Cyngor Bwrdeistref Sirol
Pen-y-bont ar Ogwr
BRIDGEND
County Borough Council

# 2020 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 2020

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# Executive Summary: Air Quality in Our Area

## Public Health

What has become distinctly apparent is that air Pollution is a local and national problem. Long-term exposure reduces life expectancy by increasing mortality, as well as increasing morbidity risks from heart disease and strokes, respiratory diseases, lung cancer and other effects.

What we know is that poor air quality in Wales poses as a significant concern for Public Health, regarded as the most significant environmental determinant of health. Its associated adverse risk to public health is particularly prevalent within urban areas and near major roads. The pollutants of primary concern for public health are particulate matter and primary/ secondary derived nitrogen dioxide ($NO_2$). Both pollutants primarily originate from motor vehicles.

The UK expert Committee on the Medical Effects of Air Pollution (COMEAP) estimates that air pollution is responsible for "an effect equivalent of between 28,000 and 36,000 deaths (at typical ages) each year". This does not mean there are 'actual' deaths from air pollution exposure; rather, that the reduced life expectancy which everyone experiences because of air pollution exposure (6-8 months on average, but could range from days to years) is 'equivalent' to between 28,000 and 36,000 deaths when summed. In Wales, based on the latest data available (for 2017), Public Health Wales estimates the burden of long-term air pollution exposure to be the equivalent of 1,000 to 1,400 deaths (at typical ages) each year.

Examining the most recent datasets (2017) made available by Public Health Wales for the total number of all-cause non-accidental deaths registered in the Cwm Taff University Health Board area, the long term mortality burden attributable to air pollution (fine particulate matter and nitrogen dioxide combined) is an estimated effect equivalent to 92- 135 deaths.

Despite the efforts made by national government and local authorities there is an apparent disconnection between air quality management and Public Health. The status of Air quality management in Wales focuses upon a hotspot approach and fails to reference other factors such as socioeconomic status or exposure to other environmental determinants of health.

Fundamentally, it is plausible that air pollution affects everyone to some extent. Whilst the legislative air quality limit values are based on epidemiological evidence and are ultimately intended to protect public health, there is also recognition that health effects may be experienced below these

thresholds for some of the key pollutants (e.g. $PM_{2.5}$ and $NO_2$), particularly affecting most susceptible groups: young children, the elderly and those with pre-existing health conditions and comorbidities. Acknowledged as the triple jeopardy concept- air pollution combines with other aspects of the social and physical environment to create an inequitable disease burden on more deprived parts of society; populations of areas with low socioeconomic status are prone to exacerbated effects from exposure to air pollution, in part as they are more likely to suffer pre-existing health conditions as a result of their poorer living conditions and lifestyle, but also as they are more vulnerable, being more likely to be living in areas with higher levels of air pollution.

## 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 ($NO_2$) & 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 one automatic air quality monitoring site located at the vestry of Soar Chapel, Rhiwceiliog (Rockwool Ltd). The site monitors on a 24/7 basis measuring levels of $SO_2$. As noted in previous reports SRS/ BCBC does have ownership of additional automatic monitoring equipment which can be used to examine levels of NO2 & PM10. This equipment has been decommissioned from its previous siting and is scheduled to be commissioned in the near future at a specific location on Park Street within the AQMA's established boundary.

**Non-automatic Monitoring Sites**- In 2019 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 2019. Existing non-automatic $NO_2$ monitoring locations were decommissioned due to continued compliance and new $NO_2$ monitoring locations were commissioned to strengthen understanding in existing monitored areas, such as the Park Street AQMA and Cowbridge Road. New $NO_2$ monitoring locations have also been established to account for elevated traffic flows, introduction of traffic management systems and foreseeable development, all with nearby relevant exposure.

In addition to the outlined established non-automated monitoring network, as discussed in the 2019 Annual Air Quality Progress Report (APR); funded externally by Natural Resources Wales (NRW) as part of the Citizen Science project, commissioned by NRW and commencing in April 2019, air quality monitoring services was provided by Shared Regulatory Services (SRS) on behalf of BCBC for a number of schools premises located in Bridgend;

-Bridgend College;
-Oldcastle Primary School;
-Pen-y-bont Primary School;
-Pencoed Comprehensive School;
-Newton Primary School;
-Cwmfelin Primary School; and
-Bryncethin Primary School

These particular schools were chosen based upon local knowledge of the area, previous history, as well as focusing upon annual average daily traffic (AADT) flows of nearby road networks. Where road links are susceptible to traffic volumes greater than 10,000 AADT or 5,000 AADT (narrow streets) it is best practise to consider these areas for potential air quality concerns.

The air quality monitoring specifically targeted levels of nitrogen dioxide (NO2), known as a transport derived pollutant, utilising the recognised non-automated monitoring method to support the collection of datasets. The objective of the monitoring project was to examine and record levels of nitrogen dioxide ($NO_2$), a known traffic derived pollutant. The project was funded for one year, whereby the datasets collected were intended to be used a driver to work with the monitored schools to influence behavioural change and raise awareness for air quality concerns.

Unfortunately NRW have confirmed that there is no available budget to financially support the project any further, however it is confirmed that all monitored locations were compliant with the annual and 1- hour average legal air quality objectives. Representatives for each school were contacted in February 2020 to notify them of the discontinuation and compliant results to date.

Bridgend Council's 2018 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 Welsh Government's (WG) Policy Guidance and Section 83 of the Environment Act 1995, SRS/ BCBC was required to legally declare an Air Quality

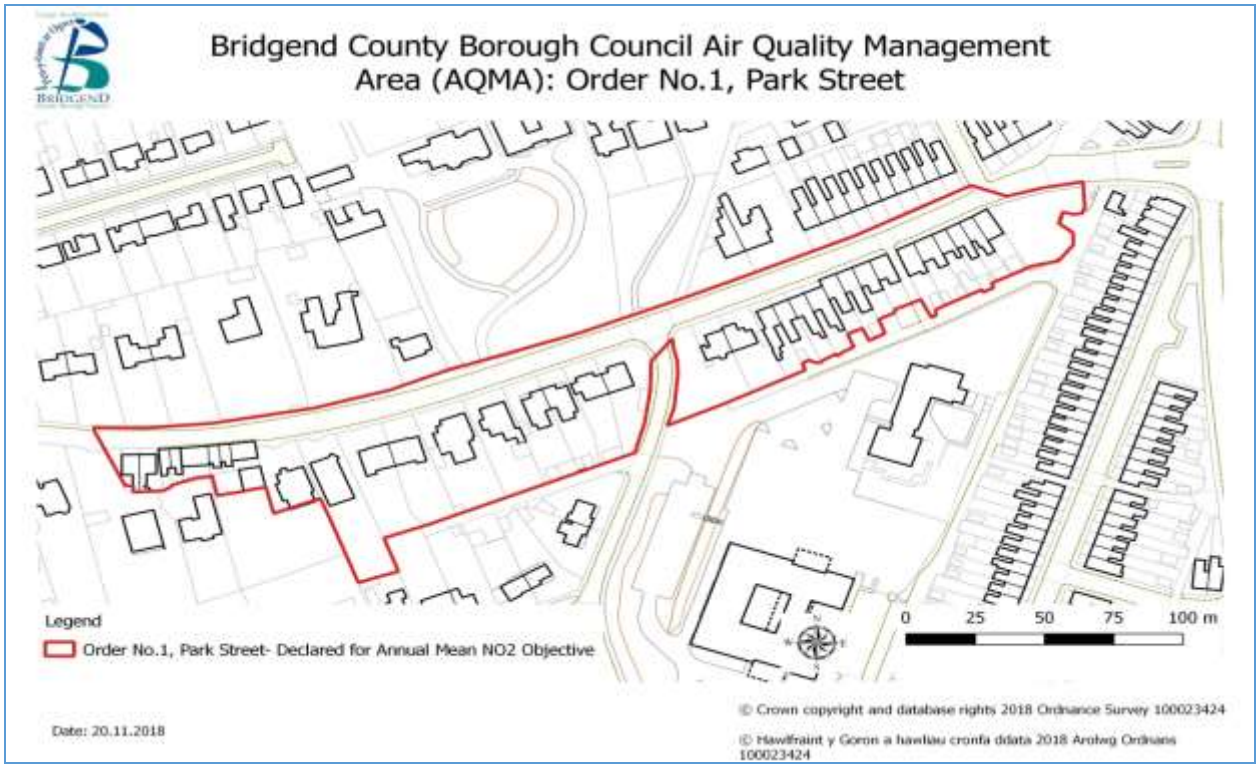
Management Area (AQMA) for Park Street, and in doing so raise an AQMA order that defines the detail and locality of the AQMA.

**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**



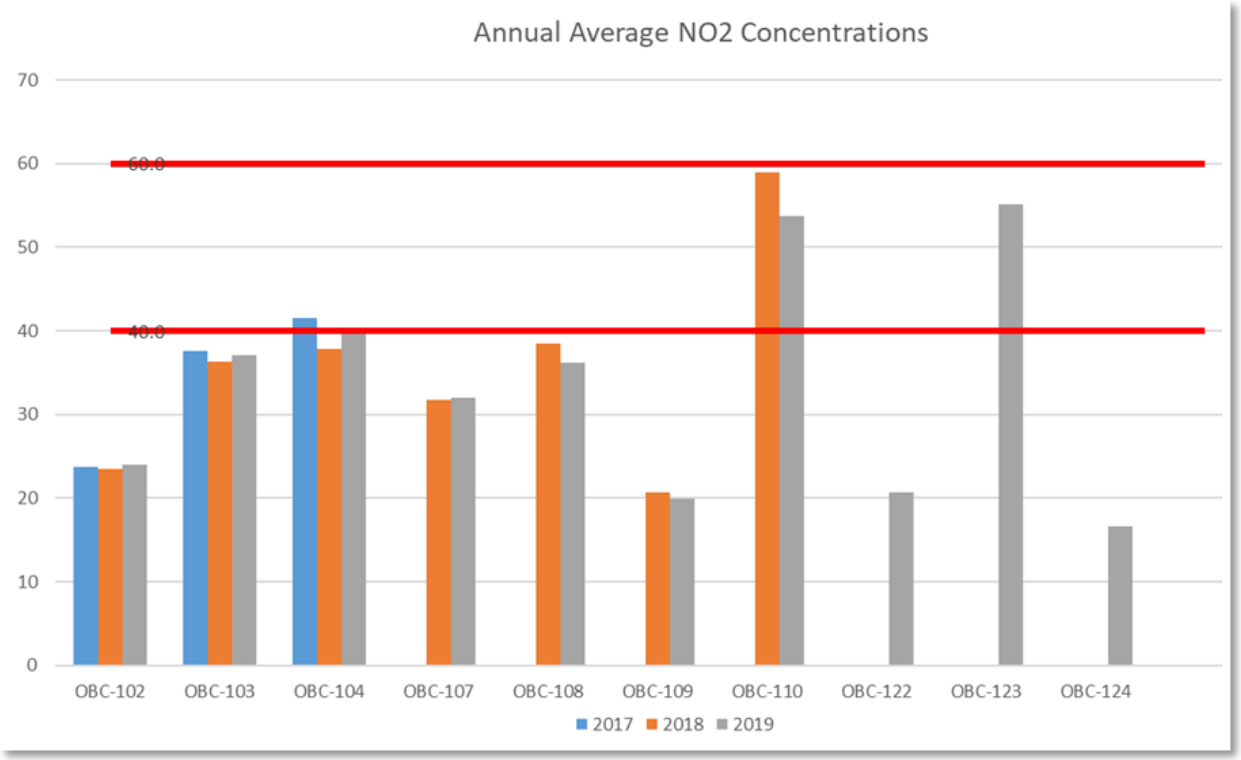

Since 2017, monitoring for $NO_2$ was further increased along Park Street and adjoining road networks. Figure 3 illustrates the network of monitoring for Park Street & Tondu Road.

