2019 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 2019

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Report Reference number	Air Quality Progress Report 2019
Date	27/08/2019

Executive Summary: Air Quality in Our Area

Air Quality in Bridgend County Borough Council (BCBC)

Local authorities have a statutory duty under Part IV of the Environment Act 1995 & Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 to manage local air quality. Under Section 82 of the Environment Act 1995 the Local Air Quality Management (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 air quality objectives are likely to be achieved.

The air quality objectives applicable to LAQM in Wales are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138) and Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298). Where the air quality reviews indicate that the air quality objectives may not be met the local authority is required to designate an Air Quality Management Area (AQMA). Action must then be taken at a local level and outlined in a specific Air Quality Action Plan (AQAP) to ensure that air quality in the identified area improves.

In line with the Local Authorities' statutory duties under Part IV of the Environment Act 1995, Shared Regulatory Services (SRS) on behalf of BCBC undertakes regular air quality monitoring at specifically allocated locations across Bridgend using automated and non-automated principles for ambient air nitrogen dioxide (NO_2), particulate matter (PM_{10}) & sulphur dioxide (SO_2).

With regards to prioritising ambient air quality sampling locations, the Council adopts a risk based approach to any allocation of monitoring sites, considering the requirements of The Department for Environment, Food and Rural Affairs' (Defra) Local Air Quality Management (LAQM) Technical Guidance 16 (TG16), February 2018. The designated monitoring locations are assigned based on relevant exposure and where the certain Air Quality Objective levels for a particular pollutant applies. TG16 states that annual mean objectives should apply at "All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, car homes etc."

Automatic Monitoring Sites- BCBC has two automatic air quality monitoring sites which are located at Ewenny Cross Roundabout and the vestry of Soar Chapel, Rhiwceiliog (Rockwool Ltd). The sites monitor on a 24/7 basis measuring levels of NO_2, PM_{10} & SO_2.

Non-automatic Monitoring Sites- In 2018 there were 30 specifically allocated non automatic monitoring sites in Bridgend which monitored levels of nitrogen dioxide (NO_2). These sites are supported and maintained by SRS on behalf of BCBC. The non-automatic sites do not provide live data; instead they consist of diffusion tubes which are placed at each of the sites, collected and replaced on a rolling monthly basis. The results derived from the tube sampling are then averaged over the year to enable a comparison of the results against the annual mean (40µg/m3) and 1-hour mean (200µg/m3 not to be exceeded > 18 times per year) air quality objectives for NO_2.

The NO_2 non-automatic monitoring network utilised in Bridgend has been revised and geographical expanded for 2018. Where possible, existing monitoring locations have been improved to represent worse case exposure. New non-automatic NO_2 monitoring locations were commissioned based on known areas of particularly elevated traffic flows, introduction of traffic management systems and foreseeable development, all with nearby relevant exposure. These newly commissioned sites included Pencoed and Porthcawl.

Bridgend Council's 2018 Annual Air Quality Progress Report (APR) documented and made the recommendation to implement and raise an Order for an Air Quality Management Area (AQMA), designated to Park Street Bridgend. On 18th September 2018 BCBC's Cabinet approved the 2018 LAQM APR 2018 for Bridgend[1]. The report examined datasets captured during 2017 and noted that Park Street, Bridgend was an area of particular concern and subsequently an Air Quality Management Area (AQMA) was required. It was reported that two nitrogen dioxide (NO_2) non-automated monitoring locations situated at residential facades on Park Street, as detailed in Table 1 & Figure 1 recorded elevated and exceeding annual average levels of NO_2 when compared to the annual mean NO_2 Air Quality Objective of 40µg/m3.

1https://democratic.bridgend.gov.uk/documents/s17130/18.09.11%20Air%20Quality%2018%20Sep%20Cabinet%20Report%20Bridgend%20LF%20approval.pdf

Table 1- 2017 Annual Mean NO_2 Concentrations

Site ID	Annual Mean Concentration (µg/m³) AQS = 40 µg/m³ (2)
	2017
OBC- 102	23.7
OBC- 103	37.6
OBC- 104	41.5

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m³ are shown in bold.

NO_2 annual means exceeding 60µg/m³, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in bold and underlined.

(1) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(2) Diffusion tube data has been "bias adjusted" in accordance with Box 7.11 in LAQM.TG16 and "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(3) Diffusion tube data has been corrected for distance to represent relevant exposure in accordance with Sections 7.77- 7.79 in LAQM.TG16 "Fall-off in NO2 concentrations with Distance from the Road"

Figure 1- 2017 NO_2 Diffusion Tube Monitoring Location, Park Street

Based on the 2017 NO_2 datasets, in accordance with WG's Policy Guidance and Section 83 of the Environment Act 1995, SRS/ BCBC was required to legally declare an Air Quality Management Area

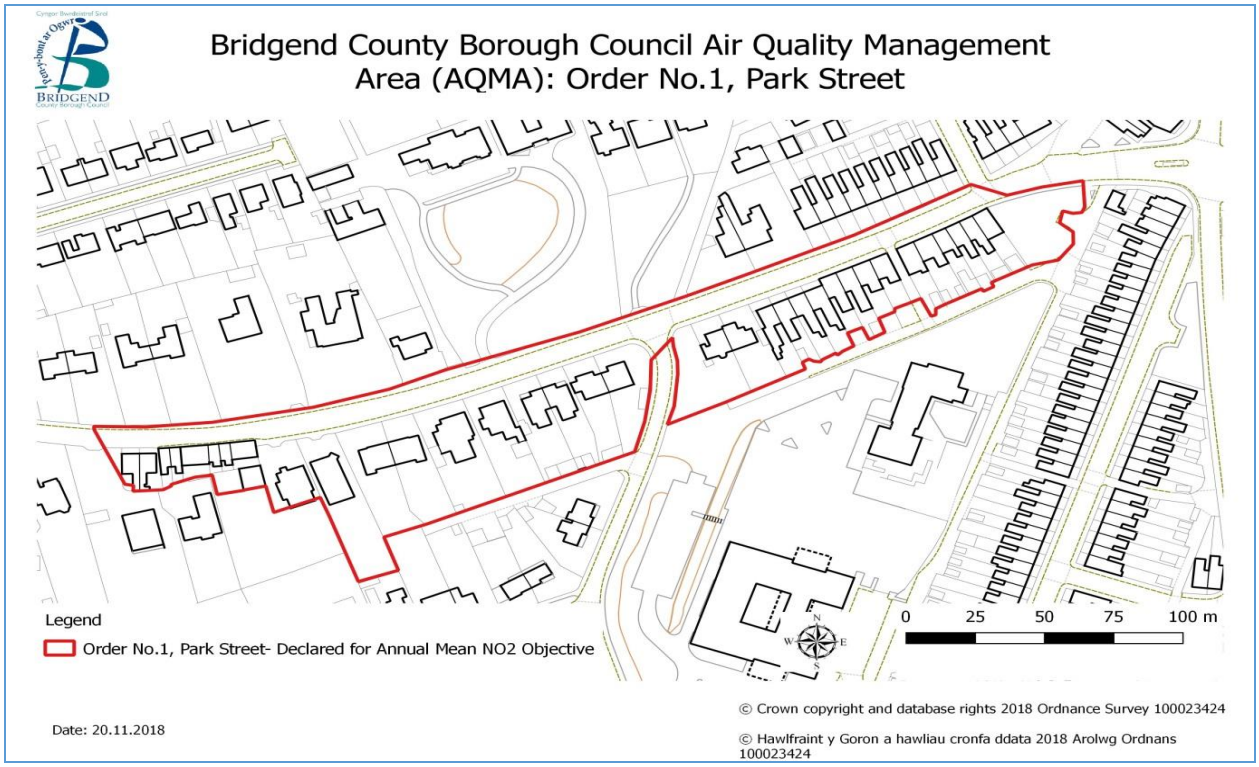
(AQMA) for Park Street, and in doing so raise an AQMA order that defines the detail and locality of the AQMA.

Park Street, Bridgend AQMA

The Park Street, Bridgend AQMA Order was officially implemented on the 1st January 2019. The area comprising the Bridgend County Borough Council Air Quality Management Area Order No. 1, Park Street is that contained within the following boundary;

The designated area borders the green space area prior to the rear entrance of properties located on Sunnyside Road. The designated area incorporates all north facing properties, including their open space areas between 39 Park Street and 105 Park Street. The boundaries' northern side borders the open space areas that front the south facing properties encapsulating the public access pathway.

Figure 2- Extent of Park Street Air Quality Management Area



For 2018, monitoring for NO_2 was further increased along Park Street and adjoining road networks (Tondu Road). Figure 3 illustrates the 2018 network of monitoring for Park Street & Tondu Road.

Figure 3 - 2018 NO_2 Diffusion Tube Monitoring Locations, Park Street

This Annual Progress Report confirms that in 2018 air quality is still a prevalent concern within the designated AQMA and along adjoining road networks where relevant exposure is apparent.

Due to vandalism, it must be noted that data capture was very low in 2018 for sites OBC 103, 104 & 110, situated on Park Street, therefore results have been ratified in accordance with best practise guidance.

It is noted that monitoring undertaken at the new established site for 2018 (OBC-110), located on Park Street, does not only demonstrate annual average levels in exceedance of the annual average air quality objective set at (40µg/m3) for NO_2, but levels captured are also encroaching upon the 1-hour objective; 200µg/m3 not to be exceeded > 18 times per year. Detailed in the Local Air Quality Management (LAQM) (TG16), Paragraphs 7.90 & 7.91 focus on predicting exceedances of the NO_2 1-hour objective with the use of NO_2 diffusion tubes, it states that "exceedances of the NO2 1-hour mean are unlikely to occur where the annual mean is below 60µg/m3." With reference to this viewpoint the annual average figure examined at site OBC-110 is calculated at 58.7µg/m3 which is therefore close to the 1- hour objective. Focusing upon those monitoring sites outside the AQMA boundary, but located in close proximity on pieces of adjoining road network, site OBC 108

demonstrates elevated annual average levels recorded at 38.5µg/m3. It is essential that these monitoring levels are closely examined and suitable action is taken where necessary. Such action may involve amendments to the AQMA Order including revisions of the geographical boundary to encapsulate a wider area and reasoning for declaration. At the time of writing this report, for 2019 the non-automated monitoring network in Bridgend has been further amended and additional sites have been implemented to Park Street.

Despite the referenced sites of concern, all other monitoring locations across Bridgend demonstrate compliance with the applicable air quality objectives.

The Ewenny Cross Roundabout Automatic Monitoring Station (AMS) used to measure NO_2 and PM_{10} has unfortunately been subjected to some quality and technical issues. In 2018 the site has been subject to a number of challenges including data retrieval and power supply failures. Due to revised ICT configurations and mains power supply outage the site has endured complications receiving datasets and therefore has a resultant low data capture for the year. In order to overcome these technical difficulties SRS on behalf of BCBC facilitated the use of their appointed service and maintenance supplier and a professional consultant to devise a system to arrange the safe and efficient transfer of data. In order for such a system to be put in place trials were taken place and in August 2018 the system was formally adopted. The chemiluminescent NOx Analyser had a total data capture of 39.3% and the Met One E Sampler for PM10 captured 44.1%. Results for this time period are displayed in Tables 5- 8.

For 2019, in order to develop the AQAP for the Park Street, Bridgend AQMA, works are underway to commission a new automated monitoring station (AMS), designated for Park Street, Bridgend. Due to continued compliant levels examined at the Ewenny Roundabout location SRS/ BCBC has decided to decommission the Ewenny Cross Roundabout AMS and transfer the equipment to a specific location on Park Street within the AQMA's established boundary.

With particular focus upon nitrogen dioxide (NO_2), it is imperative that SRS/ BCBC improve the air quality monitoring capabilities along Park Street by introducing an automated air quality monitoring system. The equipment will allow for air quality trends to be examined on a high temporal resolution basis and therefore be able to assist with underpinning those short term periods whereby raised levels of NO_2 are particularly prevalent. This data will be particularly useful in assigning traffic control measures for certain time periods.

SRS/ BCBC have examined potential locations along Park Street, within the AQMA boundary to implement the automated air quality monitoring equipment. Following preliminary site visits with air quality monitoring equipment suppliers and Bridgend's Highways Team, it was evident that Park Street posed as a rather difficult area to implement an air quality monitor due to narrow foot ways and the fact that Park Street is designated as traffic sensitive, only allowing highway works between restricted hours.

In order to overcome these concerns it was noted that the Quaker's Meeting House (Bridgend Quaker Meeting, 87 Park St, Bridgend, CF31 4AZ) car park offered a preferable location and would be a representative location for data collection.

