	67
NOLTON STREET / EWENNY RD CROSS LINK																							
OBC-049	91 Nolton Street, Bridgend	SS 290700 179305	Roadside	4.95	4.95	0.00	14.51		30.8			27.1	32.5	20.4	27.6	29.5	36.0	46.4	58.7	**34.3**	26.8	**26.8**	75
OBC-050	2 Ewenny Road, Bridgend	SS 290665 179293	Roadside	7.33	7.33	0.00	14.51		41.6		27.8		19.8	11.2	16.5		31.5	34.1	39.2	**27.7**	21.9	**21.9**	67
EWENNY ROUNDABOUT																							
OBC-041	55/57 Priory Avenue, Bridgend	SS 290733 178535	Roadside	1.29	8.67	7.38	11.61	35.0	39.4	36.9	29.2	31.2	23.7	20.8	23.8	26.4	36.4	43.8	54.2	**33.4**	26.1	**20.2**	100
OBC-043	Darbury, A48 Bypass, Bridgend	SS 290609 178567	Roadside	2.04	11.83	9.79	11.61	51.1	54.9	52.7	45.2	48.6	47.9	36.6	42.6	43.1	50.2	55.8	66.1	**49.6**	38.7	**27.5**	100
OBC-044	99 Ewenny Road, Bridgend	SS 290680 178582	Roadside	13.66	24.04	10.38	11.61	37.6		42.5	30.4	35.1	29.8	25.2	27.1	31.7	27.7	42.2	46.5	**34.2**	26.6	**23.0**	92
OBC-055	STL, Ewenny Road	SS 290583 178371	Roadside	3.18	9.66	6.48	11.61	18.3	30.1	28.8	23.6	25.2	17.4	10.2		19.3	32.0	33.5	45.8	**25.8**	20.2	**17.7**	92
OBC-056	Parkhof, Ewenny Road	SS 290596 178361	Kerbside	0.47	12.30	11.83	11.61		48.8	37.7	38.2	42.5	40.3	27.9	33.3	39.3	43.0	47.3	57.7	**41.5**	32.3	**20.5**	92
OBC-075	Rear of Danbury	SS 290660 178580	Urban Background	18.51	18.51	0.00	11.61	25.9	27.5	25.3	21.2	25.3	18.8	12.1	19.1	19.5	25.1	26.9	27.5	**22.9**	17.8	**17.8**	100
OBC-078	Corner of Ewenny Roundabout	SS 290662 178533	Roadside	1.85	6.25	4.40	11.61	41.2	42.6				37.3	27.9	32.7	37.8	40.5	42.2	57.0	**39.9**	31.1	**25.6**	75
OBC-085	Property Façade of (Further down from Milstead)	SS 290524 178541	Roadside	10.28	10.28	0.00	11.61	30.1	26.7	31.6	24.3	26.9	22.9	17.9	21.4	22.0	30.0	37.9	45.5	**28.1**	21.9	**21.9**	100
OBC-087	Property Façade of Danbury	SS 290606 178572	Roadside	9.40	9.40	0.00	11.61	26.6	29.7	28.1	25.6	26.7	21.7	14.1	16.5	23.1	25.1	26.3	47.0	**25.9**	20.2	**20.2**	100
OBC-088	Co-location - Tube 1	SS 290566 178566	Roadside	2.20	2.20	0.00	11.61	30.7		33.7		32.9	26.0	14.6	15.1	24.3	17.9	38.4	38.8	**27.2**	21.2	**21.2**	83
OBC-089	Co-location - Tube 2	SS 290566 178566	Roadside	2.20	2.20	0.00	11.61	26.9		33.4	28.3		26.1	13.5	18.7	25.4	35.4	36.4	55.7	**30.0**	23.4	**23.4**	83
OBC-090	Co-location - Tube 3	SS 290566 178566	Roadside	2.20	2.20	0.00	11.61		32.3	25.0	29.0	27.7	25.0	13.6	19.0	23.3	23.8	36.5	44.9	**27.3**	21.3	**21.3**	92
OBC-091	Property Façade of Milstead	SS 290610 178533	Roadside	13.39	13.39	0.00	11.61	30.1	37.2	34.7	27.3	32.6	25.5	19.6	22.0	24.8	35.1	38.8	47.4	**31.3**	24.4	**24.4**	100
MAESTEG TOWN CENTRE																							
OBC-080	Opposite Card Factory, Talbot Street, Maesteg	SS 285131 191284	Urban / Kerbside	0.58	1.79	1.21	9.61		20.1	34.5	34.7	18.5	29.6	21.1	23.7	27.6	31.9	38.4	47.7	**29.8**	23.2	**20.4**	92
OBC-081	Opposite Maesteg Indoor Market Entrance, Talbot Street, Maesteg	SS 285229 191331	Urban / Roadside	1.26	1.26	0.00	9.61		21.3	32.2	43.8	21.0	33.2	25.6	26.2	28.6	30.4	42.0	35.0	**30.8**	24.1	**24.1**	92
OBC-082	Opposite Fluid Nightclub, Castle Street, Maesteg	SS 285296 191398	Urban / Roadside	2.72	2.72	0.00	9.61	64.6	43.0	28.2		19.9			24.2	29.5	31.9	38.9	43.1	**35.9**	28.0	**28.0**	75
OBC-083	Outside Maesteg Day Centre, Castle Street, Maesteg	SS 285370 191382	Urban / Roadside	2.04	8.94	6.9	9.61	44.1	40.9	34.9	44.1	21.6	35.3	27.1			38.2	36.7	52.0	**37.5**	29.2	**22.4**	83

Appendix B: QA/QC Data

Diffusion Tube Bias Adjustment Factors

A database of bias adjustment factors determined from Local Authority co-location studies throughout the UK has been collated by the LAQM Helpdesk. The National Diffusion Tube Bias Adjustment Factor Spreadsheet (Version 06/16) was used to obtain an overall adjustment factor of 0.78 from the input data shown in the following screen shot. This overall factor is based on 38 co-location studies where the tube preparation method and analysis laboratory used were the same as those used by Bridgend Borough Council.

Figure B.1: National Diffusion Tube Bias Adjustment Factor Spreadsheet

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/17

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 September 2017
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@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (Tube preparation, please select from the pop-up list)	Year[5] (Tube co-location, please select)	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)
ESG Didcot	50% TEA in acetone	2016	R	City and County Swansea	9	35	31	12.7%	G	**0.89**
ESG Didcot	50% TEA in acetone	2016	R	North East Lincolnshire Council	10	36	30	20.0%	G	**0.83**
ESG Didcot	50% TEA in acetone	2016	R	North East Lincolnshire Council	10	57	42	37.3%	G	**0.73**
ESG Didcot	50% TEA in acetone	2016	R	North East Lincolnshire Council	11	44	29	52.0%	G	**0.66**
ESG Didcot	50% TEA in acetone	2016	SU	Reigate and Banstead BC	12	27	20	33.6%	G	**0.75**
ESG Didcot	50% TEA in acetone	2016	B	Reigate and Banstead BC	12	20	17	20.7%	G	**0.83**
ESG Didcot	50% TEA in acetone	2016	KS	Slough Borough Council	11	42	33	27.6%	G	**0.78**
ESG Didcot	50% TEA in acetone	2016	R	Wrexham County Borough Council	9	20	18	8.2%	G	**0.92**
ESG Didcot	50% TEA in acetone	2016		**Overall Factor[3] (38 studies)**					**Use**	**0.78**

Discussion of Choice of Factor to use

The bias adjustment factor applied to all 2016 data is 0.78. The applied bias adjustment factor has been calculated using the national diffusion tube bias adjustment factor spreadsheet version 06/16. The individual bias adjustment factor calculated using Ewenny Cross Roundabout automatic monitoring system and the co-located triplicate diffusion tubes has not been used due to quality issues. As previously stated calibrations for roadside/ kerbside located monitors should be undertaken **every two weeks** by LAs. Unfortunately due to staffing requirements this was not adhered to. As a best practise approach, due to the inconsistency of LA Calibrations a nitrogen dioxide (NO_2) co-location study was not undertaken and alternatively a national bias adjustment factor was obtained and applied from the DEFRA website, based on an average of 38 co-location studies.

Short-term to Long-term Data Adjustment

AMS Adjustment

The Ewenny Cross Roundabout AMS had poor annual data capture for Particulate Matter (PM_{10}) (**49.7%**). As a result, the PM_{10} data presented in this report from this monitor has been annualised according to the methods presented in Boxes 7.9 & 7.10 of LAQM TG(16). Two long-term AURN urban background continuous monitoring sites, within a distance of approximately 50 miles from Bridgend were selected, Newport and Bristol St Paul's.

Table B.1 – Long term AURN sites used for calculation of PM_{10} annualisation ratio for Ewenny Cross Roundabout AMS

Site	Site Type	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$)	Ratio
Newport AURN	Urban Background	15.15	14.15	1.07
Bristol St Paul's AURN	Urban Background	15.20	14.13	1.08
Average Ratio				1.07

Diffusion Tubes Adjustment

The Nitrogen Dioxide (NO_2) obtained via the use of passive diffusion tubes during January to December 2016 were annualised via the method described in Boxes 7.9 & 7.10 of LAQM TG(16). Due to potential quality issues surrounding Ewenny Roundabout's AMS NO_2 data, three long-term AURN urban background continuous monitoring sites, within a distance of approximately 50 miles from Bridgend were selected, Cardiff, Cwmbran and Bristol St Paul's.

Table B.2 – Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-050

Site	Site Type	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$)	Ratio
Cwmbran AURN	Urban Background	22.02	21.90	1.01
Bristol St Paul's AURN	Urban Background	27.20	26.80	1.01
Cardiff City Centre AURN	Urban Background	23.06	22.68	1.02
Average Ratio				1.01

Table B.3 – Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-069

Site	Site Type	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$)	Ratio
Cwmbran AURN	Urban Background	22.02	21.90	0.94
Bristol St Paul's AURN	Urban Background	27.20	29.50	0.92
Cardiff City Centre AURN	Urban Background	23.06	24.14	0.96
Average Ratio				0.94

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Environmental Scientifics Group Didcot, using the 50% triethanolamine (TEA) in water method. Environmental Scientifics Group Didcot participates in the Annual Field Inter-Comparison Exercise and Workplace Analysis Scheme for Proficiency (WASP) inter-comparison scheme for nitrogen dioxide diffusion tube analysis. From April 2014 the WASP Scheme was combined with the STACKS scheme to form the new AIR scheme, which Environmental Scientifics Group participates in. The AIR scheme is an independent analytical proficiency testing scheme operated by LGC Standards and supported by the Health and Safety Laboratory (HSL).

The laboratory Environmental Scientifics Group Didcot is regarded ranked as the highest rank of satisfactory in relation to the WASP intercomparison scheme for spiked Nitrogen Dioxide diffusion tubes. Information regarding tube precision can be obtained via http://laqm.defra.gov.uk/diffusion-tubes/precision.html Information regarding WASP results can be obtained via http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

Uncertainties

All values presented in this report are the best possible estimates, but uncertainties in the results might cause over-or under-predictions. All of the measured concentrations presented have an intrinsic margin of error. DEFRA and the Das suggest that this is of the order of plus or minus 20% for diffusion tube data and plus or minus 10% for automatic measurements.

The UK Government's Air Quality Expert Group (AQEG) has published a report on trends in primary nitrogen dioxide in the UK (AQEG, 2007). This examines evidence that shows that while NOx emissions have fallen in line with predictions made a decade previously, the composition of NOx has, in some urban environments, changed. This may have caused nitrogen dioxide levels at some locations to fall less rapidly than was expected. The latest guidance from DEFRA and the DAs (2009) has been followed regarding NOx to NO_2 relationships.

The limitations to the assessment should be borne in mind when considering the results set out in preceding sections.