**Figure 3 - 2019 $NO_2$ Diffusion Tube Monitoring Locations, Park Street**


This Annual Progress Report confirms that in 2019 air quality was a prevalent concern along Park Street and coincides with the geographical boundary of the Park Street, Bridgend AQMA Order raised on the 1st January 2019. It is also noted that elevated annual average air quality levels exist in close proximity to Park Street along adjoining road networks where relevant exposure is apparent.

Figure 4 illustrates the annual average $NO_2$ datasets recorded at sensitive receptor locations within and in close proximity to the Park Street AQMA boundary.

**Figure 4- Annual average levels of $NO_2$ examined at sensitive receptor locations within and in close proximity to Park Street AQMA boundary**




It is noted that monitoring undertaken at monitoring sites **OBC-110 & OBC-123**, located on Park Street residential facades, 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 figures examined at sites OBC-110 & OBC-123 are calculated at **53.7µg/m3 & 55.2µg/m3** which is therefore considered relatively 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 an elevated annual average level of 36.2µg/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.

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

With particular focus on nitrogen dioxide ($NO_2$), as discussed earlier in this report; 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.

Planning permission has been received for the AMS at the highlighted address, however although a final legal agreement is agreed between Council Officers and Quaker representatives for the use of the proposed AMS, due to the current unprecedented circumstances (COVID-19), this has somewhat hindered developments to formalise the agreement. At the time of writing this report it has been agreed to reconvene the formalisation of the agreement and verify some details about the site's implementation.

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.

Welsh Government's 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.

As stated by WG's policy guidance the following ways of working should be incorporated when devising any AQAP.

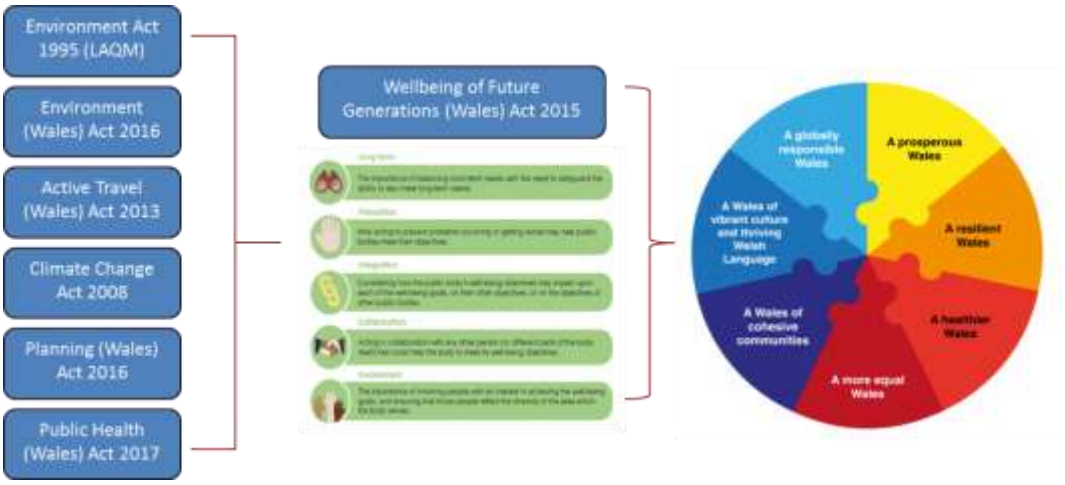
- looking to the **long term** so we do not compromise the ability of future;
- generations to meet their own needs;
- taking an **integrated** approach;
- **involving** a diversity of the population in the decisions affecting them;
- working with others in a **collaborative** way to find shared sustainable;
- solutions; and
- acting to **prevent** problems from occurring or getting worse.

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 **5** 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 5- The Well- being of Future Generations (Wales) Act 2015 Matrix**



**Welsh Government, Clean Air Plan for Wales, Healthy Air Healthy Wales**

At the time of drafting this report WG has published its latest plan which underpins its commitment and long term ambition to improve air quality in Wales. The plan sets out WG's policy direction and proposed actions to reduce air pollution to support improvement in public health and the natural environment. Actions are proposed across four thematic themes, examined as People, Environment, Prosperity and Place.

The plan and its proposed actions is available at
https://gov.wales/sites/default/files/publications/2020-08/clean-air-plan-for-wales-healthy-air-healthy-wales.pdf

SRS/ BCBC support the aspirations of the plan and welcome the development of more stringent mitigation measures that will enable a cohesive approach to air quality management and protecting public health and the natural environment.

## Actions to Improve Air Quality

### Improved monitoring

- In an effort to improve its monitoring capabilities, for 2019, 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 was 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.

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.*

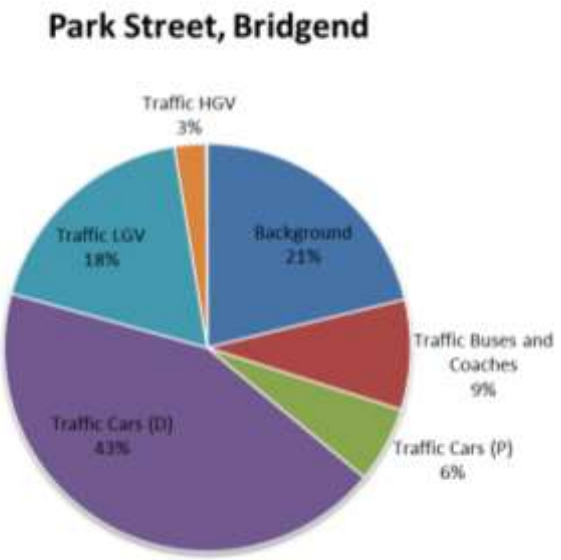
As highlighted and as part of the LAQM statutory duties, from the date of raising the AQMA Order (in this instance 1st January 2019) SRS and BCBC has 18 months in which to prepare a DRAFT Action Plan to improve air quality in the area, and once agreed, this plan must be formally adopted before two years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

**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 6- 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, Austria[2].

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

### Work Steering Group and Public Engagement

In order to develop ideas and ensure an effective AQAP which considers all aspects, prioritising public health, an AQAP Work Steering Group has been put together consisting of representatives from Bridgend's various departments, as well as persons from the local PSBs.

In addition to works and discussions held by the AQAP Work Steering Group, a number of informal 'drop-in' sessions have been facilitated by SRS/ BCBC in December 2019 which provided opportunity for the public find out more about air quality in the area, AQAP updates and suggest ideas for the AQAP.

### Proposed Mitigation Measures

Collaborating the ideas and suggestions made to date a list of proposed mitigation measures has been put together. Sub-section 1.3 displays Table 2 outlining proposed mitigation measures for the Park Street AQMA.

An indicative cost and benefit score has also been provided for each action in Table 3. The potential actions have been scored for cost benefit and the resulting rank in order to identify the most deliverable actions. Estimated costs (1 for high cost to 5 for low cost) were multiplied by a sum of the likely benefit from reducing pollution and people's exposure to the pollution (10 for high and 1 for low) to provide a score. The highest score shows the greatest cost benefit according to the opinions of the project team. The measures in Table 3 are listed in order of their ranking score (most deliverable at the top).

It is acknowledged that some measures may score highly despite not affecting air pollution, because they instead may help reduce people's exposure to the pollution.

Agreed by the AQAP Working Steering Group and coincided with the feedback received at the December 2019 public engagement sessions, the extent of the air quality levels examined on Park Street are derived by the nature of traffic flows utilising the network. Queuing and inconsistent traffic flows would appear to be the principal cause of the portrayed poor air quality levels. It is also concerning given the level of surrounding development scheduled, there is the likelihood of increased pressure for the network and consequentially air quality levels along Park Street. Following the indicative Cost Benefit Analysis a decision was made by the AQAP Work Steering Group to pursue those mitigation options that will manage and improve traffic flows through the Park Street AQMA

and in doing so deliver air quality improvements in the **shortest time possible,** and in line with the ambitions of Welsh Government and BCBC; reduce levels to as low as reasonably practicable.

**Next Steps- Detailed Transportation and Air Quality Study**

It is necessary that in order to proceed with the development of a successful and meaningful AQAP the Council would need to make the decision whether to undertake detailed transport and air quality assessments to quantify and ensure that correct mitigation measures are implemented. With this viewpoint BCBC/ SRS has taken the informed decision to agree and pursue the necessary works to examine the impacts expected of a preferred mitigation options package;

The preferred options include;

1. Deny all access onto St Leonards Road (Measure 18);
2. Implement a 4 phase junction (3 traffic, 1 pedestrian) at the Heol-y-Nant turning (Measure 21); and
3. Optimise the Park Street/ Angel Street/ Tondu Road Junction (Measure 20).

It is proposed that SRS/ BCBC seek external consultant support to undertake transport and air quality modelling for the above options to illustrate any benefits for air quality levels. As the above measures work in conjunction with one another any transport and air quality modelling undertaken would assess the options cumulatively as one preferred scenario. Works are now underway to progress with the assessments working with external consultants to ensure a suitable scope of works.

To be clear; any AQAP is an evolving document, therefore those measures contained within this document and produced to date can be added to or revised somewhat. SRS/ BCBC encourages anyone to submit their opinions and suggestions to the dedicated email address (AirQuality-SRSWales@valeofglamorgan.gov.uk).

## Local Priorities and Challenges

**Challenges**

Due to the unprecedented circumstances, this has had an impact on the local air quality monitoring and the development of the action plan for the Park Street AQMA, in terms of its scheduling and delivery. Welsh Government have been made aware of delays to delivering the action plan and making an appropriate decision to undertake any detailed transport and air quality modelling to

support the action plan. In doing so Welsh Government recognise the need to allow for an extension period to facilitate the delivery of the DRAFT action plan. It has been confirmed that a 6 month extension for the DRAFT action plan has been accepted by Welsh Government's Minister, therefore the deadline for submission is the 31st December 2020. Despite the difficulties SRS do see the completion of the action plan as a necessity and are committed to producing the DRAFT action plan.

During the COVID-19 pandemic local air quality monitoring has continued in Bridgend, however some non-automated results for a few selected months in 2020 will not be available for next year's reporting due to 'lockdown' measures introduced in the month of March 2020. Local Authorities including SRS at the time of the 'lockdown' measures being imposed looked for official clarity to ascertain if the monitoring was classified as essential in view of quietened road networks which may lead to a favourable bias, as well as difficulties faced by analytical laboratories utilised by SRS which had to adapt their working practises which added to postage delays.

Air quality data collection has been deemed as an essential service by Welsh Government, whereby monitoring was resumed for May 2020. The results for 2020, which will be recorded in the 2021 Annual Progress Report will need to be corrected/ ratified to account for the gaps in the annual datasets incurred by the COVID situation. The exclusion of this data will be further discussed, however at this moment in time, results gathered during the COVID pandemic, where it is apparent that road traffic volumes have decreased significantly are perhaps not representative of a true business as usual scenario which could generate a bias/ underestimate of levels.

The main priorities for SRS and Bridgend 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.

## 2019 Annual Progress Report

BCBC's 2019 Annual Progress Report highlighted general compliance for monitoring undertaken in 2018, however it did note the elevated and exceeding annual average levels of nitrogen dioxide ($NO_2$), especially within and close to the established Park Street AQMA boundary. The report outlined the works initiated to develop an effective Air Quality Action Plan (AQAP) to support the AQMA. In doing so the report highlighted the commitment of a designated work steering group to develop appropriate mitigation measures that would not only benefit the Park Street AQMA "hot spot" but would also generate wider air quality benefits to improve and protect the amenity of public health.