At the time of writing this report planning permission has been received for the AMS at the highlighted address, however a final agreement is yet to be made on the written agreement between the Council and Quaker representatives for the use of the proposed AMS.

SRS & BCBC recognises that in order to tackle known pockets of poor air quality, a more suitable and constructive approach is required to target the whole of Bridgend, improving overall air quality. With the implementation of correct long term measures, highlighted road networks and identified areas of concern should be able to benefit from improved air quality. The recent Welsh Government guidance on local air quality management recommended two clear goals:

(1) achieve compliance with the national air quality objectives in specific hotspots and
(2) reduce exposure to pollution more widely, so as to achieve the greatest public health benefit.

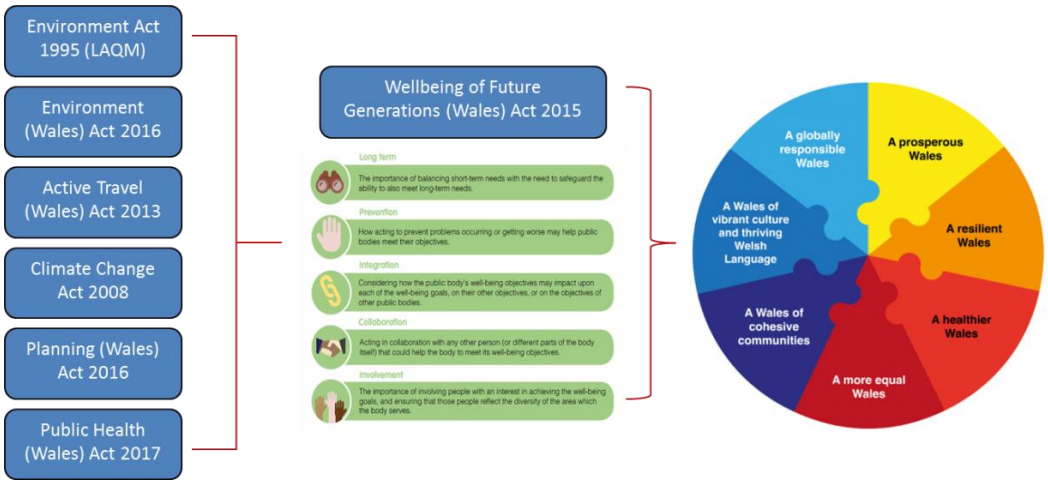
Collective efforts, therefore, should look beyond targeted action in localised air pollution hotspots and do this in parallel with universal action to reduce risks for everyone.

In sight of these aspirations SRS & BCBC adopts the principles of The Well-being of Future Generations (Wales) Act 2015. The Act is a significant enabler to improve air quality as it calls for sustainable cross-sector action based on the principles of long-term, prevention-focused integration, collaboration and involvement. It intends to improve economic, social, environmental and cultural well-being in Wales to ensure the needs of the present are met without compromising the ability of future generations to meet their own needs. The Act places responsibilities on public bodies in Wales to work in new ways (including via Public Services Boards) towards national Well-being goals.

Progress is measured against a suite of well-being and Public Health Outcomes Framework indicators; there is one specifically concerned with air pollution.

As Figure 4 illustrates below, the Act is the legislative vehicle for "Health in all Policies in Wales" and provides the underpinning principles for all policy and decision making, including economic development, in Wales. Reducing air pollution, health risks and inequalities can help contribute to most, if not all, of the well-being goals. As such, the Act presents excellent opportunities to change policy and practice to enhance air quality management arrangements across Bridgend (and wider).

Figure 4- The Well- being of Future Generations (Wales) Act 2015 Matrix



Actions to Improve Air Quality

Improved monitoring

- In an effort to improve its monitoring capabilities, for 2018, as part of a yearly review SRS have amended and improved the network of diffusion tubes previously assigned in previous years used for the LAQM regime. The amendments include improved monitoring locations to represent the locality of monitoring objectives and implementation of additional sites to increase the network's geographical footprint.

- For 2019; Shared Regulatory Services (SRS) on behalf of BCBC has been commissioned by Natural Resources Wales (NRW) to establish new air quality monitoring locations around school premises. The monitoring project will be used to examine and record levels of nitrogen dioxide (NO_2), a known traffic derived pollutant. The project is funded for one year. The datasets collected will be used a driver to work with the monitored schools to influence behavioural change and raise awareness for air quality concerns.

  After the data has been collected for a year, reporting of the data will be included in Bridgend Council's LAQM Annual Air Quality Progress Report 2020. As part of the LAQM process if levels are found to be encroaching upon or exceeding the air quality objectives set for NO_2, SRS/ BCBC will have a requirement to fulfil the requirements of LAQM and adopt formal procedures to start implementing an Air Quality Management Area (AQMA). SRS/ BCBC would work with the school to develop strategic measures that could be implemented to alleviate any concerns and improve air quality levels for NO_2.

Development of the Park Street, Bridgend AQMA Air Quality Action Plan (AQAP)

SRS/ BCBC are working in accordance with WG's Policy Guidance to produce an Air Quality Action Plan (AQAP). As outlined by the guidance;

4.12 A draft action plan must be produced for review by the Welsh Government within 18 months of the coming-into-force date of the AQMA order, and the action plan must be formally adopted before two years have elapsed. A Local Authority failing to produce a draft action plan for review by the Welsh Government within two years of declaring or extending an AQMA will, in the absence of a compelling explanation, be issued with a direction from the Welsh Ministers under section 85(3) of the 1995 Act.

As highlighted and as part of the LAQM statutory duties, from the date of raising the AQMA Order (in this instance 1st January 2019) SRS and BCBC has 18 months in which to prepare a DRAFT Action Plan to improve air quality in the area, and once agreed, this plan must be formally adopted before two years has elapsed.

Letters of engagement were issued over the Christmas period 2018 to local residents within the AQMA boundary, as well as residents in relative close proximity to the boundary. The engagement letters highlighted works to date and envisaged timeline for developing the Air Quality Action Plan (AQAP);

The Council wishes to work closely with residents whose properties are situated within the AQMA and those who live in close proximity, in order to develop the most appropriate set of measures to bring local air quality back into compliance. Such measures may be as simple as adaptations to traffic flow and traffic light configuration.

In the New Year, Council departments will be working towards a set of proposed mitigation measures which will be presented at a number of public meetings in the spring of 2019. Your views on these initial proposals will then be invited, with residents being given a number of ways in which to respond. Thereafter, the Action Plan will be put in place where it will remain until compliance has been achieved and maintained over a minimum of three years.

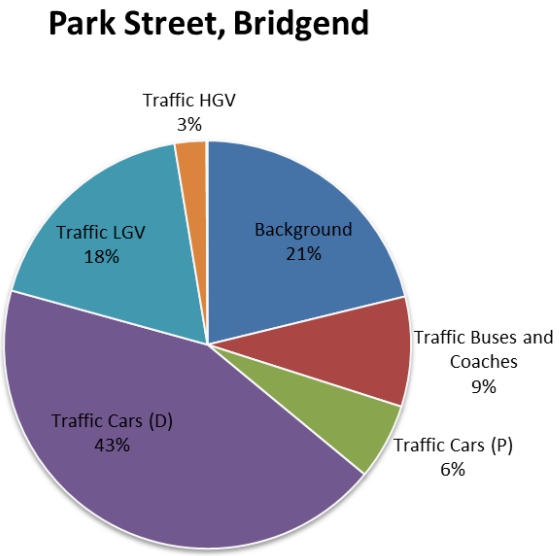
In preparing such a document SRS has established a Work Steering Group which ensures the AQAP considers all aspects, including transport, planning, strategy & policy, public health and communications. The work steering group consists of representatives from BCBC's various departments, as well as representatives from the local Public Service Board (PSB). Meetings held to date have allowed for cross department integration and the development of realistic mitigation measures to alleviate the air quality concerns.

Source apportionment Analysis

Using available 2017 DfT manual count data and adopting the guidance outlined in Local Air Quality Management (LAQM) Technical Guidance 16, Box 7.5, the percentage proportion of various vehicle classifications contributing towards measured annual average NO_2 concentrations has been quantified.

The analysis confirms that a large percentage proportion of NO_2 levels experienced at sensitive receptor locations along Park Street is attributed by cars (predominantly diesel models), as well as Light Goods Vehicles (LGVs). The analysis is detailed in Figure 5.

Figure 5- Park Street, Bridgend NO_2 Source Apportionment Assessment



It can thus be concluded that diesel cars are overwhelmingly the main contributor to NO_2 concentrations; therefore reducing the number of diesel cars (and queuing) on Park Street should be the main focus of the action plan for the Park Street AQMA.

Diesel Cars and Increased NO_2

The high contribution of diesel cars to NOx emissions and the resulting concentrations of NO_2 is something that has been widely acknowledged and is an unwanted consequence of a greater uptake of diesel cars due, in part, to government incentives in order to reduce emissions of carbon dioxide.

Although NOx emissions overall have been declining as a result of improved engine technology, primary NO_2 emissions have increased due to technology designed to lower the emissions of particles. This is explained in the scientific article 'Emission reduction versus NO_2 air quality concentrations, a trade-off?' by Peter J Sturm and Stefan Hausberger of Graz University of Technology,Austria2.

2 **Emission reduction versus NO2 air quality concentrations, a trade-off? (https://online.tugraz.at/tug_online/voe_main2.getVollText?pDocumentNr=145519&pCurrPk=52228)**

Mitigation Measures

To date SRS has developed a preliminary list of proposed mitigation measures to address and hopefully alleviate the air quality concerns within the established Park Street, Bridgend AQMA. This preliminary list of measures considers the following main categories;

- Public Information;
- Traffic Management;
- Policy Guidance and Development Control;
- Promoting Travel Alternatives;
- Transport Planning and Infrastructure; and
- Alternative to Private Car use.

Once the list is agreed SRS will perform a Cost Benefit Analysis which will 'rank' the measures from most desirable to least desirable. Following further agreement on this ranking and perhaps an informal briefing to Councillor Members, SRS/BCBC will be engaging with members of the public via 'Drop-in' sessions scheduled over the course of a week at a specified location accessible to the public.

The drop in sessions will consist of officers being present over the course of a week between certain times, at a certain location to answer any questions from residents and businesses in regards to the development of the Park Street AQMA Action Plan. The drop in sessions will provide an outline understanding for Council proposed mitigation measures and will allow persons to comment or request further information on the proposal. The drop in sessions will look to provide feedback forms and link people to a dedicated email address to submit their opinions for suggested mitigation measures (AirQuality-SRSWales@valeofglamorgan.gov.uk).

Local Priorities and Challenges

The main priorities for SRS and Vale of Glamorgan Council in the coming year are;
-Review air quality datasets and where necessary take appropriate action. This may include the revision of the Park Street, Bridgend AQMA Order; and
-Deliver a finalised Air Quality Action Plan (AQAP) for the Park Street, Bridgend AQMA. Where possible SRS/ BCBC will need to ensure that proposed measures are actioned.

How to Get Involved

BCBC welcomes any correspondence relating to air quality enquiries or concerns. Shared Regulatory Services (SRS) Specialist Services Team represents BCBC for air quality and therefore is contactable via the webpage www.srs.wales/en/Home.aspx OR via their direct team email AirQuality-SRSWales@valeofglamorgan.gov.uk. Monthly average monitoring data for nitrogen dioxide (NO_2) is available at https://airquality.gov.wales/

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Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

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.

2017 Annual Progress Report

BCBC's 2017 Annual Progress Report highlighted that air quality within Bridgend County Borough continued to meet the relevant air quality objectives as prescribed in the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002.

Reporting described the amendments to the non-automatic NO_2 network with 10 new locations commissioned for 2017.

Quality and technical issues were outlined regarding the automatic monitoring at Ewenny Cross Roundabout, for both NO_2 and PM_{10}. The inability to conform to the frequency of calibration checks and technical issues faced with the PM_{10} Met One E Sampler were noted. Data capture was also an issue at the Rockwool Ltd site for SO_2 monitoring, recorded at 47.1%.