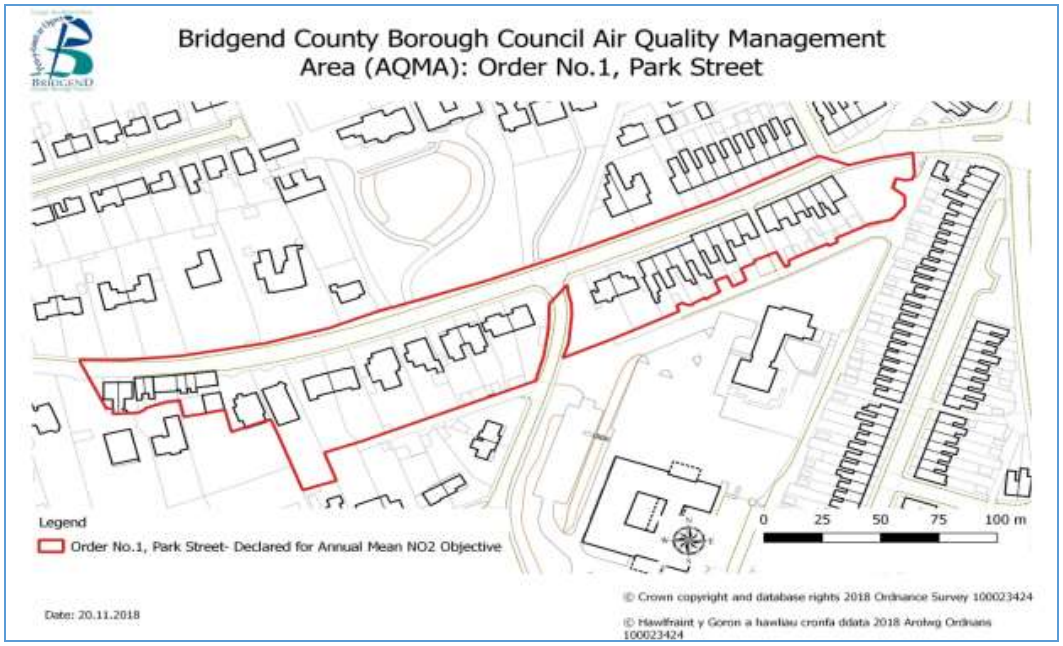
The report specified commitments to gather public engagement on the AQAP's development via public drop in sessions through the course of December 2019. It outlined how suggested mitigation measures would be assessed and indicated that detailed transportation and air quality modelling would be required to quantify the impacts derived by any preferred options. The report also noted the need for enhanced monitoring capabilities in the form of automated monitoring within the Park Street AQMA to enhance understanding and provide a platform for public to access data.

## 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 7- 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

SRS/ BCBC are adhering 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. As highlighted, due to the unprecedented circumstances, this has had an impact on the local air quality monitoring and the development of the action plan for the Park Street AQMA, in terms of its scheduling and delivery. Welsh Government have been made aware of delays to delivering the action plan and making an appropriate decision to undertake any detailed transport and air quality modelling to support the action plan. In doing so Welsh Government recognise the need to allow for an extension period to facilitate the delivery of the DRAFT action plan. It has been confirmed that a 6 month extension for the DRAFT action plan has been accepted by Welsh Government's Minister, therefore the deadline for submission is the 31st December 2020. Despite the difficulties SRS do see the completion of the action plan as a necessity and are committed to producing the DRAFT action plan.

**Table 2- Proposed AQAP Measures for Park Street, Bridgend AQMA**

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| 1 | Public health information campaign (highlight most vulnerable groups and people with certain health concerns; asthmatics, Chronic Obstructive Pulmonary Disease etc.). Increase public education messages which promote healthier choices for short journeys (<2 miles). | Public Information | Via the internet/ leaflets/ other | Cwm Taf Morgannwg University Health Board/ Public Health Wales/ BCBC/ SRS/ Charity organisations; Global Action Plan; Living Streets/ TfW | The number of hits on website.<br><br>Number of initiatives delivered. Delivery of a public education campaign.<br><br>Cross reference obtained air quality results to the applicable air quality objectives.<br>Improvements to those figures outlined in Bridgend LTP 2015 using data acquired by 2011 Census;<br>The 2011 census total, 59,235 of Bridgend residents travelled to work with **82.5%** travelling by car, or 83% including taxis. About **75%** of car users were classified as the driver which meant that they travelled alone; 5.5% used public transport; 9% walked or cycled with cycling contributing less than 1% (0.8%); other transport modes including motorcycle constituted 1.1% | No reduction in concentration in Nitrogen Dioxide, however there would be an exposure reduction for residents. | Improved capacity on road network/ reduced congestion/ improved journey times.<br>Improved public awareness.<br>Related health improvements. | Unknown |
| 2 | Support the creation of a local "Air Quality Action Group". | Public Information | Via the internet/ leaflets/ other | BCBC/ SRS/ Local Communities Forum/ local Cllrs | Number of associated members. | Negligible | Improved awareness of the issues locally | Unknown |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 3 | Increase the monitoring capabilities of the Council with investment in more air quality monitoring techniques. Creation of an online platform linked to the Air Quality Index. | Public Information | Via the internet | BCBC/ SRS; possibility to link with Public Health Wales and an appointed approach in Cardiff. | Cross reference obtained air quality results to the applicable air quality objectives. | N/A | Improved Public awareness. Improved understanding for air quality trends with the production of diurnal datasets. Increased understanding for other associated pollutants; PM10/ PM2.5. | Ongoing |
| 4 | Electronic "pollutant signage" within AQMA and local area; Signage encourages drivers to switch off their engines in standing traffic queues, linked to signalling. Example; "Do you need to drive today?" | Public Information/ Traffic Management | Other | BCBC/ SRS | Cross reference obtained air quality results to the applicable air quality objectives. | Unknown | Improved Public awareness/ Increase in the use of sustainable alternatives. | Unknown. |
| 5 | Signs and banners for engine idling; Signage at key intersections, near junctions and on public transport / taxis encouraging people to switch off engines when traffic comes to a stop. | Public Information/ Traffic Management | Other | BCBC/ SRS | Cross reference obtained air quality results to the applicable air quality objectives. | Unknown | Improved Public awareness. | Unknown. |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| 6 | Develop Supplementary Planning Guidance (SPG) to provide a specific guidance for air quality in accordance with new developments. | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | BCBC/ SRS | Production of an SPG. | N/A. | Improved Street Scene. Improvements for other environmental factors such as noise and odour. Optimise the planning process. Reduced congestion. | Ongoing |
| 7 | Planning guidance for the provision of Electric Vehicle Charging Points. To note; EV points are now compulsory in England | Policy Guidance and Development Control | Other | BCBC | Number of properties where a power spur for an electric vehicle charge point is installed.<br><br>Number of planning applications approved with a vehicle charge point as an advisory or required condition. | Unknown | % reduction in NOx emissions compared to a diesel/ petrol.<br><br>Reduction in PM10 and PM2.5, although some studies do suggest increases associated with EV, therefore enhanced monitoring capabilities particularly for PM is crucial. | Unknown |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| 8 | Revise BCBC's Walking and Cycling Strategy; Revise the existing 2009 document | Policy Guidance and Development Control/ Promoting Travel Alternatives | Promotion of cycling | BCBC/ SRS | Production of a revised document. | N/A | Related Health improvements.<br><br>% reduction in NOx emissions compared to a diesel/ petrol.<br><br>Reduction in PM10 and PM2.5. | Unknown |
| 9 | Endorse SP19; Biodiversity and Development. Further influence the use of green infrastructure for new developments. | Policy Guidance and Development Control | Other | BCBC/ SRS | Number of trees planted. | Unknown. Provision of a barrier to protect residents and visitors. | Improved street scene.<br>Absorption of Greenhouse gas emissions. | Ongoing |
| 10 | Implement 'smoke control zone' for Bridgend. Wood burners installations would need authorisation to operate and receive permissions in accordance with the Clean Air Act. | Policy Guidance and Development Control | Other policy | BCBC/ SRS | Number of nuisance complaints generated. | Unknown | % reduction in NOx emissions.<br><br>Reduction in PM10 and PM2.5. | Unknown |
| 11 | School Active Travel | Promoting Travel | Incentivise active | BCBC/ SRS/ Living | Number of participating schools. | N/A | Related Health | Ongoing |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| | Plans | Alternatives | travel campaign & infrastructure | Streets "WOW" Scheme/ Sustrans/ WG Young Dragons Educational Package/ Global Action Plan | | | improvements. Improved public awareness. Reduced Congestion. | |
| 12 | Encourage/ Facilitate homeworking; BCBC/ SRS is one of the largest employers in Bridgend and therefore could look to adopt more flexible/ agile working patterns | Promoting Travel Alternatives | Encourage / Facilitate home-working. | BCBC/ SRS | Produce Healthy Travel Charter. Number of individuals enrolled on programme. | Unknown | Quality of life improvements.<br><br>Saved costs on office space.<br><br>Eliminate time lost travelling to office meaning shorter working days.<br><br>Reduced congestion during peak times. | Ongoing |
| 13 | Work with local businesses to develop active travel to work programmes. Cardiff Staff Travel Charter currently being rolled out but only for public sector establishments. | Promoting Travel Alternatives | Other | BCBC/ Cwm Taf Morgannwg University Health Board/ Public Health Wales. | Produce Healthy Travel Charter. Number of individuals enrolled on programme. | Unknown | Quality of life improvements.<br><br>Saved costs on office space.<br><br>Eliminate time lost travelling to office meaning shorter working days.<br><br>Reduced congestion during peak times. | Unknown |
| 14 | Park and Ride facilities to be implemented at strategic sites | Alternatives to private vehicle use | Bus Park and Ride scheme | BCBC/ Bus operators/ TfW | Bus patronage figures. | Unknown | Reduced congestion during peak times. | Unknown |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| | (Broadlands)/ Shuttle bus service linking Bridgend train station to strategic points (Broadlands/ Hospital/ Coity/ McArthur Glen). There is also the potential to look at shared shuttle service for persons accessing proposed Health Centres. | | | | | | Bus services profit. | |
| 15 | Anti-idling implemented as TROs specific to sensitive areas such as outside schools, hospitals, care homes, as well as Park Street AQMA.<br><br>**Under Road Traffic (Vehicle Emissions) (Fixed Penalty) Regulations 2003, regulation 6 (3) BCBC has the power to implement "no vehicle idling" areas. BCBC will need to assess the feasibility and likely benefits.**<br><br>Run this as a pilot study. | Traffic Management | Anti-idling enforcement | BCBC | Cross reference obtained air quality results on Park Street to the applicable air quality objectives. | Anti-idling implemented as a TRO specific to Park Street AQMA. | Related Health improvements. Improved public awareness. | Unknown |
| 16 | Introduce a pilot | Traffic Management | Reduction of speed | BCBC | Evaluation of annual air quality | Unknown | Improved road | Unknown |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| | scheme "20mph speed limit" to Park Street. | | limits | | datasets for NO2.<br>Reduction in vehicle speeds via traffic flow analysis<br>Any marked improvement in collision/ incident rates.<br>Cross reference obtained air quality results on Park Street to the applicable air quality objectives. | | safety. | |
| 17 | Ghost right hand turn onto Heol-Y-Nant. | Traffic Management | Strategic highway improvement | BCBC | Reduction in capacity captured via traffic flow analysis. | Unknown | Reduced congestion. | Ongoing |
| 18 | Deny all access onto St Leonard's Road for all traffic movements. | Traffic Management | Strategic highway improvement | BCBC | Cross reference obtained air quality results on Park Street to the applicable air quality objectives. | Unknown | Reduced congestion.<br>Improved Road Safety. | Unknown |
| 19 | Deny a through route movement from Angel Street onto Park Street. | Traffic Management | Strategic highway improvement | BCBC | Reduced capacity on Park Street captured via traffic flow analysis. | Unknown | Reduced Congestion on Park Street. | Unknown |
| 20 | Optimise the traffic signals at the Tondu Rd/ Park Street/ Angel Street Junction- Adopt a MOVA system. Utilise external consultancy expertise to undertake a feasibility study. | Traffic Management | Strategic highway improvement | BCBC/SRS/ Externally Appointed Consultant | Reduced capacity on Park Street captured via traffic flow analysis.<br>Cross reference obtained air quality results on Park Street to the applicable air quality objectives. | Unknown | Improved road junction efficiency.<br>Reduced Congestion | Unknown |
| 21 | Implement a 4 phase junction (3 traffic, 1 pedestrian) at the Heol-y-Nant turning | Traffic Management | Strategic highway improvement | BCBC/SRS/ Externally Appointed Consultant | Reduced capacity on Park Street captured via traffic flow analysis.<br>Cross reference obtained air quality results on Park Street to the applicable air quality objectives. | Unknown | Improved road junction efficiency.<br>Reduced Congestion | Unknown |
| 22 | Bus Programme- Strategic Bus Network. Buses not to use St | Transport Planning and Infrastructure | Bus Route Improvements | BCBC/ Bus Operators | Customer satisfaction questionnaires from the bus operators. | Unknown | Improved Road safety at the Park Street/ St Leonard's | Unknown |

| No. | Measure | EU Category | EU Classification | Responsibility/ Lead Authority | Key Performance Indicator | Target Annual Emission Reduction in the AQMA | Associated Improvements | Timescale |
|---|---|---|---|---|---|---|---|---|
| | Leonard's Road due to the experienced access constraints onto and off Park Street. | | | | | | Junction. Reduced congestion on Park Street. | |

**Table 3- Cost Benefit Analysis for Measures proposed for Park Street, Bridgend AQMA**

| Measure No. | Cost benefit (cost x [pollution reduction + exposure reduction] = score) | | | | | |
|---|---|---|---|---|---|---|
| | **Measure** | **Cost**<br>1 = >£1m<br>2 = £250k-1m<br>3 = £50k - 250k<br>4 = £10k - £50k<br>5 = <£10k | **Air pollution reduction**<br>10 = greatest air quality gain<br>1 = least air quality gain | **Exposure reduction**<br>10 = greatest exposure reduction<br>1 = least exposure reduction | **Score = cost x benefit** | **Rank**<br>**1 = most cost benefit effective** |
| 20 | Optimise the traffic signals at the Tondu Rd/ Park Street/ Angel Street Junction. | 4 | 6 | 2 | 32 | 1 |
| 1 | Public health information campaign. | 5 | 2 | 4 | 30 | 2 |
| 15 | Anti-idling implemented as TROs specific to sensitive areas such as outside schools, hospitals, care homes, as well as Park Street AQMA. | 5 | 4 | 2 | 30 | 2 |
| 18 | Deny all access onto St Leonard's Road for all traffic movements. | 4 | 5 | 2 | 28 | 3 |
| 6 | Develop Supplementary Planning Guidance (SPG). | 5 | 3 | 2 | 25 | 4 |
| 16 | Introduce a pilot scheme "20mph speed limit" to Park Street. | 5 | 3 | 2 | 25 | 4 |

| Measure No. | Cost benefit (cost x [pollution reduction + exposure reduction] = score) | | | | | |
|---|---|---|---|---|---|---|
| | **Measure** | **Cost**<br>1 = >£1m<br>2 = £250k-1m<br>3 = £50k - 250k<br>4 = £10k - £50k<br>5 = <£10k | **Air pollution reduction**<br>10 = greatest air quality gain<br>1 = least air quality gain | **Exposure reduction**<br>10 = greatest exposure reduction<br>1 = least exposure reduction | **Score = cost x benefit** | **Rank**<br>**1 = most cost benefit effective** |
| 21 | Implement a 4 phase junction (3 traffic, 1 pedestrian) at the Heol-y-Nant turning | 3 | 6 | 2 | 24 | 5 |
| 7 | Planning guidance for the provision of Electric Vehicle Charging Points. | 5 | 3 | 1 | 20 | 6 |
| 2 | Support the creation of a local "Air Quality Action Group". | 5 | 2 | 1 | 15 | 7 |
| 10 | Implement 'smoke control zone' for Bridgend. | 5 | 2 | 1 | 15 | 7 |
| 12 | Encourage/ Facilitate homeworking. | 5 | 2 | 1 | 15 | 7 |
| 17 | Ghost right hand turn onto Heol-Y-Nant. | 5 | 2 | 1 | 15 | 7 |
| 14 | Park and Ride facilities to be implemented at strategic sites. | 2 | 4 | 3 | 14 | 8 |
| 4 | Electronic "pollutant signage" within AQMA and local area. | 3 | 2 | 2 | 12 | 9 |
| 5 | Signs and banners for engine idling | 3 | 2 | 2 | 12 | 9 |

| Measure No. | Cost benefit (cost x [pollution reduction + exposure reduction] = score) | | | | | |
|---|---|---|---|---|---|---|
| | **Measure** | **Cost**<br>1 = >£1m<br>2 = £250k-1m<br>3 = £50k - 250k<br>4 = £10k - £50k<br>5 = <£10k | **Air pollution reduction**<br>10 = greatest air quality gain<br>1 = least air quality gain | **Exposure reduction**<br>10 = greatest exposure reduction<br>1 = least exposure reduction | **Score = cost x benefit** | **Rank**<br>**1 = most cost benefit effective** |
| 11 | School Active Travel Plans | 4 | 2 | 1 | 12 | 9 |
| 22 | Bus Programme- Strategic Bus Network. | 3 | 2 | 2 | 12 | 9 |
| 3 | Increase the monitoring capabilities of the Council. | 4 | 1 | 2 | 12 | 9 |
| 19 | Deny a through route movement from Angel Street onto Park Street. | 4 | 2 | 1 | 12 | 9 |
| 8 | Revise BCBC's Walking and Cycling Strategy. | 5 | 1 | 1 | 10 | 10 |
| 9 | Endorse SP19; Biodiversity and Development. Further influence the use of green infrastructure for new developments. | 5 | 1 | 1 | 10 | 10 |
| 13 | Work with local businesses to develop active travel to work programmes. | 5 | 1 | 1 | 10 | 10 |

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

## 2.1 Summary of Monitoring Undertaken in 2019

### 2.1.1 Automatic Monitoring Sites

Within Bridgend, there is one automatic monitoring location site; Soar Chapel Rhiwceilog.

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 **Error! Reference source not found.** and details of the site are contained in Table 4. 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.

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 previous Ewenny Cross Roundabout AMS location SRS/ BCBC decided to decommission the Ewenny Cross Roundabout AMS and transfer the equipment to a specific location on Park Street to be within the Park Street AQMA. As discussed the implementation of this site has been delayed by the current unprecedented circumstances, however SRS/ BCBC are working towards finalising and initiating this work prior to the end of 2020.

**Figure 8 - Map of Rockwool Automatic Monitoring Site (Vestry of Soar Chapel, Rhiwceiliog)**

**Table 4- 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? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 2019, 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 2019;

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 (Figure 15- Area G);
h. Porthcawl (Figure 16- Area H);
i. Pencoed (Figure 17- Area I); and
j. Tremains Road (Figure 18- Area J)

The location, site description and data gathered since January 2019 are given in Table 5. The data has been gathered over a period of 12 months between January and December 2019, 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$^{o}$C and then adjusted to 20$^{o}$C to allow direct comparison with EU limits. The national bias correction factor for this laboratory was utilised. Adopting best practice guidance and adopting a conservative approach a bias correction factor of 0.75 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 Location**

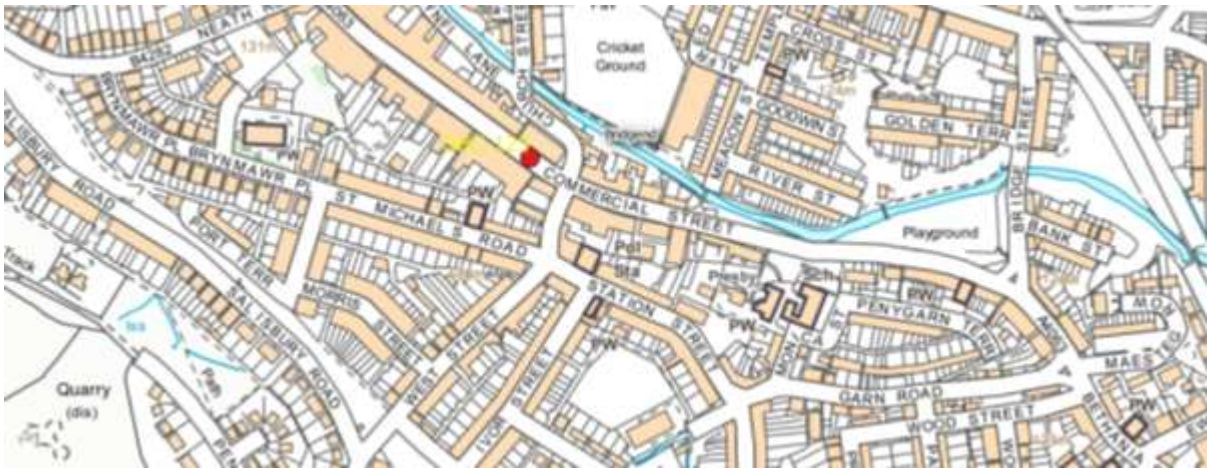



**Figure 16- Area H- Porthcawl $NO_2$ Diffusion Tube Locations**

**Figure 17- Area I- Pencoed $NO_2$ Diffusion Tube Locations**


**Figure 18- Area J- Tremains Road $NO_2$ Diffusion Tube Location**

**Table 5- Details of Non-Automatic Monitoring Sites 2019**

| 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-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-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 |
| OBC-121 | C | Cowbridge Road | Roadside | 291540 | 178734 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | 5.00 | 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 |
| OBC- 122 | E | St Leonards Road | Kerbside | 289919 | 179755 | 2.0 | $NO_2$ | N | N | (N) 4.00 | 1.0 | N |
| OBC- 123 | E | Park Street | Roadside | 290014 | 179698 | 2.0 | $NO_2$ | Y | N | (Y) 0.00 | 0.9 | Y |
| OBC- 124 | E | Park Street | Roadside | 289859 | 179710 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | 7.0 | 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-125 | G | Commercial Street, Maesteg | Roadside | 285299 | 191136 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | 2.00 | 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 |
| TREMAINS ROAD | | | | | | | | | | | | |
| OBC-126 | J | Tremains Road | Roadside | 291125 | 179517 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | 8.20 | Y |
| SCHOOL MONITORING | | | | | | | | | | | | |
| Pencoed Comprehensive Main Reception Entrance | | | Roadside | 291032 | 179062 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Pencoed Comprehensive Playground | | | Roadside | 290906 | 179136 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Bridgend College West | | | Roadside | 290537 | 179283 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Bridgend College East | | | Roadside | 290518 | 179312 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Penybont Primary Main Entrance | | | Roadside | 290852 | 180113 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Penybont Primary Car Park | | | Roadside | 290857 | 180060 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Oldcastle Primary Main Entrance | | | Roadside | 295895 | 181124 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Olcastle Primary Playground | | | Roadside | 295871 | 181115 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Cwmfelin Primary  Main Entrance | | | Roadside | 282488 | 177284 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Cwmfelin Primary Playground | | | Roadside | 282494 | 177297 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Newton Primary Reception | | | Roadside | 286290 | 189590 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Newton Primary Playground | | | Roadside | 286313 | 189555 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Bryncethin Primary Playground | | | Roadside | 291059 | 183745 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |
| Bryncethin Primary  Building | | | Roadside | 291081 | 183806 | 2.0 | $NO_2$ | N | N | (Y) 0.00 | | Y |

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 2019 Air Quality Monitoring Results