2018 Annual Progress Report

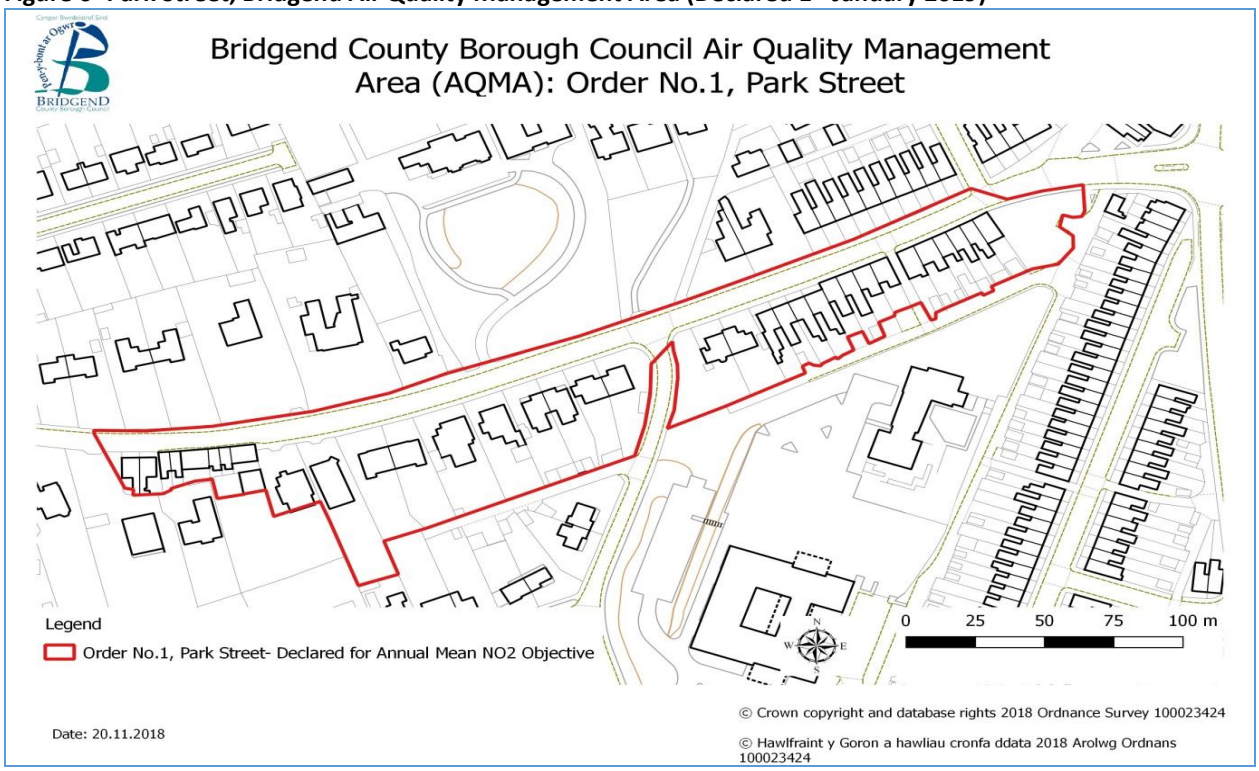
BCBC's 2018 Annual Progress Report highlighted elevated and exceeding annual average levels of nitrogen dioxide (NO_2) and outlined the requirement to proceed to implement and formalise an Air Quality Management Area (AQMA) Order for Park Street, Bridgend. On January 1st 2019 an official AQMA Order was raised for Park Street, Bridgend, designated on the basis of exceeding annual average NO_2 air quality objectives/ limit values.

1.2 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when air quality is close to or above an acceptable level of pollution (known as the air quality objective (Please see Appendix A)). After declaring an AQMA the authority must prepare a DRAFT Air Quality Action Plan (AQAP) within 18 months setting out measures it intends to put in place to improve air quality to at least the air quality objectives, if not even better. The AQAP must be formally adopted prior to 24 months has elapsed. AQMA(s) are seen by local authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

Based on monitoring results and further detailed analysis, there is currently one Air Quality Management Area (AQMA) declared in Bridgend (Park Street, Bridgend), declared due to exceedances of the annual mean NO_2 Air Quality Objective (40ug/m^3), known to be derived from road transport generated NO_2.

Figure 6- Park Street, Bridgend Air Quality Management Area (Declared 1st January 2019)



The Park Street, Bridgend AQMA Order was officially implemented on the 1st January 2019. The area comprising the Bridgend County Borough Council Air Quality Management Area Order No. 1, Park Street is that contained within the following boundary;

The designated area borders the green space area prior to the rear entrance of properties located on Sunnyside Road. The designated area incorporates all north facing properties, including their open space areas between 39 Park Street and 105 Park Street. The boundaries' northern side borders the open space areas that front the south facing properties encapsulating the public access pathway.

1.3 Implementation of Action Plans

BCBC will adhere to the timeframes outlined within WG Policy Guidance, July 2017 ensuring that a DRAFT AQAP will be in place within 18 months of the formal declaration of the AQMA, and also a formalised AQAP with appropriate measures assessed is implemented within 24 months.

In preparing such a document SRS has established a Work Steering Group which ensures the AQAP considers all aspects, including transport, planning, strategy & policy, public health and communications. The work steering group consists of representatives from BCBC's various departments, as well as representatives from the local Public Service Board (PSB). Meetings held to

date have allowed for cross department integration and the development of realistic mitigation measures to alleviate the air quality concerns.

To date SRS has developed a preliminary list of proposed mitigation measures to address and hopefully alleviate the air quality concerns within the established Park Street, Bridgend AQMA. This preliminary list of measures considers the following main categories;

- Public Information;
- Traffic Management;
- Policy Guidance and Development Control;
- Promoting Travel Alternatives;
- Transport Planning and Infrastructure; and
- Alternative to Private Car use.

Once the list is agreed SRS will perform a Cost Benefit Analysis which will 'rank' the measures from most desirable to least desirable. Following further agreement on this ranking and perhaps an informal briefing to Councillor Members, SRS/BCBC will be engaging with members of the public via 'Drop-in' sessions scheduled over the course of a week at a specified location accessible to the public.

The drop in sessions will consist of officers being present over the course of a week between certain times, at a certain location to answer any questions from residents and businesses in regards to the development of the Park Street AQMA Action Plan. The drop in sessions will provide an outline understanding for Council proposed mitigation measures and will allow persons to comment or request further information on the proposal. The drop in sessions will look to provide feedback forms and link people to a dedicated email address to submit their opinions for suggested mitigation measures (AirQuality-SRSWales@valeofglamorgan.gov.uk).

2. Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2018

2.1.1 Automatic Monitoring Sites

Within Bridgend, there are two automatic monitoring location sites; 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. Rockwool Environmental Officers have operated the continuous ambient SO2 monitor since 2008/9. 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. In addition to this, the Rockwool environmental team manage 10 SO_2 diffusion tubes placed at 10 locations in the vicinity of the Rockwool Ltd site.

The location of the SO_2 automated monitor is shown in Figure 8 and details of the site are contained in Table 2. Due to continued compliance with the SO_2 air quality objectives appointed officers from Rockwool Ltd, BCBC and NRW decided upon a new preferred location for the SO_2 automated monitoring station. On the 3rd October 2017 the monitoring was assigned to its new location in the vestry of Soar Chapel, Rhiwceilog. Rockwool Ltd continues to operate the SO_2 diffusion tube locations, which satisfies the improvement programme requirement IP5V.

The Ewenny Cross Roundabout unit has been located at this site since 2011 following elevated levels of NO_2 recorded via diffusion tubes located within the area. The location of the site is shown in Figure 7 and details of the site are contained in Table 2. 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.

The Ewenny Cross Roundabout Automatic Monitoring Station (AMS) used to measure NO_2 and PM_{10} has unfortunately been subjected to some quality and technical issues. In 2018 the site has been subject to a number of challenges including data retrieval and power supply failures. Due to revised ICT configurations and mains power supply outage the site has endured complications receiving datasets and therefore has a resultant low data capture for the year. In order to overcome these technical difficulties SRS on behalf of BCBC facilitated the use of their appointed service and maintenance supplier and a professional consultant to devise a system to arrange the safe and efficient transfer of data. In order for such a system to be put in place trials were taken place and in August 2018 the system was formally adopted. The chemiluminescent NOx Analyser had a total data capture of 39.3% and the Met One E Sampler for PM10 captured 44.1%. Results for this time period are displayed in Tables 5- 8.

There are three diffusion tubes co-located at the Ewenny Cross Roundabout AMS, whereby at the end of year, depending on data capture and precision, a locally derived bias adjustment factor is calculated. Due to insufficient data capture <90%, in accordance with Defra's LAQM (TG16), Box 7.11 it is preferable not to perform a co-location study due to concerns associated with the data quality. The National Bias Adjustment Factor supplied by the LAQM Defra website, based on 28 studies, which appointed Socotec UK Ltd Didcot laboratory, gave a figure of 0.76 and so this has been adopted for ratification purposes.

For 2019, in order to develop the AQAP for the Park Street, Bridgend AQMA, works are underway to commission a new automated monitoring station (AMS), designated for Park Street, Bridgend. Due to continued compliant levels examined at the Ewenny Cross Roundabout AMS location SRS/ BCBC has decided to decommission the Ewenny Cross Roundabout AMS and transfer the equipment to a specific location on Park Street.

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 7 - Map of Ewenny Cross Roundabout Automatic Monitoring Site

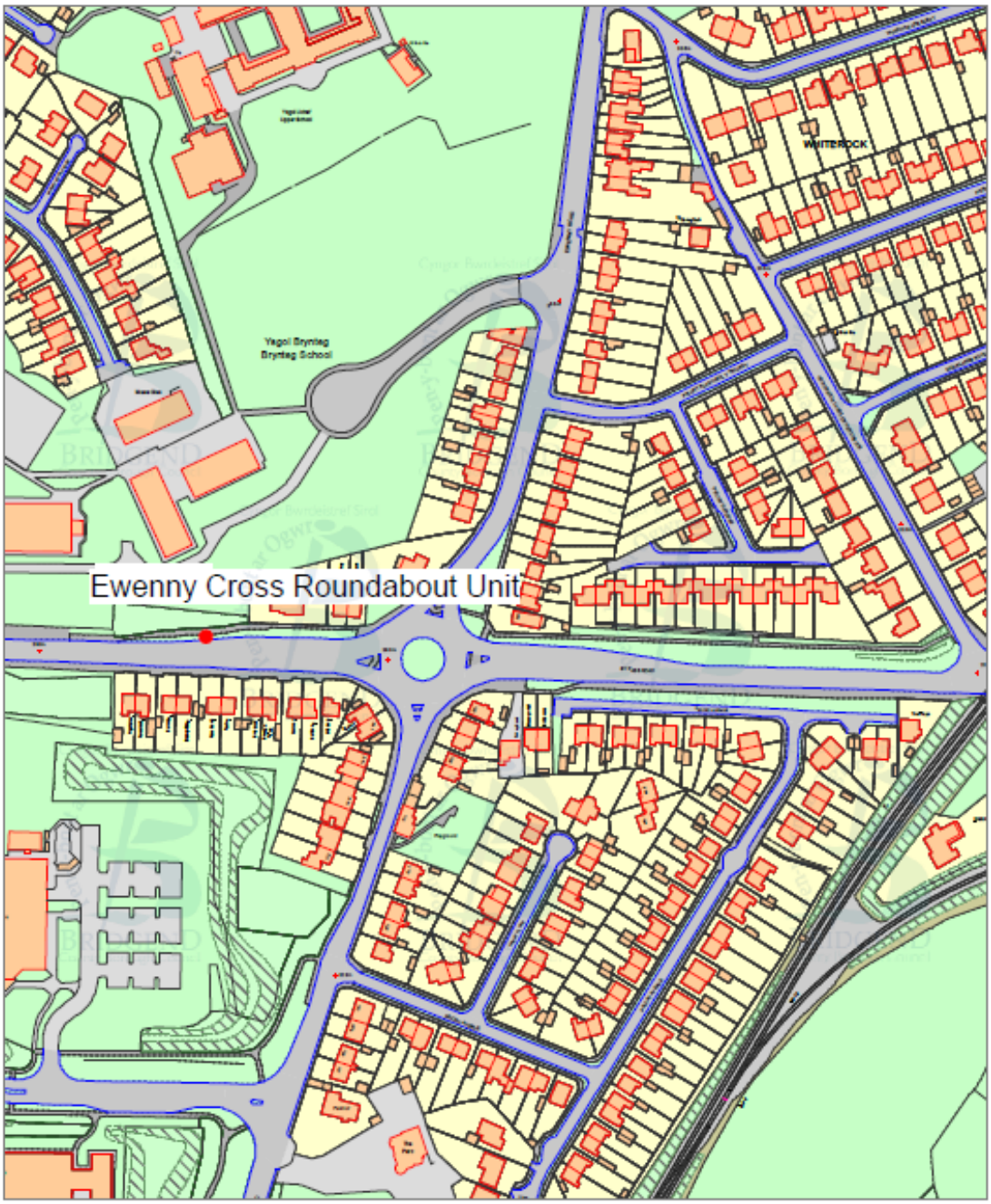


Figure 8 - Map of Rockwool Automatic Monitoring Site (New Location- Vestry of Soar Chapel, Rhiwceiliog est October 2017)

Table 2- 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	297232	184331	4.0	SO_2	N	Automated continuous SO_2 Analyser	1200m	7.5m	Y

2.1.2 Non-Automatic Monitoring Sites

SRS on behalf of BCBC carries out monitoring of ambient air quality for nitrogen dioxide (NO_2). In 2018, 30 specifically allocated non-automatic monitoring sites in Bridgend monitored levels of nitrogen dioxide (NO_2). The non-automatic sites do not provide live data; instead they consist of diffusion tubes which are placed at each of the sites, collected and replaced on a rolling monthly basis. The results derived from the tube sampling are then averaged over the year to enable a comparison of the results against the annual average (40µg/m3) and 1-hour (200µg/m3 not to be exceeded > 18 times per year) air quality objectives for NO_2.