**Table 6– Non-automatic Annual Mean $NO_2$ Monitoring Results (2015- 2019)**

| Site ID | Site Type | Monitoring Type | Valid Data Capture 2019 (%) [1] | Within AQMA? | Annual Mean Concentration (µg/m$^3$) [2] | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015 (Bias Adjustment Factor = 0.81) | 2016 (Bias Adjustment Factor = 0.78) | 2017 (Bias Adjustment Factor = 0.77) | 2018 (Bias Adjustment Factor = 0.76) | 2019 (Bias Adjustment Factor = 0.75) |
| **TONDU ROAD ROUNDABOUT** | | | | | | | | | |
| OBC-107 | Roadside | Diffusion Tube | 92 | N | - | - | - | 31.7 | 32.0 |
| OBC-108 | Kerbside | Diffusion Tube | 100 | N | - | - | - | 38.5 | 36.2 |
| **NOLTON STREET/ EWENNY CROSS LINK/ A473 COWBRIDGE ROAD** | | | | | | | | | |
| OBC-105 | Roadside | Diffusion Tube | 92 | N | - | - | 24.6 | 22.6 | 21.2 |
| OBC-106 | Kerbside | Diffusion Tube | 92 | N | - | - | 30.4/ 25.2[2 & 3] | 26.7[2 & 3] | 24[3] |
| OBC-111 | Roadside | Diffusion Tube | 83 | N | - | - | - | 26.2 | 25.8 |
| OBC-112 | Kerbside | Diffusion Tube | 67 | N | - | - | - | 32.1[2] | 36.2[2] |
| OBC-121 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | 18.5 |
| **EWENNY CROSS ROUNDABOUT** | | | | | | | | | |
| OBC-088 | Roadside | Diffusion Tube | 100 | N | 21 | 21 | 20.3 | 21.5 | 19.6 |
| OBC-089 | Roadside | Diffusion Tube | 83 | N | 21 | 23 | 21.8 | 21.0 | 20.3 |
| OBC-090 | Roadside | Diffusion Tube | 92 | N | 23 | 21 | 19.5 | 20.9 | 20.3 |

| Site ID | Site Type | Monitoring Type | Valid Data Capture 2019 (%) [1] | Within AQMA? | Annual Mean Concentration (µg/m$^3$) [2] | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015 (Bias Adjustment Factor = 0.81) | 2016 (Bias Adjustment Factor = 0.78) | 2017 (Bias Adjustment Factor = 0.77) | 2018 (Bias Adjustment Factor = 0.76) | 2019 (Bias Adjustment Factor = 0.75) |
| OBC-113 | Roadside | Diffusion Tube | 100 | N | - | - | - | 15.9 | 14.7 |
| OBC-114 | Roadside | Diffusion Tube | 100 | N | - | - | - | 18.0 | 20.0 |
| OBC-115 | Roadside | Diffusion Tube | 100 | N | - | - | - | 22.3 | 20.9 |
| **BRIDGEND TOWN CENTRE** | | | | | | | | | |
| OBC-101 | Urban Centre | Diffusion Tube | 83 | N | - | - | 18.1[2] | 17.9 | 18.6 |
| **PARK STREET** | | | | | | | | | |
| OBC-102 | Roadside | Diffusion Tube | 100 | N | - | - | 23.7 | 23.5 | 23.9 |
| OBC-103 | Roadside | Diffusion Tube | 100 | Y | - | - | 37.6 | 36.3[2] | 37.1 |
| OBC-104 | Roadside | Diffusion Tube | 92 | Y | - | - | 41.5 | 37.9[2] | 39.8 |
| OBC-109 | Roadside | Diffusion Tube | 92 | Y | - | - | - | 20.6 | 19.9 |
| OBC-110 | Kerbside | Diffusion Tube | 100 | Y | - | - | - | **58.9**[2] | **53.7** |
| OBC-122 | Kerbside | Diffusion Tube | 75 | N | - | - | - | - | 16.7 |
| OBC-123 | Roadside | Diffusion Tube | 100 | Y | - | - | - | - | **55.2** |
| OBC-124 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | 16.6 |
| **COITY ROAD** | | | | | | | | | |

| Site ID | Site Type | Monitoring Type | Valid Data Capture 2019 (%) (1) | Within AQMA? | Annual Mean Concentration (µg/m$^3$) (2) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015 (Bias Adjustment Factor = 0.81) | 2016 (Bias Adjustment Factor = 0.78) | 2017 (Bias Adjustment Factor = 0.77) | 2018 (Bias Adjustment Factor = 0.76) | 2019 (Bias Adjustment Factor = 0.75) |
| OBC-097 | Roadside | Diffusion Tube | 92 | N | - | - | 26.3 | 24.6 | 24.8 |
| OBC-098 | Roadside | Diffusion Tube | 83 | N | - | - | 24.0 | 17.0 | 23.2 |
| OBC-099 | Roadside | Diffusion Tube | 100 | N | - | - | 23.8 | 15.1 | 22.2 |
| OBC-100 | Roadside | Diffusion Tube | 100 | N | - | - | 24.1 | 17.8 | 22.8 |
| **MAESTEG TOWN CENTRE** | | | | | | | | | |
| OBC-125 | Roadside | Diffusion Tube | 75 | N | - | - | - | - | 18.8 |
| **PORTHCAWL** | | | | | | | | | |
| OBC-119 | Roadside | Diffusion Tube | 100 | N | - | - | - | 12.5 | 12.4 |
| OBC-120 | Kerbside | Diffusion Tube | 92 | N | - | - | - | 15.1 | 16.0 |
| **PENCOED** | | | | | | | | | |
| OBC-116 | Kerbside | Diffusion Tube | 100 | N | - | - | - | 22.1 | 20.8 |
| OBC-117 | Roadside | Diffusion Tube | 100 | N | - | - | - | 16.7 | 16.9 |
| **TREMAINS ROAD** | | | | | | | | | |
| OBC-126 | Roadside | Diffusion Tube | 75 | N | - | - | - | - | 19.7 |
| **SCHOOL MONITORING[4]** | | | | | | | | | |

| Site ID | Site Type | Monitoring Type | Valid Data Capture 2019 (%) (1) | Within AQMA? | Annual Mean Concentration (µg/m$^3$) (2) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015 (Bias Adjustment Factor = 0.81) | 2016 (Bias Adjustment Factor = 0.78) | 2017 (Bias Adjustment Factor = 0.77) | 2018 (Bias Adjustment Factor = 0.76) | 2019 (Bias Adjustment Factor = 0.75) |
| Pencoed Comprehensive Main Reception Entrance | Roadside | Diffusion Tube | 83 | N | - | - | - | - | 12.2 |
| Pencoed Comprehensive Playground | Roadside | Diffusion Tube | 92 | N | - | - | - | - | 15.2 |
| Bridgend College West | Roadside | Diffusion Tube | 83 | N | - | - | - | - | 15.9 |
| Bridgend College East | Roadside | Diffusion Tube | 92 | N | - | - | - | - | 14.9 |
| Penybont Primary Main Entrance | Roadside | Diffusion Tube | 83 | N | - | - | - | - | 14.3 |
| Penybont Primary Car Park | Roadside | Diffusion Tube | 92 | N | - | - | - | - | 15.1 |
| Oldcastle Primary Main Entrance | Roadside | Diffusion Tube | 83 | N | - | - | - | - | 14.1 |
| Olcastle Primary Playground | Roadside | Diffusion Tube | 67 | N | - | - | - | - | 14.1 |
| Cwmfelin Primary Main Entrance | Roadside | Diffusion Tube | 83 | N | - | - | - | - | 16.0 |

| Site ID | Site Type | Monitoring Type | Valid Data Capture 2019 (%) (1) | Within AQMA? | Annual Mean Concentration (µg/m$^3$) (2) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2015 (Bias Adjustment Factor = 0.81) | 2016 (Bias Adjustment Factor = 0.78) | 2017 (Bias Adjustment Factor = 0.77) | 2018 (Bias Adjustment Factor = 0.76) | 2019 (Bias Adjustment Factor = 0.75) |
| Cwmfelin Primary Playground | Roadside | Diffusion Tube | 67 | N | - | - | - | - | 11.4 |
| Newton Primary Reception | Roadside | Diffusion Tube | 92 | N | - | - | - | - | 7.9 |
| Newton Primary Playground | Roadside | Diffusion Tube | 75 | N | - | - | - | - | 7.1 |
| Bryncethin Primary Playground | Roadside | Diffusion Tube | 58 | N | - | - | - | - | 19.7 |
| Bryncethin Primary Building | Roadside | Diffusion Tube | 92 | N | - | - | - | - | 12.9 |

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 <u>bold and underlined.</u>

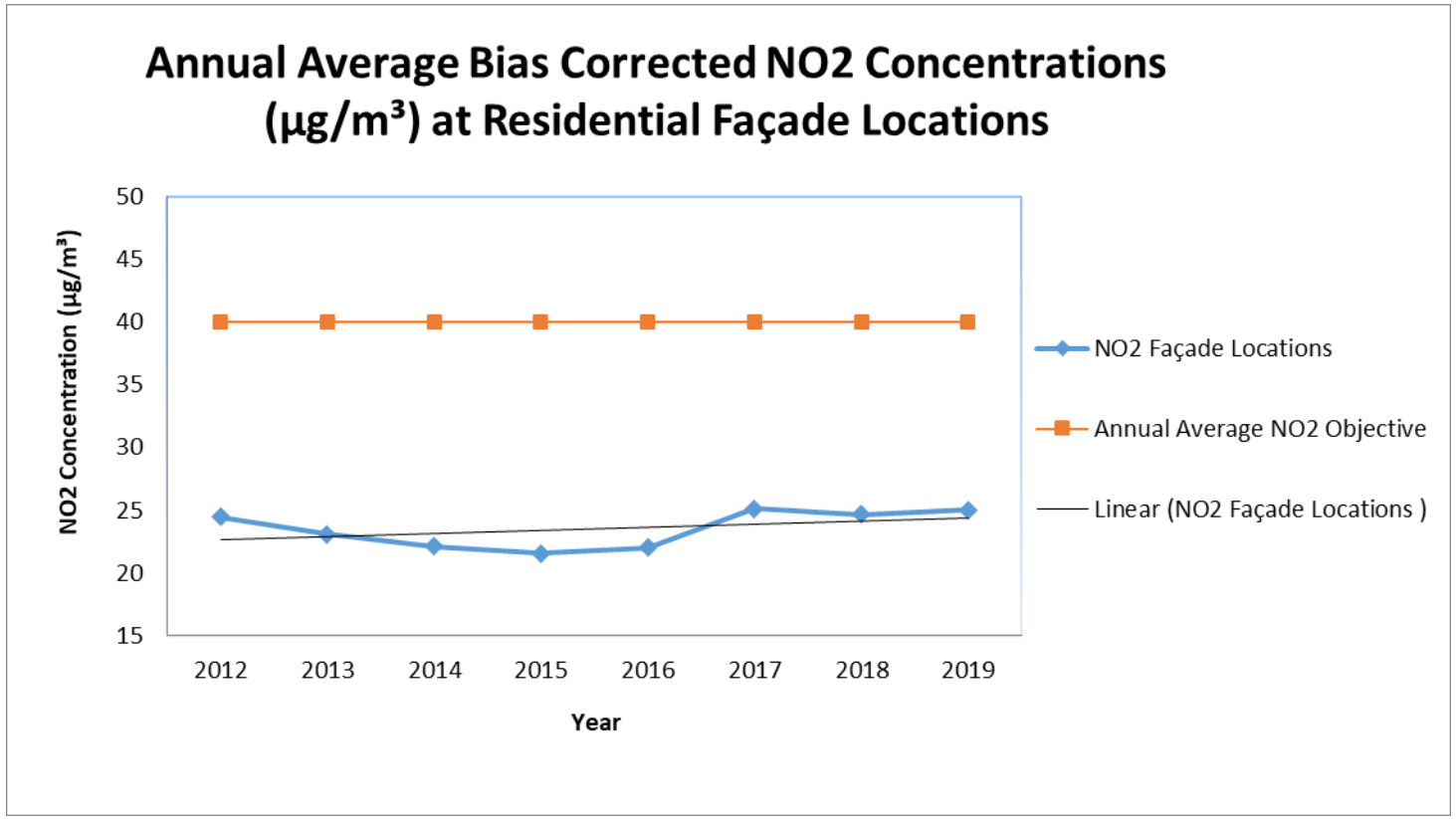
(1) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(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"

(4) School Monitoring Programme reported over 12 month period (April 2019- March 2020).

**Figure 19– 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 2019 include newly added monitoring locations at residential properties.

**Table 7– Automatic $SO_2$ Monitoring Results: Comparison with Objectives**

| Site ID | Site Type | Within AQMA? | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2019 (%) (2) | Number of Exceedences (percentile in bracket μg/m$^3$) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 15-minute Objective (266 μg/m$^3$) | 1-hour Objective (350 μg/m$^3$) | 24-hour Objective (125 μg/m$^3$) |
| CM2 | Industrial | N | 100 | 96 | NR(3) | 0 | 0 |

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 99.7$^{th}$ 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 99.2$^{nd}$ percentile for 24 hour $SO_2$

## 2.3 Comparison of 2019 Monitoring Results with Previous Years and the Air Quality Objectives

During 2019 monitoring was carried out for nitrogen dioxide ($NO_2$) and sulphur dioxide ($SO_2$).

### 2.3.1 Nitrogen Dioxide ($NO_2$)

Nitrogen dioxide was measured during 2019 by a network of 32 passive diffusion tubes.

In order to ratify the 2019 diffusion tube dataset, a bias adjustment factor of 0.75 was applied to the annual average readings. The factor was derived from the Defra website which gave the average correction factor from 38 co-location studies across the UK, whereby the analytical laboratory and method used was the same as BCBC, in this instance Socotec UK Ltd, Didcot.

**Automatic Monitoring Data**

In view of developing an effective AQAP for the Park Street, Bridgend AQMA, the previously established 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.

Planning permission has been received for the AMS at the highlighted address, however although a final legal agreement is agreed between Council Officers and Quaker representatives for the use of the proposed AMS, due to the current unprecedented circumstances (COVID-19), this has somewhat hindered developments to formalise the agreement. At the time of writing this report it has been agreed to reconvene the formalisation of the agreement and verify some details surrounding the site's implementation.

**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 in 2019 at sites OBC-110 & OBC-123, 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 sites OBC-110 & OBC-123 are calculated at **53.7µg/m3 & 55.2µg/m3** which is therefore considered 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 **36.2.µg/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.

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 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 2019 was 96%. There were no exceedances of the 1-hour objective and 1 or 24-hour objective during this time period. It is noted that levels did rise significantly in from 12th August 2019, however upon investigation this anomaly is due to a pump failure. 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 2019

SRS have reviewed the results from the monitoring undertaken across Bridgend in 2019.

Despite the examined non-compliant annual average $NO_2$ levels recorded within the Park Street, Bridgend AQMA (OBC-110 & OBC-123)), 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 2019.

### 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, whereby additional information was sought in the form of a supporting Environmental Impact Assessment (EIA). Following further discussions, in January 2020 the decision was made and agreed in the form of a screening direction with an applicable representative for the Welsh Minister of Housing and Local Government, outlining that the development does constitute as an "EIA Development" in the context of the Town and Country Planning (Wales) Regulations, 2017.

### 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 2019 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/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.

**P/18/1006/FUL**

In 2019 a planning application was received to review and inform a decision regarding the development of 127 residential properties and supporting infrastructure on the former Ysgol Bryn Castell Site, which is earmarked for residential development, under policy COM2 (7) of Bridgend County Borough Council Local Development Plan.

The following comments were made in accordance with its submitted air quality assessment;

In accordance with planning application P/18/1006/FUL an Air Quality Assessment (AQA) has been undertaken to ascertain the likely air quality impacts associated with the proposed development through its construction and operational phases.

These comments support the re-submission of the proposal's air quality assessment (AQA) following an initial review undertaken by Shared Regulatory Services (SRS). Following the initial review of the originally submitted AQA it was deemed necessary for the applicant to amend the AQA and submit an emissions mitigation statement (EMS) which would include a damage cost calculation. This damage cost calculation is used to develop an appropriate level of mitigation which should broadly equate to the calculated value. The assessment undertaken follows Defra's Air Quality Damage Cost guidance, January 2019.

For the construction phase of the proposed development a high risk has been identified with respect to dust as a result of construction phase activities (Earthworks, Construction & Trackout). Persimmon Homes West Wales has produced a Dust Emission Control Plan which outlines key measures to control any dust generating activity associated with the proposal. Having reviewed this documentation I am satisfied that the suggested mitigation measures will look to offset and suppress the high risk concerns expected with the proposal. It is therefore essential that this Dust Emission Control Plan is utilised as a control document during the construction of the proposal to alleviate concerns associated with dust.

For the operational phase of the development, the report utilises detailed dispersion modelling (ADMS- Roads) to depict whether existing and future residents will be made susceptible to any adverse changes in air quality levels, particularly focusing upon transport derived nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$ & $PM_{2.5}$).

For operational purposes, in order to determine potential impacts to air quality as a result of increased traffic movements associated with the development, the air quality modelling considers an understanding for a baseline scenario (2019) and a projected year of opening scenario (2023). The modelling adopts best practise guidance and considers a conservative approach to provide expected outcomes.

**Tables 6.1, 6.2 & 6.3** outline the projected change to annual mean air quality levels ($NO_2$, $PM_{10}$ & $PM_{2.5}$) with the proposed scheme in place for an opening year of 2023 **(With Scheme).** Utilising EPUK & IAQM guidance, as displayed by the matrix in **Table A.1**, the level of significance, in terms of the amount of % change to the air quality levels is classified. As documented, a number of existing sensitive receptor locations and future sensitive receptors have been examined, quantifying the level of impact predicted at their locations. In total there is 1 identified sensitive receptor (R5) subjected to a **moderate adverse** impact for annual mean $NO_2$ levels, for a proposed year of opening 2023. **R5** is confirmed as a residential property. The potential impact for annual mean air quality levels ($NO_2$, $PM_{10}$ & $PM_{2.5}$) at all other receptors for the proposed year of opening is classified as **negligible.**

Drawing reference to Receptor R5, Table 6.1 outlines a **moderate adverse impact** for annual mean $NO_2$ for a 2023 scenario, rising from 49.1 µg/m3 'Without Scheme' to 49.5 µg/m3 'With Scheme'. Although the report's modelling ensures a conservative approach, highlights an expectant decrease from a 2019 baseline scenario of 7.8 µg/m3 and documents the already existent air quality concern (annual average $NO_2$) for Park Street, an adverse impact to air quality is still prevalent and documented by the report.

Bridgend's Park Street Air Quality Management Area (AQMA) was established due to elevated and exceeding levels of annual mean $NO_2$. Receptor R5 lies within the boundary of the AQMA, and it is apparent from the modelling undertaken that annual mean $NO_2$ levels are forecasted to worsen with the proposed development in place. It must be acknowledged that there is no safe level as such when it comes to potential impacts of pollutants. Shared Regulatory Services (SRS) on behalf of Bridgend County Borough Council (BCBC) do not consider these levels as low as reasonably practicable. I would like to draw your attention to Welsh Government's Local Air Quality Management Policy Guidance, June 2017, paragraph 2.7;

*2.7 Any public body or group of public bodies developing or implementing a local or regional long-term plan or strategy with potential implications for air quality should as a minimum ensure it does not contribute to future breaches of the national air quality objectives. However, the national air*

*quality objectives are not **'safe'** levels of air pollution. Rather they represent a pragmatic threshold above which government considers the health risks associated with air pollution are unacceptable. Air just barely compliant with the objectives is not 'clean' and still carries long-term health risks. Nitrogen dioxide and particulate matter currently have no safe threshold defined, and the lower the concentration of those pollutants, the lower the risks of adverse health effects in the exposed population. Therefore, while compliance with the national air quality objectives is essential, it is desirable to keep levels of pollution as low as reasonable practicable.*

Welsh Government's Planning Policy Wales, December 2018, paragraph 6.7.2 replicates the above statement.

The report suggests potential long term health risks for local residents as they will be made susceptible to the quantified concerning air quality levels. Without the guarantee of sufficient mitigation measures local residents occupying the Park Street AQMA will be made susceptible to worsened air quality.

Furthermore, for obvious reasons 2019 **annual average** datasets were not available when devising the scope of works for the supporting AQA, however there are significant concerns from an SRS/ BCBC perspective whereby most recent average $NO_2$ datasets examined along Park Street are significantly elevated. Based on preliminary datasets gathered in 2019, existing and newly implemented $NO_2$ sites along Park Street suggest worsened air quality. The experienced levels do not only exceed the $NO_2$ annual average air quality objective set at **40µg/m3**, but are also on track to breach the 1- hour objective set as **200 µg/m3 not to be exceeded more than 18 times per year.**

In order to alleviate the operational impacts associated with the proposal the applicant has appointed Defra's Air Quality Damage Cost guidance, January 2019 which can be used to support the appropriateness of any developed mitigation package. As depicted by paragraph 6.28;

*The total emissions 'damage' cost value for the proposed development, based on the latest Defra guidance, has been calculated as **£70,545.***

The report outlines a number of proposed mitigation measures which the applicant is committed to implementing;

-The provision of a ghost island on Park Street onto Heol Y Nant to reduce congestion and hence pollution;

-The inclusion of the link to the active travel network including a 3 metre wide cycle/pedestrian route (encouraging a modal shift away from cars);

-A travel plan including details of public transport, active travel routes and potentially any car sharing opportunities in the area; and

-The provision of green infrastructure through a detailed landscaping scheme with the inclusion of tree, hedgerow and shrub planting.

To facilitate the above listed mitigation package I would like to see a suggested timetable for implementation of the suggested measures. To provide a positive impact, the measures will need to be implemented prior to the proposed year of opening.

**Suggested Condition: Implementation & 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 provide evidence how the devised mitigation scheme will provide positive benefits to air quality at identified sensitive receptors projected to be in exceedance of the annual average $NO_2$ air quality objective within the Park Street AQMA boundary. The proposal of mitigation schemes will need to be submitted and approved by the Local Planning Authority. As part of the condition; once agreed the applicant is required to implement the mitigation proposals outlined.

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.

Following on from the comments made in respect to the submitted air quality assessment, the development has been granted planning consent subject to the satisfaction and discharge of accompanying planning conditions.

From an air quality perspective the following conditions have been imposed as part of planning committee's decision notice;

Condition 25. Prior to the commencement of development, full details and timescales of the mitigation measures as recommended and set out in the Air Quality Assessment, June 2019, shall be submitted to and agreed in writing by the Local Planning Authority. The development shall be implemented in accordance with the agreed details and timescales.

Reason: In the interests of safeguarding residential amenities and air quality.

Condition 27. No development shall commence until a scheme for the provision of a right hand holding turning lane on the A473/Park Street – Heol y Nant Junction has been submitted to and approved in writing by the Local Planning Authority. The approved holding/turning lane shall be safety audited to stage 2/3, constructed and implemented in permanent materials prior to the first occupation of any dwellings on site and retained thereafter in perpetuity.

Reason: In the interests of highway safety and to safeguard air quality.

Discharge of conditions are under review.

# 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

The LDP document has been under review since 2018 with a view to go to consultation on its final draft (deposit plan) January/ February 2021. SRS are feeding into this document where necessary to outline air quality as an influential consideration and ensure its importance within the decision making process. Refer to the following link for useful questions and answers in regards to the new plan's development;

https://www.bridgend.gov.uk/news/the-replacement-local-development-plan-explained/

## 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/

**Good news story**

In October 2018 over £1.7m was awarded by Welsh Government to Bridgend County Borough Council to fund more Active Travel schemes which will make it easier for residents to leave their cars at home for local journeys.

The biggest single allocation of £500,000 will see the construction of an off-road route for pedestrians and cyclists along Coychurch Road in Pencoed to complete the missing active travel link between Coychurch and Pencoed Comprehensive School. Work on the scheme starts in late October and will be completed before the end of March 2019.

In Porthcawl, £450,000 will be spent on extending the active travel route along the Eastern Promenade from Coney Beach so it that it continues through to Newton Primary School along New Road. The scheme will involve some of the road humps on New Road being replaced, while the school will also benefit from new cycle and scooter storage. The work is due to begin by early December and will take approximately four months to complete.

Local residents will have already noticed work that is underway to create a new wide footway along the A48 to connect Brynteg Comprehensive School with Picton Court. The £290,000 scheme is due for completion by the end of March 2019.

A further £150,000 has also been allocated by Welsh Government through their Local Transport Fund programme to fund the next phase of work to complete the National Cycle Network Route 885 link between Sarn and Bridgend by improving access to the railway station.

The enhancements will include the footway from Bridgend Bus Station to Derwen Road being widened to enable use by cyclists and pedestrians, while signage will also be improved. The work will be carried out between January and March 2019.

The remaining funding received by Bridgend County Borough Council will also cover the design and feasibility costs of a further eight Active Travel schemes:

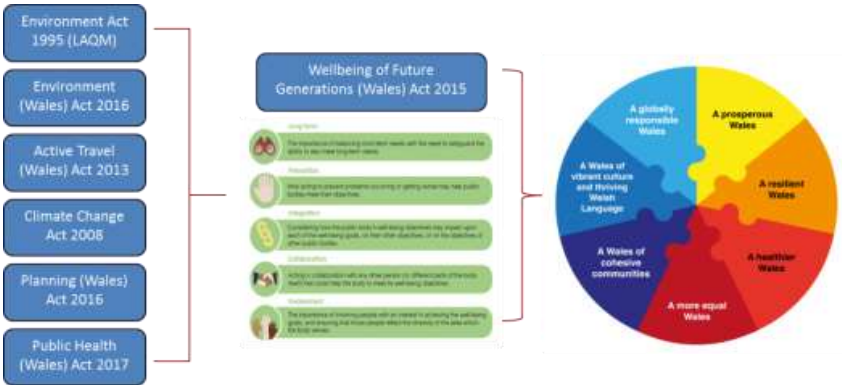
- A route along Cowbridge Road which links to Bridgend College, South Wales Police Headquarters, Bridgend Retail Park and Bridgend Industrial Estate.
- An off-road route for pedestrians and cyclists between Bridgend town centre and the Designer Outlet Village at Junction 36 along the A4061, with connections to Brackla, Princess of Wales Hospital, Parc Derwen and Litchard as well as Brackla and Litchard Industrial Estate.
- An off-road route between Llangynwyd and Maesteg School via Garth with links to Garth Primary School.
- Improved walking and cycling access between Pencoed railway station and Pencoed Technology Park to encourage active commuting.
- Improvements between Newton Primary School and Newton village, which will build upon the other scheme being delivered this year and may include additional links to Porthcawl town centre.
- An extension of the existing off-road route which runs south from Broadlands to Newbridge Fields along the A48. The proposed route will connect along the A48 to Merthyr Mawr Road and will also link up through the fields to Bridgend Life Centre with onward connections to Brynteg Comprehensive School.
- The Ogmore Valley Community Route will also be assessed to identify potential enhancements that are required.

## 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 5- 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 20- 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.

## 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 in 2019 at sites **OBC-110 & OBC-123**, located on Park Street at residential facades, 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 sites **OBC-110 & OBC-123** are calculated at **53.7µg/m3 & 55.2µg/m3** which is therefore considered 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 **36.2µg/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.

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).

**Work Steering Group and Public Engagement**

In order to develop ideas and ensure an effective AQAP which considers all aspects, prioritising public health, an AQAP Work Steering Group has been put together consisting of representatives from Bridgend's various departments, as well as persons from the local PSBs.

In addition to works and discussions held by the AQAP Work Steering Group, a number of informal 'drop-in' sessions have been facilitated by SRS/ BCBC in December 2019 which provided opportunity for the public find out more about air quality in the area, AQAP updates and suggest ideas for the AQAP.

**Proposed Mitigation Measures**

Collaborating the ideas and suggestions made to date a list of proposed mitigation measures has been put together. Sub-section 1.3 displays Table 2 outlining proposed mitigation measures for the Park Street AQMA.

An indicative cost and benefit score has also been provided for each action in Table 3. The potential actions have been scored for cost benefit and the resulting rank in order to identify the most deliverable actions. Estimated costs (1 for high cost to 5 for low cost) were multiplied by a sum of the likely benefit from reducing pollution and people's exposure to the pollution (10 for high and 1 for low) to provide a score. The highest score shows the greatest cost benefit according to the opinions of the project team. The measures in Table 3 are listed in order of their ranking score (most deliverable at the top).

Following the indicative Cost Benefit Analysis it is agreed by the AQAP Work Steering Group to pursue mitigations options that will **manage and improve traffic flows through the Park Street AQMA.** Queuing and inconsistent traffic flows would appear to be the principal cause of the portrayed poor air quality levels. It is also concerning given the level of surrounding development

scheduled, there is the likelihood of increased pressure for the network and consequentially air quality levels along Park Street. It is necessary that in order to proceed with the development of a successful and meaningful AQAP the Council would need to make the decision whether to undertake detailed transport and air quality assessments to quantify and ensure that correct mitigation measures are implemented. A decision is yet to be made about progressing with the detailed modelling following the receipt of a few proposals from external consultants.

Furthermore, 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.

# References

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-Local Air Quality Management Progress Report, June 2014

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-Local Air Quality Management Progress Report, June 2016

-Local Air Quality Management Progress Report, August 2017

-Local Air Quality Management Progress Report, August 2018

-Local Air Quality Management Progress Report, August 2019

# 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

**MONTHLY LEVELS OF NITROGEN DIOXIDE, BRIDGEND COUNTY BOROUGH, 2 2019**

RESULTS EXPRESSED IN MICROGRAMMES/CUBIC METRE (NR = NO RESULT)

| Site No | Nitrogen Dioxide Sites, Bridgend CBC | Grid Ref | Class | Distance of measurement from Kerb (m) | Distance from Kerb to Receptor | Relevant Exposure in m | Background Concentration | | 08/01/2019 - 04/02/2019 | 04/02/2019 - 05/03/2019 | 05/03/2019 - 01/04/2019 | 1/04/2019 - 03/05/2019 | 03/05/2019-04/06/2019 | 04/06/2019 - 02/07/2019 | 02/07/2019 - 08/08/2019 | 08/08/2019 - 05/09/2019 | 05/09/2019 - 02/10/2019 | 02/10/2019 - 05/11/2019 | 05/11/2019 - 03/12/2019 | 03/12/2019- 07/01/2020 | AVERA GE SINCE JAN 19 | Bias Corrected (Correction Factor 0.75) | Annualised Result (if applicable) | Distance corrected to Façade (if applicable) | Percentage of Data Capture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TONDU ROAD ROUNDABOUT** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-107 | 17 Tondu Road, Bridgend | SS 2903047 179655 | Roadside | 2.00 | 2.00 | 0.00 | | | 57.3 | 51.7 | 53.4 | 39.5 | 36.3 | 32.2 | 34.4 | 36.0 | 37.0 | 43.6 | 48.3 | | 42.7 | 32.0 | 32.0 | 32.0 | 92 |
| OBC-108 | 43 Tondu Road , Bridgend | SS 2904147 179836 | Kerbside | 0.90 | 0.90 | 0.00 | | | 54.9 | 52.8 | 59.7 | 45.5 | 44.8 | 40.5 | 43.2 | 45.9 | 50.2 | 45.5 | 51 | 45.2 | 48.3 | 36.2 | 36.2 | 36.2 | 100 |
| **PARK STREET** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-102 | 4 Sunnyside | SS 290354 179807 | Roadside | 2.95 | 2.95 | 0.00 | | | 36.8 | 36.4 | 30.2 | 34.3 | 26.4 | 24.7 | 23.4 | 23.3 | 27.3 | 34.3 | 49.4 | 36.6 | 31.9 | 23.9 | 23.9 | 23.9 | 100 |
| OBC-103 | 39 Park Street | SS 290250 179782 | Kerbside | 1.20 | 1.20 | 0.00 | | | 58.6 | 60.6 | 54 | 41.5 | 46.8 | 42.6 | 40.7 | 44.3 | 43.8 | 45.0 | 60.6 | 54.7 | 49.4 | 37.1 | 37.1 | 37.1 | 100 |
| OBC-104 | 51 Park Street | SS 290286 179800 | Kerbside | 1.05 | 1.05 | 0.00 | | | 55.8 | 57 | 55.2 | 56.7 | 52.7 | 48.7 | 45.9 | | 43.0 | 54.0 | 59.2 | 56.2 | 53.1 | 39.8 | 39.8 | 39.8 | 92 |
| OBC-109 | 32 Park Street | SS 290239 179795 | Roadside | 7.5 | 7.5 | 0.00 | | | 39.6 | 26.8 | 27.9 | | 23.3 | 21.3 | 18.8 | 18.6 | 21.5 | 25.9 | 36.5 | 31.4 | 26.5 | 19.9 | 19.9 | 19.9 | 92 |
| OBC- 122 | Post on St Leonards Road | SS 289919 179755 | Kerbside | 1.0 | 5.0 | 4.00 | 8.71 | | 38.6 | 35.6 | 26.9 | 33.1 | 21.0 | 19.9 | | 16.7 | | 27.1 | | 28.6 | 27.5 | 20.6 | 20.6 | 16.7 | 75 |
| OBC- 123 | 93 Park Street Bridgend | SS 290014 179698 | Kerbside | 0.9 | 0.9 | 0.00 | | | 96.3 | 90.6 | 80.7 | 72.2 | 67.1 | 64.3 | 59.4 | 58.0 | 61.3 | 63.2 | 91.8 | 77.9 | 73.6 | 55.2 | 55.2 | 55.2 | 100 |
| OBC- 124 | 133 Park Street | SS 289859 179710 | Roadside | 7.0 | 7.0 | 0.00 | | | 35.9 | 22.5 | 21.6 | 23.6 | 17.9 | 15.2 | 10.5 | 13.1 | 16.7 | 28.6 | 33.1 | 26.3 | 22.1 | 16.6 | 16.6 | 16.6 | 100 |
| OBC-110 | 101/103 Park Street | SS 289988 179701 | Kerbside | 0.9 | 0.9 | 0.00 | | | 84.5 | 70 | 69.5 | 67.6 | 64.6 | 59.7 | 57.5 | 55.1 | 67.4 | 81.7 | 98.1 | 84.2 | 71.7 | 53.7 | 53.7 | 53.7 | 100 |
| **BRIDGEND CITY CENTRE** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-101 | Bridgend City Centre | SS 290469 179837 | Urban Centre | 1.0 | 1 | 0.00 | | | 37.1 | 30.3 | 24.7 | | | 16.0 | 14.2 | 15.7 | 18.9 | 24.0 | 36.5 | 27.6 | 24.5 | 18.4 | 18.4 | 18.4 | 83 |
| **NOLTON STREET / EWENNY RD CROSS LINK/ A473 Cowbridge Road** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-111 | 01 Cowbridge Road | SS 290700 179305 | Roadside | 4.25 | 4.95 | 0.70 | | | 49.7 | 42.1 | 36.2 | 35.8 | 26.2 | 23.1 | | 22.6 | 26.7 | 32.8 | 45.9 | 37.8 | 34.4 | 25.8 | 25.8 | 25.8 | 92 |
| OBC- 105 | 65 Cowbridge Road | SS 290899 179185 | Roadside | 4.10 | 4.10 | 0.00 | | | | 34.4 | 29.8 | 29 | 26.7 | 19.2 | 19.6 | 19.4 | 25.5 | 30.6 | 41.6 | 34.4 | 28.2 | 21.2 | 21.2 | 21.2 | 92 |
| OBC- 106 | 38/40 Cowbridge Road | SS 290826 179210 | Kerbside | 0.90 | 4.20 | 3.30 | 11.8 | | 61.0 | 45.7 | 40.3 | 37.6 | 33.7 | 27.4 | 26.1 | | 29.7 | 39.1 | 51.7 | | 39.2 | 29.4 | 29.4 | 24.0 | 83 |
| OBC- 121 | 29 Heol Tre Derr | SS 291510 178734 | Roadside | 5.00 | 5.00 | 0.00 | | | 34.5 | 32.3 | 20.5 | 29.7 | 20.8 | 16.8 | 15.4 | 15.0 | 18.8 | 25.3 | 38.7 | 28.5 | 24.7 | 18.5 | 18.5 | 18.5 | 100 |
| OBC-112 | 33 Cowbridge Road | SS 302974 180788 | Kerbside | 0.90 | 0.90 | 0.00 | | | 69.2 | | 38.3 | 53.6 | 34.3 | 32.9 | 28.7 | 25.7 | | | 68.1 | | 43.9 | 32.9 | 36.2 | 36.2 | 67 |
| **EWENNY ROUNDABOUT** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-088 | Co-location - Tube 1 | SS 290566 178566 | Roadside | 2.20 | 2.20 | 0.00 | | | 37.0 | 26.8 | 22 | 36.1 | 24.9 | 20.0 | 17.5 | 15.5 | 22.5 | 26.4 | 39.1 | 25.2 | 26.1 | 19.6 | 19.6 | 19.6 | 100 |
| OBC-089 | Co-location - Tube 2 | SS 290566 178566 | Roadside | 2.20 | 2.20 | 0.00 | | | | 35.2 | 21.3 | 33.4 | 24.5 | 19.4 | | 18.5 | 22.0 | 26.9 | 41.1 | 29.0 | 27.1 | 20.3 | 20.3 | 20.3 | 83 |
| OBC-090 | Co-location - Tube 3 | SS 290566 178566 | Roadside | 2.20 | 2.20 | 0.00 | | | 35.3 | 32.5 | 21.4 | 35.7 | 21.8 | | 16.7 | 14.3 | 23.4 | 27.1 | 40.7 | 29.2 | 27.1 | 20.3 | 20.3 | 20.3 | 92 |
| OBC-113 | 127 Priory Avenue | SS 290616 178394 | Roadside | 10.00 | 10.00 | 0.00 | | | 25.7 | 20.2 | 20.2 | 18.2 | 17.2 | 14.2 | 13.8 | 14.8 | 17.4 | 21.9 | 30.7 | 20.7 | 19.6 | 14.7 | 14.7 | 14.7 | 100 |
| OBC-114 | 97 Ewenny Road | SS 290699 178596 | Roadside | 23.00 | 23.00 | 0.00 | | | 40.7 | 33.8 | 25.4 | 24.6 | 22.3 | 17.9 | 18.0 | 19.3 | 21.5 | 27.7 | 38.1 | 30.1 | 26.6 | 20.0 | 20.0 | 20.0 | 100 |
| OBC-115 | 105 Ewenny Road | SS 290667 178529 | Roadside | 12.00 | 12.00 | 0.00 | | | 40.2 | 30.6 | 27.5 | 29.7 | 26.4 | 18.6 | 20.4 | 17.6 | 23.1 | 28.6 | 43.4 | 28.1 | 27.9 | 20.9 | 20.9 | 20.9 | 100 |
| **MAESTEG** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC- 125 | 60 Commercial Street, Maesteg | SS 285299 191136 | Roadside | 2.0 | 2.0 | 0.00 | | | | | 30.2 | 28.3 | 23.9 | 22.9 | 19.5 | | 23.5 | 22.8 | 22.8 | 31.5 | 25.0 | 18.8 | 18.8 | 18.8 | 75 |
| **COITY ROAD, BRIDGEND** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-097 | 22 Coity Road, Bridgend | SS 290687 180185 | Roadside | 5.30 | 5.30 | 0.00 | | | 45.3 | 29.6 | 30.3 | 36.6 | 32.3 | 26.7 | | 22.9 | 26.4 | 32.50 | 43.0 | 37.60 | 33.0 | 24.8 | 24.8 | 24.8 | 92 |
| OBC-098 | 26 Coity Road, Bridgend | SS 290681 180198 | Roadside | 4.20 | 4.20 | 0.00 | | | 41.7 | 32.2 | 32 | 28.7 | 24.7 | | | 24.7 | 25.7 | 30.30 | 39.9 | 29.60 | 31.0 | 23.2 | 23.2 | 23.2 | 83 |
| OBC-099 | 42 Coity Road, Bridgend | SS 290663 180051 | Roadside | 5.60 | 5.60 | 0.00 | | | 37.8 | 33.4 | 27.8 | 35.8 | 26.6 | 21.5 | 20.9 | 20.4 | 24.8 | 31.30 | 42.3 | 33.30 | 29.7 | 22.2 | 22.2 | 22.2 | 100 |
| OBC-100 | 11 Coity Road, Bridgend | SS 290623 180374 | Roadside | 4.10 | 4.10 | 0.00 | | | 44.1 | 38.7 | 34 | 27.1 | 27.7 | 22.9 | 24.3 | 23.3 | 24.9 | 30.70 | 35.2 | 31.70 | 30.4 | 22.8 | 22.8 | 22.8 | 100 |
| **PENCOED** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-116 | 20 Hendre Road, Pencoed | SS 295886 181642 | Kerbside | 0.90 | 0.90 | 0.00 | | | 32.9 | 33.3 | 28.6 | 29.1 | 24.8 | 21.8 | 20.7 | 20.1 | 23.0 | 28.90 | 40.0 | 29.70 | 27.7 | 20.8 | 20.8 | 20.8 | 100 |
| OBC-117 | 47 Hendre Road, Pencoed | SS 295641 181687 | Roadside | 8.40 | 8.40 | 0.00 | | | 33 | 29.6 | 24.2 | 17.5 | 18.6 | 15.5 | 13.9 | 15.0 | 17.9 | 22.70 | 31.7 | 27.80 | 22.3 | 16.9 | 16.9 | 16.9 | 100 |
| **PORTHCAWL** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-119 | 48 New Road, Porthcawl | SS 282072 177126 | Kerbside | 10.00 | 10.00 | 0.00 | | | 23.1 | 17.1 | 15.6 | 23.4 | 12.4 | 10.3 | 9.7 | 9.6 | 11.3 | 15.40 | 28.9 | 20.80 | 16.5 | 12.4 | 12.4 | 12.4 | 100 |
| OBC-120 | 105 New Road, Porthcawl | SS 282264 177237 | Roadside | 0.90 | 0.90 | 0.00 | | | 30 | 21.3 | 24.7 | 19.3 | 19.3 | 14.9 | | 14.9 | 16.1 | 19.80 | 37.1 | 17.90 | 21.4 | 16.0 | 16.0 | 16.0 | 92 |
| **BRIDGEND TREMAINS ROAD** | | | | | | | | | | | | | | | | | | | | | | | | | |
| OBC-126 | Tremains Road, Bridgend | SS 291125 179511 | Roadside | 8.20 | 8.20 | 0.00 | | | | | | 22.1 | 26.1 | 21.0 | 20.3 | 21 | 25 | 28.4 | 39.9 | 32.7 | 26.2 | 19.7 | 19.7 | 19.7 | 75 |

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 microgrammes 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 8– Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales**

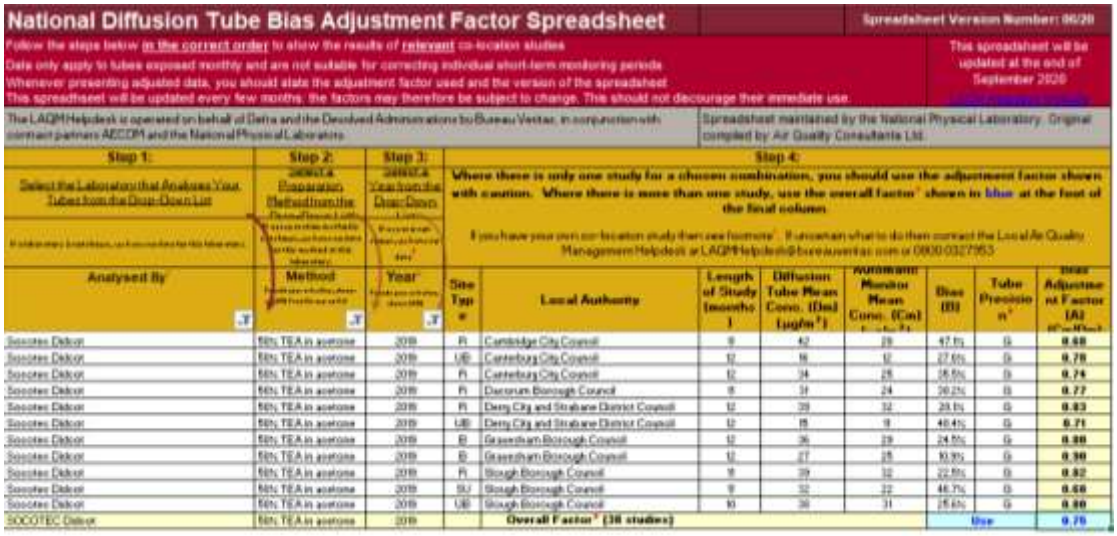
| Pollutant | Air Quality Objective | | Date to be achieved by |
|---|---|---|---|
| | Concentration | Measured as | |
| Benzene | 16.25 µg/m$^3$ | Running annual mean | 31.12.2003 |
| | 5.00 µg/m$^3$ | Annual mean | 31.12.2011 |
| 1,3-butadiene | 2.25 µg/m$^3$ | Running annual mean | 31.12.2003 |
| 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 06/20) was used to obtain an overall adjustment factor of 0.75 from the input data shown in the following screenshot. This overall factor is based on 38 co-location studies where the tube preparation method and analysis laboratory used were the same as those used by BCBC.

**Figure 21: National Diffusion Tube Bias Adjustment Factor Spreadsheet**



National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/20

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 spreadsheet 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 2020

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with its main 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

Step 2: Select a Preparation Method from the Drop-Down List

Step 3: Select a Year from the Drop-Down List

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* shown in blue at the foot of the final column

If you have your own co-location study then see footnote*. If unsure what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

| Analysed By* | Method | Year* | 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 | Bias Adjustment Factor (A) |
|---|---|---|---|---|---|---|---|---|---|---|
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Cambridge City Council | 9 | 42 | 28 | 47.5% | G | 0.68 |
| Socotec Didcot | 50% TEA in acetone | 2019 | UB | Canterbury City Council | 12 | 16 | 12 | 27.5% | G | 0.78 |
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Canterbury City Council | 12 | 34 | 25 | 35.5% | G | 0.74 |
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Dacorum Borough Council | 9 | 31 | 24 | 30.2% | G | 0.77 |
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Derry City and Strabane District Council | 12 | 29 | 22 | 29.5% | G | 0.83 |
| Socotec Didcot | 50% TEA in acetone | 2019 | UB | Derry City and Strabane District Council | 12 | 15 | 9 | 48.4% | G | 0.71 |
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Gravesham Borough Council | 12 | 36 | 29 | 24.5% | G | 0.80 |
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Gravesham Borough Council | 12 | 27 | 20 | 30.3% | G | 0.30 |
| Socotec Didcot | 50% TEA in acetone | 2019 | R | Slough Borough Council | 9 | 29 | 22 | 22.5% | G | 0.82 |
| Socotec Didcot | 50% TEA in acetone | 2019 | SU | Slough Borough Council | 9 | 22 | 22 | 46.7% | G | 0.68 |
| Socotec Didcot | 50% TEA in acetone | 2019 | UB | Slough Borough Council | 10 | 36 | 31 | 15.6% | G | 0.86 |
| SOCOTEC Didcot | 50% TEA in acetone | 2019 | | Overall Factor* (38 studies) | | | | Use | | 0.75 |

### Discussion of Choice of Factor to use

The bias adjustment factor applied to all 2019 data is 0.75. The applied bias adjustment factor has been calculated using the national diffusion tube bias adjustment factor spreadsheet version 06/19. The National Bias Adjustment Factor supplied by the LAQM Defra website, based on 38 studies, which appointed Socotec UK Ltd Didcot laboratory, gave a figure of 0.75 and so this has been adopted for ratification purposes.

## Short-Term to Long-Term Data Adjustment

Diffusion Tubes Adjustment

The Nitrogen Dioxide ($NO_2$) obtained via the use of passive diffusion tubes during January to December 2019 were annualised via the method described in Box 7.10 of LAQM TG(16). Long-term AURN urban background continuous monitoring sites, within a distance of approximately 50 miles from the diffusion tube sites impacted were selected.

**Table 9– 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 | 11.76 | 10.69 | 1.10 |
| Average Ratio | | | | 1.10 |

## 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 |