With regards to prioritising ambient air quality sampling locations, the Council adopts a risk based approach to any allocation of monitoring sites, considering the requirements of Local Air Quality Management Technical Guidance 16, February 2018. The designated monitoring locations have been assigned based on relevant exposure and where the certain Air Quality Objectives for a particular pollutant applies. The document states that annual mean objectives should apply at "All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, car homes etc."

NO_2 Diffusion Tube Locations

The location of the 9 areas where NO_2 monitoring took place in 2018;

a. Tondu Road Roundabout at the Western End of the Bridgend Cross Valley Link Road (Figure 9- Area A);
b. Ewenny Cross Roundabout, Bridgend (Figure 10- Area B);
c. Nolton Street/ Ewenny Cross Link/ A473 Cowbridge Road (Figure 11- Area C);
d. Bridgend town Centre (Figure 12- Area D);
e. Park Street (Figure 13- Area E);
f. Coity Road (Figure 14- Area F);
g. Maesteg Town Centre (Figure 15- Area G);
h. Porthcawl (Figure 16- Area H); and
i. Pencoed (Figure 17- Area I).

The location, site description and data gathered since January 2018 are given in Table 3. The data has been gathered over a period of 12 months between January and December 2018, adhering to specific monitoring dates managed and scheduled by Defra.

Laboratory Methods and Analysis of Diffusion Tubes

Analysis of the exposed tubes is carried out by Socotec UK Ltd Didcot operating procedure ANU/SOP/1015. 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°C and then adjusted to 20°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. Adopting best practice guidance and adopting a conservative approach a bias correction factor of 0.76 was obtained and applied using the Defra website which is 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), where necessary the continuous and NO_2 diffusion tube monitoring data have been ''annualised'' following the methods as described in Defra's LAQM (TG16), Boxes 7.9 & 7.10.

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 9– AREA A– Tondu Roundabout NO_2 Diffusion Tube Locations

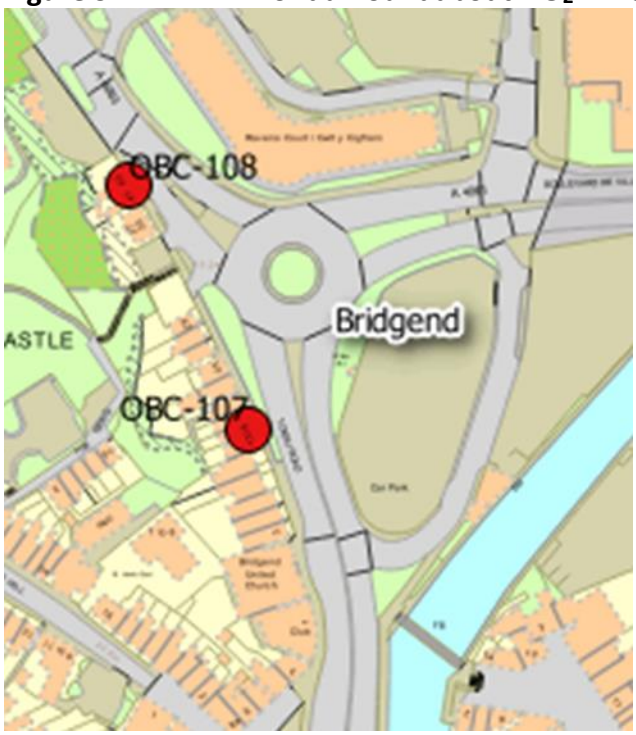


Figure 10– AREA B– Ewenny Cross Roundabout, A48 By-Pass NO_2 Diffusion Tube Locations

Figure 11– AREA C– Nolton Street/ Ewenny Cross Link/ A473 Cowbridge Road NO_2 Diffusion Tube Locations

Figure 12– Area D– Bridgend town Centre NO_2 Diffusion Tube Location

Figure 13– Area E– Park Street NO_2 Diffusion Tube Locations

Figure 14– Area F– Coity Road NO_2 Diffusion Tube Locations

Figure 15– AREA G– Maesteg Town Centre NO_2 Diffusion Tube Locations

Figure 16- Area H- Porthcawl NO_2 Diffusion Tube Locations

Figure 17- Area I- Pencoed NO_2 Diffusion Tube Locations

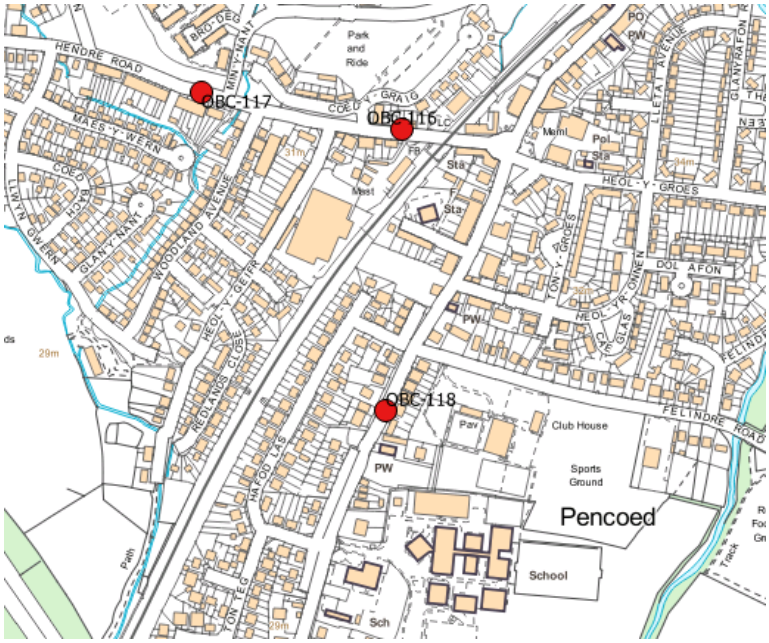


Table 3- Details of Non-Automatic Monitoring Sites 2018

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?[1] (Y/N with (m) to relevant exposure)	Distance to kerb of nearest road in metres	Worst-case Location?
TONDU ROAD ROUNDABOUT												
OBC-107	A	Tondu Road	Roadside	290347	179959	2.0	NO_2	N	N	(Y) 0.00	2.00	Y
OBC-108	A	Tondu Road	Kerbside	290311	180032	2.0	NO_2	N	N	(Y) 0.00	0.90	Y
EWENNY CROSS ROUNDABOUT												
OBC-085	B	A48 Bypass, Bridgend	Roadside	290524	178541	2.0	NO_2	N	N	(Y) 0.00	10.28	Y
OBC-087	B	A48 Bypass, Bridgend	Roadside	290606	178572	2.0	NO_2	N	N	(Y) 0.00	9.40	Y
OBC-088	B	A48 Bypass, Bridgend- Co-Location Study 1	Roadside	290566	178566	2.0	NO_2	N	Y	(Y) 0.00	2.20	Y
OBC-089	B	A48 Bypass, Bridgend- Co-Location Study 2	Roadside	290566	178566	2.0	NO_2	N	Y	(Y) 0.00	2.20	Y
OBC-090	B	A48 Bypass, Bridgend- Co-Location Study 3	Roadside	290566	178566	2.0	NO_2	N	Y	(Y) 0.00	2.20	Y
OBC-091	B	A48 Bypass, Bridgend	Roadside	290610	178533	2.0	NO_2	N	N	(Y) 0.00	13.39	Y
OBC-113	B	Priory Avenue	Roadside	290616	178394	2.0	NO_2	N	N	(Y) 0.00	10.00	Y
OBC-114	B	Ewenny Road	Roadside	290699	178596	2.0	NO_2	N	N	(Y) 0.00	23.00	Y
OBC-115	B	Ewenny Road	Roadside	290667	178529	2.0	NO_2	N	N	(Y) 0.00	12.00	Y
NOLTON STREET/ EWENNY CROSS LINK/ A473 COWBRIDGE ROAD												
OBC-105	C	Cowbridge Road	Roadside	290899	179185	2.0	NO_2	N	N	(Y) 0.00	4.10	Y
OBC-106	C	Cowbridge Road	Kerbside	290826	179210	2.0	NO_2	N	N	(N) 3.30	0.90	N
OBC-111	C	Cowbridge Road	Roadside	290700	179305	2.0	NO_2	N	N	(Y) 0.00	4.95	Y
OBC-112	C	Cowbridge Road	Kerbside	290798	179244	2.0	NO_2	N	N	(Y) 0.00	0.90	Y
BRIDGEND TOWN CENTRE												
OBC-101	D	Bridgend town Centre	Urban Centre	290469	179837	2.0	NO_2	N	N	(Y) 0.00	1.0	Y
PARK STREET												
OBC-102	E	Sunnyside Street	Roadside	290354	179807	2.0	NO_2	N	N	(Y) 0.00	2.95	Y
OBC-103	E	Park Street	Roadside	290250	179782	2.0	NO_2	Y	N	(Y) 0.00	1.20	Y
OBC-104	E	Park Street	Roadside	290286	179800	2.0	NO_2	Y	N	(Y) 0.00	1.05	Y
OBC-109	E	Park Street	Roadside	290239	179795	2.0	NO_2	Y	N	(Y) 0.00	7.50	Y
OBC-110	E	Park Street	Kerbside	289988	179701	2.0	NO_2	Y	N	(Y) 0.00	0.90	Y
COITY ROAD												
OBC-097	F	Coity Road, Bridgend	Roadside	290687	180185	2.0	NO_2	N	N	(Y) 0.00	5.30	Y
OBC-098	F	Coity Road, Bridgend	Roadside	290681	180198	2.0	NO_2	N	N	(Y) 0.00	4.20	Y
OBC-099	F	Coity Road, Bridgend	Roadside	290663	180251	2.0	NO_2	N	N	(Y) 0.00	5.60	Y
OBC-100	F	Coity Road, Bridgend	Roadside	290623	180374	2.0	NO_2	N	N	(Y) 0.00	4.10	Y

MAESTEG TOWN CENTRE												
OBC-080	G	Commercial Street, Maesteg	Urban Centre/ Kerbside	285131	191284	2.0	NO_2	N	N	(Y) 0.00	0.58	Y
OBC-081	G	Talbot Street, Maesteg	Urban Centre / Roadside	285229	191331	2.0	NO_2	N	N	(Y) 0.00	1.26	Y
PORTHCAWL												
OBC-119	H	New Road, Porthcawl	Roadside	282072	177126	2.0	NO_2	N	N	(Y) 0.00	10.00	Y
OBC-120	H	New Road. Porthcawl	Kerbside	282264	177237	2.0	NO_2	N	N	(Y) 0.00	0.90	Y
PENCOED												
OBC-116	I	Hendre Road, Pencoed	Kerbside	295886	181642	2.0	NO_2	N	N	(Y) 0.00	0.90	Y
OBC-117	I	Hendre Road, Pencoed	Roadside	295641	181687	2.0	NO_2	N	N	(Y) 0.00	8.40	Y
OBC-118	I	Coychurch Road, Pencoed	Kerbside	295866	181298	2.0	NO_2	N	N	(N) 4.10	0.90	N

Notes:

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

2.2 2018 Air Quality Monitoring Results

Table 4– Non-automatic Annual Mean NO_2 Monitoring Results (2014- 2018)

Site ID	Site Type	Monitoring Type	Valid Data Capture 2018 (%) (1)	Within AQMA?	Annual Mean Concentration (µg/m^3) (2)				
					2014 (Bias Adjustment Factor = 0.81)	2015 (Bias Adjustment Factor = 0.81)	2016 (Bias Adjustment Factor = 0.78)	2017 (Bias Adjustment Factor = 0.77)	2018 (Bias Adjustment Factor = 0.76)
TONDU ROAD ROUNDABOUT									
OBC-107	Roadside	Diffusion Tube	100	N	-	-	-	-	31.7
OBC-108	Kerbside	Diffusion Tube	100	N	-	-	-	-	38.5
NOLTON STREET/ EWENNY CROSS LINK/ A473 COWBRIDGE ROAD									
OBC-105	Roadside	Diffusion Tube	100	N	-	-	-	24.6	22.6
OBC-106	Kerbside	Diffusion Tube	58	N	-	-	-	30.4/ 25.2(2 & 3)	26.7(2 & 3)
OBC-111	Roadside	Diffusion Tube	100	N	-	-	-	-	26.2
OBC-112	Kerbside	Diffusion Tube	58	N	-	-	-	-	32.6(2)
EWENNY CROSS ROUNDABOUT									
OBC-085	Roadside	Diffusion Tube	100	N	21	23	21	19.9	19.3
OBC-087	Roadside	Diffusion Tube	100	N	21	22	20	20.0(2)	18.9
OBC-088	Roadside	Diffusion Tube	92	N	22	21	21	20.3	21.5
OBC-089	Roadside	Diffusion Tube	92	N	22	21	23	21.8	21.0
OBC-090	Roadside	Diffusion Tube	83	N	23	23	21	19.5	20.9
OBC-091	Roadside	Diffusion Tube	100	N	25	23	24	22.0	22.4
OBC-113	Roadside	Diffusion Tube	100	N	-	-	-	-	15.9
OBC-114	Roadside	Diffusion Tube	100	N	-	-	-	-	18.0
OBC-115	Roadside	Diffusion Tube	100	N	-	-	-	-	22.3
BRIDGEND TOWN CENTRE									
OBC-101	Urban Centre	Diffusion Tube	75	N	-	-	-	18.1(2)	17.9
PARK STREET									
OBC-102	Roadside	Diffusion Tube	100	N	-	-	-	23.7	23.5
OBC-103	Roadside	Diffusion Tube	50	Y	-	-	-	37.6	35.6(2)
OBC-104	Roadside	Diffusion Tube	50	Y	-	-	-	41.5	37.1(2)
OBC-109	Roadside	Diffusion Tube	100	Y	-	-	-	-	20.6
OBC-110	Kerbside	Diffusion Tube	50	Y	-	-	-	-	**58.7**(2)

Site ID	Site Type	Monitoring Type	Valid Data Capture 2018 (%) (1)	Within AQMA?	Annual Mean Concentration (µg/m^3) (2)				
					2014 (Bias Adjustment Factor = 0.81)	2015 (Bias Adjustment Factor = 0.81)	2016 (Bias Adjustment Factor = 0.78)	2017 (Bias Adjustment Factor = 0.77)	2018 (Bias Adjustment Factor = 0.76)
COITY ROAD									
OBC-097	Roadside	Diffusion Tube	100	N	-	-	-	26.3	24.6
OBC-098	Roadside	Diffusion Tube	100	N	-	-	-	24.0	17.0
OBC-099	Roadside	Diffusion Tube	100	N	-	-	-	23.8	15.1
OBC-100	Roadside	Diffusion Tube	100	N	-	-	-	24.1	17.8
MAESTEG TOWN CENTRE									
OBC-080	Urban / Kerbside	Diffusion Tube	100	N	34	24	23	23.9(2)	22.8
OBC-081	Urban / Roadside	Diffusion Tube	100	N	26	25	24	21.4(2)	23.5
PORTHCAWL									
OBC-119	Roadside	Diffusion Tube	100	N	-	-	-	-	12.5
OBC-120	Kerbside	Diffusion Tube	100	N	-	-	-	-	15.1
PENCOED									
OBC-116	Kerbside	Diffusion Tube	100	N	-	-	-	-	22.1
OBC-117	Roadside	Diffusion Tube	100	N	-	-	-	-	16.7
OBC-118	Kerbside	Diffusion Tube	58	N	-	-	-	-	17.7(2 & 3)

Notes:

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

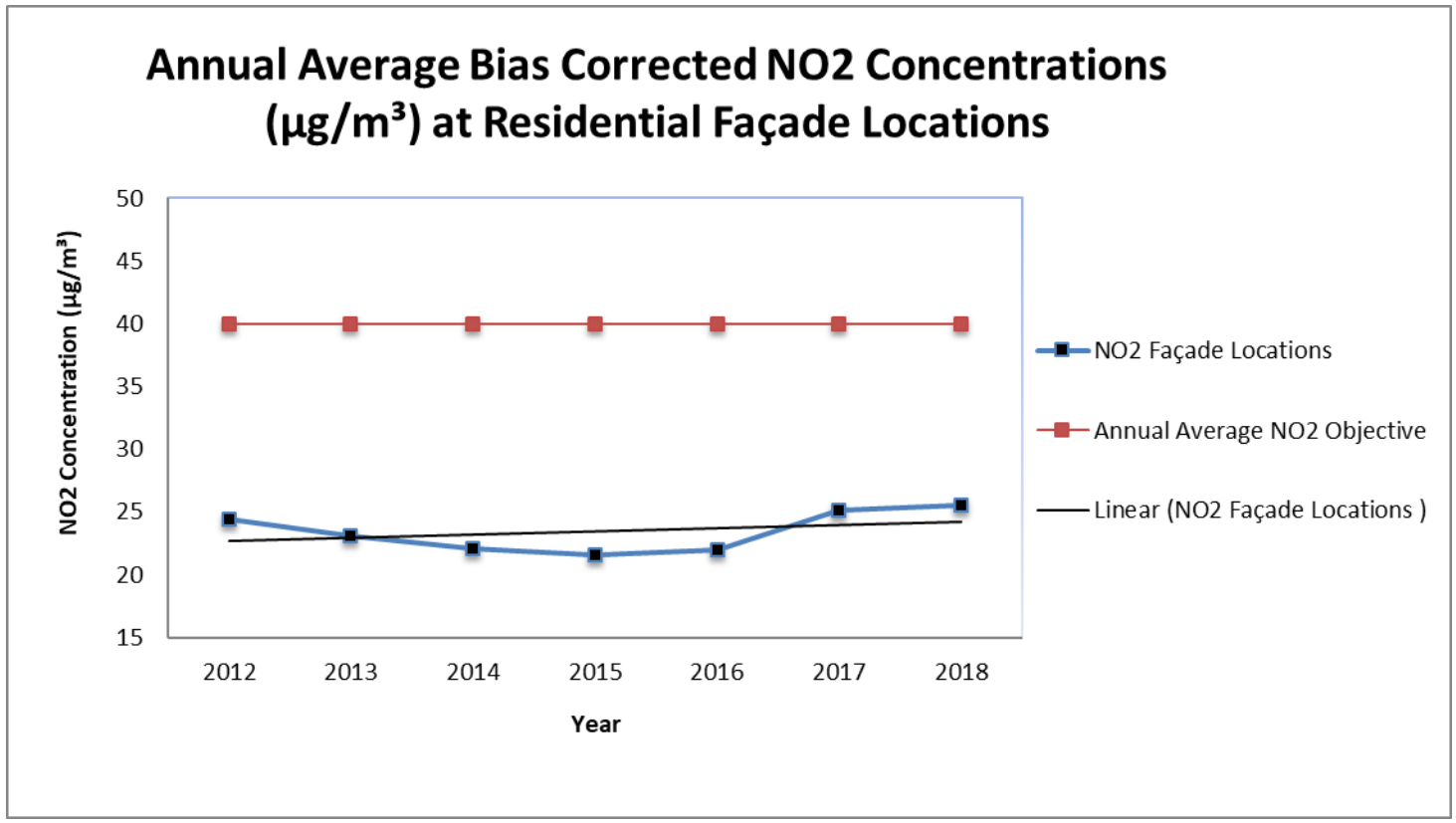
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in bold and underlined.

(1) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(2) Diffusion tube data has been "bias adjusted" in accordance with Box 7.11 in LAQM.TG16 and "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(3) Diffusion tube data has been corrected for distance to represent relevant exposure in accordance with Sections 7.77- 7.79 in LAQM.TG16 "Fall-off in NO2 concentrations with Distance from the Road"

Figure 18– Trends in Annual Mean NO_2 Concentrations



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 residential façade locations. The displayed average datasets indicate compliant NO_2 results for Bridgend in general since 2012. The results are somewhat stable. Datasets utilised for 2018 include newly added monitoring locations at residential properties.

Table 5– Automatic Annual Mean NO_2 Monitoring Results (2014- 2018)

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % (1)	Valid Data Capture 2018 % (2)	Annual Mean Concentration (µg/m^3)				
					2014	2015	2016	2017	2018
CM1	Roadside	N	100	39.3	NR(4)	30.49(3)	32.37	25.7(3)	17.76(3)

Notes:
Exceedances of the Annual Average NO2 objective (40µg/m3) are shown in bold.
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
(3) Data has been "annualised" as per Box 7.9 in LAQM.TG16 where valid data capture for the full calendar year is less than 75%. See Appendix C for details.
(4) NO RESULT "NR". No data recorded for 2014 due to technical faults incurred with Automatic Monitoring Station

Table 6– Automatic 1-hour Mean NO_2 Monitoring Results (2014- 2018)

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % (1)	Valid Data Capture 2018 % (2)	Number of Hourly Means (> 200µg/m^3)(3)				
					2014	2015	2016	2017	2018
CM1	Roadside	N	100	39.3	NR(4)	0 (30.44)	0	0 (131.3)	0 (66.36)

Notes:
Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in bold.
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
(3) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.
(4) NO RESULT "NR". No data recorded for 2014 due to technical faults incurred with Automatic Monitoring Station.

Table 7– Automatic Annual Mean PM_{10} Monitoring Results (2014- 2018)

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	Confirm Gravimetric Equivalent (Y or N/A)	PM_{10} Annual Mean Concentration (µg/m^3) (3)				
						2014	2015	2016	2017	2018
CM1	Roadside	N	100	44.1	N/A	NR(4)	NR(4)	15.18(3)	NR(4)	10.13(3)

Notes:
Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in bold.
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
(3) Data has been "annualised" as per Box 7.9 in LAQM.TG16 where valid data capture for the full calendar year is less than 75%. See Appendix C for details.
(4) NO RESULT "NR". No data recorded for 2014, 2015 & 2017 due to technical faults incurred with Automatic Monitoring Station.

Table 8– Automatic 24-Hour Mean PM_{10} Monitoring Results (2013- 2017)

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m^3 (3)				
						2014	2015	2016	2017	2018
CM1	Roadside	N	100	44.1	N/A	NR(4)	NR(4)	2 (24.66)	NR(4)	1 (19.17)

Notes:
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in bold.
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
(3) If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.
(4) NO RESULT "NR". No data recorded for 2014, 2015 & 2017 due to technical faults incurred with Automatic Monitoring Station.

Table 9– Automatic SO_2 Monitoring Results: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	Number of Exceedences (percentile in bracket μg/m³)		
					15-minute Objective (266 μg/m³)	1-hour Objective (350 μg/m³)	24-hour Objective (125 μg/m³)
CM2	Industrial	N	100	63.9	NR(3)	0 (144.40)(4)	0 (100.07)(5)

Notes:

Exceedances of the SO2 mean objectives are shown in bold.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) NR given due to the fact a 15 min recording interval download could not be obtained

(4) In accordance with LAQM.TG16, due to the fact data capture is <85% it is a requirement to report the 99.7th percentile for 1 hour SO_2

(5) In accordance with LAQM.TG16, due to the fact data capture is <85% it is a requirement to report the 99.2nd percentile for 24 hour SO_2

2.3 Comparison of 2018 Monitoring Results with Previous Years and the Air Quality Objectives

During 2018 monitoring was carried out for nitrogen dioxide (NO_2), particulate matter (PM_{10}) and sulphur dioxide (SO_2).

2.3.1 Nitrogen Dioxide (NO_2)

Nitrogen dioxide was measured during 2018 at one site equipped with an automatic NOx analyser and by a network of 32 passive diffusion tubes.

In order to ratify the 2018 diffusion tube dataset, a bias adjustment factor of 0.76 was applied to the annual average readings. The factor was derived from the Defra website which gave the average correction factor from 28 co-location studies across the UK, whereby the analytical laboratory and method used was the same as BCBC, in this instance Socotec UK Ltd, Didcot.

Automatic Monitoring Data

In 2018, monitoring of NO_2 was carried out at the Ewenny Cross Roundabout AMS. As previously discussed, due to quality and technical issues in 2018, data capture for NO_2 from the Ewenny Cross Roundabout AMS was limited to 39.3% and a site specific co-location study could not be performed. Annual average NO_2 datasets for the Ewenny Cross Roundabout AMS have been annualised in accordance to the requirements of LAQM (TG16), Box 7.9. Tables 5 & 6 confirm compliance with the set long term and short term NO_2 air quality objectives in 2018.

In view of developing an effective AQAP for the Park Street, Bridgend AQMA, the Ewenny Cross Roundabout AMS was decommissioned in 2019 with a view to be located to a new location on Park Street. In order to build a cohesive understanding for air quality data trends along Park Street, with particular focus upon nitrogen dioxide (NO_2), it is imperative that BCBC improve the air quality monitoring capabilities along Park Street by introducing an automated air quality monitoring system. The equipment will allow for air quality trends to be examined on a high temporal resolution basis and therefore be able to assist with underpinning those short term periods whereby raised levels of NO_2 are particularly prevalent. This data will be particularly useful in assigning traffic control measures for certain time periods. SRS' Specialist Services Team have entered an annual contract with appointed contractors whom will manage the data collected by the automated NOx and PM10 analysers. These measures will hopefully eradicate any quality or technical concerns as previously experienced.

At the time of writing this report planning permission has been received for the AMS at the highlighted address, however a final agreement is yet to be made on the written agreement between the Council and Quaker representatives for the use of the proposed AMS.

Non- automated Monitoring Data

Annual average datasets outline continued elevated and exceeding levels of NO_2 at sensitive receptor locations situated on Park Street within the established AQMA Order boundary. It is noted that monitoring undertaken at the new established site for 2018 (OBC-110), located on Park Street, does not only demonstrate annual average levels in exceedance of the annual average air quality objective set at (40µg/m3) for NO_2, but levels captured are also encroaching upon the 1-hour objective; 200µg/m3 not to be exceeded > 18 times per year. Detailed in the Local Air Quality Management (LAQM) (TG16), Paragraphs 7.90 & 7.91 focus on predicting exceedances of the NO_2 1-hour objective with the use of NO_2 diffusion tubes, it states that "exceedances of the NO_2 1-hour mean are unlikely to occur where the annual mean is below 60µg/m3." With reference to this viewpoint the annual average figure examined at site OBC-110 is calculated at 58.7µg/m3 which is therefore close to the 1-hour objective. Focusing upon those monitoring sites outside the AQMA boundary, but located in close proximity on pieces of adjoining road network, site OBC-108 demonstrates elevated annual average levels recorded at 38.5µg/m3.

It is essential that these monitoring levels are closely examined and suitable action is taken where necessary. Such action may involve amendments to the AQMA Order including revisions of the geographical boundary to encapsulate a wider area and reasoning for declaration. At the time of writing this report, for 2019 the non-automated monitoring network in Bridgend has been further amended and additional sites have been implemented to Park Street.

Despite the referenced sites of concern, all other monitoring locations across Bridgend demonstrate compliance with the applicable NO_2 air quality objectives.

2.3.2 Particulate Matter (PM_{10})

As described in previous sections, monitoring of PM_{10} has continued to be carried out at Ewenny Cross Roundabout. However, due to data retrieval configuration issues and power supply issues, the Met One E PM10 Sampler captured only 44.1% valid data in 2018. Data has therefore been annualised utilising Defra's LAQM (TG16), Box 7.9.

2.3.3 Sulphur Dioxide (SO_2)

Monitoring of 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 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.

The total data capture for 2018 was 63.9%. There were no exceedences of the objectives during this time period. With regards to the 15 minute SO_2 objective a NR result is provided due to the fact a 15 minute interval download was not available upon the request for datasets.

2.4 Summary of Compliance with AQS Objectives as of 2018

SRS have reviewed the results from the monitoring undertaken across Bridgend in 2018.

Despite the examined non-compliant annual average NO_2 levels recorded within the Park Street, Bridgend AQMA (OBC-110), all automated and non- automated datasets show compliance with the air quality objectives at **every other monitored location.**

3. New Local Developments

3.1 Road Traffic Sources (& other transport)

SRS on behalf of BCBC can confirm that there are no new significant developments since the Progress Report in 2018.

3.1.1 Airports

SRS on behalf of BCBC 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.

3.1.2 Railways (Diesel and Steam Trains)

Stationary Trains

SRS on behalf of BCBC 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 BCBC confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

3.1.3 Ports (Shipping)

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

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

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

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

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

SRS on behalf of BCBC 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.

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

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

3.2.4 Major Fuel (Petrol) Storage Depots

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

3.2.5 Petrol Stations

SRS on behalf of BCBC confirms that there are no petrol stations meeting the specified criteria.

3.2.6 Poultry Farms

SRS on behalf of BCBC confirms there are no poultry farms meeting the specified criteria.

3.3 Commercial and Domestic Sources

3.3.1 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 biomass plant within the Llynfi Valley. However the plant has not yet been installed. In 2019 an application was received by BCBC planning to change the intended fuel used for the facility (P/19/275/RLX). Air quality comments were made in respect to this request and at the time of writing this report BCBC's Planning department are liaising with the applicant to decide upon appropriate next steps.

3.3.2 Biomass Combustion – Combined Impacts

Previous reports have confirmed that there are no known areas in Bridgend where coal or solid fuel burning provides a significant level or primary household heating. Nothing has changed in this regard since the 2018 APR, despite the potential for increasing popularity of solid fuel heating with increased fossil-fuel prices, and there is no need to consider this further at this time.

3.3.3 Other Sources

3.3.4 Domestic Solid-Fuel Burning

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

3.4 New Developments with Fugitive or Uncontrolled Sources

SRS on behalf of BCBC 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 2018.

3.5 Planning Applications

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

P/16/549/OUT

Since the publication of the 2016 Progress Report, major planning application (P/16/549/OUT) had 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.

At the time of writing this report, the supporting air quality assessment (AQA) in accordance with the referenced planning application has been submitted for review. The AQA considers the operational phase impacts of the proposed development. For operational purposes the modelling accounts for 2 scenarios, which focus around 'Do-Minimum' & 'Do-Something' scenarios for a proposed year of opening in 2026. The report summarises in Tables 6 & 7 that a "negligible" impact is anticipated for NO2 & PM_{10} for a projected year of opening at all sensitive receptor locations modelled.

P/18/983/FUL

The application seeks Planning permission for the redevelopment of the former Magistrates Court and Council Offices site at Sunnyside Road, Bridgend.

The proposed 'Wellness Village' will comprise 59 affordable homes, a healthcare centre and associated works including parking, landscaping and access arrangements.

The following comments were made in accordance to the supporting air quality assessment;

The Air Quality Assessment produced in support of planning application P/18/983/FUL concluded that the overall effect of the proposed development, in terms of road traffic impacts, will be 'not significant'. As outlined by my original response **I do not** agree with this statement and do have underlying concerns from an air quality perspective for the impacts generated by the proposal.

As per a follow up meeting on the 11th February it was agreed that the air quality assessment submitted in accordance with the planning application identified that as a result of the proposed development and generated traffic movements, **1 sensitive receptor (Receptor 6- 91 Park Street)** would be subjected to a **slight adverse** impact for annual mean nitrogen dioxide (NO_2) levels, for a proposed year of opening (2021). At 91 Park Street the annual average NO_2 is scheduled to rise from **38.4µg/m3 to 38.6µg/m3** with the proposed development in place. Although the levels do not breach the annual average limit value of **40µg/m3,** the impact is regarded **as 'slight adverse'** and needs to be treated with caution, especially with the implementation of the air quality management area and the council's responsibility to put together an effective air quality action plan to address poor air quality identified by the designation of the Park Street, AQMA.

In preparation for the meeting on the 11th February 2019 the air quality consultants prepared a technical note which indicated that the projected adverse impact at 91 Park Street would be negligible by 2023. The technical note also stated the following;

"In those circumstances where a single development can be judged in isolation, it is likely that a moderate or substantial impact will give rise to a significant effect and a negligible or slight impact will not have a significant effect, but such judgements are always more likely to be valid at the two extremes of impact severity."

In regards to the above statement, from a Local Air Quality Management perspective and adopting BCBC's own policy as well as Welsh Government's best practise guidance, the proposed development cannot be viewed in silo and I must view the potential for cumulative impacts as a resultant of future development in the area, especially if a negligible impact is not projected until 2023.

Although 2018 annual datasets were not available when devising the scope of works for the supporting AQA, there are significant concerns from an SRS/ BCBC perspective whereby most recent annual average NO_2 datasets examined along Park Street are significantly elevated. The datasets recorded an annual average figure of 59.5µg/m3 **in 2018 at site OBC-110 (101/ 103 Park Street). This level does not only exceed the NO_2 annual average air quality objective set at** 40µg/m3**, but is also encroaching on the 1- hour objective set as** 200 µg/m3 not to be exceeded more than 18 times per year.

It was noted by the air quality consultants that any remodelling with the revised understanding for levels recorded during 2018 would not differ the outcome significance for a proposed year of opening, said to also be an adverse impact. It would definitely be a concern to see an adverse impact experienced at these raised levels, especially if the development would influence the projected levels to surpass the 1- hour objective for NO_2.

On the grounds of air quality SRS are minded to object to the proposal. However, if the planning committee were to grant the application with outline consent SRS would advise that the following planning Condition be implemented;

Condition: Develop & Quantify a Scheme of Mitigation Measures

Prior to any above ground development works associated with the proposal, the applicant is required to develop a scheme of mitigation measures associated with the proposal. The applicant is required to undertake a detailed air quality assessment to quantify how the devised mitigation scheme will provide positive benefits to air quality at identified sensitive receptors located on Park Street and within the established Air Quality Management Area boundary. The air quality assessment shall consider the impacts to NO_2 & PM_{10} and look to include most recent receptor locations monitored by the Council. The air quality assessment and mitigation scheme will need to be submitted and approved by the Local Planning Authority.

If appropriate mitigation measures to protect existing residents and future occupiers of the development **cannot be implemented** to ensure compliance with existing national air quality objectives then the **development must not proceed.**

Reason: To safeguard the amenity of existing and future residents.

It was decided that the Condition was amended to;

Prior to any above ground development works associated with the proposal, the applicant is required to develop a scheme of mitigation measures associated with the proposal. To inform the level of mitigation required an updated air quality assessment shall consider the impacts of NO2 & PM10 and look to include most recent receptors locations monitored by the Council. The assessment shall calculate the value of mitigation required following Defra's damage cost approach. The cost of mitigation implemented by the applicant should broadly equate to the calculated value. The scheme shall also include a timetable for the implementation of these approved mitigation measures. The air quality assessment and mitigation scheme will need to be submitted and approved by the Local Planning Authority.

The application (P/18/983/FUL) was reported to Development Control Committee on 28 March 2019 where Members resolved to approve the application subject to a Section 106 Legal Agreement and conditions.

The decision notice will be issued as soon as the S106 Legal Agreement is signed by all parties and the applicant will then look at discharging the conditions. The amended condition cited above is referenced as Condition 40.

4. Polices and Strategies Affecting Airborne Pollution

4.1 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

4.2 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

4.3 Active Travel Plans and Strategies

In September 2014, the Welsh Government introduced the Active Travel (Wales) Act. This measure legally requires Welsh local authorities to map and plan suitable routes for Active Travel within certain areas, as designated by the Welsh Government.

Following formal public consultation and review by Welsh Government, BCBC has produced Integrated Network Maps (INM) that show highlighted routes dedicated to pedestrians and cyclists.

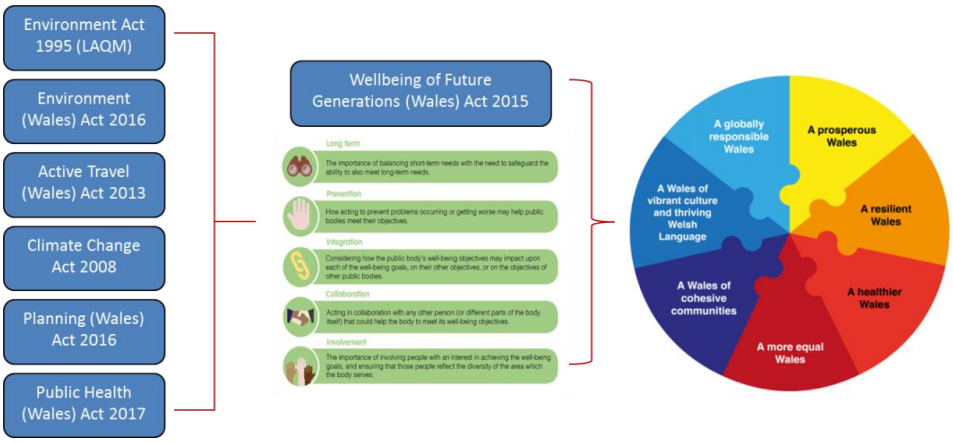
The maps are available to download from;
https://www.bridgend.gov.uk/residents/roads-transport-and-parking/active-travel-routes/

4.4 Local Authorities Well-being Objectives

In 2015 Welsh Government made a new law called the Well-being of Future Generations (Wales) Act. The new law has the sustainable development principle at its heart. This means that we need to work in a way that improves wellbeing for people today without doing anything that could make things worse for future generations.

As highlighted in the earlier Figure 4 there are seven national well-being goals that form the basis of the Act and five ways of working which support the goals.

Figure 4- The Well- being of Future Generations (Wales) Act 2015 Matrix



Public, third and business sectors have come together in Bridgend to form a Public Services Board (PSB). Bridgend PSB is committed to working together to improve wellbeing in Bridgend County Borough now and in the future. Bridgend PSB has used the sustainable development principle and the new five ways of working to develop a Well-Being Plan (2018-2023).

The plan outlines the things that Bridgend PSB will work together on, over the next five years, well-being objectives and steps, and provide a vision for how Bridgend will look in 10 years' time. The plan is seen as a mechanism that provides the best possible means of working to help understand the underlying causes of problems and prevent those problems getting worse or happening in the future.

Contributing to the seven national well-being goals and long term vision for Bridgend, Bridgend PSB has developed four main objectives.

Figure 19- Bridgend PSB Four Well-being Objectives

In accordance with air quality, as part of the objective for "Healthy Choices in a Healthy Environment" Bridgend PSB outlines that resources are best utilised and collaborative working ensures that the built, cultural and natural environment remains resilient in future. The priority areas to endorse and encourage the success of the objective will include working together to maximise benefit from cultural, built and natural assets. It will also look at promoting a more resource and energy efficient way of living and working. In order to measure the success of promoting a more resource and energy way of living air quality, particularly NO2 levels will be examined.

Bridgend PSB Well-being Plan is available at;

https://www.bridgend.gov.uk/media/3657/bridgend-wellbeing-bps-plan-e-0518.pdf

4.5 Green Infrastructure Plans and Strategies

Outlined in Bridgend's Local Development Plan (LDP) 2006- 2021, Policy ENV5 focuses upon Green infrastructure.

Policy ENV5

Green Infrastructure

Green infrastructure will be provided through the protection and enhancement of existing natural assets and the creation of new multi-functional areas of green space. Green infrastructure corridors will connect locations of natural heritage, green space, biodiversity or other environmental interest. They will be safeguarded through:

1) Not permitting development that compromises their integrity and therefore that of the overall green infrastructure framework;
2) Using developer contributions to facilitate improvements to their quality and robustness;
3) Investing in appropriate management, enhancement and restoration, and the creation of new resources.

A Supplementary Planning Guidance (SPG) concerning Green Infrastructure was produced in 2014 by BCBC to provide a detailed understanding to the elements raised in the LDP.

-The document highlights how the Council expect habitats to be considered as part of development proposals within the County Borough of Bridgend. It also introduces the concept of adopting a *Green Infrastructure Approach* to development.

In addition to the above, outlined within the Bridgend PSB Well-being Plan, as part of the objective "Healthy Choices in a Healthy Environment" and priority area to include working together to maximise benefit from cultural, built and natural assets, the steps involved will;

- identify opportunities to improve the green asset base by implementing the Bridgend Nature Recovery Plan.
- improve the public estate and green spaces in urban areas by encouraging award of green flag status.

4.6 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:

- Having lower carbon energy requirements by reducing energy demand, and promoting energy efficiency;
- Utilising local materials and supplies wherever feasible;
- Encouraging the development of renewable energy generation;
- Having a location and layout which reflects sustainable transport and access principles, thereby reducing the overall need to travel;
- 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;
- Using resources more efficiently and minimising waste water use and pollution;
  Avoiding or minimising the risk from flooding and/ or adapting to the increased risk of flooding, coastal erosion and warmer annual mean temperatures; and
- Promoting sustainable building methods and drainage systems where appropriate.

5. Conclusions and Proposed Actions

5.1 Conclusions from New Monitoring Data

Annual average datasets outline continued elevated and exceeding levels of NO_2 at sensitive receptor locations situated on Park Street within the established AQMA Order boundary. It is noted that monitoring undertaken at the new established site for 2018 (OBC-110), located on Park Street, does not only demonstrate annual average levels in exceedance of the annual average air quality objective set at (40µg/m3) for NO_2, but levels captured are also encroaching upon the 1-hour objective; 200µg/m3 not to be exceeded > 18 times per year. Detailed in the Local Air Quality Management (LAQM) (TG16), Paragraphs 7.90 & 7.91 focus on predicting exceedances of the NO_2 1-hour objective with the use of NO_2 diffusion tubes, it states that "exceedances of the NO2 1-hour mean are unlikely to occur where the annual mean is below 60µg/m3." With reference to this viewpoint the annual average figure examined at site OBC-110 is calculated at 58.7µg/m3 which is therefore close to the 1-hour objective. Focusing upon those monitoring sites outside the AQMA boundary, but located in close proximity on pieces of adjoining road network, site OBC-108 demonstrates elevated annual average levels recorded at 38.5µg/m3.

It is essential that these monitoring levels are closely examined and suitable action is taken where necessary. Such action may involve amendments to the AQMA Order including revisions of the geographical boundary to encapsulate a wider area and reasoning for declaration. At the time of writing this report, for 2019 the non-automated monitoring network in Bridgend has been further amended and additional sites have been implemented to Park Street.

Despite the referenced sites of concern, all other monitoring locations across Bridgend demonstrate compliance with the applicable NO_2 air quality objectives.

Despite the highlighted area of concern, compliance with the air quality objectives was achieved at all other monitoring locations.

5.2 Conclusions relating to New Local Developments/ Sources

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

5.3 Other Conclusions

There are no other conclusions to be drawn from the information provided herein.

5.4 Proposed Actions

SRS/ BCBC are working in accordance with WG's Policy Guidance to produce an Air Quality Action Plan (AQAP).

In preparing such a document SRS has established a Work Steering Group which ensures the AQAP considers all aspects, including transport, planning, strategy & policy, public health and communications. The work steering group consists of representatives from BCBC's various departments, as well as representatives from the local Public Service Board (PSB). Meetings held to date have allowed for cross department integration and the development of realistic mitigation measures to alleviate the air quality concerns.

In view of developing an effective AQAP for the Park Street, Bridgend AQMA, the Ewenny Cross Roundabout AMS was decommissioned in 2019 with a view to be located to a new location on Park Street. In order to build a cohesive understanding for air quality data trends along Park Street, with particular focus upon nitrogen dioxide (NO_2), it is imperative that BCBC improve the air quality monitoring capabilities along Park Street by introducing an automated air quality monitoring system. The equipment will allow for air quality trends to be examined on a high temporal resolution basis and therefore be able to assist with underpinning those short term periods whereby raised levels of NO_2 are particularly prevalent. This data will be particularly useful in assigning traffic control measures for certain time periods. It is a priority that the written agreement between the Council and land owners is agreed as soon as possible so works can start on commissioning the new AMS.

The Specialist Services Team have entered an annual contract with appointed contractors whom will manage the data collected by the automated NOx and PM10 analysers. These measures will hopefully eradicate any quality or technical concerns as previously experienced.

To date SRS has developed a preliminary list of proposed mitigation measures to address and hopefully alleviate the air quality concerns within the established Park Street, Bridgend AQMA. This preliminary list of measures considers the following main categories;

- Public Information;
- Traffic Management;

- Policy Guidance and Development Control;
- Promoting Travel Alternatives;
- Transport Planning and Infrastructure; and
- Alternative to Private Car use.

Once the list is agreed SRS will perform a Cost Benefit Analysis which will 'rank' the measures from most desirable to least desirable. Following further agreement on this ranking and perhaps an informal briefing to Councillor Members, SRS/BCBC will be engaging with members of the public via 'Drop-in' sessions scheduled over the course of a week at a specified location accessible to the public.

References

Department for Environment, Food and Rural Affairs, 2003. *Part IV of the Environment Act 1995, Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management, Technical Guidance LAQM.TG(16).* London: DEFRA (as updated February 2018).

Welsh Government, Local Air Quality Management in Wales, Policy Guidance, June 2017.

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-First Stage Review and Assessment of Air Quality in Bridgend County Borough, September 1999

-Second Stage Review and Assessment of Air Quality in Bridgend County Borough, December 2000

-Updating and Screening Assessment of Air Quality in Bridgend County Borough, July 2003

-Local Air Quality Management Progress Report, July 2005

-Detailed Assessment of Nitrogen Dioxide and Particles (PM_{10}), March 2006

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-Local Air Quality Management Progress Report, June 2014

-Updating and Screening Assessment of Air Quality in Bridgend County Borough, May 2015

-Local Air Quality Management Progress Report, June 2016

-Local Air Quality Management Progress Report, August 2017

-Local Air Quality Management Progress Report, August 2018

Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results
Appendix B: A Summary of Local Air Quality Management
Appendix C: Air Quality Monitoring Data QA/QC

Appendix A: Monthly Diffusion Tube Monitoring Results

Table 10– Full Monthly Diffusion Tube Results for 2018

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		04/01/2018 - 01/02/2018	01/02/2018 - 01/03/2018	01/03/2018 - 29/03/2018	29/03/2018 - 03/05/2018	02/05/2018 - 06/06/2018	06/06/2018 - 04/07/2018	04/07/2018 - 01/08/2018	01/08/2018 - 05/09/2018	05/09/2018 - 05/10/2018	05/10/2018 - 31/10/2018	31/10/2018 - 05/12/2018	30/10/2018 - 05/12/2018	05/12/2018 - 08/01/2019	AVERAGE SINCE JAN 18	Bias Corrected (Correction Factor 0.78)	Annualised & Bias Corrected (0.78)	Distance corrected to Façade	Percentage of Data Capture
TONDU ROAD ROUNDABOUT																										
OBC-107	17 Tondu Road, Bridgend	SS 290347 179959	Roadside	2.00	2.00	0.00	12.81		42.1	44	48.1	41	39.1	36.3	40.8	34.3	40.9	46.1	39.9	48.0	41.7	**31.7**	**31.7**	**31.7**	100
OBC-108	43 Tondu Road , Bridgend	SS 290311 180032	Kerbside	0.90	0.90	0.00	12.81		60.0	51.9	55.2	51.1	46.6	39.6	52.9	41.3	50.4	53.6	45.5	59.5	50.6	**38.5**	**38.5**	**38.5**	100
PARK STREET																										
OBC-102	4 Sunnyside	SS 290354 179807	Roadside	2.95	2.95	0.00	12.81		35.2	34.1	35.1	29.6	30.0	28.5	25.5	20.6	27.1	38.6	29.1	38.2	31.0	**23.5**	**23.5**	**23.5**	100
OBC-103	39 Park Street	SS 290286 179800	Roadside	1.20	1.20	0.00	12.81		55.7	50.4	47.6	46.5					47.5	55.2			50.5	**38.4**	**35.6**	**35.6**	50
OBC-104	51 Park Street	SS 290250 179782	Roadside	1.05	1.05	0.00	12.81		52.2	53	57.4	52.3					45.7	55.2			52.6	40.0	**37.1**	**37.1**	50
OBC-109	32 Park Street	SS 290239 179795	Roadside	7.5	7.5	0.00	12.81		33.2	34.7	29.3	26.4	24.9	20.6	21.5	19.1	24.9	33.1	24.3	33.9	27.2	**20.6**	**20.6**	**20.6**	100
OBC-110	101/103 Park Street	SS 289988 179701	Kerbside	0.9	0.9	0.00	9.31		91.4	92.2	105.2	90.3					62.6		76		86.3	65.6	58.7	58.7	50
BRIDGEND CITY CENTRE																										
OBC-101	Bridgend City Centre	SS 290469 179837	Urban Centre	1.0	1.0	0.00	12.81		24.9	24.3	29.4	19.2	19.9			16.1	21.6		23.9	32.4	23.5	**17.9**	**17.9**	**17.9**	75
NOLTON STREET / EWENNY RD CROSS LINK/ A473 Cowbridge Road																										
OBC-111	01 Cowbridge Road	SS 290700 179305	Roadside	4.95	4.95	0.00	12.81		42.5	42	37.3	31.5	33.2	27.8	28.1	22.4	37.1	38.8	35.4	36.8	34.4	**26.2**	**26.2**	**26.2**	100
OBC- 105	65 Cowbridge Road	SS 290899 179185	Roadside	4.10	4.10	0.00	12.81		35.0	32.5	35	27.7	24.7	24.8	24.2	20.0	28.5	39.5	28.8	36.3	29.8	**22.6**	**22.6**	**22.6**	100
OBC- 106	38/40 Cowbridge Road	SS 290826 179210	Kerbside	0.90	4.20	3.30	12.81		45.3	48.8	48.2	36.1		31.5		30.7	38.5				39.9	**30.3**	**32.7**	**26.7**	58
OBC-112	33 Cowbridge Road	SS 290798 179244	Kerbside	0.90	0.90	0.00	12.81		48.9				42.0		37.4		30.0	65.3	48.0	53.8	46.5	**35.3**	**32.6**	**32.6**	58
EWENNY ROUNDABOUT																										
OBC-085	Property Façade of (Further down from Milstead)	SS 290524 178541	Roadside	10.28	10.28	0.00	9.44		32.5	30.2	28	21	22.7	23.8	21.1	18.5	22.6	30.5	23.3	30.9	25.4	**19.3**	**19.3**	**19.3**	100
OBC-087	Property Façade of Danbury	SS 290606 178572	Roadside	9.40	9.40	0.00	9.44		25.0	22.6	28.7	25.8	25.7	24.7	24.9	17.6	20.6	27.1	25.7	30.0	24.9	**18.9**	**18.9**	**18.9**	100
OBC-088	Co-location -Tube 1	SS 290566 178566	Roadside	2.20	2.20	0.00	9.44		30.2	31.8	32.6	28.3	29.1	28.6	22.8	17.1		34.1	26.2	30.2	28.3	**21.5**	**21.5**	**21.5**	92
OBC-089	Co-location -Tube 2	SS 290566 178566	Roadside	2.20	2.20	0.00	9.44		32.8	30.4	29.1	27.9	30	30.0	25.4	17.0	21.7		26.9	32.9	27.6	**21.0**	**21.0**	**21.0**	92
OBC-090	Co-location -Tube 3	SS 290566 178566	Roadside	2.20	2.20	0.00	9.44		26.4		33.2	26.1	29.3	30.2		17.9	21.7	34.6	23.4	32.3	27.5	**20.9**	**20.9**	**20.9**	83
OBC-091	Property Façade of Milstead	SS 290610 178533	Roadside	13.39	13.39	0.00	9.44		31.4	43.1	33.3	27.5	29.6	24.7	25.1	21.1	25.9	33.0	24.8	34.5	29.5	**22.4**	**22.4**	**22.4**	100
OBC-113	127 Priory Avenue	SS 290616 178394	Roadside	10.00	10.00	0.00	9.44		26.4	26.3	25.2	18	16.5	16.8	17.4	14.7	20.1	26.1	19.5	24.4	21.0	**15.9**	**15.9**	**15.9**	100
OBC-114	97 Ewenny Road	SS 290699 178596	Roadside	23.00	23.00	0.00	9.44		27.6	19.4	20.3	22.7	21.7	18.9	23.6	18.5	24.1	30.7	25.6	30.7	23.7	**18.0**	**18.0**	**18.0**	100
OBC-115	105 Ewenny Road	SS 290667 178529	Roadside	12.00	12.00	0.00	9.44		37.0	31.4	33.9	26.3	25.5	27.5	25.5	21.5	26.0	35.6	26.8	35.3	29.4	**22.3**	**22.3**	**22.3**	100
MAESTEG TOWN CENTRE																										
OBC-080	Opposite Card Factory, Talbot Street, Maesteg	SS 285131 191284	Urban / Kerbside	0.58	0.58	0	8.21		35.3	38.1	29.9	28.6	32.1	26.8	28.9	19.2	30.5	28.2	28.9	33.0	30.0	**22.8**	**22.8**	**22.8**	100
OBC-081	Opposite Maesteg Indoor Market Entrance, Talbot Street, Maesteg	SS 285229 191331	Urban / Roadside	1.26	1.26	0.00	8.21		35.9	36.5	30.5	30.2	32.4	27.7	26.5	23.9	32.9	31.3	26.4	36.2	30.9	**23.5**	**23.5**	**23.5**	100
COITY ROAD, BRIDGEND																										
OBC-097	22 Coity Road, Bridgend	SS 290687 180185	Roadside	5.30	5.30	0.00	12.87		27.9	40.6	36.7	28.7	30.4	33.0	29.6	23.1	29.2	39.70	31.70	38.20	32.4	**24.6**	**24.6**	**24.6**	100
OBC-098	26 Coity Road, Bridgend	SS 290681 180198	Roadside	4.20	4.20	0.00	12.87		31.5	31.3	31.8	26.6	27.0	22.4	29.1	22.3	28.4	33.80	27.00	33.50	28.7	**21.8**	**17.0**	**17.0**	100
OBC-099	42 Coity Road, Bridgend	SS 290663 180251	Roadside	5.60	5.60	0.00	12.87		22.5	32.5	28.9	30.1	27.9	23.4	23.0	19.7	23.7	9.70	30.60	33.30	25.4	**19.3**	**15.1**	**15.1**	100
OBC-100	11 Coity Road, Bridgend	SS 290623 180374	Roadside	4.10	4.10	0.00	12.87		35.7	33.7	29.7	25.7	28.4	23.5	29.6	23.2	28.3	34.80	30.20	36.90	30.0	**22.8**	**17.8**	**17.8**	100
PENCOED																										
OBC-116	20 Hendre Road, Pencoed	SS 295886 181642	Kerbside	0.90	0.90	0.00	14.14		34	32.7	31	26.9	25.0	25.2	25.2	20.3	31.0	31.70	29.90	36.60	29.1	**22.1**	**22.1**	**22.1**	100
OBC-117	47 Hendre Road, Pencoed	SS 295641 181687	Roadside	8.40	8.40	0.00	14.14		28	26.4	25.6	20.4	19.9	16.4	18.2	15.6	22.8	22.10	25.70	22.30	22.0	**16.7**	**16.7**	**16.7**	100
OBC-118	Post on Coychurch Road, Pencoed	SS 295866 181298	Kerbside	0.90	5.00	4.10	14.14			30.9				18.5	21.6	16.9	28.4		25.00	31.40	24.7	**18.8**	**19.51**	**17.7**	58
PORTHCAWL																										
OBC-119	48 New Road, Porthcawl	SS 282072 177126	Roadside	10.00	10.00	0.00	8.05		19.1	17.7	16.5	14	13.9	17.7	17.2	14.7	14.5	17.40	16.40	18.50	16.5	**12.5**	**12.5**	**12.5**	100
OBC-120	105 New Road, Porthcawl	SS 282264 177237	Kerbside	0.90	0.90	0.00	8.05		21.3	22.7	23.5	18.2	19.2	13.6	11.7	19.2	23.4	24.30	20.00	21.20	19.9	**15.1**	**15.1**	**15.1**	100

Notes:

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

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

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

Appendix B: A Summary of Local Air Quality Management

Purpose of an Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act 1995 and associated government guidance. 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 being achieved. Where exceedances occur, or are likely to occur, the local authority must then declare an Air Quality Management Area (AQMA) and prepare a DRAFT Air Quality Action Plan (AQAP) within 18 months, setting out measures it intends to put in place to improve air quality in pursuit of the air quality objectives. The AQAP must be formally adopted prior to 24 months has elapsed. Action plans should then be reviewed and updated where necessary at least every 5 years.

For Local Authorities in Wales, an Annual Progress Report replaces all other formal reporting requirements and have a very clear purpose of updating the general public on air quality, including what ongoing actions are being taken locally to improve it if necessary.

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 11.

The table shows the objectives in units of micrograms per cubic metre µg/m3 (milligrammes per cubic metre, mg/m3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 11– 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

Appendix C: Air Quality Monitoring Data QA/QC

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 06/19) was used to obtain an overall adjustment factor of 0.76 from the input data shown in the following screenshot. This overall factor is based on 28 co-location studies where the tube preparation method and analysis laboratory used were the same as those used by BCBC.

Figure 20: National Diffusion Tube Bias Adjustment Factor Spreadsheet

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/19

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 2019
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 (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2018	KS	Marylebone Road Intercomparison	12	95	85	11.3%	G	**0.90**
Socotec Didcot	50% TEA in acetone	2018	B	Gravesham Borough Council	12	37	30	22.1%	G	**0.82**
Socotec Didcot	50% TEA in acetone	2018	B	Gravesham Borough Council	12	28	24	18.8%	G	**0.84**
Socotec Didcot	50% TEA in acetone	2018	UI	North Lincolnshire Council	12	24	16	53.5%	G	**0.65**
Socotec Didcot	50% TEA in acetone	2018	R	Swansea Council	12	33	24	39.0%	G	**0.72**
Socotec Didcot	50% TEA in acetone	2018	UB	Swansea Council	10	19	16	23.4%	G	**0.81**
Socotec Didcot	50% TEA in acetone	2018	R	Sevenoaks District Council	12	34	25	34.8%	G	**0.74**
Socotec Didcot	50% TEA in Acetone	2018	R	Wrexham County Borough Council	11	21	18	16.1%	G	**0.86**
SOCOTEC Didcot	50% TEA in acetone	2018		**Overall Factor[3] (28 studies)**				**Use**		**0.76**

Discussion of Choice of Factor to use

The bias adjustment factor applied to all 2018 data is 0.76. The applied bias adjustment factor has been calculated using the national diffusion tube bias adjustment factor spreadsheet version 06/19. Due to insufficient data capture <90%, in accordance with Defra's LAQM (TG16), Box 7.11 it is preferable not to perform a co-location study due to concerns associated with the data quality. The National Bias Adjustment Factor supplied by the LAQM Defra website, based on 28 studies, which appointed Socotec UK Ltd Didcot laboratory, gave a figure of 0.76 and so this has been adopted for ratification purposes.

Short-Term to Long-Term Data Adjustment

AMS Adjustment

The Ewenny Cross Roundabout AMS had poor annual data capture for NO_2 and PM_{10} (39.3% & 44.1%). As a result, the finalised NO_2 & PM_{10} figures presented in this report from this monitor have been annualised according to the methods presented in Box 7.9 of LAQM TG(16). Long-term AURN urban background continuous monitoring sites, within a distance of approximately 50 miles from Bridgend were selected.

Table 12– Long term AURN sites used for calculation of NO_2 annualisation ratio for Ewenny Cross Roundabout AMS

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.25	15.65	0.85
Cardiff City Centre AURN	Urban Background	20.87	23.66	0.88
Average Ratio				0.86

Table 13– Long term AURN sites used for calculation of PM_{10} annualisation ratio for Ewenny Cross Roundabout AMS

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cardiff City Centre AURN	Urban Background	17.240	16.03	1.08
Average Ratio				1.08

Diffusion Tubes Adjustment

The Nitrogen Dioxide (NO_2) obtained via the use of passive diffusion tubes during January to December 2017 were annualised via the method described in Box 7.10 of LAQM TG(16). Due to potential quality issues surrounding Ewenny Roundabout's AMS NO_2 data, long-term AURN urban background continuous monitoring sites, within a distance of approximately 50 miles from Bridgend were selected.

Table 14– Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-103

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.71	14.5	0.95
Cardiff City Centre AURN	Urban Background	21.08	23.17	0.91
Average Ratio				0.93

Table 15– Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-104

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.71	14.5	0.95
Cardiff City Centre AURN	Urban Background	21.08	23.17	0.91
Average Ratio				0.93

Table 16– Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-106

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.71	12.49	1.10
Cardiff City Centre AURN	Urban Background	21.08	19.83	1.06
Average Ratio				1.08

Table 17– Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-110

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.71	15.27	0.90
Cardiff City Centre AURN	Urban Background	21.08	23.58	0.89
Average Ratio				0.90

Table 18– Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-112

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.71	15.09	0.91
Cardiff City Centre AURN	Urban Background	21.08	23.06	0.91
Average Ratio				0.91

Table 19– Long term AURN sites used for calculation of nitrogen dioxide annualisation ratio for Diffusion Tube OBC-118

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Cwmbran AURN	Urban Background	13.71	13.33	1.03
Cardiff City Centre AURN	Urban Background	21.08	20.56	1.03
Average Ratio				1.03

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Socotec UK Ltd Didcot, using the 50% triethanolamine (TEA) in water method. Socotec UK Ltd 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 Socotec UK Ltd Didcot 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 Socotec UK Ltd 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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
BCBC	Bridgend County Borough Council
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide