



County Hall  
Cardiff  
CF10 4UW  
Tel: (029) 2087 2000

Neuadd y Sir  
Caerdydd  
CF10 4UW  
Ffôn: (029) 2087 2000

## AGENDA

|                                 |  |
|---------------------------------|--|
| <b>Committee</b>                | ENVIRONMENTAL SCRUTINY COMMITTEE   |
| <b>Date and Time of Meeting</b> | THURSDAY, 8 DECEMBER 2022, 4.30 PM   |
| <b>Venue</b>                    | CR 4, COUNTY HALL - MULTI LOCATION MEETING   |
| <b>Membership</b>               | Councillor Owen Jones (Chair)<br>Councillors Derbyshire, Gibson, Green, Lancaster, Lewis, Lloyd Jones, Jackie Parry and Wood |

*Time  
approx.*

**1 Apologies for Absence**

To receive apologies for absence.

**2 Declarations of Interest**

To be made at the start of the agenda item in question, in accordance with the Members' Code of Conduct.

**3 Minutes (Pages 5 - 18)**

To approve as a correct record the minutes of the meetings held on 26 September and 10 November 2022.

**4 One Planet Cardiff, Annual Update (Pages 19 - 104)**

4.35 pm

Pre-decision item

**5 Local Air Quality Monitoring Report, Annual Progress Report (Pages 105 - 298)**

5.35 pm

**6 Committee Business (Pages 299 - 304)**

6.35 pm

To receive an update on open recommendations made by the Committee

**7 Urgent Items (if any)**

**8 Way Forward**

6.45 pm

To review the evidence and information gathered during the meeting, agree Members comments, observations and concerns to be passed on to the relevant Cabinet Member by the Chair.

**9 Date of next meeting**

Thursday 12 January 2023, 4:30 pm

**Davina Fiore**

**Director Governance & Legal Services**

Date: Friday, 2 December 2022

Contact: Graham Porter, 02920 873401, [g.porter@cardiff.gov.uk](mailto:g.porter@cardiff.gov.uk)

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ENVIRONMENTAL SCRUTINY COMMITTEE

26 SEPTEMBER 2022

Present: Councillor Owen Jones(Chairperson)  
Councillors Derbyshire, Gibson, Green, Lancaster, Lloyd Jones,  
Jackie Parry, Proctor and Wood

17 : APOLOGIES FOR ABSENCE

No apologies for absence were received.

18 : DECLARATIONS OF INTEREST

No declarations of interest were received in accordance with the Members' Code of Conduct.

19 : MINUTES

The minutes of the meeting held on the 7 July were approved as a correct record.

20 : RECYCLING STRATEGY FOR CARDIFF 2021-2025

Members were advised that this item provided Members with the opportunity to consider and provide comments on the new Recycling Strategy for Cardiff which is due to be considered by Cabinet on 28 September.

The Chairperson welcomed Councillor Caro Wild (Cabinet Member for Climate Change) and Matt Wakelam (Assistant Director, Street Scene – Waste) to the meeting for this item.

The Chairperson invited Councillor Wild to make a statement during which he referred to the need for bold action to be taken in respect of Climate Change. The intention is to try and get some of the best recycling rates in the world and to certainly meet Welsh Government recycling rates which are at 70%; it is an ambitious target. The strategy has highlighted some issues, one being that there is further work to do in respect of Houses of Multiple Occupation (HMO's) and flats – the targeting of these areas is not something which will be happening immediately; there will be a phased approach to this strategy as a whole. It is important that there is an awareness of what is being thrown away together with an awareness of how what is thrown away is recycled.

Matt Wakelam (Assistant Director, Street Scene – Waste) provided Members with a presentation which outlined the mission statement; the projects in the programme; the resource requirements; segregated recycling; the circular economy; and the current position.

The Chairperson invited Mrs Linda Gibbs, a member of the public, to give a statement. Mrs Gibbs, a resident of the Danescourt estate, expressed support for the Council's overall strategy but raised concerns about the implementation and evaluation of the pilot scheme for segregated recycling on the estate. She warned of

the danger of losing the goodwill of residents in regard to segregating their waste and suggested that more effective means of gathering residents' views could have been carried out.

The Chairperson invited Councillor Driscoll to make a statement as the Ward Councillor, in which he reiterated some of the concerns of Danescourt residents.

Members were invited to ask questions and make observations, which are summarised below:

Members asked whether the Council had enough segregated waste collection vehicles and whether there was a programme to acquire more. Officers advised that the procurement process for kerbside vehicles had commenced and was awaiting Cabinet approval before being set in motion. Sixty-four vehicles will be required and will be acquired in phases as segregation is rolled out on a ward basis.

Members raised residents' concerns about woven bags due to the contents being vulnerable to water damage and the bags being sprayed by cats. Officers advised that there were health and safety concerns around the use of caddies due to the risk of repetitive strain injury. Bags with waterproof vinyl coating which will also protect them from UV radiation are being investigated. Different styles of bag will be tested out during the roll-out.

Members discussed the cost of the new vehicles. Officers advised that the expense was approximately 2.5 times less than that of the current refuse collection vehicles because of differences in construction.

Members were advised that it was important that the design of the vehicles encouraged the behaviour change associated with segregated recycling.

Officers advised that efforts would be made to ensure the identifiability of bags using Braille tags or a similar device for the sake of partially sighted residents.

Members discussed the adverse reactions on the part of some residents to the limitation on residual waste collection and the prospect of a 3-weekly collection of residual waste. Officers advised that residual waste collections currently contain significant amounts of food waste and waste that could be recycled. Public messaging would be employed to increase the amount of waste recycled, particularly food. Welsh Government and WRAP state they have not seen a reduction in residual waste unless there is restriction in bin capacity to encourage movement of non-residual waste into appropriate collections.

Members sought clarification on whether there had been a reduction in the total amount of waste recycled by residents during the pilot. Officers advised that there was no marked change in the tonnage of recycled waste received.

Members discussed residents' concerns about storage of waste bags and caddies. Officers advised that there would be no increase in the amount of waste required to be stored at residents' properties. It was recognised that there are issues concerning storage in HMO's and flats and this may require further pilot studies. It is hoped that

over time storage would be a less pressing concern as manufacturers reduce materials used in packaging.

Members discussed the desirability of a dedicated advice team to support residents. Officers advised a team would be put in place to help areas and individuals that required support, using a phased approach. It was recognised that a significant amount of support might be required to assist vulnerable people. Workshops in Hubs would be used to engage people, and community champions would be recruited to spread positive messaging.

Members sought further information on plans to tackle the 40% of people who are resistant to recycling. Officers advised that the Council would educate and inform and that the final resort was enforcement. It is expected that 10% would always be resistant but the remaining 30% could be encouraged to recycle. The move away from green bags would help as people would be reluctant to contaminate their segregated recycling bags with unsuitable waste. Non-conforming areas and individuals would be targeted for education and enforcement.

Members enquired as to whether manufacturers were in place to take all the recycle. Officers advised that the Council was working with Welsh Government and other LAs to create hubs for recycling materials. Currently most material is sent to plants within the UK. The cost of transporting material has increased and provides an incentive for localising treatment. Conversations are ongoing with Welsh Government on encouraging processors to set up more locally.

Members sought further information on the Repair and Reuse Superstore. Officers advised there was a lack of a suitable repurpose and reuse facility in Cardiff. There was a large one in Manchester that was being examined. The key issue is ensuring a flow through of material to avoid a build-up within the facility. A business plan will be developed.

Members were interested in the timescale of the Superstore, potential revenue streams and whether there were any materials that could not be accepted at the facility and currently go to Lamby Way or Bessemer Close. Members were advised that more information would become available as the business plan was developed. There would be a consultation to encourage input of ideas. Other parties would be encouraged to become involved.

Members discussed recycling in schools and wished to know what was being done to further it. Officers advised that schools conducted their own programmes under the direction of their governing bodies. The Council is working with a 3<sup>rd</sup> party to provide skips for schools to collect textiles from parents, with part of the revenue returned to the school. Members considered that it would be helpful to share best practice between schools.

Members wondered why only 1 bag of each colour per household was being considered and how it was planned to accommodate the varying amounts of recycling across the year. Officers advised that there was no limit to the number of bags per household. At key times of the year special collections would be mounted to take in additional quantities of material.

Members wished to know what it was planned to do with the blue boxes used in the glass recycling pilot. Officers advised that glass boxes would be used as part of the segregated recycling scheme.

Members discussed recycling of plastic. Officers advised that Welsh Government was introducing an end user responsibility policy which could encourage recycling. Environmental problems are caused by irresponsible disposal of the material. Changes to legislation may be required to enhance enforcement. The view was expressed that a public information film by the Council might be desirable to tackle irresponsible disposal of plastic.

Members discussed whether reduction in consumption of materials and products would be included in communications and engagement with residents. Officers advised that consumer pressure was leading to manufacturers and retailers altering their practices to reduce the amount of material used in packaging. It is hard for the Council to drive change in this area apart from in its messaging. There is widespread misunderstanding about the carbon footprint of different materials. The Council will reduce numbers of single use plastic bags used by ending use of comingled recycling collection as part of its waste strategy.

Members enquired about the reasons behind the choice of areas for the segregated recycling pilot, and the high level of dissatisfaction revealed in responses, particularly regarding space for receptacles. Information was sought on whether there was best practice from other LA areas that could be investigated. Officers advised that the pilot areas were chosen on the basis of housing type and demographics. The Council is looking into extending the areas into other wards to gather more feedback. Initial responses to the Strategy were positive. Resistance to new practices was to be expected from some residents. The Council is looking into support for families in terraced properties, including smaller bags or bags that can hold more than one material. Properties without frontages or rear spaces are a particular concern. Solutions for HMOs are also being investigated.

Members discussed the problems raised by the random distribution of HMOs in communities. Officers advised that consideration was being given to the best solution for mixed streets. It is possible to deliver individualised collection but capacity and resource needs to be taken into account.

Members were advised that houses without frontages and HMOs have separate issues. Specific pilots in these areas may be required. It is important to facilitate recycling by all residents.

Members were advised that different types of bags were being investigated for robustness. A decision will have to be made based on balancing quality against cost. Some different varieties of bag will be piloted in the expansion areas.

Members enquired about the budget for the Strategy. Officers advised that there will be savings from ending comingling. Some costs will be supported by grants from Welsh Government. Effective messaging will reduce later costs associated with cleansing and enforcement. A phased rollout, partly caused by infrastructure issues, will facilitate communication and engagement as well as adaptation driven by experience.



Members expressed the view that communicating the benefits of segregated recycling in terms of reduced amounts of material being burnt was vital.

Members expressed their gratitude to officers for the work that has been done in developing the Strategy.

RESOLVED: That the Chairperson writes to the Cabinet Member on behalf of the Committee to convey any comments, observations and recommendations made during the way forward.

## 21 : COASTAL RISK MANAGEMENT PROGRAMME

Members were advised that this item provided Members with the opportunity to consider and provide comments on the report titled 'Coastal Risk Management Programme – Revised Procurement of a Construction Contract to Deliver the Coastal Defence Improvements' which is due to be considered by Cabinet at its meeting on the 22 September 2022.

The Chairperson welcomed Councillor Caro Wild (Cabinet Member for Climate Change) and Matt Wakelam (Assistant Director, Street Scene – Waste) to the meeting for this item.

The Chairperson invited Councillor Wild to make a statement during which he referred to the problem of rising sea levels and the necessity to ensure adequate protection.

Matt Wakelam (Assistant Director, Street Scene – Waste) provided Members with a presentation which provided an outline of the project and its purpose; funding arrangements; revisions to the scheme; the next steps; and risks to the Council.

Members were invited to ask questions and make observations, which are summarised below:

The Committee discussed the risks of a flood breaching the defences of Lamby Way landfill and enquired about measures to prevent it. Officers advised that the Directorate would continue to investigate ways to improve flood protection to the site despite its removal from the scheme. Inspections and an asset plan were being put in place. The rock-on would prevent the frag tip from falling into the sea.

Members were concerned about whether restricting protection to the west side of the Rumney estuary might increase the risk of erosion in other areas. Officers advised that the engineering to be used in the flood defences would mitigate the risk of increased erosion elsewhere.

Members enquired whether there was a 3D representation of the implications of a flood. Officers advised that the full business case would include a plan of the areas most at risk, and this could be shared with members.

Members asked how the Wales Coast Path would be affected by the scheme. Officers advised that some enhancements to the walkway would be made including

to its width and prevention of vehicle access, while retaining its character as a natural coastal path. There was no intention to make it into a cycleway or put down tarmac. There would be some temporary diversions of the path during engineering works.

Members were advised that willow latticing would form part of the soft engineering in the Rumney estuary.

Members enquired about steps to ensure the tender was attractive to potential bidders. Officers advised that the contract had been made as viable as possible for potential contractors. Allowance has been made for inflation to reduce risk for contractors.

Members were concerned about the possible impact of the current economic conditions on the programme and the short timescale for launching the programme. Officers advised that one of the previous tenders used local materials, which mitigated the risk from a weak pound but that here would be likely implications from rising fuel costs. They were further advised that whilst the timetable was tight officers were working hard to achieve it.

Members were concerned whether the forecasts of flood risk used in the report were still accurate as they had been made in 2016. Officers advised that the parameters for the design had been raised in 2018 from 20% to 40%.

Members enquired whether there were areas that were being considered for managed retreat.

The Committee were advised that the programme would take approximately 2-2.5 years to deliver following the award of contract.

Members considered whether the delays to the programme could have been avoided. Officers advised that there was a dedicated team for flood management which had been asked to take on the coast defence project although it was outside their remit. There had been protracted discussions around the marine licence and the construction plans. Regulatory reviews which were necessary to protect habitats had also taken time.

Members expressed their gratitude to officers for their work on the programme.

RESOLVED: That the Chairperson writes to the Cabinet Member on behalf of the Committee to convey any comments, observations and recommendations made during the way forward.

## 22 : WORK PROGRAMME

Members were advised that this item provided the Committee with an opportunity to discuss and prioritise items for their work programme 2022-2023.

Members were content with the contents of the programme outlined.

## 23 : URGENT ITEMS (IF ANY)

No urgent items were received.

Members extended their best wishes to Cllr Proctor who will shortly be going on maternity leave.

24 : WAY FORWARD

Members discussed the information received and identified a number of issues which the Chair agreed would be included in the letter(s) that would be sent, on behalf of the Committee, to the relevant Cabinet Member(s) and Officers.

25 : DATE OF NEXT MEETING

Members were advised that the next Environmental Scrutiny Committee is scheduled for Thursday, 13 October 2022 at 4.00pm.

The meeting terminated at 6.25 pm

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## ENVIRONMENTAL SCRUTINY COMMITTEE

10 NOVEMBER 2022

Present: Councillor Owen Jones(Chairperson)  
Councillors Derbyshire, Gibson, Green, Lancaster, Lewis,  
Lloyd Jones, Jackie Parry and Wood

Shifa Shahzad and Charlotte Bowden

### 35 : APOLOGIES FOR ABSENCE

No apologies for absence were received.

### 36 : DECLARATIONS OF INTEREST

No declarations of interest were received.

### 37 : MINUTES

The minutes of the meeting held on 13 October 2022 were approved by the Committee as a correct record and were signed by the Chairperson.

### 38 : LOCAL DEVELOPMENT PLAN ANNUAL MONITORING REPORT

The Committee received a report providing an opportunity to endorse the 6<sup>th</sup> Local Development Plan (LDP) Annual Monitoring Report (AMR) following its approval by Cabinet and submission to Welsh Government.

Members were advised that the LDP was adopted in January 2016. Annual monitoring reports are required to be submitted by 31 October each year. The topics noted by Cabinet were summarised in the report. These included Employment, Housing, Transportation, Gypsy and Traveller Sites, Supplementary Planning Guidance and contextual changes. The AMR concluded that good progress was being made against LDP objectives.

The Chairperson welcomed Councillor Dan De'Ath, Cabinet Member –Transport & Strategic Planning), Andrew Gregory (Director of Planning, Transport and Environment) and Stuart Williams (Operational Manager) to the meeting. The Cabinet Member was invited to make a statement which was followed by a brief presentation from the officers.

The Chairperson opened the debate on this item. Members were invited to seek clarification, comment or raise questions on the information provided. Those discussions are summarised as follows:

- Members sought clarification on the classification of 'affordable housing' given that house prices have increased on average by 66% over the period of the LDP and, also, whether affordability was adjusted to take account of this rise. Officers stated that 'affordable housing' is defined by Planning Policy Wales as

houses in the social rented sector such as council houses and houses developed by housing associations that are offered to tenants at rents that are below the market value.

- Responding to a point made by a Member of the Committee, the Director stated that the Plas Dwr development is not yet complete. The masterplan for the development aims to deliver a sustainable community and it was therefore difficult to make an assessment on a scheme that is incomplete. The AMR suggests that the development is moving in the right direction. The masterplan provides for a full range of community facilities, including health, retail and SUDs drainage schemes.
- In terms of the larger housing developments, a Member considered that it was often difficult for ward members to identify who has responsibility for different aspects of those developments. The point was accepted and the Director asked that any particular difficulties be reported to officers directly.
- Members asked for an estimate of the likely number of new homes built by the end of the current LDP in 2026. Officers estimated that in the four remaining years of the current LDP the AMR has projected that there would be approximately 2000 housing completions each year.
- Members asked whether there was any opportunity to continue to press developers to improve the energy efficiency of their housing and match the achievements of the Council in their development in Rumney. Officers stated that the replacement LDP will offer a great opportunity to improve policy in terms of energy efficiency and to set targets for developers. The replacement LDP will aim to address a much broader range of issues in terms of quality, the environment and wellbeing. The powers that the authority has to require developers to build energy efficient stock is currently limited but the replacement LDP will require private sector developers to build to the highest standards.
- Members noted the 18 new SPGs that have been introduced during the period of the current LDP. Members asked how the effectiveness of the new SPGs is being monitored and assessed. Officers stated that SPGs are material considerations that need to be taken into account but they do not carry the same weight as the LDP. They are an important part of the framework but they are not binding. Officers accepted that some SPGs may need reviewing and the new LDP would offer an opportunity to fine tune them as part of a comprehensive review of the LDP. Members considered that it was essential to monitor the effectiveness of SPGs. Officers stated that SPGs are important documents that reinforce LDP policies. They play an important role and provide additional guidance. Appeal decisions are monitored to ensure SPGs are being implemented effectively.

- Officers were asked to comment on the effect the introduction of 20mph speed limits on roads in the city would have on bus journey times. The Director acknowledged the concerns of public transport providers. The authority is working closely with Cardiff Bus to ensure that improvements to the bus network are aligned with the strategic bus routes that Cardiff Bus wish to prioritise.
- Responding to a comment made regarding delays in housing completions, the Director stated that greenfield sites have taken longer than expected to become productive. However, there is lots of demand and completions are expected to increase over the next few years. The significant number of student accommodation developments did not count towards residential figures but there are now many more rented accommodation brownfield sites coming on stream and these will have a significant positive impact on housing completion figures.
- Members asked whether it was realistic to expect the target of 24% affordable homes to be achieved. The Director considered that the target was very achievable.
- Members asked what could be done to improve the energy efficiency of older properties in the city. Officers stated that they work closely with colleagues in housing on this issue. The replacement LDP will provide a focus on the provision of new homes for older people. The retrofitting of older properties falls outside the remit of the LDP.
- Members noted that 1,797 out of a target of 6,646 affordable homes (27%) has been built after 60% of the period of the LDP had elapsed. Members asked for further information as to why the completions were not higher at this stage. Members also asked whether the director was confident the overall target would be achieved as an additional 4,849 additional affordable homes would need to be completed in 4 years – 1,200 per year on average. Officers stated that completions have not been as high as anticipated due to the delays associated with the complexities in getting large strategic housing developments started, such as land assembly and planning consents. A large proportion of the affordable housing yet to be delivered would be delivered more quickly on those larger housing developments. Officers confirmed that the 'lag' referred to was not unique to Cardiff and that large developments across the UK will encounter similar issues.
- Members asked why the lower than anticipated number of affordable homes completed was rated 'yellow' in the AMR report and not rated 'red'. The Director stated that the rating reflected the number of affordable houses completed as a percentage of all completions.
- Members asked why children and young people were not included in the measure of adults participating in physical activity indicator in the report.

Officers stated that the indicators were set by the Planning Inspector. The point was accepted and this would be considered as part of the process for agreeing the new plan.

- Members noted that the number of adults participating in the recommended level of physical exercise had dropped 10%. Members asked officers to comment. The officers stated that there were a number of factors at play that were not necessarily associated with the LDP. However, the LDP does protect open space, provide for further open space and encourage active travel.
- Members commented on the 'green' and 'yellow' ratings in the AMR. Members considered that a number of these ratings were not in accord with the realities that Members are aware of within their wards. Members asked officers to comment on the performance indicators that are working and those that need to be changed to reflect the lived experiences of the citizens of Cardiff. Officers stated that a new suite of indicators would be brought forward as part of the replacement LDP. The existing indicators would be reviewed to ensure that they are more effective and responsive. The new indicators will reflect the policy approaches adopted as part of the new LDP. Officers accepted that point raised previously by the Committee regarding the monitoring of the effectiveness of SPGs.
- Members asked how much control could be built into the replacement LDP in terms of the types of development the Council would like to come forward in the City. Officers stated that the replacement LDP would need to deliver a range of choice in housing and a Local Market Housing Assessment will be undertaken. An overarching aim of the LDP is to cater for the needs of different demographics and different types of households. The authority would have more control over its own development but each planning application is judged on its merits. Other cities have zones in areas of the city to permit certain types of housing developments.
- Officers were asked to comment on the progress made regarding future provision of gypsy and traveller sites. Officer indicated that a needs assessment has been undertaken on the two types of sites required – transit and permanent. The assessment highlighted a need for 10 transit and 170 permanent pitches. Discussions are ongoing with other authorities in South East Wales regarding a transit site. Work is ongoing with Welsh Government regarding the provision of a permanent site. The Director stated that there was a complex set of needs in play and proposals would be brought forward in due course.
- Officers confirmed that the housing needs assessment includes provision for older people and care homes. The Cabinet Members stated that he is having discussion with his Cabinet colleagues regarding this and also the provision of childrens homes being factored into the LDP process.



RESOLVED – That the Chairperson writes to the Cabinet Member on behalf of the Committee to convey any comments, observations and recommendations made during the way forward.

#### 39 : CABINET RESPONSE TO RLDP SCRUTINY RECOMMENDATIONS

Members received a report providing the Cabinet's response to the Joint Task and Finish Group Inquiry on the Replacement LDP. The formal response to each of the six recommendations can be found in the appendix to the report.

The Cabinet Member for Transport and Strategy Planning was invited to make a brief statement. Members received a presentation on the findings of the Task and Finish Inquiry and the Cabinet Response. Five of the six recommendations were accepted. However, recommendation 1 was rejected.

The Chairperson opened the debate on this item. Members were invited to seek clarification, comment or raise questions on the information provided. Those discussions are summarised as follows:

- Members asked how those members of the community who are digitally excluded were consulted with as many of those who are digitally excluded are also under represented. Officer stated that the consultation had taken place during the Covid-19 pandemic. The consultation was supported by a campaign in the local media. Letters were also sent to anybody who had registered on the mailing list. The Cabinet Member accepted the important point raised. However, moving forward the authority has undertaken to reach out to communities that do not normally engage in a more structured way.
- Officers were asked whether they would do anything differently in future consultation exercises of this sort. Officers stated that traditional drop in events would be held so that officers could meet with residents face to face. This was not possible during the lockdown period. This would be done in parallel with social media and virtual campaigns which had proven to be successful.
- Members asked whether children and young people would be involved in formulating the child-friendly version of the consultation document. Officers welcomed the suggestion and provided an undertaking that this would be done.

The Chairperson opened the debate on this item. Members were invited to seek clarification, comment or raise questions on the information provided. Those discussions are summarised as follows:

#### 40 : DRAFT FORWARD WORK PLAN

Members were invited to suggest potential issues to be included in the future work programme. The Committee discussed a number of potential subjects.

RESOLVED – That the report be noted.

41 : COMMITTEE CORRESPONDENCE

RESOLVED - That the report be noted.

42 : URGENT ITEMS (IF ANY)

No urgent items.

43 : DATE OF NEXT MEETING

Members were advised that the next Environment Scrutiny Committee is scheduled for 8 December 2022.

44 : CORRESPONDENCE FOLLOWING THE COMMITTEE MEETING

The meeting terminated at 6.30 pm

CYNGOR CAERDYDD

CARDIFF COUNCIL

ENVIRONMENTAL SCRUTINY COMMITTEE

8 DECEMBER 2022

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**ONE PLANET CARDIFF STRATEGY AND ACTION PLAN: PRE-DECISION  
SCRUTINY**

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**Purpose of the Report**

1. To provide Members with background information to aid the scrutiny of the draft report to Cabinet regarding the One Planet Cardiff Strategy Annual Review which is due to be considered by Cabinet at their meeting on 15<sup>th</sup> December 2022.

***Scope of Scrutiny***

2. At their meeting on 15 December 2022 the Cabinet will consider a report that provides an annual review of the One Planet Cardiff Strategy (OPC) and the agreed Action
3. The draft report to Cabinet entitled ‘One Planet Cardiff - Annual Review’ is attached at **Appendix A** and has **one** appendix:
  - **Appendix A1** - One Planet Cardiff – Council Action Plan, Review of Progress 2022
4. The Cabinet report is the main progress report which is then provided in a summary in the appendix A1.
5. During this scrutiny, Members have the opportunity to explore:
  - *The progress made to date;*
  - *Proposed changes to the action Plan*
  - *The recommendations to Cabinet.*

**Background**

6. As stated in the Cabinet report attached, Cardiff Council declared a climate emergency in 2019 in response to this the One Planet Cardiff Strategy was developed and published along with an action plan towards the end of 2021. The

Strategy sets out how we will respond and tackle this emergency and become carbon neutral Zero as a Council and a City by 2030.

7. Since its publication the new administration has published their 'Stronger, Fairer, Green' Strategy placing climate change at the heart of the Council agenda and internal Council policy has also been reinforced.
8. In September 2022 the Council debated and passed a motion in relation to climate injustice which called for the Council to become more 'globally responsible' in tackling climate change
9. The Cabinet report is the first review of the OPC strategy and action plan and **point 16** notes the inclusion of the first annual Operational Carbon Analyses findings from the Welsh Governments ambition for a Carbon Neutral public sector in Wales.

#### **Issues identified in the Cabinet Report**

10. The **Analysis of the Council's Annual Operation Carbon Emissions**, highlighted at **point 17**, notes the baseline data used was 2019/20 together with 2020/21 data to safeguard any skewing of the data due to the COVID-19 pandemic and associated restrictions and lockdowns
11. **Point 19** notes a change in the Welsh Government reporting framework methodology due to significant issues with the overall methodology – defined nationally - for calculating procurement emissions were noted at the time <sup>1</sup>.
12. Instead of the Scopes 1, 2 and 3 approach an activity based reporting structure will be used, under the following headings
  - Buildings
  - Fleet
  - Business travel, commuting and homeworking
  - Waste
  - Land based emissions and sequestration
  - Renewables
  - Supply chain (procurement)

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<sup>1</sup> See [www.oneplanetcardiff.co.uk](http://www.oneplanetcardiff.co.uk) for a fuller explanation of the 2021 Carbon Reporting methodology and terminology

13. Historical 2019/20 and 2020/21 data has been reworked using the new methodology for this first annual review,
14. However, as the methodology for calculating results has changed between reporting periods this means that direct comparisons with the council published baseline data and the current reporting year are problematic.
15. Comparison graphs are provided in **point 22** that relate to the previous categorisations i.e. Scope 1 and Scope 2 emissions and note a **13% reduction** in the Council's direct operational emissions between 2019/20 and 2020/21.
16. Issues in relation to the unusual circumstances regarding the Covid-19 pandemic are noted in **point 23**, which also notes that while directly comparable data is not available the 'general trend and observations' are reliable.
17. The rest of the annual review reports in using the new methodology and the chart at **point 25** shows a reduction in emissions of 4% over the last three years excluding those from the supply chain/procurement category
18. **Point 26** states building emissions have decreased over the three year period by 18%. The increase between 2020/21 and 2021/22 of 8% was anticipated following lifting of covid restrictions and buildings being opened.
19. Progress in relation to Street Lighting, **point 27**, notes a small increase in emissions between 2019/20 and 2021/22, despite the LED replacement and dimming programmes. During the pandemic there was a global shortage of electronic equipment which slowed progress and streets in new hosing developments will have been adopted growing the baseline figure.
20. Commuting and business travel emission reduced over the period due to the increase in on-line meetings.
21. The effect of newly planted trees on land emissions will not be seen until the trees start to mature.
22. **Point 30** highlights the issues that prevented better progress:
  - Fleet emissions - covid restrictions preventing vehicle sharing;
  - Inclusion of 'home -working' emission for the first time;

- For a short period a small amount of waste being sent to landfill due to breakdown of one of the handling plants.

23. **Point 32** states that although the significant majority of Councils operational carbon footprint relates to supply chain or procurement, due to the weaknesses in the methodology in assessing the impact an in depth review has not been included in the report. It also notes Welsh Government are undertaking work to improve the evaluation framework.

### Analysis of Cardiff City-wide emissions

24. Local authority wide carbon emissions, (i.e. relating to all residents, organisations and visitors within the city boundaries) are published by Central Government’s Department for Business Energy and Industrial Strategy (BEIS). Data is collated on a calendar year basis with the most recent data available for 2020, indicating a whole city carbon emission of 1.6m tonnes CO<sub>2</sub>. Compared to 1.8 m tonnes in 2019

25. Comparison data of the percentage between sectors in 2019 and 2020 is shown in the table below

|      | Transport | Domestic | Industry | Commercial | Public sector | Waste Mgt | Agriculture |
|------|-----------|----------|----------|------------|---------------|-----------|-------------|
| 2019 | 41%       | 26%      | 17%      | 7%         | 5%            | 4%        | 1%          |
| 2020 | 38%       | 29%      | 17%      | 6%         | 5%            | 4%        | 1%          |

### Modelling the Impact of our Projects and Plans – a ‘Pathway to Net-Zero’

26. **Points 35 – 42** describes the methodology used in the modelling to graphically show the impact on carbon emissions proposed projects will have over the years to 2030. Although the methodology currently excluded emissions in relation to procured goods and services.

27. A number of graphs illustrating scenarios are provided throughout the report. The first chart (**point 39**) shows the progress to date and then projects a “do nothing” scenario, relying solely on national predictions for grid decarbonisation. The resulting solid green line <sup>2</sup>is then compared against two target lines showing

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<sup>2</sup> This methodology takes the current actual/observed annual emissions data between 2019/20 and 2021/22 and uses the projected emissions conversion factors as issued by BEIS in 2021. Grid decarbonisation has actually occurred at a rate faster than shown in the BEIS 2021 projected conversion factors and explains the apparent increase in emissions in 2023. This is not an increase in overall emissions, but an adjustment as forecast emissions (which are higher than the actual recorded levels) take over from actual ones.

where the Council needs to be in the journey to net zero (one linear/straight (in red) with approx. 10% reduction per annum, and the other exponential/curved (in blue) which would involve deeper and more impactful interventions earlier on in the timeline). The gap between the green and red lines effectively represents notional annual targets for carbon savings.

28. This can be used as a baseline in the model and the impact of projects and programs over time will be shown by changes to the green/solid line. The graph in **point 40** demonstrated the impact of a number of ongoing projects including
- Building decarbonisation
  - Transition to low emission fleet
  - Replacing of all streetlighting to LED
  - Coed Caerdydd tree planting and biodiversity programme
29. **Point 41** highlights the projected significant gap of 20,566 tCO<sub>2</sub>e that remains in 2030 after grid decarbonisation and the implementation of the schemes above.

#### **ACTION PLAN REVIEW - Buildings**

30. Emissions from council buildings and schools represent a major challenge as they rely on fossil fuels for heating and power.
31. **Council premises:(Carbon Neutral Council action) – Points 44 – 48** note the reduction in emissions of 55% between 2014/15 (40,00 tonnes) and 2021/22 (18,000 tonnes) (excluding leisure centres).
32. The current approved activity is not sufficient to address the reductions needed, therefore the Council has responded by:
- Starting to install smart meters in key buildings;
  - Developed a number of roof mounted solar schemes
  - Piloted installation of air source heat pump in a school, linking to solar generation and other efficiency controls to develop a prototype for a net zero retrofit
  - Commissioned work to design one of our new-build schools to Net Zero standards as a pathfinder for all future School construction;
  - Published a position statement on the Council's own new buildings which requires all commissions from 2024 onwards to be designed to net zero carbon standards; and

- Commissioned a study, drawing from the above data and pilots, to advise on a fully costed programme of retrofit activity across the whole estate over the rest of the decade.
33. **Domestic Premises:(Carbon Neutral City action) – Points 49 – 54** states the challenges in relation to this issue particularly in light of increasing fuel prices and the cost of living crisis, but notes the work the Council is doing in relation to domestic energy efficiency includes:
- A scheme to upgrade all council owned low-rise flats;
  - Applying for and implementing any Welsh Government grant funds to support domestic retrofit schemes;
  - Working with Cardiff Capital Region to support an additional scheme targeting Energy Company Obligation (ECO) funding towards households in fuel poverty
34. Also noted is the OPC target to retro fit 2,000 homes by 2024, however a foot note explains that this type of work is not included in that pathway analysis as it falls outside the remit of the Councils direct operational carbon footprint.
35. The construction of 40 new build Council Houses, due to be completed in 2023 have been designed to meet zero carbon standards. These will set the standard for all new Council homes in the future.
36. However, much of the domestic housing in Cardiff will fall outside the remit of many schemes, therefore that Council has a key role in lobbying and flagging up for resident's trustworthy sources of assistance.
37. **Points 53 and 54** highlight the potential in this area in relation to economic growth, skill development, as it approximates up to 10,000 houses a year may need some energy efficiency upgrades in the next 10 years and discussions are taking place at regional and national levels supporting a nationwide retrofit scheme, although a decision has yet to be made.
38. **City Scale Building Decarbonisation (Carbon Neutral City action) - Point 55** indicates that work is ongoing with partners on the Climate Emergency Board (CEB) to take forward the decarbonisation agenda across the organisations and to share and promote best practice.



39. The replacement Local Development Plan is also being shaped by OPC, sustainability and climate change

### **ACTION PLAN REVIEW - Mobility**

40. As previously noted Government figures suggest transport emissions make up 38% of the City's carbon footprint. In relation to Council activity, transport emissions are the second highest with approximately 10,000 tonnes released in 2021/22.

41. **Council Mobility (Carbon Neutral Council action) - Points 57 – 61** note the Councils Fleet Transport Action Plan and the transition to electric vehicles. 53 vehicles are now electric, included 10 refuse collection lorries. The remaining vehicles will be replaced by 2025.

42. Transport emissions also include 'grey fleet' i.e. staff using their own vehicles for Council business. The decrease of 45%, in emissions between 2019/20 and 2020/21 in this area will as a result of covid and the change in working practices.

43. For the same reason emissions relating to staff commuting decreased by 17% over the same period. Although it is recognised that many staff groups are not able to work from home and need access to their work place.

44. The varied problems linked to the Councils 'mobility' are multifaceted and are allied to many polices. To focus on this a task and finish group has been established made up of key stakeholders whose task will be to develop a 10 year action plan that can be assessed and included in future modelling work Alongside this, evaluating operational needs and hybrid working to reduce superfluous journeys and incentivising a shift to active/low carbon travel choices.

45. **Citywide Mobility (Carbon Neutral City action) - Points 62 – 65** notes the progress in relation to the Transport White Paper and the Low Emission Transport Strategy which includes:

- Traffic calming and cycling infrastructure
- 36 electric buses, to be increased in 2023 with additional grant funding
- Improvements between Cardiff & Newport on the Newport Road corridor
- Electrification of railways and discussion on the South Wales Metro

- Introduction of 20 mph zones ahead of a roll out of the national scheme in September 2023
  - Active travel work in schools
  - Seventy Publicly accessible EV charging points installed in public car parks/residential areas with further roll out in development.
  - Regionally funded e3lectric taxi initiative
  - Consideration of a road user charging scheme to reduce the number of vehicles entering the city
46. The importance of Behaviour Change strategies is also noted along with the work of the Climate Emergency Board and partners organisations who are facing the same challenges to work together.

### **ACTION PLAN REVIEW – Supply Chain and Procurement**

47. **(Carbon Neutral Council action) - Points 66 – 75** reiterate the reporting problems with procured goods and services which account for more than 80% of the Councils operational carbon footprint. Therefore, significant work has been done in trying to find solutions.
48. The Councils refreshed Socially Responsible Procurement Policy 2022-27 was approved recently and has carbon reduction at its core.
49. Examples of proactive carbon reduction procurement include the recent contract to build net zero schools, the roll out of LED lighting across the city and a recent road resurfacing scheme which specified the need for the contractor to use recycled low carbon materials.
50. It is recognised that that Council has many suppliers and smaller independents may not be able to move as quickly to low carbon solution , however we need to consider how they can be support in this transition.

### **ACTION PLAN REVIEW – Waste and Recycling**

51. **(Carbon Neutral City action) - Points 76 – 83** states the Council has been successful in removing the need for landfill and improving recycling activity.
52. It notes the difficulties of accurately reporting carbon benefits as recycling materials are handed to third parties to be processed. Consequently, WG require

calculations to be limited to waste that goes to landfill and some degree of transfer activity in handing waste over.

53. The recent approval of a new recycling strategy for the City is noted and it aims to :
- Increase recycling and participation
  - Increase opportunities to recycle
  - Improve the material quality of recycling sent for reprocessing
  - Encourage and support prevention, reuse, repair of materials
54. A link to the Welsh Government website 'My Recycling Wales' is provided in **point 82**. This provides a range of information about recycling information in all local authorities in Wales.
55. The development of a Cardiff Circular Economy Network with Cardiff Metropolitan University and Celsa Steel UK and delivery of workshops and the engagement with schools to share resources and develop lesson plans to embed 'circular economy' principles across the curriculum.

#### **ACTION PLAN REVIEW – Energy.**

56. ***Renewable Energy Generation and Low Carbon Energy Distribution – Point 84*** notes the need to grow clean renewable energy sources, as despite the effort to reduce energy consumption, the growth in electric vehicles and heating solutions creates more demand.
57. ***Energy (Carbon Neutral Council action) – Points 85 – 87*** focus on the work the Council is has done and will undertaking in relation to renewable energy generation.
58. Proposals for two new energy generation schemes on Council land are noted, with business cases to be developed for approval.
59. ***Energy (Carbon Neutral City action) – Points 88 – 90*** mention the opportunities Cardiff has to support grid decarbonisation as it is a major landholder. The Lamby Way solar farm provides the equivalent zero carbon energy to power over 2,000 homes.

60. The heat from the Cardiff Heat Network that is currently under construction is expected in late 2023. This heat will not be from 'renewable' sources but is the result of a waste handling process that would otherwise be unused.
61. **Point 90** states that there is interest and support from the City Region and the [Western Gateway Group](#) (A pan region partnership from Swansea to Swindon and Cheltenham to Salisbury) in exploring tidal power generation in the Severn Estuary.

### **ACTION PLAN REVIEW – Green Infrastructure and adaptation to Climate Change (Carbon Neutral Council and City action)**

62. **Point 91** refers to Coed Caerdydd project as a tool to deliver some of the ambitions in relation to land management and biodiversity in the OPC strategy, and notes that 22 hectares of land will have been planted by 2024 to support carbon gathering. The final outcome of the project is to plant 839 hectares however funding is only available until July 2023 with a bid for an additional 2 years funding being made to the Shared Prosperity Fund.
63. **Flood defence Points 92 – 95** – states Cardiff has a well formed flood defence programme that includes Sustainable Urban Drainage. It notes that work is ongoing with NRW to improve the water quality in the city including the three rivers, which will in turn improve biodiversity and lessen flood risk.
64. The Cabinet report also refers to coastal risk management programme which the committee considered in September 2022, and it notes construction is due to begin by the end of March 2023.

### **ACTION PLAN REVIEW – Food**

65. An officer has been recruited to oversee the Cardiff Food Strategy 2021-24 which promotes healthy low carbon food. They will also engage with schools, communities and local SMEs.
66. **Council Food (Carbon neutral Council action) - Points 97 – 99.** Through schools 15 vegetable gardens have been built and a further 10 will be completed by the end of March 2023.

- 67. Over the summer 18 schools had kitchen upgrades, and this will be up to 40 by Christmas 2022. Investigation work is also ongoing to develop new low carbon sustainable healthy menus.
- 68. A proposed pilot in the County Hall Canteen has been delayed due to the implementation of hybrid working, however, discussions are on going to ensure the menu options reflect the council's food procurement, i.e. health low carbon choices
- 69. **City-wide Food (Carbon neutral City action) - Points 100 and 101** indicates the councils is looking at ways to use spare and underused areas of land and to make them available for community groups to develop food growing projects
- 70. The Cardiff City Region in partnership with Monmouthshire Council have begun a large food innovation project. It is a competition looking for creative ideas to local production and supply of environmentally sustainable food.

**ACTION PLAN REVIEW – Behaviour Change – engagement & partnership – Point 102**

- 71. The development of a wide program to address behaviour change is needed to support the OPC vision for the whole city.
- 72. **Council Staff Engagement (Carbon neutral Council action) – Points 103 – 105** discuss embedding low carbon values across all Directorates and making sure that all future decisions made have the least impact
- 73. Acknowledging the complicated cross cutting matters, under the direction of the Chief Executive a formal layer of control for the OPC strategy has been introduced that brings together key directorate leads to discuss cross cutting issues and settle and difficult issues.
- 74. The central role of schools is acknowledged and the development and they are being invited to develop their own Action plans as part of the One Planet Schools Pledge.
- 75. **City Wide Behaviour Change Initiatives (Carbon Neutral City action) – Points 106 – 111** notes the hope that whilst undertaking the work in schools the

pupils will become leaders for change and persuade their family and friends of the changes that need to be made.

76. The work of the Climate Emergency Board and key partners and the sharing good practice and supporting each other's work going forward so that key messages are strengthened and amplified.
77. It is also acknowledged that there is more work to be done to encourage behaviour change plans and approaches to better support this are being investigated. It is noted the Welsh Government are preparing a new Strategy for Public Engagement and Action on Climate Change and the Council will need to align any work with this.
78. Officers are preparing easily to understand, powerful messages to engage with citizens to ensure that everyone plays their part, and the Cabinet report states that in line with current Welsh Government guidance on Climate Change Engagement, we need *"to make the right thing to do the easiest thing to do"*,
79. **Council Pension Fund – Disinvestment away from High Carbon Activities and Fossil Fuels – Points 112 and 113** although the fund does not directly impact on the Council's carbon emissions it is eager to support ethical investment where possible. To support this the following has been undertaken:
- Increasing its proportional allocation of investment to the Low Equity Carbon Tracker fund and introducing a de-carbonisation overlay to a number of its Active Equity Funds
  - The potential for Disinvestment from companies representing a continuing risk who do not respond positively to engagement
  - The soon to be launched WPP Sustainable Equity Fund is expected to see an acceleration in positive investment in companies developing clean technology

## **CONCLUSION**

80. Despite good progress being made in some areas the development of the suggested Pathway methodology indicates that there is still a lot of work to be done.

81. It is also uncertain what Government funding support will be available to the public and domestic sector to enable decarbonisation of buildings.
82. Global issues have impacted on the availability and price of components and vehicles to move forward with elements of the strategy.

### **Proposed Recommendations to Cabinet**

83. The report to Cabinet contains the following recommendations:
  - i. Note the progress made on carbon reduction in the first year of One Planet Cardiff Action
  - ii. To approve the Pathway modelling methodology as a tool for onward monitoring and decision making
  - iii. To note and approve the refinement and progress of the One Planet Cardiff Action Plan
  - iv. To note and approve the intention to hold a Climate Change Convention in 2023

### **Previous Scrutiny**

84. This Committee undertook initial scrutiny of the draft strategy at their meeting in December 2020. As well as hearing from the Leader, Cabinet Members and Officers from the Planning, Transport and Environment Directorate, the Committee also considered written submissions from stakeholder groups on the draft Strategy. Each of the stakeholder groups were also offered the opportunity attend the meeting to answer Member questions on the Draft One Planet Cardiff Strategy and the submission that they had provided. The stakeholder groups who agreed to take part in the meeting were:

- Cardiff University;
- Cardiff Youth Council Cardiff;
- Dwr Cymru;
- Labour for a Green New Deal (LGND);
- Natural Resources Wales;
- Size of Wales;
- Sustrans;
- Wales & Wests Utilities;
- Wales Co-operative Centre;

- Welsh Government Energy Services.

85. The Chair's letter from this meeting is attached at **Appendix B** contains a series of feedback comments as well as recommendations. These were structured into the following themes:

- Strategy Feedback
- Partnership and Governance
- Behavioural Change
- Covid Resilience
- Planning and Cardiff's Local Development Plan
- Local Sustainable Low-Carbon Food Supply
- Water - Usage and Drainage and its link to Climate Change
- Education and Engagement
- Trees
- Resources
- Transport
- Prioritisation
- Future Energy Solutions
- Procurement
- Regulation and Policy

86. The Committee also asked that their letter and the witness submissions be added to the other documents as a part of the wider consultation exercise for One Planet Cardiff.

87. At their Committee meeting on 11 May 2021, Members received a progress update on the development of the 'One Planet Cardiff' Strategy. Following their Scrutiny the following which they again provided a series of feedback comments around the following themes:

- Cost of Retrofit on Social Housing
- Wildlife Corridors
- Tree Planting
- Charging Points
- Public Consultation



- Electric Taxis
- City Car Club

88. A full copy of this letter and the response received from the Leader, Cllr Michael and Cllr Wild is attached at **Appendix C**.

89. Members received the proposed final draft of the One Planet Cardiff Strategy and Action Plan at their Committee meeting on 5 October 2021 and provided comments in relation to the following subjects:

- Behaviour Change
- Governance
- Carbon Neutral Building Developments
- Action Plan and Monitoring
- Financial Implications
- Dedicated Resource

90. A full copy of this letter and the response received from the Leader and Cllr Michael is attached at **Appendix D**.

### **Way Forward**

91. Councillor Caro Wild, Cabinet Member – Climate Change and Andrew Gregory, Director of Planning, Transport & Environment have been invited to make a statement and answer Member's questions. These will be supported by further representatives from the Planning, Transport and Environment Directorate.

### **Legal Implications**

92. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters, there are no direct legal implications. However, legal implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any legal implications arising from those recommendations. All decisions taken by or on behalf of the Council must (a) be within the legal powers of the Council; (b) comply with any procedural requirement imposed by law; (c) be within the powers of the body or person

exercising powers on behalf of the Council; (d) be undertaken in accordance with the procedural requirements imposed by the Council e.g. Scrutiny Procedure Rules; (e) be fully and properly informed; (f) be properly motivated; (g) be taken having regard to the Council's fiduciary duty to its taxpayers; and (h) be reasonable and proper in all the circumstances.

### **Financial Implications**

93. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters, there are no direct financial implications at this stage in relation to any of the work programme. However, financial implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any financial implications arising from those recommendations.

### **RECOMMENDATION**

The Committee is recommended to:

- i) Consider the information in this report, its appendices and the information presented at the meeting;
- ii) Determine whether they would like to make any comments, observations or recommendations to the Cabinet on this matter in time for its meeting on 15 December 2022; and
- iii) Decide the way forward for any future scrutiny of the issues discussed.

**DAVINA FIORE**

**Director of Governance & Legal Services**

**2 December 2022**

**BY SUBMITTING THIS REPORT TO THE CABINET OFFICE, I, (DIRECTOR NAME) (DIRECTOR TITLE) AM CONFIRMING THAT THE RELEVANT CABINET MEMBER(S) ARE BRIEFED ON THIS REPORT**

**CARDIFF COUNCIL  
CYNGOR CAERDYDD**

**CABINET MEETING: December 15<sup>th</sup> 2022**

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**REPORT TITLE One Planet Cardiff – Annual Review**

**CABINET PORTFOLIO TITLE**

**Cllr Caro Wild – Cabinet Member for Climate Change  
AGENDA ITEM:**

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### **Reason for this Report**

1. To note progress on the One Planet Cardiff Strategy and associated Carbon Reduction analysis.
2. To introduce a standardised methodology to model a pathway to net zero by 2030, and
3. To approve the refreshed action plan in light of the new Administration's ambition for a Stronger, Fairer, Greener City.
4. To set out the initial steps that the Council is taking in response to the Motion agreed by Full Council in September 2022 on Climate Change and Climate Justice.

### **Background**

5. We are in the early stages of a man-made climate crisis, with severe consequences for humanity and future generations around the world, including Cardiff. The over-heating of the planet's atmosphere has been caused by the unsustainable use

of the earth's resources, and particularly by the associated carbon emissions.

6. Cardiff cannot shy away from the fact that our citizens emit more carbon than the world's average and as the capital city of a developed nation have helped profligate an environmentally unsustainable economy.
7. The current and future risks to humanity from these threats include:
  - Rising sea levels will submerge currently inhabited land and increase the likelihood of flooding
  - The climate will get progressively more unstable with storms and heatwaves increasing in regularity and intensity
  - Global heating is making some parts of the world uninhabitable, leading to the displacement of millions of people
  - Drought, storms and changes to the weather seasons impact farming and global food production, leading to food shortages and price increases
8. Whilst it is likely that poorer and hotter parts of the world will be more seriously impacted, as an inter-connected global city, Cardiff will also feel the impact of these threats directly and indirectly.
9. We know it would be almost impossible to reverse climate change, but if cities and nations around the world act now we can stop the impacts from getting far worse.
10. The Council declared a climate emergency in 2018 and then published its strategic response to this in the One Planet Cardiff (OPC) Strategy in 2021. One Planet Cardiff established two overarching goals:
  - for the Council to be Carbon Neutral in its activities by 2030, and
  - to work in partnership with stakeholders to develop a pathway for a Carbon Neutral City by 2030.
11. Since then, significant progress has been made by the Council and key partner public sector organisations in identifying the key high impact priorities for action that need to be focussed on,

developing a robust programme for change, and starting to make tangible carbon reduction improvements.

12. The Council's internal policy position has also strengthened over the intervening period. The approval of the new Administration's "Stronger, Fairer, Greener" strategy places Climate Change at the centre of the Council's agenda.
13. Full Council debated and passed a Motion in September 2022 around climate justice and the impact of climate change on nations around the world, many of which produce far fewer emissions than more developed nations. The motion calls on the council to commit to being a 'globally responsible city' and also reinforced the commitment to acknowledge and tackle the global consequences of climate change. The One Planet Cardiff Strategy and Action Plan set out a number of the steps that the Council will take to respond to the Motion.
14. This report is the first review of the OPC Strategy. It records the progress that the Council has made so far, both in striving to reduce the climate implications of our actions and to build greater resilience to the effects of climate change that we're already experiencing.
15. The report updates and adds detail to the programmes, projects and actions that will deliver these overarching goals. Details of the OPC strategy and how it was developed can be found at [www.oneplanetcardiff.gov.uk](http://www.oneplanetcardiff.gov.uk). A summary of the main point of progress across the OPC action plan is provided in the Appendix to this report and discussed in more detail below.
16. As part of the Welsh Government's ambition for a Carbon Neutral public sector in Wales the Council's operational emissions are calculated annually and submitted to WG. The findings of this first annual Operational Carbon Analysis are also discussed, along with carbon statistics produced by Central Government relating to the city as a whole. This reporting provides the basis for the monitoring of our progress against the One Planet Cardiff 2030 target.

## Issues

### ***Analysis of the Council's Annual Operational Carbon Emissions***

17. The 2021 One Planet Cardiff Strategy reported the Council's estimated carbon emissions at a 2019/20 baseline year, alongside an analysis for 2020/21. This was to ensure that the One Planet Cardiff carbon baseline related to "normal" pre-pandemic activities, so as not to be skewed by the various implications of the Covid lockdowns.
18. The key recognition from that analysis was that the carbon emissions "caused" by the Council's procurement activities dwarfed all other types of more direct emissions from heating and powering buildings and from our travel and mobility activities (referred to at the time as "Scope 1" and "Scope 2" emissions, with "Scope 3" referring to indirect (or "caused") emissions). However, some significant issues with the overall methodology – defined nationally - for calculating procurement emissions were noted at the time <sup>1</sup>.
19. Since then, the Welsh Government carbon reporting framework methodology has been amended. This year's reporting has shifted focus from the Scope 1, 2 and 3 approach, to "activity" based reporting under the headings of:
  - Buildings
  - Fleet
  - Business travel, commuting and homeworking
  - Waste
  - Land based emissions and sequestration
  - Renewables
  - Supply chain (procurement)
20. As this presents a more meaningful subdivision, which relates more directly to the OPC themes and action plan, officers have reworked the 2019/20 and 2020/21 data using this methodology and have used this to form the basis of the analysis for this report.
21. However, this changed methodology means that direct comparison between the current reporting year and the

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<sup>1</sup> See [www.oneplanetcardiff.co.uk](http://www.oneplanetcardiff.co.uk) for a fuller explanation of the 2021 Carbon Reporting methodology and terminology

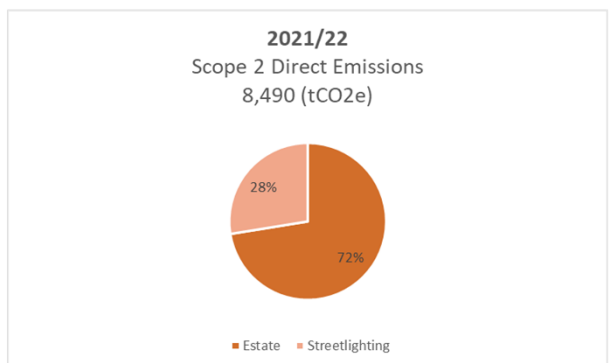
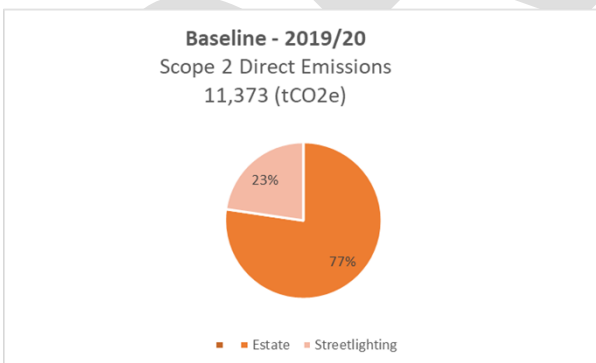
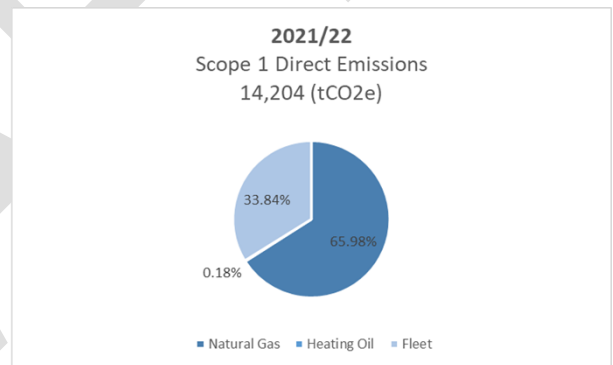
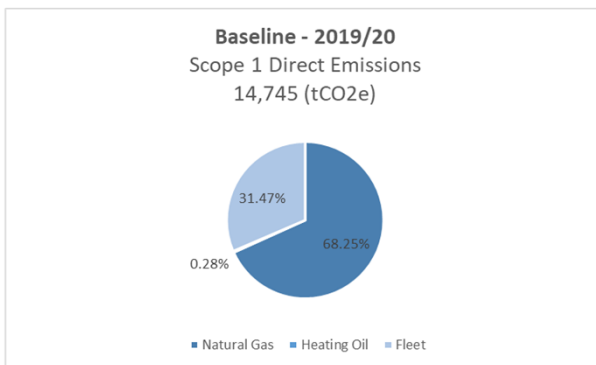
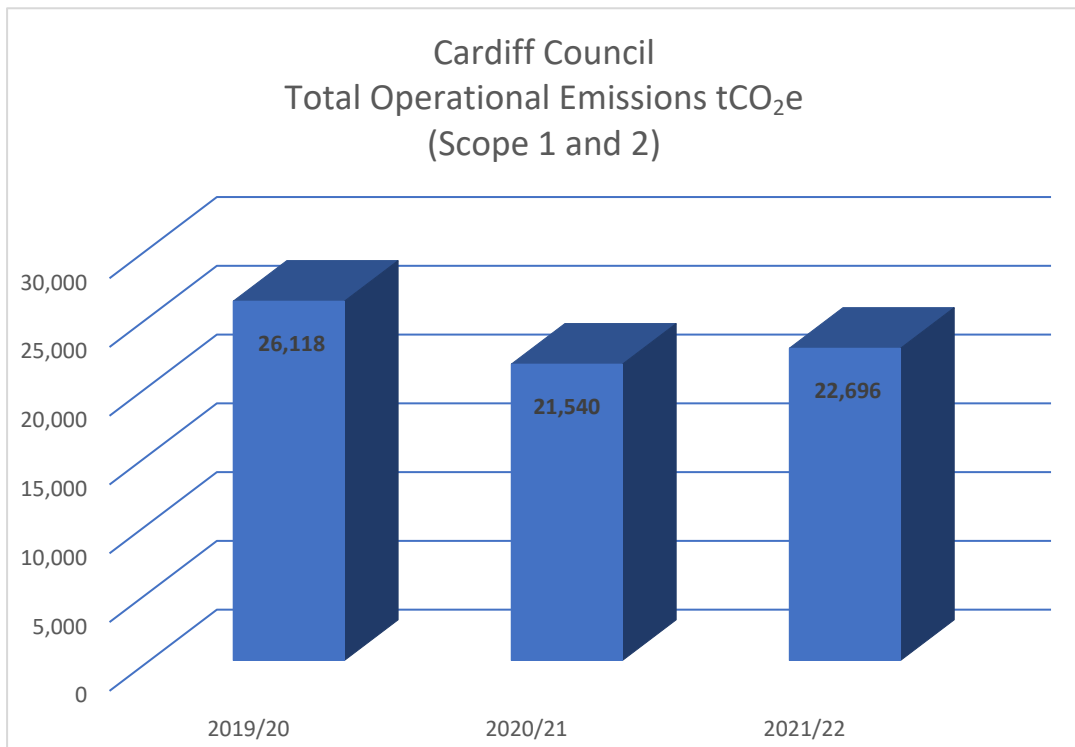
Council's published baseline is difficult<sup>2</sup>. Therefore, in order to ensure that the first year's progress is properly recorded we have also included an analysis based on the original methodology to ensure a like-for-like comparison as follows.

22. Excluding Scope 3 emissions this analysis showed that the Council's direct operational emissions (Scope 1 + Scope 2) reduced from 26,118 tonnes CO<sub>2</sub>e to 22,695 tonnes between 2019/20 and 2021/22. This represented a 13% reduction with the majority of this observed in electricity consumption. The charts below give further details.

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<sup>2</sup> In particular, the current WG methodology includes some "well-to-tank" emission factors, which have been used to account for the upstream emissions associated with extraction, refining and transportation of the fuel sources to an organisation's site (or asset), prior to combustion. These were considered to be external/caused emissions in the 2019/20 baseline calculations. See this link [Welsh Public Sector Net Zero Carbon Reporting Guide \(gov.wales\)](#) for a fuller explanation of WG's methodology.

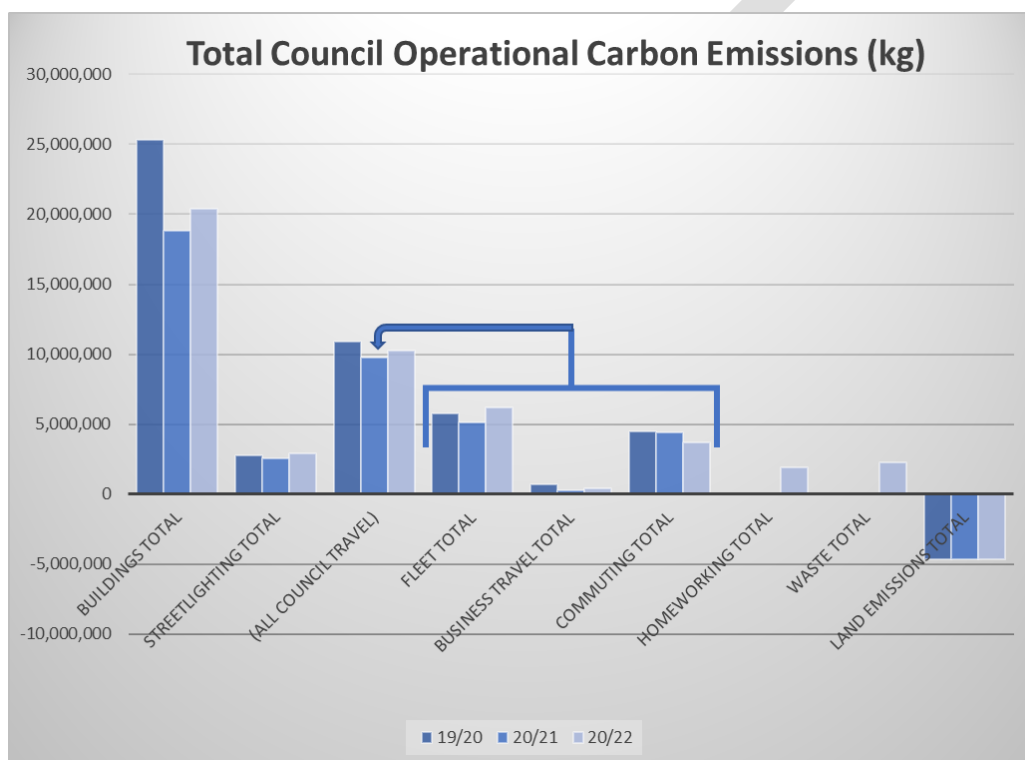


23. The more detailed analysis that now follows is based on the new WG reporting methodology. Overall, it is important to understand the current data in the light of the highly abnormal circumstances associated with the Covid Pandemic, as well as changing accounting methodologies. In particular, the figures show a “bounce-back” from the pandemic year as activities resumed, and now include the “upstream” emissions not



previously counted, along with some new elements attributable to waste and homeworking as described below. on that basis the detailed analysis is not directly comparable with the original OPC report the general trend and observations are consistent.

24. The chart below shows how emissions (calculated with the new WG methodology) changed over the last three years on an “Activity” basis.
25. Excluding the emissions from the Supply Chain/Procurement category the Council’s operational Carbon Emissions reduced by 4% between the 2019/20 base year and 2021/22.



26. Building emissions reduced by an overall 18% over the three year period but with a slight (8%) increase in the year 2020/21-21/22, This increase was expected, and reflects the reopening of key buildings post-lockdown, but overall the downward trend was still strong. The majority of the decrease was observed in electricity consumption with gas emissions (largely associated with heating) still relatively slow to decarbonise.
27. Street Lighting emissions increased slightly over the period, though the figures disguise some significant work done on the Council’s programme of LED replacement and dimming work. In particular, a large element of this work was completed prior

to the 19/20 base year, delivering a 50% carbon reduction in treated areas. A worldwide shortage of electronic equipment then slowed progress over the Covid period with work only able to resume at pace in late 21/22 and meaning that the data associated to the latest work is not fully captured in the report. On that basis it is anticipated that a more significant impact will register the next reporting year. It should also be noted that the moderate increase during the 21/22 year is likely to be the result of new street lighting being added to the baseline figure as new roads in new developments were adopted

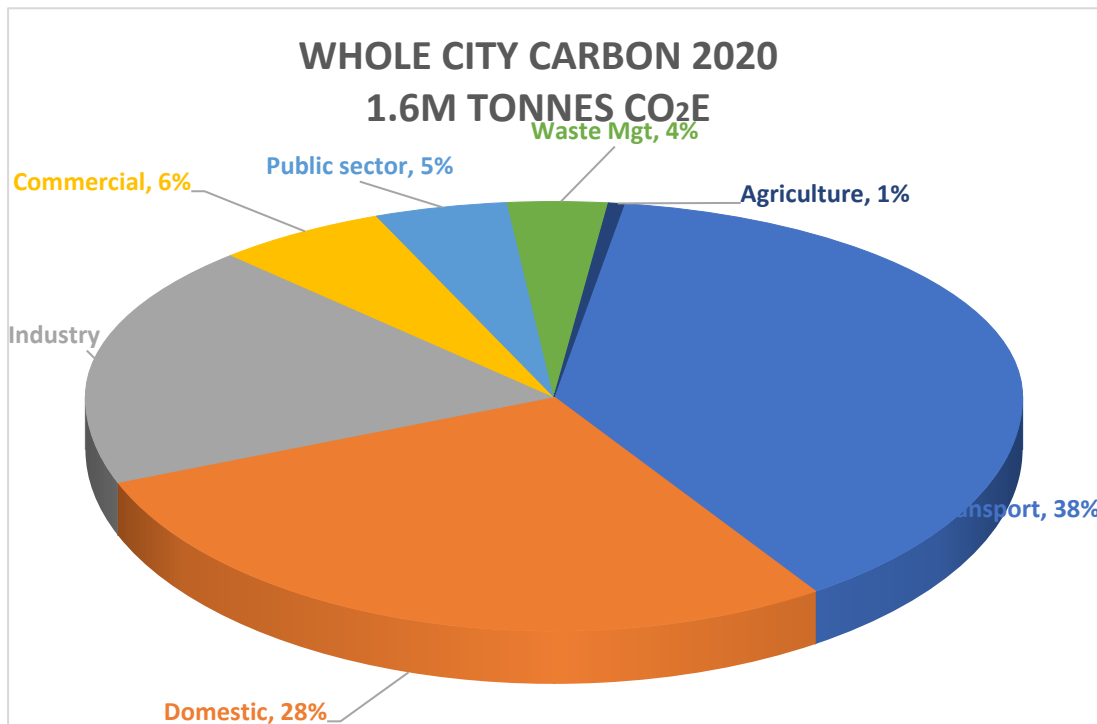
28. The Council's commuting emissions reduced by 17% since the baseline year, with the downward trend persisting through the reporting period. Business travel also decreased, reflecting the significant uptake of on-line meetings across the organisation.
29. The figures for "Land Emissions" show the effects that trees and green infrastructure on the Council's land have in capturing, or sequestering carbon thus having a positive effect on carbon reduction. The static figures disguise some positive progress made in extending our tree canopy since the true effects of new planting aren't captured until the trees start to mature.
30. Three key factors were noted in this analysis which held back some otherwise positive progress:
  - Emissions from our fleet increased, partly because of the Council's Covid protocols which limited or prevented vehicle sharing and therefore triggered more individual trips. This situation is expected to be rectified in the current financial year now that most of these restrictions have been lifted;
  - For the first time, the report includes emissions caused by our practice of asking people to work from home (i.e. estimates of the carbon costs of heating and powering private residences are now included); and
  - Due to a breakdown of one of the waste processing plants in the city a small element of our waste needed to be sent to landfill in 2021/22. Though this was for only a brief period, with the issue now fully rectified, the associated emissions for the year were recorded and included in the analysis. Additionally, the WG methodology now attributes a small portion of the waste processing

emissions at the first point of processing for all non-landfill waste streams.

31. Supply chain or procurement emissions still account for the huge majority of the Council's operational carbon footprint but as noted, the methodology used for assessing this complex area has significant limitations. WG are aware of this limitation and have instigated several pieces of work aimed at improving the analysis framework. In view of the current limitation of this methodology it is proposed to hold back on a detailed response until a more accurate and reflective approach is adopted. It is still recognised that Procurement remains the biggest source of operational emissions and is therefore a central pillar of our One Planet Cardiff strategy. The Procurement team have made significant progress in work to understand the Council's supply chain footprint and to identify the highest carbon spend areas. Cabinet has also approved a new "Socially Responsible Procurement Strategy" which has carbon, climate change and circular economy as central themes.

### ***Analysis of Cardiff's City-wide Emissions***

32. Central Government's Department for Business Energy and Industrial Strategy (BEIS) estimates and publishes carbon emissions at a local authority level annually. These figures relate to calendar years and the latest available data relates to 2020. These figures showed that emissions across the entire City boundary (i.e. relating to all citizens, organizations and visitors in the city) stood at 1.6 million tonnes, representing a reduction of 12% since the 2019 1.8m Tonnes recoded in the 2019 base year. The chart below shows how this is distributed amongst the key sectors in the city.



33. Transport remains the highest emitting sector for the city, contributing 607,900 tonnes of city emissions in 2020. This had reduced by over 20% from 749,000 tonnes CO<sub>2</sub> in 2019. Domestic emissions were the second highest, accounting for 469,800 tonnes CO<sub>2</sub> in 2020, with a more modest decrease of 2.3% since 2019. These observations are likely to have been affected by the lockdowns in 2020 with fewer people travelling and more people working from home.

34. The table below gives more details of the distribution of emissions for key sectors, and how these changed over the two reporting periods. They particularly reflect the need for a strong and collaborative focus across the city on the decarbonisation of Transport, Domestic heat and power, and industry, and this data is shaping the Council's response to the climate emergency.

% Of City-Wide Carbon Emissions by sector (Source: BEIS)

|      | Transport | Domestic | Industry | Commercial | Public sector | Waste Mgt | Agriculture |
|------|-----------|----------|----------|------------|---------------|-----------|-------------|
| 2019 | 41%       | 26%      | 17%      | 7%         | 5%            | 4%        | 1%          |
| 2020 | 38%       | 29%      | 17%      | 6%         | 5%            | 4%        | 1%          |

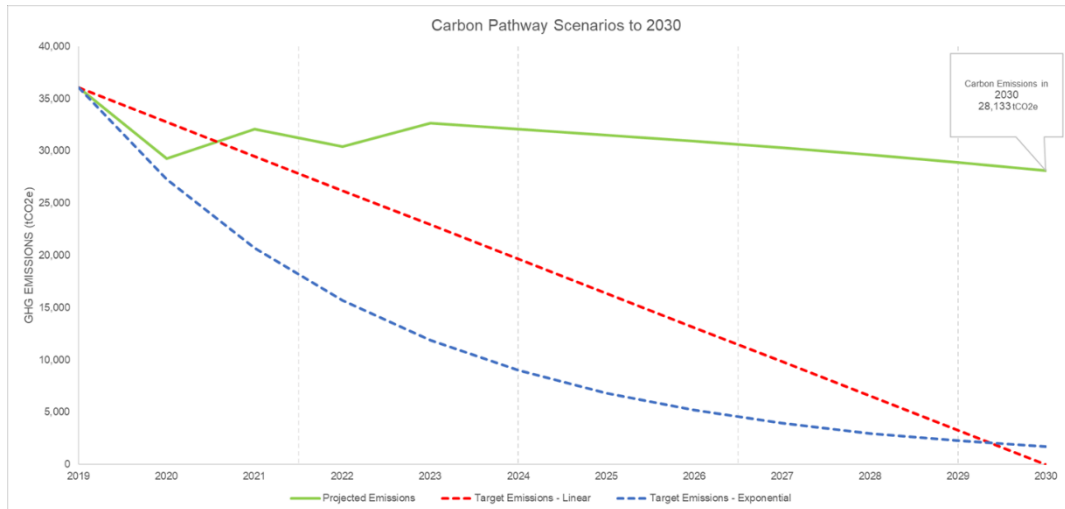
## ***Modelling the Impact of our Projects and Plans – a ‘Pathway to Net-Zero’***

35. Since the approval of the One Planet Cardiff Strategy significant progress has been made in developing and enhancing methodologies to model and predict the impacts of current and future projects and programmes. This is a crucial step and defines a so-called ***Pathway to Net Zero***. It will assist in clearly tracking progress and to set meaningful interim targets for the remainder of the decade. It will also allow us to understand the gaps and challenges in the programme at the earliest opportunity and will assist in decision making and prioritisation of projects across all our activities.
36. The current focus of the work is on the Council’s operational carbon and the initial project impact modelling done for the 2021 OPC report has been used as the basis of the work. A methodology has been developed that can show graphically how known and approved projects will affect the bottom line of the Council’s carbon emissions, when these will impact over the years to 2030, and what all of the projects will achieve in aggregate. In doing this the model shows the gaps that are left and allows new or amended project proposals to be examined for their potential impacts.
37. The model includes assumptions about grid decarbonisation (effectively the “do-nothing” scenario of waiting for renewable energy provision to increase nationally) and can adapt in the event that baselining and carbon reporting methodologies change.
38. Currently, procured goods and services (Scope 3) emissions have not been captured in the pathway as the methodology and guidance for calculating emissions and setting target is under review.
39. The chart below shows the progress to date (reflecting data discussed in the sections above) and then projects a “do nothing” scenario, relying solely on national predictions for grid decarbonisation. The resulting green line <sup>3</sup>is then compared

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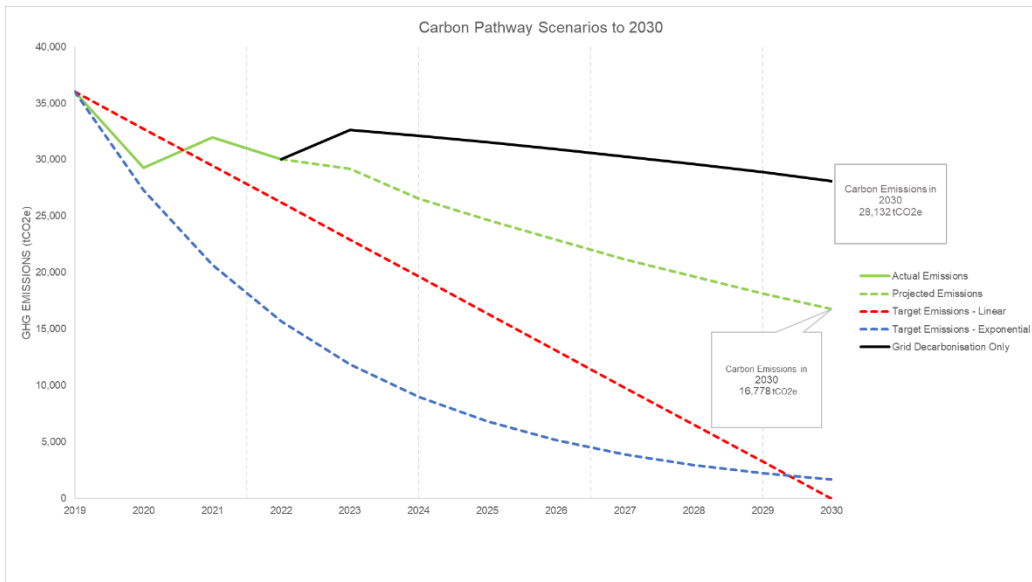
<sup>3</sup> This methodology takes the current actual/observed annual emissions data between 2019/20 and 2021/22 and uses the projected emissions conversion factors as issued by BEIS in 2021. Grid decarbonisation has actually occurred at a rate faster than shown in the BEIS 2021 projected conversion factors and explains the apparent increase in emissions in 2023. This is not an increase in overall emissions, but an adjustment as forecast emissions (which are higher than the actual recorded levels) take over from actual ones.

against two target lines showing where the Council needs to be in the journey to net zero (one linear (in red) with approx. 10% reduction per annum, and the other exponential (in blue) which would involve deeper and more impactful interventions earlier on in the timeline). The gap between the green and red lines effectively represents notional annual targets for carbon savings.



40. Taking this as the base position the model then allows our various decarbonisation projects to be added, based on their anticipated carbon reductions over time. This then causes the green line to descend, showing the individual and collective impacts of the OPC programme. The graph below is an example which includes the following known projects:

- building decarbonisation (according to the currently approved Estate Decarbonisation Plan (which is being reviewed))
- a transition to a low emission fleet.
- full replacement of all streetlighting to LED, and
- a tree planting and biodiversity programme under the banner of Coed Caerdydd



41. Limiting our actions solely to these projects still leaves an anticipated carbon gap of 20,566 tCO<sub>2</sub>e in 2030, illustrating the scale of the additional challenge that faces us.
42. This methodology has been used to underpin and inform our refresh of the OPC action plan. The remainder of this report focuses on successes, and challenges experienced to date in each of our key areas of work and recommends areas of focus and acceleration over the next period of our work.

### **ACTION PLAN REVIEW - Buildings:**

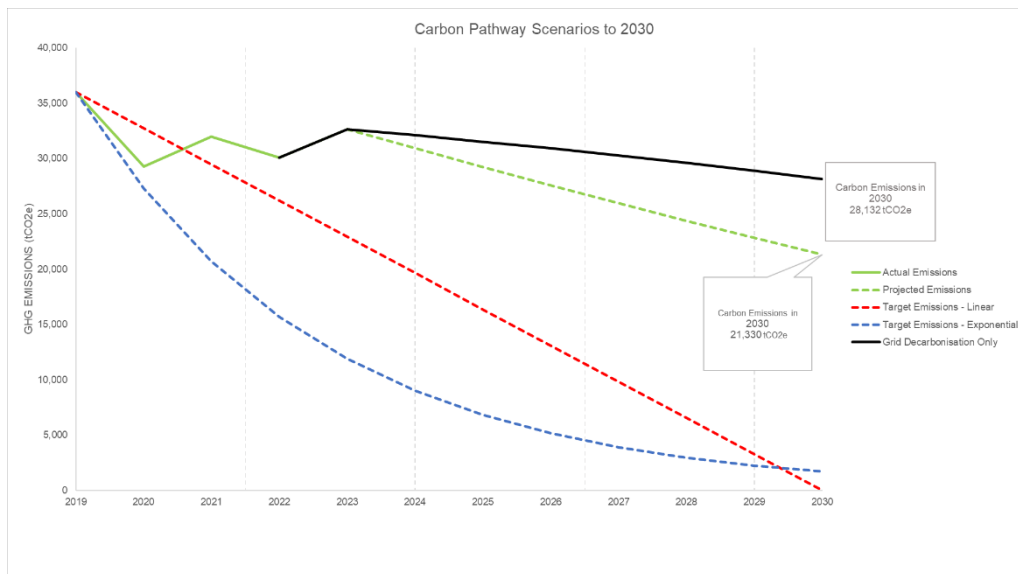
43. The way in which we all heat and power our buildings in the UK is still heavily dependent on high carbon fossil fuels. Emissions from the Council's buildings, schools and offices are the single largest element of its direct carbon footprint, whilst emissions from all of the domestic properties across Cardiff in the city are responsible for close to a third of the carbon footprint of the city as a whole. Across the sector, there have been some very significant carbon reduction outputs experienced through the decarbonisation of the electricity grid but carbon from heating, which remains dominated by gas, is still a major challenge.

### **Council premises:** **(Carbon Neutral Council action)**

44. The Council has a long track record of addressing energy efficiency in our operational estate and, alongside national grid decarbonisation, has already reduced our building's carbon

emissions from over 40,000 tonnes in 2014/15 to just over 18,000 tonnes in 21/22 (excluding leisure centres).

45. The Council's current Estates Decarbonisation Plan includes an approved target to remove 60% of carbon emissions by 2030. The graph below shows what this scenario does to the Pathway analysis model. It is clear that the approved plans are not enough and so the strategy is being reviewed, looking for opportunities for deeper decarbonisation.



46. We know that the remainder of the journey to 2030's Carbon Neutral goal remains challenging. Many of the initial easy options have already been instigated (LED replacement bulbs etc), however the vast majority of required work in regards to scale and resource still lies ahead. This will need to address much harder problems, especially around large scale / estate wide refit, insulation, the removal of fossil fuels from our heating systems, and the need to increase renewable electricity supplies in line with growing electric heat demands.

47. In response, the Council has already:

- Instigated a programme of smart monitor installations and energy performance benchmarking tools in key buildings to develop a much better understanding of how they perform;
- Focussed on a series of roof mounted Solar proposals to support and decarbonise on-site electricity requirements;
- Commenced a pilot scheme to install an air source heat pump in one of our existing schools, joining some solar



- generation, energy efficiency measures and smart building controls at the site, to develop prototype for net zero retrofit;
  - Commissioned work to design one of our new-build schools to Net Zero standards as a pathfinder for all future School construction;
  - Published a position statement on the Council's own new buildings which requires all commissions from 2024 onwards to be designed to net zero carbon standards; and
  - Commissioned a study, drawing from the above data and pilots, to advise on a fully costed programme of retrofit activity across the whole estate over the rest of the decade.
48. This work will culminate in a proposed new Estates Carbon Reduction plan that will present targets, costs, options and delivery models for the Cabinet to consider as part of the One Planet Cardiff strategy's 2030 ambition. The outputs from this study will inform the contribution that buildings will make to the net zero target and indicate the scale of capital investment required.

***Domestic Premises:  
(Carbon Neutral City action)***

49. On a city-wide scale Domestic energy efficiency is an ever-more significant issue with spiralling fuel prices central to the current cost of living crisis. The Council has been working on domestic energy efficiency schemes for many years but is now gearing up to escalate this work significantly by:
- Procuring a scheme to upgrade all council owned low-rise blocks of flats;
  - Continuing to apply for and implement Welsh Government grant funded domestic retrofit schemes;
  - Working with Cardiff Capital Region to support an additional scheme targeting Energy Company Obligation (ECO) funding towards households in fuel poverty.
50. One Planet Cardiff set a target of retrofitting 2,000 homes per year using these and any other emerging opportunities by 2024<sup>4</sup>.

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<sup>4</sup> This category of decarbonisation falls outside of the Council's direct operational carbon footprint and so isn't included in the Pathway analysis.

51. Forty new build Council Houses are also under construction which have been designed to near Zero carbon standards, with solar PV, ground source heat pumps and electric boilers and a local energy management plan to optimize the linked energy systems. These properties are due for completion in 2023 – setting a standard for new Council homes going forward. These form the exemplar scheme in a wider programme delivering over 1,100 new homes (Council and privately owned) which are already exceeding national standards for energy efficiency.
52. Although this activity collectively marks good progress, the work will be limited to certain fuel poor and Council owned categories of housing and the target won't reach the majority of the City's other domestic properties. Whilst the Council cannot hope to directly tackle all properties that fall outside of these limitations, it is in a central position to highlight the issues, to lobby for co-ordinated policy and partnership action, and to signpost residents to reliable information and support.
53. More than any other area in the climate and decarbonisation agenda, this issue represents an obvious opportunity for clean economic growth, and new skills and business development, with possibly close to 8-10,000 homes per year estimated to be in need of some sort of energy efficiency upgrades in the city over the next decade.
54. Active discussions on this agenda have taken place over the last 12 months, at the local, City Region and National Level, and it is important that these reach a defined conclusion soon. A nationwide retrofit scheme is desperately needed and the Council is gearing up to lobby for and help to deliver this.

***City Scale Building Decarbonisation  
(Carbon Neutral City action)***

55. The Council is also working on this building decarbonisation agenda a City-Wide scale and in a partnership context:
  - Our Climate Emergency Board (CEB) has brought together major public sector, academic and utility organisations in the city, each of which also has an active decarbonisation plan in

place, to share and encourage best practice. A specific CEB sub-group has now been established to focus on our collective endeavours to decarbonise the city's public estate; and

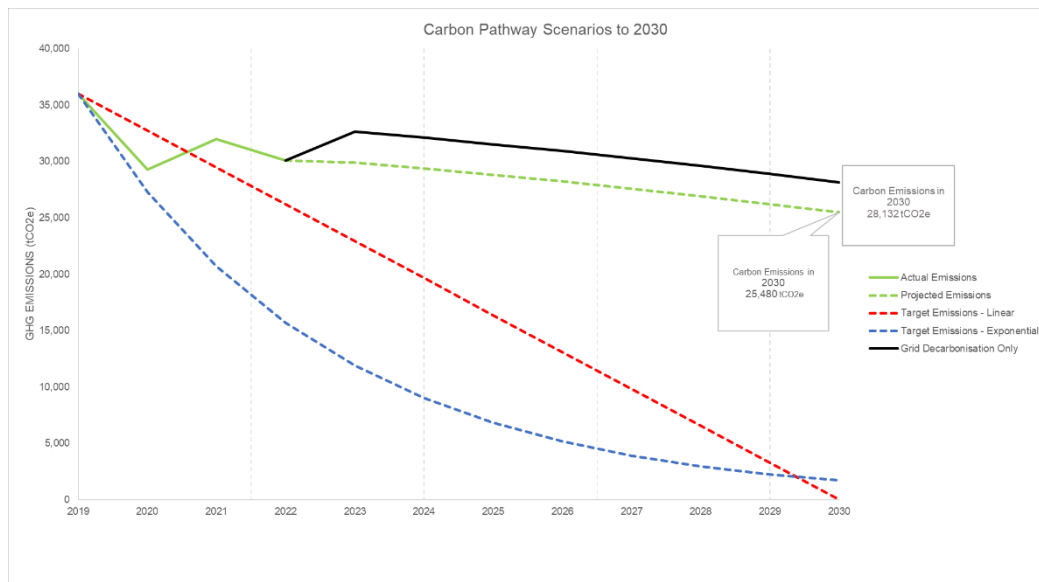
- Our Planning and Building Control service is also working hard to deliver local and national policy for near zero carbon buildings. The replacement Local Development Plan is also being shaped to have sustainability and climate change as a central driving force. A position statement on the current policy context and expectations for new development was published in 2021. Success in this area will need the co-operation and partnership of developers in the city to ensure that new development does not add to our carbon and climate challenges. New development needs to be fully engaged with climate concerns and ready to help deliver the low carbon vision of One Planet Cardiff.

### **ACTION PLAN REVIEW - Mobility**

56. Government figures estimate that emissions associated to transport account for 38% of the City's carbon footprint, making it the highest impacting sector. The Council's own transport activities (including fleet vehicles, staff business travel and staff commute) represent its second largest operational carbon cost with an estimated 10,000 tonnes of CO2 emitted in 21/22 – equivalent to half of the emissions attributed to our buildings.

#### **Council Mobility (Carbon Neutral Council action)**

57. The Council's Fleet Transition Action Plan is actively examining the operational mobility footprint of all service areas. It sets out a target to transition the Council's fleet of vans, car and refuse collection vehicles to electric Vehicles (EV). To date, 53 of the Council's fleet vehicles are now electric with the remainder due for replacement by 2025 ( subject to a review of the current program which is underway in light of current shortages of vehicles nationally). This includes 10 new electric refuse collection vehicles which are now operational. The graph below shows the anticipated impact of full fleet decarbonisation over the remainder of the decade.



58. The way in which the Council uses “grey fleet” – where staff use their own cars on Council business - is also being examined for opportunities to decarbonise. Carbon emissions arising from this reduced by a dramatic 45% over the period 2019/20 to 2021/22. This is likely to be reflective of a significant increase in on-line meetings triggered by the lockdown but there was an upward trend between 20/21 and 21/22 which needs to be carefully considered and understood.
59. Carbon emissions associated with staff commute have reduced by 17% between 2019/20 and 2021/22. This is assisted by current hybrid/home working arrangements which are still in place in many parts of the Council. However, a very large number of our staff, especially in Schools, Communities and Waste services, still need access to places of work.
60. The issues around Council mobility are complex, touching on HR policy for travel, diverse operational needs in different service areas, our future proposals for hybrid working, our strategic estates strategies, and especially on staff’s own personal choices around travel mode and car purchasing. Reflecting this complexity the Council has set up a task and finish group, bringing together major stakeholders across the Council to develop an action plan for the remainder of the decade which can then be assessed and included in our Pathway model. As well as looking closely at our operational needs and hybrid working policies to reduce unnecessary journeys, we’ll also be rolling out a range of staff incentivisation initiatives to encourage greater modal shift to active/low carbon travel.

61. Though hard to quantify, transport emissions caused by our procurement activities through deliveries and distribution are likely to exceed this direct operational total.

**Citywide Mobility**  
**(*Carbon Neutral City action*)**

62. The way in which we all move around our city for work and leisure is already on a low carbon trajectory, supported by the actions set out in the Transport White Paper and Low Emission Transport Strategy. Progress to date includes:

- An ambitious programme of traffic calming measures and cycling infrastructure provision which is well underway;
- A fleet of 36 electric buses which is now in operation throughout the city and the Council is seeking to increase this through grant funding provided by the Welsh Government by 2023;
- The council is working with the Burns Delivery Unit on active travel, bus and rail improvements between Cardiff and Newport on a Newport Road corridor;
- The council is working with Transport for Wales on integrated ticketing with the first phase bus and rail trial planned between Cardiff and Newport in 2023 to 2024
- Proposals for electrification of the railways in the city are well advanced including further funding decisions on the South Wales Metro;
- a series of 20 miles per hour zones is in place throughout the city and the Council is working with the Welsh government under the roll out of the national 20 mph scheme in Cardiff by September 2023;
- work with schools on safety and active travel continues and will be scaled up in line with the “one Planet Schools” pledge initiative referred to in paragraph 105 below.
- The installation of over 70 publicly accessible EV charging posts in residential areas and public car parks with plans for a continued roll out of these being developed; and
- A Cardiff Capital Region funded electric taxi initiative which will enable taxi drivers to trial EV taxis to aid in their future purchase and investment decisions.
- A road user charging scheme to reduce the number of cars coming into the city centre is also under consideration

63. However, it is critical to note that this good work will also need to be supported by public campaigns and information aimed at encouraging and supporting people and businesses to make healthier and more environmentally sustainable travel choices and this will form a major part of our Behaviour Change strategies discussed below.
64. The Council is also working with partner organisations across the city who are known to have very similar mobility challenges, to investigate how combined and aligned actions may help to drive deeper carbon savings and enhance transport management across Cardiff. Our Climate Emergency Board has established a specific Fleet and Mobility sub-group to look into opportunities for collaboration and this is soon to report on some joint EV procurement, collaborative EV charging and co-ordinated staff behaviour change proposals.
65. Overall, the imperative is clear for us to all reduce the number of unnecessary motorised journeys in the city, to enable healthier and more environmentally sustainable active travel modes, and to support a transition to low carbon fuels for any remaining journeys.

**ACTION PLAN REVIEW - Supply Chain and Procurement**  
**(Carbon Neutral Council action)**

66. Notwithstanding the reporting difficulties described earlier, emissions arising indirectly from the Council's procured goods and services are known to account for for well over 80% of operational carbon impact. This area of work has therefore been subject to significant analysis and review over the past year and all staff involved in specifying, sourcing, awarding and managing contracts have a key role to play in finding solutions.
67. The Council's Socially Responsible Procurement Policy 2022-27 has been refreshed and was approved by Cabinet in October 2022. The strategy now has carbon reduction as a central theme and, alongside national guidance, will take a stepped approach to ensuring that the Council understands and aims to reduce the carbon consequences of the goods and services it procures, as well as engaging with and encouraging our suppliers to understand and reduce their carbon impacts. Welsh Government guidance is seeking to require all suppliers for major procurements to have an approved climate change strategy in

place and to begin to signal, and then require that tender evaluation starts to favour low carbon purchasing alongside value for money and other social responsibility issues.

68. The Council is also identifying some of our very high carbon spend areas and conducting analysis of these to help understand issues and solutions moving forwards.
69. Meanwhile, there has been some proactive work on a range of specific procurements to pilot lower carbon outcomes in the Council. In particular a recent road resurfacing scheme contained a central specification for the contractor to use recycled, low carbon materials. Large parts of North Road have now been resurfaced with materials derived from waste processing residues and the scheme has been accredited as having low /zero carbon credentials.
70. Other schemes, such as the recent contracts to build a net zero high- school and to roll out LED lightbulbs across all of the city's street lighting, show how low carbon can and will form a central consideration in our purchasing activities moving forward.
71. Moving forward, it is clear that staff in the Authority with responsibilities for procurement will need upskilling to be able to identify and then seek to drive down the carbon impacts of the goods and services that the Council purchases. A programme of carbon literacy and circular economy training is being developed and piloted and will start to roll out over the coming year.
72. It also needs to be recognised that not all of the Council's suppliers, especially the smaller independent and local ones, will be able to move to low carbon solutions at pace and we need to consider how our purchasing activities can support the transitions needed.
73. In order to set a target for reducing emissions from our supply chain the Council will need to review reporting boundaries for priority contracts and hot spot spend areas, to estimate what emissions target needs to be in 2030 if Cardiff is to become a Carbon Neutral Council. This will require engagement with our suppliers and work on their ability to provide us with accurate data. The Council is awaiting the outputs from Welsh Government and the WLGA to inform appropriate carbon modelling methodologies and approaches to target setting.

74. There is an increasing recognition of the key role that procurement can play in tackling some of the greatest challenges facing our Communities and the Planet as a whole.
75. To achieve this it is crucial that these challenges are considered at each stage of the procurement cycle which means that all staff involved in specifying, sourcing, awarding and managing contracts have a key role to play. It is particularly important that adequate attention and time is invested in the planning and contract management stages.

**ACTION PLAN REVIEW - Waste and Recycling**  
***(Carbon Neutral City action)***

76. Wales is amongst the leaders in the world on its waste and recycling record and the Council has had acknowledged success in virtually eliminating landfill and increasing recycling activities in the city.
77. The recording of associated carbon benefits is complex as waste or recycling material handed to third parties then enters separate processing procedures which attract their own footprint calculations. For that reason WG requires us to limit calculations to any waste that goes to landfill (which is usually zero in the Council's case), along with some limited transfer activities in handing waste streams over.
78. This, however, disguises some of the very positive carbon reduction activities that are associated with our Waste operations. Recycling helps reduce greenhouse gas emissions by reducing energy consumption. Using recycled materials to make new products reduces the need for virgin materials. This avoids greenhouse gas emissions that would result from extracting or mining virgin materials. In addition, manufacturing products from recycled materials typically requires less energy than making products from virgin materials.
79. Waste prevention and smart shopping are even more effective at reducing greenhouse gas emissions that result from energy consumption. When we use less or reuse products more, less energy is needed to extract, transport and process materials to manufacture products. Purchasing products made from recycled



materials, such as paper, plastics, and metal, instead of virgin materials also helps to reduce energy consumption.

80. The high rate of household recycling in Wales saves over 400,000 tonnes of CO<sub>2</sub> per year from being released into the atmosphere and further accelerating climate change. In 2020/21 Cardiff is estimated to have avoided 36,000 tonnes of CO<sub>2</sub> emissions. There is a clear message, that all disposal options create an impact on the environment in terms of climate change and that the recycling of materials provides a net benefit.
81. To drive further benefits the Council's Waste Service has recently produced an improvement Action Plan in its recycling strategy which is targeting a range of behaviour change and education areas to:
  - Increase Recycling Participation and Capture
  - Increase opportunities to recycle
  - Improve the material quality of recycling sent for re-processing and
  - Encourage and support the prevention, reuse and repair of materials.
82. A data modelling exercise has also been undertaken which should help us to create better local estimates of the carbon benefits arising. More detailed information on the Council's waste activities can be found in the following link: [https://myrecyclingwales.org.uk/local\\_authorities/cardiff](https://myrecyclingwales.org.uk/local_authorities/cardiff) .
83. Linked to this, the Council has joined forces with Cardiff Metropolitan University and Celsa Steel UK to work with businesses and schools within the Council's boundary to network and develop a deeper understanding of circular economy principles and practices. To date, this Cardiff Circular Economy Network project has delivered seven workshops and engaged with 12 schools. These sessions provided educators with tools to embed circular economy principles across the curriculum, supporting the sharing of resources and the development of new lesson plans.

**ACTION PLAN REVIEW – Energy**  
***Renewable Energy Generation and Low Carbon Energy Distribution***

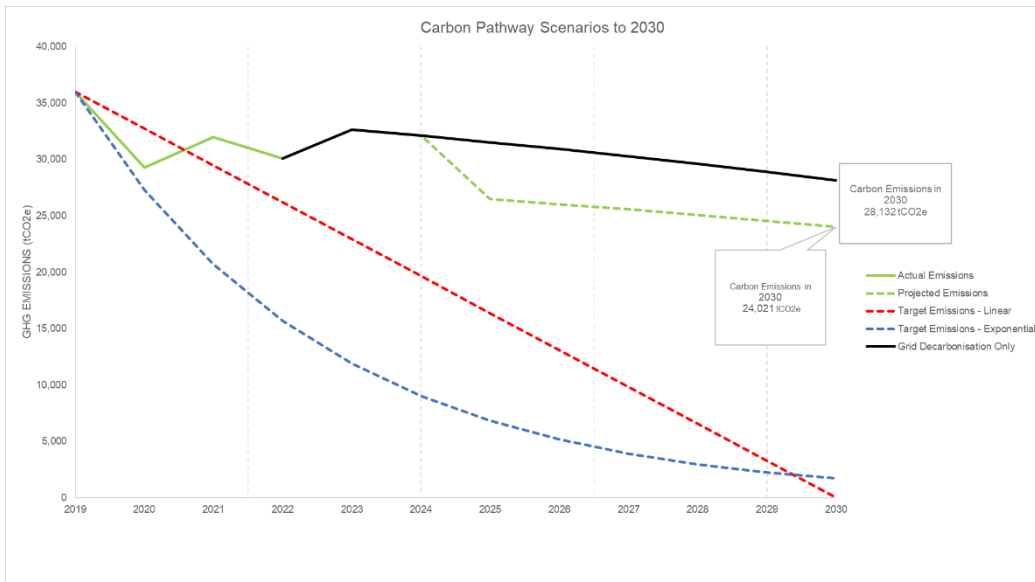
84. It is now well established that the overall electricity demand for both the Council and the city will increase towards 2030 and beyond. Even with a huge effort to reduce electricity consumption through energy efficient lighting, appliances and electrical goods, the new demands created from electric vehicles and new heating technologies will grow much faster as the Country moves away from fossil fuels . It is critical that this growing demand is met by clean renewable energy sources and the Authority has a key role to play in achieving this locally.

**Energy**  
***(Carbon Neutral Council action)***

85. The Council has installed many roof mounted Solar PV and hot water systems in the last decade and this approach needs to be fully embedded in our building retrofit projects moving forward, accommodating onsite needs as far as possible and reducing demand on the grid.

86. Moving forwards Officers are now scoping out two new renewable energy generation schemes to be delivered on Council Land and with the potential to generate to almost 25MW of clean, renewable power for the city.

87. Business cases are currently being assembled for Cabinet consideration next year. If acceptable, one of these two schemes could help to provide zero carbon power for a significant proportion of the Council's energy demands at its recycling depot, including power for our new Waste Vehicle fleet. The graph below estimates that the potential carbon impact of this single proposal in the Pathway analysis could be highly significant. There is still much work to do to develop these technical and business cases but the scheme already illustrates how linking new renewable generation directly to our operational energy demands holds the potential for step-change decarbonisation where the prevailing local opportunities are favourable.



## Energy (Carbon Neutral City action)

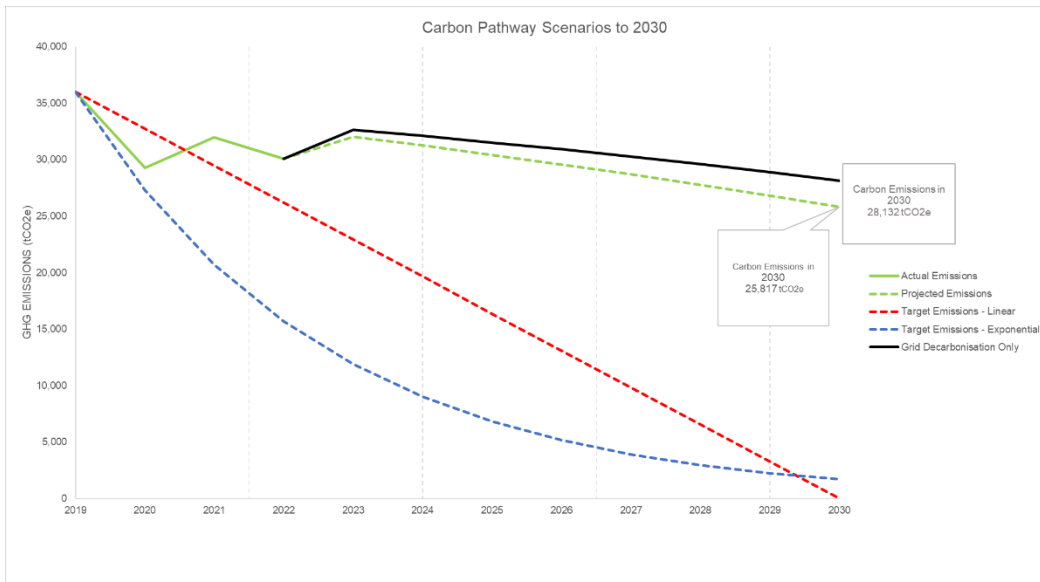
88. As a major landholder in the City the Council also has a potential role in supporting wider grid decarbonisation for the city and region and a whole. Our 8.9 MW solar farm scheme at Lamby Way has been commissioned, providing the equivalent zero carbon energy to power over 2,000 homes. The energy is currently being used, via a direct off-grid connection, to help achieve low/zero carbon operations at the City’s waste-water treatment works as well contributing to wider grid decarbonisation.
89. The Cardiff Heat Network is also now under construction with first “heat-on” dates anticipated in late 2023. Though not considered to be renewable energy the heat that will be distributed to customer buildings has a very low carbon content as it is a by-product of the separate waste processing operation much of which would otherwise go unused. Customers will see an immediate 80% average reduction in their carbon emissions compared to traditional gas heating systems and it is estimated that the project will deliver a city-wide carbon reduction of well over 9,000 tCO<sub>2</sub>e per annum once complete. The scheme offers the additional benefit of providing heat without significantly increasing electricity demands associated with other types of low carbon heating.
90. At a significantly larger scale the Council is also supporting work at the City Region and in the Western Gateway Group of local Authorities to re-examine the case for tidal power generation in

the Severn Estuary. This work is at a very early stage but has significant interest and support from regional partners in the public and academic sectors and could be a game changer for renewable energy in Wales.

**ACTION PLAN REVIEW - Green Infrastructure and Adaptation to Climate Change**  
**(Carbon Neutral Council and City action)**

**COED CAERDYDD**

91. The One Planet Cardiff Strategy highlighted the need to increase the city's tree canopy and reshape our land management techniques to protect and enhance biodiversity. The Coed Caerdydd project is now well established as a tool to help to deliver these aspirations. Urban tree planting is known to have more immediate positive impacts on air quality and cooling than increasing canopy cover in woodland and forests and so this project is also reaching out to partner organisations in the city who are also starting to identify parts of their estates on which to host Coed Caerdydd planting. By 2024, 22 hectares will have been planted with additional trees and other planting, supporting carbon sequestration and providing additional urban shading and cooling. The final target for the Coed Caerdydd project is to plant 839 hectares though it should be noted that current funding is only secured July until 2023. A bid has been made to the Councils Shared Prosperity Fund for an additional 2 years of funding which is critical to the continuation of Coed Caerdydd. The graph below shows this impact that the delivery of the full scheme could bring to the Council's operational footprint. This measures only the activity that the project does on council owned land, though the totality of the work, which will need to extend to other land ownerships, will be larger.



### **Flood Defence**

92. Our flood defence programme is also becoming well established and, drawing inspiration from our Greener Grangetown work, many of the City's new developments, public realm improvements and traffic calming schemes are now including Sustainable Urban Drainage design. As well as mitigating and adapting to extreme weather incidents, these schemes help to reduce the power demands otherwise placed on the sewage system to pump and cleanse storm water. The schemes also brings enhanced biodiversity opportunities to our urban areas.
93. The Council has a statutory duty as the Lead Local Flood Authority (LLFA) to adopt a flood risk strategy and management plan. The existing strategy and plan have been in place since 2014 and 20115 respectively but a refreshed combined emerging strategy and management plan is being developed. This strategy will include community engagement and community adaptation to climate change and the resultant flood risk, from coastal, river and surface water flood events. The Council as The Suds Approval Body under its statutory duties as the LLFA is working with NRW to improve the water quality across the city and in particular within the city's 3 rivers – this will improve biodiversity as well as mitigate against flood risk.
94. Coastal flooding is one of the major risks to Cardiff from climate change. The FRAW (Flood Risk Assessment Wales) modelling has shown that the Rhymney estuary is at significant risk from fluvial and coastal flooding. The council has designed a scheme to strengthen the defences through rock-armour, sheet piling and embankment works with a 100 year design life offering protection against the 1 in 200 year flood event. The tender process began

in October 2022 and construction is expected to commence by the end of March 2023.

95. The BEIS City wide emissions report referred to above captures the positive “sequestration” benefits of our green infrastructure and estimated that this was removing 4,000 tCO<sub>2</sub>e from the city in 2020. However this is unlikely to have picked up the detail of the recent activities mentioned above.

### **ACTION PLAN REVIEW - Food**

96. The Cardiff Food Strategy 2021-24 promotes healthy, local and low carbon food. With the appointment of a dedicated officer for food, there is now a wide range of food initiatives well into delivery that will contribute to One Planet Cardiff. Activity underway in our schools is gathering momentum, engaging with pupils, the community, and local SMEs.

### **Council Food (Carbon Neutral Council action)**

97. The Council’s school’s food programme captures the efforts for production of food on school grounds and the provision of healthy, sustainable food choices in our schools. The Edible Schools programme has delivered 15 vegetable gardens, with a further 10 to be installed this financial year. Options for school-based food co-operatives are being explored and potential partners will be identified to develop a pilot scheme.
98. Free school meals provision to all pupils requires significant investment in both kitchen and menu provision. 18 schools have had kitchen improvement works during the summer, increasing to 40 schools by Christmas 2022. A scope of works for appointing a consultancy to develop the new low carbon, sustainable and healthy menu has been produced. The new menu will be developed with dietetic and carbon modelling experts.
99. A pilot project for County Hall Canteen has been delayed due to internal changes within the Council and timing of getting staff back into County Hall on a hybrid working model. Work is ongoing with Facilities Management to consider options for

delivery. Healthy, low carbon food choices are to be reflected in council food procurement, with initial discussions underway.

***City-wide Food  
(Carbon Neutral City Action)***

100. The Council is also engaged with a number of food projects across our Cardiff Food Network group and, in particular, is working on a pilot project to test ways in which spare and underused plots of land in Council ownership can be made available to local community groups for healthy, local, lower carbon food growing initiatives' etc.
101. The Council has also launched a major food innovation project in partnership with Monmouthshire Council and the Cardiff City Region. This £2.5m project is being run as a competition seeking innovative solutions to increase the local production and supply of healthy, low carbon and environmentally sustainable food in the region. Successful projects will help to increase the quantities of locally produced food consumed in the region and to stimulate sustainable supply chains and jobs in a food economy that is currently over-dependent on imported and processed foods.

***ACTION PLAN REVIEW – Behaviour Change – engagement and partnership***

102. Delivering the One Planet Cardiff vision, both for a carbon neutral Council by 2030 and for the production of a detailed “pathway” to net zero for the whole city, will require the efforts of everyone living and working in the Cardiff and officers have been tasked with developing a far reaching programme of Behaviour Change support to help facilitate this.

***Council Staff Engagement  
(Carbon Neutral Council action)***

103. At the Council's operational level, embedding low carbon principles across the Council requires a governance structure that holds each directorate accountable for delivery of the interventions within the action plan and ensuring that future decision making has the lowest possible impact on carbon emissions. As mentioned above Procurement Officers have started to develop relevant carbon spend statistics on a

Directorate level, our Estates team have recognised the need to support behaviour change in building managers to target wasted energy use, and work has also begun to support low carbon travel choices for our staff.

104. Recognising the complex cross-cutting issues involved in this agenda officers have also now added a formal layer of governance to the One Planet Cardiff project which brings together key directorate leads, under the steerage of the Chief Executive, to discuss cross cutting issues and resolve more difficult challenges.
105. There has also been very significant progress on engagement with Schools and the youth of Cardiff who are acknowledged to hold the central interest in ensuring that we deliver a sustainable future for the city. A One Planet Schools Pledge is being developed where Schools will be invited to commit to developing their own school specific One Planet Action plan, researched and championed by pupils who will also monitor progress and keep plans on track. This initiative is also being seen as a central strand in implementing the New Curriculum in Wales, which is seeking to build more real-life experience into the teaching and learning processes.

### **City Wide Behaviour Change Initiatives (Carbon Neutral City action)**

106. It is hoped that the One Planet Schools Pledge will also reach out and start to influence behaviour change at a wider city scale. The overall aim of the project is to encourage well informed and able learners to become ambassadors and champions for the changes that we all need to see. Their knowledge, and influence over friends and family, will be an important educational factor beyond the school environment and should stand them in good stead as they progress to more active roles in society and the economy in future years.
107. Our work with the Climate Emergency Board of public sector, academic and utility partners in the city is also looking closely at behaviour change strategies. Partners have collectively agreed to share best practice and start to align our outreach and internal staff behaviour change strategies so that the wider collective impact of our messages can be reinforced and amplified.



108. Though the above account marks good progress there is still much ground that the Council needs to cover in its Behaviour Change plans and Officers are looking at ways to better resource this. Plans are taking shape to hold a Climate Change convention event in the new year, bringing together the many organisations, groups and stakeholders in the city to discuss our challenges and common interests, and to ensure that this conversation continues and starts to identify and deliver real change.
109. Welsh Government are currently consulting on a new draft Strategy for Public Engagement and Action on Climate Change and the Council will be looking closely at this and aligning procedures wherever possible. In particular, the proposed Climate Change Convention offers an opportunity to draw from best practice and test options arising from this draft engagement strategy and we plan to engage with the report's authors to explore options.
110. More broadly, officers will be developing some easy to understand, but compelling messages and requests to present to the wider public in the city. The Council is doing all it can to address the climate emergency but citizens, businesses and organisations in the City also need to be fully engaged in this to achieve real success.
111. Work will be needed to develop and promote a rolling list of the easiest and most impactful changes that we all need to try to achieve in our daily lives. We all already know that making sustainable travel choices, buying more responsibly to reduce waste, and taking care over domestic energy efficiency are important. But the Council needs its messages to be well researched, simple and compelling, and supported by good advice and appropriate signposting along the way. In line with current Welsh Government guidance on Climate Change Engagement, we need *"to make the right thing to do the easiest thing to do"*, and the Council will be developing a partnership approach to this over the next period.

### **Council Pension Fund – Disinvestment away from High Carbon Activities and Fossil Fuels**

112. Though not directly impacting on operational or city wide emission statistics, the Council is also keen to ensure that its financial investments are ethical and low carbon based wherever

possible. In light of this, some recent changes were made to the Cardiff and Vale of Glamorgan Pension fund holdings, including the following three actions:

- Increasing its proportional allocation of investment to the Low Equity Carbon Tracker fund and introducing a de-carbonisation overlay to a number of its Active Equity Funds
- The potential for Disinvestment from companies representing a continuing risk who do not respond positively to engagement
- The soon to be launched WPP Sustainable Equity Fund is expected to see an acceleration in positive investment in companies developing clean technology

113. The Joint Governance Committee of the Wales Pension Partnership has also recently approved the structure of the Sustainable Equity Sub-Fund which will further develop the sustainable credentials of investment, and the target is that this Fund will launch in 2023.

## **Conclusion**

114. Work over the last period has kick-started a very wide range of Council led and collaborative projects to address the Climate Emergency. It has also added significantly to our understanding of the carbon consequences and impacts of our work across many complex areas.

115. The proposed Pathway analysis methodology is now maturing and shows reasonable progress but also highlights the enormous scale of the challenge that the Council faces in the coming years.

116. Despite the good progress it's clear that some things aren't happening fast enough to enable us to fully respond to the Decarbonisation and Climate Emergency agendas at the speed now required. The decarbonisation of the Gas Grid is still a major challenge and progress is much slower than the parallel work on electricity. Work to fully decarbonise buildings therefore remains difficult and costly, and the uncertainties around Government funding support for this in the public sector and in the domestic setting are undoubtedly causing problematic delays on progress. Similarly, the "Metro for the Valleys" scheme is a central opportunity in the City and Region's ability of decarbonise

transport and uncertainty around funding decisions is slowing progress here too. Linked to this, global shortages of electronic components resulting from the Pandemic, and the Ukrainian crisis have impacted the price and availability of low emission vehicles and progress here is slower than had been hoped. These challenges are well known and difficult to fix but are inevitably and inextricably linked to our Climate Emergency response.

117. A range of areas has been identified where teams across the organisation can inject new focus and this will trigger a series of more detailed reports and business cases for the Council to consider in the coming months and years.

118. The financial and operational challenges associated to this were always significant but are now in sharper focus as a result of the energy and cost of living crises. This underlines that the Council can't tackle the Climate Emergency alone. Collaboration, communication, goal alignment and good monitoring across the city and beyond is essential and the Council will continue to act as a focal point for this in the next decade and beyond.

#### **Local Member consultation (where appropriate)**

119. N/A

#### **Reason for Recommendations**

120. To ensure that the progress and momentum of our Climate Emergency response is recorded and to approve the amended monitoring, modelling and action planning required to continue its delivery.

#### **Financial Implications**

121. Meeting targets set out in this report will require additional capital and revenue budgets that have not been assumed in the current budget framework.

122. Whilst the reporting on emissions and updates on progress is an iterative process, priority actions outlined remain un-costed and in many cases are not included in this report.

123. This remains a similar position to that outlined in a July 2022 report of the Auditor General Wales – ‘Public Sector Readiness for Net Zero Carbon by 2030’, which found that public bodies have not fully assessed the financial implications of the 2030 collective ambition.
124. A full understanding of the financial issues, risks and deliverability of the strategy actions needs to take place as proposals are considered.
125. A number of processes, actions and the strategies across various areas referred to in the update continue to be developed or are yet to be developed. These should be prioritised at pace with any financial implications of these considered alongside other Council financial commitments and pressures to ensure the budget framework for 2023/24 and future years includes the full approved commitments for the Council in the medium to long term.
126. The update sets out a number of actions and issues to tackle. However, it is unclear which actions are to be prioritised and over which timescale to make the biggest impact on targets as well as future cost avoidance. It is also unclear as to the financial interventions which have the biggest impact in outcomes achieved per £ of investment i.e. where financial and human resources need to be prioritised to make the biggest impact with least risk.
127. Future actions included in the report developed across Directorates such as energy generation will need to be the subject of robust business cases and consider alternative options to deliver the outcomes having regard to risks and capacity and skills to deliver. Were it approved that the Council should incur such expenditure, without external grant funding, any such projects would significantly increase the Council’s currently assumed borrowing further and to be repaid over a long period of time.
128. The action plan also considers interventions such as buildings retrofit, road resurfacing measures etc. Initial pilot exercises have demonstrated that changes to alternative systems in these areas cost significantly more in current financial terms. Such strategies would again increase the Council’s borrowing requirement significantly if applied to all future planned maintenance. The cost of these pilot exercises are to be met from

existing directorate budgets and the One Planet Small Schemes Capital Fund. No further costs are included in the current budget framework.

129. In respect to the Council housing stock, Welsh Government have recently consulted on introducing a new housing quality standard, which focuses on decarbonisation. The costs of meeting any such standard and the decarbonisation of the housing stock is significant and not viable for the rent payer alone to afford, particularly when rents are not controlled by the Council.
130. Without certainty of significant external cash grants for investment in the actions identified in this report, including mobility, there is a significant risk as to whether the actions are affordable or sustainable in the long term. In submitting business cases for the actions identified, these will need to demonstrate how all the all areas of the council can use existing funding in different ways, explore fully and maximise potential additional external grant funding opportunities and consider opportunities for collaboration.
131. Where data is being used to inform decision making and prioritisation, the source of that data needs to be robust, to ensure interventions and scarce resources are allocated to priority areas and requirements for sustainability reporting can be complied with.

### **Legal Implications (including Equality Impact Assessment where appropriate)**

132. The report seeks to review progress with the 2021 One Planet Cardiff Strategy and Action plan, to approve the pathway methodology, and to approve refinements to the plan as set out in the body of this report. The strategy and action plan cover many proposed actions, measures and projects, as such it is not possible in the confines of this legal advice to comment on the legal implications raised by each such action, measure or project. Detailed legal advice will need to be taken on each of the proposed actions, measures and projects as the same are further developed. To the extent that any of the proposed actions, measures or projects require any changes to be made to any of the documents, which comprise the Council's Policy Framework, then such matters will be subject to decision of Council. To the

extent that the action plan provides, without caveat, that specified actions will be undertaken, then the adoption of the plan and strategy will serve to create a legitimate expectation that such actions will be undertaken by the Council. The report refers to consultation undertaken. It should be noted that consultation gives rise to the legitimate expectation that the outcome of the consultation will be taken into account when developing and determining to adopt the strategy and action plan.

## **Equalities & Welsh Language**

133. In considering this matter the decision maker must have regard to the Council's duties under the Equality Act 2010 (including specific Welsh public sector duties). Pursuant to these legal duties Councils must, in making decisions, have due regard to the need to (1) eliminate unlawful discrimination, (2) advance equality of opportunity and (3) foster good relations on the basis of protected characteristics. Protected characteristics are: (a) Age, (b) Gender reassignment, (c) Sex, (d) Race – including ethnic or national origin, colour or nationality, (e) Disability, (f) Pregnancy and maternity, (g) Marriage and civil partnership, (h) Sexual orientation, (i) Religion or belief – including lack of belief.
134. When taking strategic decisions, the Council also has a statutory duty to have due regard to the need to reduce inequalities of outcome resulting from socio-economic disadvantage ('the Socio-Economic Duty' imposed under section 1 of the Equality Act 2010). In considering this, the Council must take into account the statutory guidance issued by the Welsh Ministers (WG42004 A More Equal Wales The Socio-economic Duty Equality Act 2010 (gov.wales) and must be able to demonstrate how it has discharged its duty.
135. An Equalities Impact Assessment aims to identify the equalities implications of the proposed decision, including inequalities arising from socio-economic disadvantage, and due regard should be given to the outcomes of the Equalities Impact Assessment attached to this report.
136. The decision maker should be mindful of the Welsh Language (Wales) Measure 2011 and the Welsh Language Standards.

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

137. The Well-Being of Future Generations (Wales) Act 2015 ('the Act') places a 'well-being duty' on public bodies aimed at achieving 7 national well-being goals for Wales - a Wales that is prosperous, resilient, healthier, more equal, has cohesive communities, a vibrant culture and thriving Welsh language, and is globally responsible. In discharging its duties under the Act, the Council has set and published well being objectives designed to maximise its contribution to achieving the national well being goals. The wellbeing objectives are set out in Cardiff's Corporate Plan 2020 -23.

138. When exercising its functions, the Council is required to take all reasonable steps to meet its wellbeing objectives. This means that the decision makers should consider how the proposed decision will contribute towards meeting the wellbeing objectives and must be satisfied that all reasonable steps have been taken to meet those objectives.

139. The wellbeing duty also requires the Council to act in accordance with a 'sustainable development principle'. This principle requires the Council to act in a way which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. Put simply, this means that Council decision makers must take account of the impact of their decisions on people living their lives in Wales in the future. In doing so, the Council must:

- Look to the long term
- Focus on prevention by understanding the root causes of problems
- Deliver an integrated approach to achieving the 7 national well-being goals
- Work in collaboration with others to find shared sustainable solutions
- Involve people from all sections of the community in the decisions which affect them

140. The decision maker must be satisfied that the proposed decision accords with the principles above; and due regard must be given to the Statutory Guidance issued by the Welsh Ministers, which is accessible on line using the link below:  
<http://gov.wales/topics/people-and-communities/people/future-generations-act/statutory-guidance/?lang=en>

## **Policy and Budget Framework**

141. The decision maker must be satisfied that the proposal is within the Policy and Budget Framework, if it is not then the matter must be referred to Council.

### **HR Implications**

142. There are a number of elements within the action plan that will be further developed and will have HR implications. As these items develop there will be full consultation with Trade Unions and staff appropriate to the specific item. If there is a requirement to change any Council policies that effect staff then the corporately agreed process will be followed.

### **Property Implications**

143.

## **RECOMMENDATIONS**

Cabinet is recommended to:

- 1) Note the progress made on carbon reduction in the first year of One Planet Cardiff Action
- 2) To approve the Pathway modelling methodology as a tool for onward monitoring and decision making
- 3) To note and approve the refinement and progress of the One Planet Cardiff Action Plan
- 4) To note and approve the intention to hold a Climate Change Convention in 2023

|                       |                    |  |
|-----------------------|--------------------|--|
| <b>SENIOR OFFICER</b> | <b>RESPONSIBLE</b> | <b>Director Name</b><br>Andrew Gregory |
|                       |                    | Date submitted to Cabinet office       |



*The following appendices are attached:  
One Planet Cardiff – Action Plan Review 2022*

*The following background papers have been taken into account  
One Planet Cardiff Strategy*

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# One Planet Cardiff – Council Action Plan

## Review of Progress 2022



# Action Plan Review - **BUILDINGS**

## Council Impact

### **Estates Energy Efficiency**

- 18% reduction since 2019/20
- 55% reduction since 2014

Net-Zero New build and Retrofit pilots in progress

Performance sensors/baselining measures in place

Detailed and costed Council Buildings programme and action plan being prepared for Cabinet Consideration

## City Impact

### **Housing – 28% of City footprint**

Major Council flats retrofit programme progressing.  
Grant schemes in development with WG and Region

Increased Fuel Poverty and cost of living crisis challenges.  
Outreach beyond those in fuel poverty needed for major city impact – discussing possibilities with Cardiff Capital Region and others and Govt role acknowledged

### **Commercial Development**

Strong Planning Policy Position Statement in Place  
Climate Change and Carbon at the heart of the new LDP

# Action Plan Review – MOBILITY

## Council Impact

**Collective emissions = 30% Council Operational total:**

### **Fleet:**

Significant EV's now operational incl 10 Waste Vehicles  
Charging infrastructure also in place at key sites  
Revised Fleet Strategy in preparation aiming for full transition to low emission vehicles

### **Grey Fleet:**

Cross Authority review underway – requires operational needs audit and HR policy examination

### **Commute:**

Staff Incentives scheme developed  
Links with Hybrid working plans and on-line meetings  
Large numbers of staff still location based (esp schools)

## City Impact

**Almost 40% of City Wide Emissions**

### **Transport White Paper:**

Electric Bus Fleet Operational  
Almost 70 public EV chargers in place by Spring 2023  
Cycle priority and traffic calming strategy well advanced but with more to do over the next decade  
Rail electrification advancing

Requires significant behaviour change from all alongside hard measures

# Action Plan Review – SUPPLY CHAIN & PROCUREMENT

## Council Impact

**Dwarfs other emissions >80% of total**

### **New Procurement Strategy in place:**

Carbon and circular economy as central themes

Signals to supply chains that Carbon will soon be a competitive factor in tender

### **Pilot Projects – designing out high carbon elements:**

Low/zero carbon road resurfacing

Net zero new build school pilot project

- LED replacement – buildings and street lighting

### **Next Steps:**

Issue Directorate spend/carbon profiles and develop deeper understanding of high carbon impact spend areas.

Commence carbon literacy and training support for Specifiers.

Work with WG to improve impact assessment methodology

## City Impact

### **Socially Sustainable Procurement Strategy**

Supports and stimulates wider change amongst suppliers

### **PSB partnership approach**

Co-ordinated ambitions and messaging to the market being considered with our public sector partners in the city

# Action Plan Review – Recycling and Waste

| Council Impact   | City Impact   |
|--|---|
| <p><b>Minimal inclusion in WG carbon framework</b><br/>Disguises impressive track record</p> <p><b>Action Plan for Further Improvements:</b></p> <ul style="list-style-type: none"><li>• Increase Recycling Participation and Capture</li><li>• Increase opportunities to recycle</li><li>• Improve the material quality of recycling sent for re-processing an</li><li>• Encourage and support the reuse and repair of materials.</li></ul> | <p><b>Wales amongst the leaders in the world</b></p> <p>Awareness raising and behaviour change support is a constant need</p> |

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# Action Plan Review – Renewable Energy

| Council Impact  | City Impact  |
|---|--|
| <p><b>Significant rooftop solar in place</b></p> <p>Another tranche in development</p> <p><b>Plans for 2 new major renewables schemes being developed.</b></p> <p>One could supply direct energy to operations and vehicles at Lamby Way (potentially significant impact)</p> | <p><b>Lamby Way Solar Farm complete</b><br/>Decarb benefits to Grid and Waste Water Treatment Works</p> <p><b>Cardiff Heat Network</b><br/>Under construction – reducing the need for gas/electricity for heating in the Bay</p> <p><b>Tidal Power</b><br/>Western gateway and CCR re-examining the case</p> |

# Action Plan Review – Green Infrastructure & Adaptation

| Council Impact   | City Impact  |
|--|--|
| <p><b>Coed Caerdydd</b><br/>Increasing the City's tree canopy by 25%</p> <p>Direct impact where planting is on Council land</p> <p>Challenges in finding space, long term management resource and recording impacts appropriately (after planting matures)</p> | <p><b>Coed Caerdydd</b><br/>Increasing the City's tree canopy by 25%</p> <p>Positive partnership working and outreach with planting on non-council land in progress – more opportunities needed and being explored</p> <p><b>Flood Defence Schemes</b><br/>Sustainable Urban Drainage Schemes (SUDS) now starting to emerge as standard<br/>Bespoke schemes delivered (Greener Grangetown, Central Square, Cathays Terrace, etc)<br/>Updated Flood Defence Strategy in development</p> |

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# Action Plan Review – Food

| Council Impact   | City Impact  |
|--|--|
| <p><b>Food Strategy:</b><br/>Focus on Schools Food<br/>Edible Playgrounds<br/>Study to optimise health and carbon benefits in menu planning<br/>40 School kitchen improvements by Christmas 22</p> | <p><b>City Growing Plans</b><br/>Pilot community growing opportunities on Council land<br/>£2.5m CCR funded innovation project for “local healthy food”<br/>Local Development Plan Policy review to identify “food deserts” and relevant policy response</p> |



# Action Plan Review – Behaviour Change & Engagement

## Council Impact

### Embedding Carbon in Council Decision Making

CEx level meetings to address cross cutting, complex issues

### Staff engagement

Carbon Literacy Training

Travel incentives

Specifier Training

### Schools and Youth Engagement

One Planet Schools Pledge

Strengthening of network of advisors and support

Cardiff Youth Council as Champions

Curriculum integration of Climate Change Agenda

## City Impact

### PSB Climate Emergency Board

Alignment of public, academic and utility partner strategies

Focus on collaboration around

- Fleet and Mobility
- Procurement
- Estates and Green Infrastructure
- Behaviour Change

### Climate Change Convention

Plans developing for major stakeholder event

### Behaviour Change Campaign

Focus areas:

1. Transport
2. Energy and heating
3. Waste & Recycling
4. Food

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Ref: NT/RP/HTMMCW/11.05.2021

17<sup>th</sup> May 2021

Councillors Huw Thomas, Michael Michael, Caro Wild.  
County Hall,  
Atlantic Wharf,  
Cardiff CF10 4UW.



Dear Leader, Councillor Michael & Councillor Wild,

**Environmental Scrutiny Committee – 11 May 2021 – One Planet Cardiff –  
A Response to the Climate Emergency: Key Progress**

On behalf of the Environmental Scrutiny Committee I would like to thank you and officers for attending Committee on Tuesday 11<sup>th</sup> May to discuss the One Planet Cardiff Progress Report. In a bid to assist you and the service area, Members of the Committee have requested that I feed back the following comments and observations to you.

Members firstly wish to acknowledge the level of corporate working of yourselves and officers in moving this agenda forward. As referenced at the meeting, Members look forward to receiving the definitive Report which is due later in the summer and will include comparisons between the strategy's key projects, along with a detailed action plan and findings of the carbon analysis assessment.

**Cost of Retrofit on Social Housing**

During the meeting, questions were raised on the costings of the council house retrofit programme and Members were advised that there is a specific budget of the council's Housing Revenue Account which is assigned to such work. However, as a specific figure was not provided it was unclear to Members the exact costings of the scheme. As such, Members would appreciate if specific detail on the costings could be provided along with insight into how the programme will be managed. During the discussion, the need to encourage higher income households into the agenda of retrofitting was also referenced as an ongoing piece of work and Members would

appreciate some more information on the initiatives we are considering in engaging such households.

### **Wildlife corridors**

With regard to wildlife corridors, although Committee Members note the comments made that extensive talks on all aspects of biodiversity does occur with developers, Committee Members do hold concerns that wildlife corridors have not necessarily always appeared to be recognised, maintained or enhanced in recent developments. Committee Members wish to stress the importance of public perception of the council in this respect and wish to seek evidence on how we as a council will ensure that wildlife corridors on future developments which occur in the city are better achieved in the future.

### **Tree planting**

Committee acknowledge that the Council has planted over 10,000 trees and saplings in the last four years and would be intrigued to know exactly how many trees planted by the council have reached maturity. Committee wish to encourage the continuation of such activity, however do wish to stress that it is fundamental trees reach full maturity in order to provide their full benefits. Further to this, Members also wish to stress that within all future developments, areas are assigned for tree planting as not only will this help to ensure that the agenda of One Planet Cardiff is fully embedded, but it will foster and drive a positive perception and message to the general public that the council recognises and values the importance of green open space. In addition, Committee Members would also be grateful to receive further information on the National Park City as offered by Cllr Wild.

### **Charging Points**

With regard to the forecast of 40,000 charging points being required in Cardiff by 2030, Members hold concerns in this forecast being achieved effectively given the possibility of technology changing along with the other key variables highlighted by yourselves at the meeting. Members note this is a Welsh Government ambition and acknowledge and ratify your comments that a cautious approach in achieving this ambition is needed. Members do wish to

stress that if such ambitions are included in the final strategy, or in any document produced by the council, it be clearly noted when ambitions or targets are set by outside bodies in order to ensure clarity to the readers.

### **Public Consultation**

Members note the comments that the consultation reiterated the importance of facilitating a change in public behaviour and Members wish to seek feedback on if the recommendations made following our December meeting on public behaviour change have been accepted and will be acted upon. Members also wish to reiterate that a key purpose of a consultations is to act as a tool for learning which in turn can generate new ways of thinking and ensure the best possible outcome and delivery of such an important strategy. Members wish to note it was disappointing that this perspective on the purpose of a consultation appeared to not necessarily be shared.

### **Electric Taxis**

Members note that cost remains a key challenge in the move toward electric taxis and Members acknowledge and felt assured by the comments made that that work is ongoing with outside bodies to develop trials and schemes towards addressing this challenge.

### **City Car Club**

Members note the comments made on the research conducted by Hackney Council on the City Car Club and would welcome such information being shared with Committee. Members do hold concerns that a lot of the emphasis on transportation within the progress Report appears to be on cars. Members note the move to electric vehicles is a good solution, however wish to stress that electric cars are not the panacea and we as a council need to do more to discourage the public from using cars and this emphasis on a change in public mind-set could have been more greatly reflected within the report. Members wish to reiterate the need to more greatly emphasis public transport or other alternative modes of transport such as cycling or walking within all documents generated. Members feel the emphasis on public transport is particularly important in light of the pandemic and the general public perception on public transport safety. Members feel we as a council need to

do more to rectify this perception and ensure members of the public are better informed that public transport is safe in the current climate and is the preferred mode of transport, which in turn will also assist with public transports financial viability.

Thank you once more to you and officers for attending the meeting. For ease of reference, the requests detailed in this letter are as follows:

- Costings on the retrofit of social housing along with insight into how such work will be managed.
- How we are looking to engage higher income households into the agenda of retrofitting
- How we as a Council will ensure that wildlife corridors on future developments are better achieved in the future.
- How many trees planted by the council have reached maturity.
- To receive further information on the National Park City as offered by Cllr Wild.
- Feedback on if the public behaviour change recommendations made following our December meeting have been accepted and will be acted upon.
- Sight of the research conducted by Hackney Council on City Car Clubs.

Regards,

The image shows a handwritten signature in black ink, which appears to be 'Ramesh Patel'. The signature is written in a cursive style with some loops and flourishes.

Councillor Ramesh Patel

Chairperson Environmental Scrutiny Committee

Cc:

- Paul Orders – Chief Executive
- Andrew Gregory – Director for Planning, Transport & Environment
- Gareth Harcombe – Operational Manager – Energy & Sustainability
- Jason Bale - Programme Manager – Clean Air Cardiff
- Members of Cardiff's Environmental Scrutiny Committee

Ref: NT/RP/HTMMCW/11.05.2021

17th May 2021

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#### **Tree planting**

Committee acknowledge that the Council has planted over 10,000 trees and saplings in the last four years and would be intrigued to know exactly how many trees planted by the council have reached maturity. Committee wish to encourage the continuation of such activity, however do wish to stress that it is fundamental trees reach full maturity in order to provide their full benefits. Further to this, Members also wish to stress that within all future developments, areas are assigned for tree planting as not only will this help to ensure that the agenda of One Planet Cardiff is fully embedded, but it will

foster and drive a positive perception and message to the general public that the council recognises and values the importance of green open space. In addition, Committee Members would also be grateful to receive further information on the National Park City as offered by Cllr Wild.

### **Charging Points**

With regard to the forecast of 40,000 charging points being required in Cardiff by 2030, Members hold concerns in this forecast being achieved effectively given the possibility of technology changing along with the other key variables highlighted by yourselves at the meeting. Members note this is a Welsh Government ambition and acknowledge and ratify your comments that a cautious approach in achieving this ambition is needed. Members do wish to stress that if such ambitions are included in the final strategy, or in any document produced by the council, it be clearly noted when ambitions or targets are set by outside bodies in order to ensure clarity to the readers.

### **Public Consultation**

Members note the comments that the consultation reiterated the importance of facilitating a change in public behaviour and Members wish to seek feedback on if the recommendations made following our December meeting on public behaviour change have been accepted and will be acted upon. Members also wish to reiterate that a key purpose of a consultations is to act as a tool for learning which in turn can generate new ways of thinking and ensure the best possible outcome and delivery of such an important strategy. Members wish to note it was disappointing that this perspective on the purpose of a consultation appeared to not necessarily be shared.

### **Electric Taxis**

Members note that cost remains a key challenge in the move toward electric taxis and Members acknowledge and felt assured by the comments made that that work is ongoing with outside bodies to develop trials and schemes towards addressing this challenge.

### **City Car Club**

Members note the comments made on the research conducted by Hackney Council on the City Car Club and would welcome such information being shared with Committee. Members do hold concerns that a lot of the emphasis on transportation within the progress Report appears to be on cars. Members note the move to electric vehicles is a good solution, however wish to stress that electric cars are not the panacea and we as a council need to do more to discourage the public from using cars and this emphasis on a change in public mind-set could have been more greatly reflected within the report. Members wish to reiterate the need to more greatly emphasis public transport or other alternative modes of transport such as cycling or walking within all documents generated. Members feel the emphasis on public transport is particularly important in light of the pandemic and the general public perception on public transport safety. Members feel we as a council need to do more to rectify this perception and ensure members of the public are better informed that public transport is safe in the current climate and is the preferred mode of transport, which in turn will also assist with public transports financial viability.

Thank you once more to you and officers for attending the meeting. For ease of reference, the requests detailed in this letter are as follows:

**PLEASE NOTE THE RESPONSES TO THE REQUESTS ARE BELOW IN GREEN TEXT**



1. Costings on the retrofit of social housing along with insight into how such work will be managed.

The Housing Directorate has already insulated circa 150 blocks and thus has experience of managing such a scheme and a good understanding of the costs and timeframes involved. There are roughly 700 blocks yet to be upgraded and this will be a long programme of works delivered up to 2030.

It is anticipated that it will cost £6k to provide external wall insulation (EWI) to each flat and a further £3k for PV panels. Whilst EWI is physically possible on each block, PV installations can be subject to issues of tree shading and roof orientation. In summary PV may not be possible on every roof and this will obviously reduce the overall cost of the project.

If every block was to receive EWI then the cost of the whole project for the estimated 700 blocks would be in the region of £29m. If every block was to receive PV panels then this would add a further £18m. (The £18m included a provision to add PV to the 150 blocks that have already received EWI in previous schemes).

The project would be managed through the Directorates Planned Maintenance Team who have experience of such projects and contractor management. The work would be delivered via a framework that will ensure value for money and include additional community benefits such as local jobs and training.

Decarbonisation budgets of £20m have already been approved in the Housing Revenue Account 2021/22 budget setting process which will enable the first phases of this project to be delivered. The Directorate will seek to support the project with external funding as this becomes available and/or top up existing budgets should this becomes necessary.

2. How we are looking to engage higher income households into the agenda of retrofitting

We are still exploring a range of potential opportunities in this area and the work will form an integrated part of the wider domestic retrofit programme that will be formally instigated in the final OPC strategy. In the meantime, we are also working closely with the Cardiff City Region on this agenda as a holistic regional, or even National approach is likely to be needed. Initial proposals being tested include:

- i. a widespread publicity campaign targeted at home-owners which will point to the benefits of self-funded retrofit and provide signposting to appropriate advisory resources;
- ii. exploring how the Council, or city region, can provide a more direct service in retrofit using mechanisms like LA Flex which can connect existing industry funding (Energy Company Obligation funds, etc) with a wider range of home-owners;
- iii. exploring how the Council, or city region, could set standards or provide some other means of quality assurance on installers and suppliers to give home-owners greater confidence in choosing appropriate energy efficiency measures; and
- iv. setting out an appraisal of the wider benefits of an expanded retrofit sector, including in job creation, health and wellbeing benefits, and carbon reduction to justify requests for potential new funding mechanisms for retrofit.

3. How we as a Council will ensure that wildlife corridors on future developments are better achieved in the future.

Where an ecological impact assessment (EclA) of a proposed development is submitted to Cardiff Council, we expect it to conform to the EclA guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2018. Those guidelines make it clear that an EclA, or Ecology Chapter in an Environmental Statement, should consider the impacts upon ecosystems, as well as habitats and species. Statements to this effect are found throughout the document, for example at sections 1.3, 1.9, 2.3, 4.1 and 4.8 etc. All EclA's, or ecology / biodiversity chapters of Environmental Statements, submitted to Cardiff Council should demonstrate how the impacts upon ecosystems have been assessed, in accordance with the 2018 EclA Guidelines. Any consideration of ecosystems in an EclA or ES should also consider the aspects of ecosystem resilience, including connectivity, as set out below.

Furthermore, in his letter to Heads of Planning of 23/10/19 the Chief Planner stated *'The attributes of ecosystem resilience (PPW para 6.4.9 refers) should be used to assess the current resilience of a site, and this must be maintained and enhanced post development. If this cannot be achieved, permission for the development should be refused.'* The attributes of resilience referred to here are the diversity, extent, condition and connectivity of these ecosystems.

The 'connectivity' aspect of ecosystem resilience which most closely equates to the need to maintain ecological corridors between habitats in and around development sites. However, the term 'corridor' implies a long, linear feature, whereas in reality ecological connectivity can take many forms, including ecological 'stepping stones' or broader habitat areas.

In separate legislation, Regulation 41 of the Conservation of Habitats and Species Regulations 2017 (as amended) requires that policies relating to the development and use of land must include policies encouraging the management of features which, *'by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems of marking field boundaries) or their function as "stepping stones" (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species.'*

This legislation is reflected in Local Development Plan policy EN6 'Ecological Networks and Features of Importance for Biodiversity', which states that *'Development will only be permitted if it does not cause unacceptable harm to :*

- i. Landscape features of importance for wild flora and fauna, including wildlife corridors and 'stepping stones' which enable the dispersal and functioning of protected and priority species;*
- ii. Networks of importance for landscape or nature conservation'*

Other LDP policies also make reference to the importance of ecological connectivity, such as the Green Infrastructure Policy KP16, and in fact we require that ecological connectivity or corridors are delivered via a comprehensive green infrastructure strategy for major development sites, which incorporates not just ecology and biodiversity, but also tree protection, parks and public open spaces, sustainable drainage and public rights of way.

By using this approach we secure the retention, creation and enhancement of green infrastructure corridors through all major developments.

4. How many trees planted by the council have reached maturity.

Technically, the age at which trees reach maturity will depend on the species of tree and the size the tree was planted. The Woodland Carbon Code requires planting to be in situ for a minimum of 25 years in order to provide the carbon capture benefits required, so we are using 25 years as a minimum age for a mature tree - trees that have been in the ground for 25 years will be counted as mature. Trees that are planted as 'semi mature' will take much longer to establish and begin to grow and capture carbon than if they are planted as small whips or saplings, so the 25 year 'rule' can apply for all sizes of tree.

On this basis, none of the 10,000 trees planted in the last 4 years will have reached maturity and we don't have accurate figures going back 25 years to calculate the failure rate for trees planted prior to 1997. The Coed Caerdydd programme will capture this data going forward.

It is recognised that development offers a significant opportunity to secure new tree planting. The impact of development on trees and its provision for new tree planting is assessed in accordance with our adopted policies and Supplementary Planning Guidance. New tree planting is important at all scales, from the smallest infill development to the largest strategic site. Key principles are typically agreed at outline and pre-application stage, with full details secure via reserved matters and discharge of condition applications. Key principles that are stressed from the outset include: -

- i. Securing space above and below ground for large, long-lived trees tolerant to the predicted impacts of climate change.
- ii. Ensuring tree planting is diverse in terms of species and form.
- iii. Maximising the biodiversity benefits afforded by tree planting.
- iv. Ensuring new trees will not be over-dominant and vulnerable to removal or unsuitable pruning.
- v. Ensuring there is a mixed age class structure of trees – i.e. not too many young, middle aged and old trees but a balanced mixture of all three wherever possible.
- vi. Ensuring that the characteristics of the site soil are assessed to ensure tree planting is suitable for the prevailing conditions.
- vii. Ensuring that tree planting and aftercare follows best practice in arboriculture.

5. To receive further information on the National Park City as offered by Cllr Wild.

Below are two links to the NPC Foundation and the NPC London web sites which will provide detailed information about National Park City status.

<https://www.nationalparkcity.org>

<https://www.nationalparkcity.london>

6. Feedback on if the public behaviour change recommendations made following our December meeting have been accepted and will be acted upon.

We are very grateful for the input of Environmental Scrutiny on this aspect of the work and fully recognise the need for ongoing dialogue and engagement on public behaviour change. This is reflected in para 10 of the May Cabinet report which notes that

*“Public behaviour change is the biggest challenge in delivering the OPC Strategy and a section should be dedicated stating that the public has an essential role in this. A behaviour change plan needs to be well resourced, and continually in collaboration with partners, over the next 9 years, reviewed and evaluated by people with expertise.”*

We are actively planning to make this public engagement exercise a key project in the final OPC strategy and an integral part of the wider action plan and delivery mechanisms being developed. We are currently in discussions with external consultants who are expert in this field and, subject to procurement, will be bringing them on board to advise on a fully worked, long term strategy for engagement with the public and other stakeholders in the city.

7. Sight of the research conducted by Hackney Council on City Car Clubs.

The London Councils Car Club Action Plan states that *‘a shift to the use of car clubs from private car use has led to an increase in the use of public transport, taxis, walking and cycling.*

The full action plan can be found here

<https://www.londoncouncils.gov.uk/download/file/fid/15211>

The Council is preparing a Bus Strategy to emphasise the importance of public transport. The Council is also working with the Welsh Government, Transport for Wales, Cardiff City Region and Bus Operators on reforming the bus network through the Bus Emergency Scheme (BES2) as reported to Cabinet in January 2021. Further reports will follow as plans emerge through the working groups and consultation will be undertaken on the plans at the appropriate time to ensure there is wider input to their development. The Council is also working with the Welsh Government and Transport for Wales on future enhancements to the Metro and the promotion of public transport associated with the recovery plans.

Furthermore, the Council is working with Welsh Government, bus operators and the Confederation of Passenger transport (CPT) to ensure that social distancing on public transport is adhered to. In addition, operators are continuing to use enhanced cleaning such as overnight anti-viral fogging and in service cleaning of handrails, seat backs etc. on vehicles to ensure that they are as safe as possible.

Regards,

Councillor Ramesh Patel

Chairperson Environmental Scrutiny Committee

Cc:

- Paul Orders – Chief Executive
- Andrew Gregory – Director for Planning, Transport & Environment
- Gareth Harcombe – Operational Manager – Energy & Sustainability
- Jason Bale - Programme Manager – Clean Air Cardiff
- Members of Cardiff’s Environmental Scrutiny Committee

Ref: RK/RP/HT/05.10.2021

5<sup>th</sup> October 2021

Councillor Huw Thomas,  
County Hall,  
Atlantic Wharf,  
Cardiff CF10 4UW.



Dear Leader,

**Environmental Scrutiny Committee – 5 October 2021 – One Planet  
Cardiff Strategy and Action Plan**

On behalf of the Environmental Scrutiny Committee, I would like to thank you as well as Officers from the Planning, Transport and Environment Directorate for attending Committee on Tuesday 5<sup>th</sup> October and providing the Committee with the opportunity to consider and discuss the One Planet Cardiff Strategy and Action Plan. Following our consideration, Members of the Committee have requested that I feed back the following observations, requests and recommendations to you.

**Behaviour Change**

The Committee welcomed the information provided within the One Planet Cardiff (OPC) Strategy and Action Plan in relation to Behaviour Change and were reassured by confirmation that the Council was working with the Centre for Climate Change and Social Transformations. Members still expressed concerns that the proposals did not incorporate aspects relating to empowerment, both community and individual, whereby the public aren't just involved and engaged over what changes they need to make but take personal ownership. Members propose that by taking control and responsibility themselves, success is more likely, however it was not entirely clear how this would be achieved from the current strategy and action plan.

## **Governance**

The Committee noted the governance framework proposed as part of the strategy and were pleased to see the inclusion of key partners and stakeholders. However, whilst there are numerous references to public engagement throughout the strategy, Members raised the point that there is no involvement of the public in the governance process. Members expressed the view that in order to achieve behaviour change, residents need to be involved in all aspects including the governance framework and that local community groups, for example, should be able to hold the Council to account and provide their input.

## **Carbon Neutral Building Developments**

The Committee highlighted during the meeting that the target date for forthcoming new build development to be carbon neutral, including schools, was from 2024. Members appreciate that this would mean that school developments, already identified under Cardiff's 21st Century Schools Band B Programme, might not be included within this target. Members agreed to take up the offer from the Leader regarding **further detail** over the extent to which Band B schools have considered and incorporated carbon neutral solutions and could possibly achieve this target, or whether further funding would be required from Welsh Government for this to be realised.

Furthermore, the Committee **requested** that clarification be provided as to whether there was a similar situation regarding the new Cardiff Arena, and that due to prior commitment, including financial, this development might not achieve the carbon neutral target. Members asked for detail as to what extent this development would achieve carbon neutrality.

## **Action Plan and Monitoring**

Following discussion over targets for achieving carbon neutral by 2030, the Committee noted that a set percentage shift per year may not be suitable due to various sizes of projects with each having a different percentage of reduction allocated. Officers explained that some projects and their associated reduction of emissions would likely be achieved in the first few years, whereas others would take longer to achieve and could be tail ended.

Whilst appreciating this, the Committee **recommend** that targets, key indicators as well as timescales be incorporated into the OPC Action Plan in order to be able to undertake effective annual monitoring of the strategy.

### **Financial Implications**

During the meeting Members queried the fact that there was no mention of financial commitment within the OPC Strategy or Action Plan. Members welcomed the offer made by the Director of Planning, Transport and Environment to receive an estimated cost of the projects under Phase 1 of the Strategy. The Committee also **recommend** that the action plan incorporate financial detail in order that annual monitoring can effectively assess the financial situation including what can be achieved within existing resource and what further resource may be required.

### **Dedicated Resource**

Whilst noting that the OPC Agenda involves numerous staff across the Council, previous reports to Cabinet identify additional posts that have been funded in recognition of the need to bring extra resource to the OPC Strategy. Members support a dedicated resource and believe that it is essential to push forward the OPC Agenda; to monitor it effectively and ensure its achievement. The Committee therefore **requested** clarification as to what these additional posts are and whether they have now been filled.

### **Requests following this scrutiny**

For ease of reference the requests contained in the letter are as follows:

- **Further detail** over to the extent to which Cardiff's 21st Century Schools Band B Programme has incorporated carbon neutral solutions;
- Clarification regarding whether the new Cardiff Arena development and will achieve carbon neutrality;
- To receive an estimated total cost of the projects under Phase 1 of the Strategy.

- Clarification as to what additional posts have been funded to take forward the OPC Strategy and whether they have now been filled.

**Recommendations to be monitored following this scrutiny**

To summarise, the Scrutiny Committees made two formal recommendations which are set out below. As part of the response to this letter we would be grateful if you could, for each recommendation, state whether the recommendation is accepted, partially accepted or not accepted and summarise the Cabinet’s response. If the recommendation is accepted or partially accepted, I would also be grateful if you could identify the responsible officer and provide an action date. This will ensure that progress can be monitored as part of the approach agreed by Cabinet in December 2020.

| Recommendation   | Accepted, Partially Accepted or Not Accepted | Cabinet Response | Responsible Officer | Implementation Date |
|--|--|------------------|---------------------|---------------------|
| 1. That targets, key indicators as well as timescales be incorporated into the OPC Action Plan in order to be able to undertake effective annual monitoring of the strategy.   |  |                  |                     |                     |
| 2. That the action plan incorporate financial detail in order that annual monitoring can effectively assess the financial situation including what can be achieved within existing resource and what further resource may be required. |  |                  |                     |                     |

Regards,



Councillor Ramesh Patel  
 Chairperson Environmental Scrutiny Committee

Cc:

- Paul Orders – Chief Executive



- Cllr Caro Wild, Cabinet Member, Strategic Planning & Transport
- Cllr Michael Michael, Cabinet Member - Cleaner Streets, Recycling & Environment
- Andrew Gregory – Director for Planning, Transport & Environment
- Gareth Harcombe – Operational Manager – Energy & Sustainability
- Jason Bale - Programme Manager – Clean Air Cardiff
- Debi Said, PA to the Leader
- Heather Warren, Cabinet Support Office
- Cabinet Support Office
- Joanne Watkins, Cabinet Business Manager
- Members of Cardiff's Environmental Scrutiny Committee

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**ASSIGNED TO : Richard Portas**

*Responding officer is satisfied reply is complete: Yes*

***Further detail over to the extent to which Cardiff's 21st Century Schools Band B Programme has incorporated carbon neutral solutions;***

As part of the 21<sup>st</sup> Century Band B Programme, working in partnership with Atkins, a Net Zero Carbon standard has been developed for all new schools.

Many Local Authorities are exploring Net Zero Carbon on smaller scheme and on an operational carbon basis, but Cardiff in its latest Band B tender for Fairwater Campus, has also included stretching embodied carbon targets (up to the point of construction, not beyond). In doing so, the programme secured additional capital funding from Welsh Government of circa £13m on top of the construction project of circa £75m.

The Cardiff targets are commercially sensitive until the tender is concluded, but extracts from the standards include:

## 2.4. Targets

The targets outlined below are based on a number of best practice targets and recommendations developed to achieve net zero carbon operational energy. These targets are identified to provide guidance to all developers regarding the design standards they should be aiming to achieve.

It is recommended that the main operational energy targets that new school buildings should aim to achieve:

**Table 2-2 - School Operational Energy Targets**

| Criteria                            | Target                             |
|-------------------------------------|------------------------------------|
| School Operational Energy Use (EUI) | 65 kWh/m <sup>2</sup> /annum (GIA) |
| Space Heating Demand                | 15 kWh/m <sup>2</sup> /annum       |
| Renewable Energy (RE) Supply        | Maximise % of on-site renewables.  |

As a stretch target, onsite energy generation should exceed the Operational Energy Use (EUI) by 10%.

### 3.4. Targets

The whole life carbon LCA assessment results must be reported using the following units: kgCO<sub>2</sub> equivalent (kgCO<sub>2</sub>e), or any clearly stated metric multiples e.g. tCO<sub>2</sub>e.

The total carbon results also need to be normalised as follows for the different project types:

- Buildings; planning use classes A1–A5, B1: kgCO<sub>2</sub>e/m<sup>2</sup> NIA
- Buildings; planning use classes B2–B7: kgCO<sub>2</sub>e/m<sup>3</sup> of internal building volume

New school buildings should aim for the targets outlined below. These are based on the RIBA 2030 climate challenge benchmarks (see Figure 3-4) and LETI best practice guidance.

**Embodied carbon target:** for building Life Cycle Stages A1-A5, including Substructure, Superstructure, MEP, Facade & Internal Finishes – less than 600 kgCO<sub>2</sub>e/m<sup>2</sup>.

**Embodied carbon target:** as above, also including sequestration – less than 400 kgCO<sub>2</sub>e/m<sup>2</sup>.

**Reuse of materials target:**

- Current target of total building construction materials & elements that are reused: 30%
- 2030 target of total building construction materials & elements that are reused: 50%

The Fairwater Campus project brings Cantonian High School, Woodlands High School and Riverbank Primary School onto one site. Following this pilot, the standard will then be applied to all new school developments following lessons learnt and this commitment has been confirmed by Welsh Government.

It should be noted that the Net Zero Carbon targets also include biodiversity and a targeted BREEAM requirement. The project is also piloting mechanisms such as a hydroponics farm (with produce to be used for the community café), edible playgrounds and digesters.

#### **ASSIGNED TO : Chris Barnett**

*Responding officer (Chris) is satisfied reply is complete: Yes*

#### **Clarification regarding whether the new Cardiff Arena development and will achieve carbon neutrality;**

Atlantic Wharf is a key part of the One Planet Cardiff Strategy. It provides an opportunity to show what can be achieved through sustainable regeneration.

Our aim is for an exemplar holistic development addressing people, place and planet.

A “whole system” approach to the masterplan area is adopted achieving a masterplan wide trajectory to climate neutral by 2030.

To Arena cannot achieve a net-neutral position as a standalone facility this can only be achieved via a holistic solution considering energy production and use across the Atlantic Wharf to decrease current requirements due to inefficient buildings such as the existing County Hall, Red Dragon Centre.

The site offers numerous opportunities to create new energy sources such as ground and air source as well as solar and heat panels etc. This will be further supported with the connection into

new Heat Network offering opportunity to deal with peak requirements for Arena, new RDC and the associated development.

**ASSIGNED TO : RUTH LLOYD**

*Responding officer is satisfied reply is complete: Yes/No*

**To receive an estimated total cost of the projects under Phase 1 of the Strategy.**

| PROJECT TITLE   | PROJECT DETAILS   | Allocated Budget  |
|---|---|---|
| <b>Transport white paper</b>                            | Continue to implement the approved Transport White Paper projects with a target to reduce GHG emissions from road travel by 50% across the City.  | The White Paper does not have phases, the programme is one 10 year vision due to the quantity, complexity and interdependency of the projects involved. Our current high level estimate of the total cost of the white paper is £2.5bn. The majority of this cost is rail based and attached to the South East Wales Metro Project, this project has a phase 1 element that is estimated to be £100m. |
| <b>Energy Efficiency Retrofit in the Council Estate</b> | A new Corporate Property Strategy 2021-26 to be published in November 2021 which will outline how the Council will reduce the carbon output of its operational and schools estate, and off-set with new renewable energy sources, targeting a 60% reduction by 2030 | To be confirmed via a report to Cabinet in Nov 21   |
| <b>Heat Network Phase 1 Delivery</b>                    | Begin construction of Phase 1 of the Cardiff Heat Network by winter 2021  | £15m  |
| <b>Council Fleet Transition Low Emission Transport</b>  | Develop and Implement Council Vehicle Replacement Strategy in line with the Low Emission Strategy to deliver a Low Carbon Fleet ensuring that as a minimum of 90 Council vehicles are replaced by EVs by 2022.  | £120,000 annual revenue allocation to bridge the gap on fleet vehicle lease rentals.<br>£500,000 (mainly WG Grant) for associated charging infrastructure<br>£2.4mWG Grant funding for 12 EV waste vehicles   |
| <b>Coed Caerdydd Cardiff's Urban Forest</b>             | Development of a holistic programme approach to tree planting and land management city wide to increase biodiversity and expand the city's tree canopy by 25%   | £1m with potential for other partner led contributions  |

|  |  |   |
|--|--|---|
| <b>Low Carbon New Build for Council Housing Estate</b>       | ~2,700 new council homes over the next 6-7 years. Over 2,000 council home new builds (planned over 10 year programme) will meet higher standards. Around 500 already built out or in construction will exceed the previous building regs standard (SAP B+).  | £450m   |
| <b>Energy Efficiency Retrofit for Council Housing Estate</b> | Energy Retrofit Scheme for low rise public housing blocks. The programme will be phased to tackle the worst performing blocks first over a 10-year period which eventually should see over 700+ low rise blocks improved   | £20m  |
| <b>LED Street Lighting</b>                                   | Continued implementation of LED replacement and dimming measures   | £6.53m  |
| <b>Cardiff Food Strategy</b>                                 | Promote healthy, local and low-carbon food by delivering the Cardiff Food Strategy by 2024. This includes the development of a strategy for a carbon responsive, holistic approach to food in schools across Cardiff, measures to address food deserts in the city and initiatives to increase sustainable local growing | Food officer post has been funded for 3 years, with small, project specific funding opportunities being developed.        |
| <b>Schools engagement and action plan</b>                    | Establish a curriculum integrated climate emergency education programme to stimulate the creation and implementation of school specific action plans   | Revenue costs from existing resources   |
| <b>City wide behaviour change programme</b>                  | Roll out an ongoing programme of engagement with citizens, businesses and workers, targeting high impact areas of behaviour change, and set in place a systematic methodology for measuring and monitoring impacts   | Approx. £50k over the first two years, to include development of a longer-term strategy incl. future funding requirements |

## **ASSIGNED TO : GARETH HARCOT**

*Responding officer is satisfied reply is complete: Yes*

***Clarification as to what additional posts have been funded to take forward the OPC Strategy and whether they have now been filled.***

- Programme Lead - programme managing OPC and supporting with project delivery of key renewables schemes:
  - Permanent
  - out to advert currently
- Food Strategy Officer – implementing the approved food Strategy and managing stakeholder engagement & project implementation
  - temp (3 years)
  - out to advert currently
- Housing Retrofit Officer - developing a strategy and framework for domestic energy retrofit (targeting 2000 schemes p.a. by 2024)
  - going to consultants due to limited time constraints
  - Funding temp (1yr)
- EV Delivery Officer – delivering the EV Strategy and associated projects, looking for funding opportunities (grant) and implementing
  - temp as above
- Senior Carbon & Climate Officer - carbon modelling, carbon impact assessments and annual carbon reporting to WG. Will be required on an annual basis (subject to funding bids)
  - temp as above

**ASSIGNED TO : GARETH HARCOTBE**

*Responding officer is satisfied reply is complete: Yes/No*

Recommendations to be monitored following this scrutiny

To summarise, the Scrutiny Committees made two formal recommendations which are set out below. As part of the response to this letter we would be grateful if you could, for each recommendation, state whether the recommendation is accepted, partially accepted or not accepted and summarise the Cabinet's response. If the recommendation is accepted or partially accepted, I would also be grateful if you could identify the responsible officer and provide an action date. This will ensure that progress can be monitored as part of the approach agreed by Cabinet in December 2020.

Please complete the table

| Recommendation   | Accepted, Partially Accepted or Not Accepted | Cabinet Response  | Responsible Officer | Implementation Date   |
|--|--|---|---------------------|---|
| 1. That targets, key indicators as well as timescales be incorporated into the OPC Action Plan in order to be able to undertake effective annual monitoring of the strategy.   | Accepted                                     | Given the complexity of the projects, and the highly varied timelines for delivery and impact, a simplistic annual target is unlikely to be useful. However we will discuss and develop a more robust and periodic target analysis for incorporation into the annual report | Gareth Harcombe     | To be contained within OPC Annual report submission – date to be determined but likely Oct 2022 |
| 2. That the action plan incorporate financial detail in order that annual monitoring can effectively assess the financial situation including what can be achieved within existing resource and what further resource may be required. | Partially accepted                           | Confirmed details for the short term actions are given above. Medium and longer term actions, as recognised in the cabinet report, will need to be subject to the Council's full budget setting process and subject to more detailed business case analysis.                |                     |   |



**CYNGOR CAERDYDD  
CARDIFF COUNCIL**

**ENVIRONMENTAL SCRUTINY COMMITTEE**

**8 DECEMBER 2022**

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**LOCAL AIR QUALITY MANAGEMENT – CARDIFF COUNCIL AIR QUALITY  
ANNUAL PROGRESS REPORT 2022: PERFORMANCE MONITORING  
SCRUTINY**

---

**Purpose of the Report**

1. To provide Members with background information to aid scrutiny of the report to Cabinet regarding Cardiff Council's Local Air Quality Annual Progress Report, which is due to be considered by Cabinet.

**Scope of Scrutiny**

2. At their meeting on 15 December 2022, the Cabinet will consider a report entitled 'Local Air Quality Management – Cardiff Council 2021 Air Quality Progress Report' and notes the reason for the report as:
  - Seeking approval for the Cardiff Council 2022 Air Quality Progress Report, based on the 2021 data sets, (as attached as Appendix A1) for submission to Welsh Government for approval.
  - To note the receipt of further direction from the Welsh Government regarding the Clean Air Plan, (as attached as Appendix A2) including the need to assess and decide on a permanent transport scheme for Castle Street.
3. During this scrutiny, Members have the opportunity to explore:
  - i) The progress and performance of the Council in relation to the national air quality objectives Wales;<sup>1</sup>
  - ii) The impact of the Covid-19 pandemic on air quality in Cardiff;
  - iii) The recommendations to Cabinet.

---

<sup>1</sup> [Standards and Objectives | Air Quality In Wales \(gov.wales\)5778](https://gov.wales/standards-and-objectives-air-quality-in-wales)

## Background

4. Scientific evidence shows that increased risk of heart disease, strokes, respiratory illness and other diseases that reduce life expectancy can be caused by that poor air quality. Therefore, air quality is the biggest environmental risk to public health in the UK <sup>2</sup>, and Public Health Wales have stated that it is their greatest concern after smoking, and in Wales it is estimated that 1,100 deaths could have been avoided that are linked to NO<sub>2</sub> exposure each year, based on 2011-12 data.
5. The main causes of poor air quality are particulate matter and nitrogen dioxide (NO<sub>2</sub>) which are mostly from vehicle emissions.
6. The estimated number of avoidable deaths based on the latest available information from Public Health Wales (2017) for the total number of all cause non-accidental deaths due to long-term mortality attributable to air pollution as between 178 - 227 deaths.
7. There is also a disproportionate impact on vulnerable population groups and dependant on living conditions/location.
8. 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.
9. 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).<sup>3</sup>
10. *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 to provide an Air Quality Action Plan (AQAP) for each identified AQMA to ensure that air quality in the identified area improves.*

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<sup>2</sup> Estimating local mortality burdens associated with particulate air pollution', Public Health England, (2014)

<sup>3</sup> [The Air Quality \(Amendment\) \(Wales\) Regulations 2002 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2002/1940/related/ukdl/2002-1940-amendment)

11. In 2018, Shared Regulatory Services and Cardiff Council developed a citywide Clean Air Strategy & Action Plan (CASAP) for Cardiff. The strategy coincides with Cardiff's Capital Ambition report and helps to implement and deliver the priorities outlined in the Ambition report with an overarching aim to improve air quality to protect and improve public health in Cardiff.

12. The current Air Quality Annual Progress Report for the Council provides details on the ratified data for air quality monitoring undertaken in 2021 within the Cardiff Council area. This report must include monitoring results for the previous calendar year, a progress report on action plan implementation and an update on any new policies or developments likely to affect local air quality.

### Structure of the Papers

13. The draft report to Cabinet is attached at **Appendix A** with the 2022 Annual Air Quality Progress Report attached at **Appendix A1**, and the Welsh Government Direction at **Appendix A2**

14. The Progress Report consists of the following sections:

|   |     |
|---|-----|
| Executive Summary: Air Quality in Our Area                                | i   |
| 1. Actions to Improve Air Quality   | 1   |
| 2. Air Quality Monitoring Data and Comparison with Air Quality Objectives | 42  |
| 3. New Local Developments   | 110 |
| 4. Policies and Strategies Affecting Airborne Pollution                   | 119 |
| 5. Conclusions and Proposed Actions                                       | 128 |
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| Appendix A: Quality Assurance/Quality Control (QA/QC) Data                | 132 |
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15. A full **Table of Contents** can be found on **Page xiii** of the Progress Report.

### **Issues identified in the Cabinet Report**

16. The Cabinet report notes that in 2021 following the lifting of COVID-19 restrictions that air quality data collection continued and normal monitoring resumed.

17. **Point 22** of the Cabinet report identifies four Air Quality Management Areas (AQMAs) declared across Cardiff which have all been declared due to exceedances of the annual mean NO<sub>2</sub> Air Quality Standard (40 µg/m<sup>3</sup>), known to be derived from road transport. These areas are:

- **Cardiff City Centre AQMA** (declared 1/4/13 to incorporate Westgate Street; formerly St Marys St AQMA);
- **Ely Bridge AQMA** (declared 1/2/07);
- **Stephenson Court AQMA** (declared 1/ 12/10); and
- **Llandaff AQMA** (declared 1/4/13).

18. According to the Cabinet report, **points 24 – 33**, Cardiff had four automatic air quality monitoring sites in 2021, located at Frederick Street in the City Centre, Richard's Terrace, just off Newport Road, Castle Street<sup>4</sup> and Lakeside Primary School. **The results obtained at 3 of these sites, omitting Lakeside (see point 314 of the Cabinet report) demonstrate compliance with the national air quality objectives for both NO<sub>2</sub> and PM<sub>10</sub> which are set at 40 µg/m<sup>3</sup> as an annual average.**

19. Further to this, points **34 – 39** state that **out of the 108** Cardiff Council operated specifically allocated non automatic monitoring sites in Cardiff which monitor levels of Nitrogen Dioxide (NO<sub>2</sub>), **none of them recorded exceedances of the annual average objective set for NO<sub>2</sub> (40 µg/m<sup>3</sup>).**

20. As highlighted at **point 36**, however, the concentrations recorded for 2021 are not a true representation due to the impacts of the COVID lockdowns and restrictions on pollution levels in Cardiff which is likely owing to traffic volumes having decreased during the pandemic and are not yet reflective of 'business as usual' .

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<sup>4</sup> Installed late summer 2020 and operational from October 2020

The results have therefore generated a bias/ underestimation of levels of pollution across Cardiff in 2021. (See figure 1 on page 7 of the Cabinet report)

21. **Point 38** notes the results for 2022 are likely to be a better representation of more settled circumstances as the majority of Covid restrictions had been lifted.
22. **City Centre AQMA – Points 40 and 41** – Using sites 186 and 187 located on Castle Street - pre pandemic, 2019 levels were 44  $\mu\text{g}/\text{m}^3$  at both sites. For 2020, the same locations recorded concentrations of 23  $\mu\text{g}/\text{m}^3$  and 26  $\mu\text{g}/\text{m}^3$ , which equates to a reduction of 47% and 41%. In 2012 both sites recorded concentrations of 26  $\mu\text{g}/\text{m}^3$ , which is still below pre pandemic levels, but probably due to the fact that up until October 2021 Castle Street remained closed.
23. **Ely Bridge AQMA - Point 42** - Site 117, 192 & 218) recorded annual average levels of  $\text{NO}_2$  at 30 $\mu\text{g}/\text{m}^3$  or less.
24. **Llandaff AQMA – Point 45** - Site 212, in 2019 had an annual average reading of 41.3  $\mu\text{g}/\text{m}^3$ . For 2020, it recorded a concentration of 33  $\mu\text{g}/\text{m}^3$ , a reduction of 20%. However, this has now increased in 20221 to 37  $\mu\text{g}/\text{m}^3$ , an increase of 4%, as the number of cars on the road has increased after covid restrictions are lifted
25. **Stephenson Court, Newport Rd, AQMA – point 47** - No monitoring sites within the Stephenson Court AQMA (Sites, 81, 131 & 198) recorded concentrations >30  $\mu\text{g}/\text{m}^3$ .
26. **Points 59-65** of the Cabinet report provides detail of the **School Streets Pilot Project** which involves the temporary closure of road links surrounding an initial 6 specific schools in Cardiff, followed by an additional 9, with the idea to encourage parents, staff and children to adopt an alternative mode of travel. The results obtained from each of the school sites indicated **full compliance with the  $\text{NO}_2$  annual average objective of 40  $\mu\text{g}/\text{m}^3$  at all sites.**
27. **Cardiff Council Clean Air Plan: Response to the Welsh Government Direction – points 66 and 67** note that following previous temporary work undertaken to improve air quality on **Castle Street** further legal direction under part IV of the Environment act 1995 was issued to the Council by the Welsh Government, requiring the need for maintained compliance with  $\text{NO}_2$  limits.

28. However, the report contains no details of any proposed scheme as detailed assessment works on a number of possible solutions are being developed to inform a full business case/funding requirements for a final scheme that will need Welsh Government approval.

29. The following schemes have been implemented to improve air

- Electric Buses (**point 68**) – 36 Electric Buses introduced on a number of routes within the City Centre, a further grant of up to £8m has been made available to the Council
- Bus Retrofit Scheme (**points 69 and 70**), 49 older buses have reduced NOx emissions by 90%;
- EV Taxi Scheme (**point 71**); the Council in partnership with a local vehicle hire company has acquired 5 fully electric wheelchair accessible Dynamo Hackney Carriage Taxis, further work needs to be done to incentivise the scheme take up; and
- Establishing a real-time city-wide air quality monitoring network (**point 72**) – the locations of monitors is being finalised with installation to be completed early in 2023.

### **Proposed Recommendations to Cabinet**

30. The report to Cabinet contains the following recommendations:

- i) To note and accept the monitored results gathered in 2021 and approve the 2022 Annual Progress Report (as attached at Appendix A1) for submission to Welsh Government for approval by 31<sup>st</sup> December 2022.
- ii) Note the receipt of the updated Air Quality Legal Direction issued on the 21<sup>st</sup> September 2022 and that work to comply with the Direction is being progressed.

### **Previous Scrutiny**

31. The Environmental Scrutiny Committee has been very involved in reviewing the work being undertaken by the Council to improve air quality in the city. Pre decision and update reports were received in March 2018 and March 2019 respectively as well as a Task and Finish Group inquiry in 2017/18 titled 'Improving Cardiff's Air Quality'. The inquiry considered a range of aspects that

have an impact on Cardiff's air quality and consulted with a number of industry experts. The report made 31 recommendations and was presented to Cabinet on the 20<sup>th</sup> September 2018, a response to which was presented to the Scrutiny Committee in January 2020<sup>5</sup>, and resulted in further observations and comments via the Chair's letter<sup>6</sup>.

32. In June 2019, the Committee received and provided comment on a pre-decision item titled 'Air Quality Feasibility Study Final Plan - Full Business Case & City Centre Transport Improvements'<sup>7</sup> and more recently, in June 2021, a further pre-decision report on City Centre Next Steps – Castle Street and City Centre East (Phase 1 + Canal).

33. The Committee has also examined the subject of air quality during scrutiny of associated topics and Council strategies such as One Planet Cardiff, Active Travel, Cardiff Bus Strategy and the Cardiff Transport White Paper.

### **Way Forward**

34. Councillor Caro Wild, Cabinet Member for Climate Change has been invited to make a statement. Andrew Gregory, Director of Planning, Transport and Environment as well as other representatives from the Directorate have also been invited to answer questions and assist the Committee in its consideration of the item.

### **Legal Implications**

35. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters, there are no direct legal implications. However, legal implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any legal implications arising from those recommendations. All decisions taken by or on behalf of the Council

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<sup>5</sup> [Agenda item - Cabinet Response to the Environmental Scrutiny Committee Report Titled 'Improving Cardiff's Air Quality' : City of Cardiff Council \(moderngov.co.uk\)](#)

<sup>6</sup> [\(Public Pack\)Correspondence Following Committee Meeting Agenda Supplement for Environmental Scrutiny Committee, 21/01/2020 16:30 \(moderngov.co.uk\)](#)

<sup>7</sup> [\(Public Pack\)Correspondence Following the Committee Meeting Agenda Supplement for Environmental Scrutiny Committee, 12/06/2019 16:30 \(moderngov.co.uk\)](#)

must (a) be within the legal powers of the Council; (b) comply with any procedural requirement imposed by law; (c) be within the powers of the body or person exercising powers on behalf of the Council; (d) be undertaken in accordance with the procedural requirements imposed by the Council e.g. Scrutiny Procedure Rules; (e) be fully and properly informed; (f) be properly motivated; (g) be taken having regard to the Council's fiduciary duty to its taxpayers; and (h) be reasonable and proper in all the circumstances.

### **Financial Implications**

36. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters, there are no direct financial implications at this stage in relation to any of the work programme. However, financial implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any financial implications arising from those recommendations.

### **RECOMMENDATION**

The Committee is recommended to:

- i) Consider the information in this report, its appendices and the information presented at the meeting;
- ii) Determine whether they would like to make any comments, observations or recommendations to the Cabinet on this matter in time for its meeting on 15 December 2022; and
- iii) Decide the way forward for any future scrutiny of the issues discussed.

**DAVINA FIORE**

**Director of Governance & Legal Services**

**2 December 2022**



**BY SUBMITTING THIS REPORT TO THE CABINET OFFICE, I, Andrew Gregory, DIRECTOR for Planning Transport and Environment AM CONFIRMING THAT THE RELEVANT CABINET MEMBER(S) ARE BRIEFED ON THIS REPORT**

**CARDIFF COUNCIL  
CYNGOR CAERDYDD**

**CABINET MEETING: December 2022**

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**LOCAL AIR QUALITY MANAGEMENT – CARDIFF COUNCIL  
AIR QUALITY ANNUAL PROGRESS REPORT 2022**

**Climate Change (Cllr Caro Wild)  
Transport & Strategic Planning (Cllr Dan De’Ath)**

**AGENDA ITEM:**

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#### **Reason for this Report**

1. The purpose of this report is to seek approval for the 2022 Cardiff Council (CC) Local Air Quality Management (LAQM) Annual Progress Report (APR), based upon on air quality datasets obtained in 2021, for submission to Welsh Government for approval.
2. To note the receipt of further legal direction from Welsh Government regarding the Clean Air Plan, including the requirement to assess and decide upon a permanent transportation scheme for Castle Street to an agreed programme.

#### **Background**

3. Poor air quality is now considered the largest environmental risk to public health in the UK.<sup>1</sup> There is clear scientific evidence that shows that air pollution exposure reduces life expectancy by increasing mortality and morbidity risk from heart disease, and strokes, respiratory diseases, lung cancer and other conditions.

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<sup>1</sup> Estimating local mortality burdens associated with particulate air pollution', Public Health England, (2014)

4. In the UK, in the context of air quality management, the main air pollutants that are the primary public health concern are particulate matter and Nitrogen Dioxide (NO<sub>2</sub>). In the UK, it has been estimated that an equivalent of 23,500 deaths can be attributed to long-term exposure to NO<sub>2</sub> each year.<sup>2</sup>
5. The principal source of these pollutants is from road transport emissions, particularly from diesel cars. In 2012, the International Agency for Research on Cancer listed diesel exhaust pollution as a Class 1 carcinogen<sup>3</sup> and extended this to all ambient air pollution in 2013<sup>4</sup>.
6. Public Health Wales has stated that poor air quality is the second greatest public health concern after smoking and is the most significant environmental determinant of health. In Wales, based on data for the period 2011-2012, it has been estimated that an equivalent of 1,100 avoidable deaths can be linked to NO<sub>2</sub> exposure each year.
7. Poor air quality does not only cause ill health, but it also has a wider societal cost. Accounting for health service costs and reduced productivity through lost workdays in the UK this is significant, standing at around £20bn every year<sup>5</sup>.
8. Some people are more at risk than others. Air pollution can disproportionately affect vulnerable population groups (e.g., children, older people, people with underlying chronic disease), as well as those exposed to higher levels because of living or commuting in urban or deprived locations<sup>6</sup>.
9. 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 Cardiff and Vale 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 178-227 deaths.
10. Under Section 82 of the Environment Act 1995 every local authority has an obligation to regularly review and assess air quality in their areas, and to determine whether or not air quality objectives to protect health are likely to be achieved. Where the air quality reviews indicate that the air quality objectives are not being achieved, or are not likely to be achieved, Section 83 of the 1995 Act requires local authorities to designate an Air Quality Management Area ('AQMA'). Section 84 of the Act ensures that action must then be taken at a local level which is

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<sup>2</sup> Improving air quality in the UK: tackling nitrogen dioxide in our towns and cities: UK overview document' Defra (2015)

<sup>3</sup> International Agency for Research on Cancer, (October 2013)

<sup>4</sup> Every breath we take: the lifelong impact of air pollution', Royal College of Physicians and Royal College of Paediatrics and Child Health (2016).

<sup>5</sup> National Institute for Health and Care Excellence 2017

<sup>6</sup> WHO Regional Office for Europe 2016

outlined in a specific Air Quality Action Plan (AQAP) to ensure that air quality in the identified area improves.

11. 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).
12. This Annual Progress Report provides details on the ratified data for air quality monitoring undertaken in 2020 within the Cardiff Council area.
13. Welsh Government issue statutory policy guidance to Local Authorities under section 88 of the Environment Act 1995 to bring the local air quality management system in Wales into line with the sustainable development principle outlined in Welsh Government's Well-being for Future Generations legislation, 2015. This guidance, with which local authorities must have regard to when carrying out their air quality functions under the Environment Act 1995, sets out that authorities in Wales have to publish an Annual Progress Report (APRI) by 31<sup>st</sup> December at the latest. This report must include monitoring results for the previous calendar year, a progress report on action plan implementation and an update on any new policies or developments likely to affect local air quality.
14. The APR attached in Appendix 1 satisfies the above criteria examining ratified datasets for air quality monitoring undertaken in 2021 within the Cardiff Council area.

#### Background: Welsh Government Clean Air Direction

15. In 2020 Cardiff Council received a direction from Welsh Government. In response the Council's published [Full Business Case](#) (Final Plan) set out a series of measures not only aimed at ensuring compliance on the A4161 Castle Street could be achieved in the shortest possible time, but provided city wide air quality improvements. The measures set out and approved by Welsh Government included:
  - Implementation of Electric Buses – 36 Electric Buses;
  - Bus Retro Fitting Programme;
  - Taxi Mitigation Scheme; and
  - City Centre Transportation Improvements.
16. A key component of the Clean Air Plan to deliver compliance was the full implementation of the City Centre Schemes, particularly the City Centre North (Castle Street) Scheme. The schemes would establish a high-quality active travel infrastructure for the city and improve connectivity between key developments by strategically aligning bus routes and enhancing links with the new Transport Interchange. These schemes were due to commence in early 2020, prior to the onset of the COVID pandemic.

17. In June 2021 Cabinet approved the construction of the original City Centre North Scheme as detailed in the Clean Air Plan, albeit on an interim basis. This basis of implementing an interim scheme was on the need that any wider impacts following a full post Covid recovery period could be fully accounted for to ensure that no detrimental impacts in terms of congestion and air quality would result from the Clean Air Scheme.
18. Following implementation of the interim scheme the Council has maintained regular monitoring and assessment of traffic and air quality impacts on Castle Street to demonstrate that compliance is being maintained. The results from 2021, as detailed in the previous section of this report showed that the annual result for NO<sub>2</sub> on Castle Street was 26 µg/m<sup>3</sup>. Results for 2022 up to the end of October showed a result of 32 µg/m<sup>3</sup>, which is not unexpected given the reintroduction of traffic and reflects the modelling work undertaken on the Clean Air plan.
19. Owing to the decision for an interim scheme being implemented in late 2021, the Council has ensured that constant dialogue and ongoing collaboration with Welsh Government officials has been maintained to ensure that the Plan remains on course to deliver and maintain compliance.

## Issues

### Covid-Pandemic

20. During the COVID-19 pandemic local air quality monitoring continued in Cardiff. In 2021 the Council ensured that air quality data collection was maintained and following the lifting of restrictions in 2021 monitoring resumed as normal.
21. The results for 2021, have been corrected/ ratified to account for the gaps in the annual datasets incurred by the COVID situation.

### Air Quality in Cardiff

22. There are currently four Air Quality Management Areas (AQMA) declared across Cardiff which have all been declared due to exceedances of the annual mean NO<sub>2</sub> Air Quality Standard (40 µg/m<sup>3</sup>), the main source of the pollution being derived from road transport emissions. The established AQMA are:
  - **Cardiff City Centre AQMA** (declared 1/4/13 to incorporate Westgate Street; formerly St Marys St AQMA);
  - **Ely Bridge AQMA** (declared 1/2/07);
  - **Stephenson Court AQMA** (declared 1/ 12/10); and
  - **Llandaff AQMA** (declared 1/4/13).
23. **The 2022 Annual Progress Report presents monitoring data captured in 2021.** In line with the Cardiff Council's (CC) statutory duties under Part IV of the Environment Act 1995, Shared

Regulatory Services on behalf of CC undertakes regular air quality monitoring at specifically allocated locations across Cardiff using automated and non-automated principles for ambient air Nitrogen Dioxide (NO<sub>2</sub>), Particulate Matter (PM<sub>10</sub> & PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>), Carbon Monoxide (CO) & Ozone (O<sub>3</sub>).

### Automated Monitoring Network

24. In 2021, Cardiff had four automatic air quality monitoring sites located at Frederick Street in the City Centre, Richard's Terrace, just off Newport Road, Castle Street and Lakeside Primary School.
25. The Frederick Street (Urban Background) site monitors on a 24/7 basis measuring levels of NO<sub>2</sub>, PM<sub>10</sub> & PM<sub>2.5</sub>, SO<sub>2</sub>, CO and O<sub>3</sub> feeding data directly into Defra's Automatic Urban and Rural Network (AURN).
26. The Richard's Terrace site (Urban Traffic/ Roadside monitors on a 24/7 basis measuring levels of NO<sub>2</sub> & PM<sub>10</sub> at that location, feeding data directly into Defra's Automatic Urban and Rural Network (AURN).
27. The Castle Street site was installed as part of the Council's Clean Air Plan and the site monitors on a 24/7 basis measuring levels of NO<sub>2</sub>, PM<sub>10</sub> & PM<sub>2.5</sub> at that location, forming part of the Welsh Air Quality Network.
28. The 2021 results of the monitoring for NO<sub>2</sub>, and PM<sub>10</sub>, at the above-mentioned stations is presented in Table 1.

**Table 1 - Summary of Automated Results for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> as annual averages**

| Site Name                    | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) |
|------------------------------|--|---|--|
| Frederick Street City Centre | 16   | 13  | 9  |
| Richards Terrace Newport Rd  | 22   | 17  | N/A  |
| Castle Street                | 25   | 12  | 9  |

29. The results obtained at all 3 sites demonstrate compliance with the national air quality objectives for both NO<sub>2</sub> and PM<sub>10</sub> which are set at 40 µg/m<sup>3</sup> as an annual average. Full datasets for these monitors are available on the Welsh Air Quality Forum Website <https://airquality.gov.wales/>.

30. Lakeside Primary School (Urban Background) site monitors on a 24/7 basis measuring levels of Polycyclic aromatic hydrocarbons (PAH) at that location, feeding data directly into Defra's PAH Digital (solid phase) Network. SRS serve as a local site operator to this site, however data interpretation is sanctioned by the consultants Ricardo Energy and Environment Ltd. Therefore, the purpose of this site and results derived are not corresponded to any of the limit values outlined for the purposes of LAQM in Wales.

31. In addition, Cardiff Council has acquired 7 near real time indicative air quality analysers. 5 analysers were purchased with the financial support of Welsh Government and the 2 analysers were facilitated by the Shared Regulatory Services (SRS) who had successfully accrued funding via a S106 planning contribution. The analysers have been specifically placed in locations to monitor the impacts of the Clean Air Plan, and also improve monitoring in the Llandaff AQMA and represent relevant exposure. The remaining monitor has been installed in Canton owing to traffic and pollution concerns raised with SRS by local members and residents alike. The analysers continuously monitor for Nitric Oxide, Nitrogen Dioxide & Ozone, PM10 & PM2.5, and do so every 15 minutes (data uploaded every hour).

32. Results captured from the AQMesh monitors are summarised in Table 2 below

**Table 2 - AQ MESH Data Summary 2021**

| Site Name                | Valid Data Capture 2021 % | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) |
|--------------------------|---------------------------|--|---|--|
| Westgate Street*         | 0                         | N/A  | N/A   | N/A  |
| Lower Cathedral Road     | 100                       | 19.9   | 11.1  | 8.5  |
| Tudor Street             | 100                       | 20   | 13.9  | 10.7   |
| North Road               | 100                       | 22.1   | 9.5   | 7.8  |
| Penarth Road             | 100                       | 12.7   | 11.5  | 9.5  |
| Lansdowne Road, Canton** | 54                        | 25.6   | 16.6  | 11.4   |
| Llandaff AQMA            | 11                        | 12   | 9.3   | 20.72  |

\*Westgate Street Monitor suffered numerous technical issues which has meant data capture for 2021 was not valid. Instrument has been fully recommissioned in 2022

\*\* -data capture representative of period monitored was installed.

### **Non-automatic Monitoring Sites**

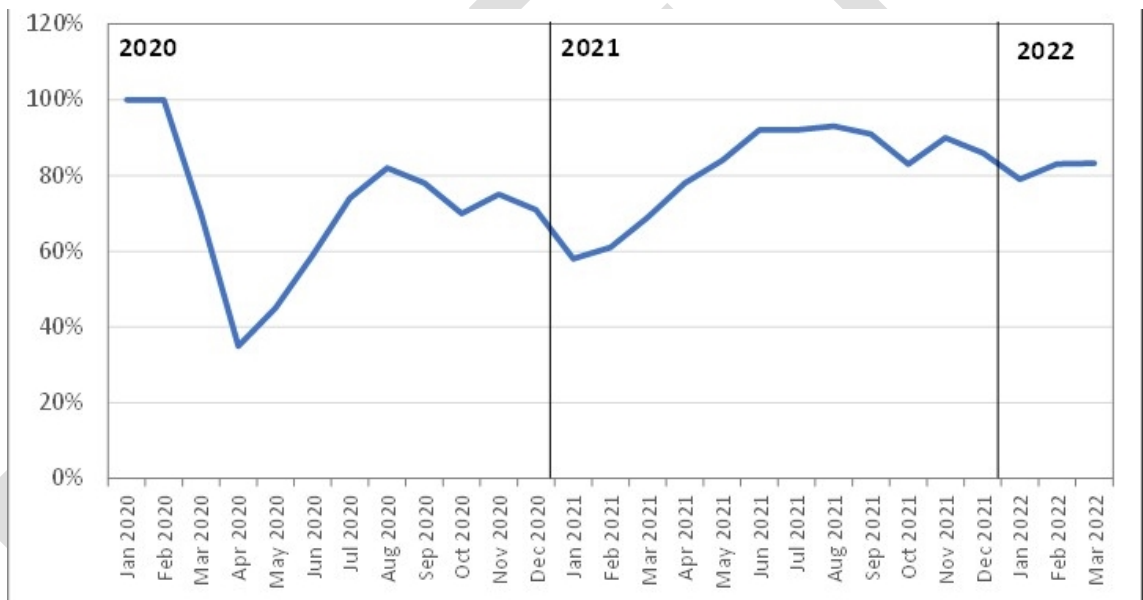
33. In 2021 CC operated 108 specifically allocated non automatic monitoring sites in Cardiff which monitor levels of Nitrogen Dioxide (NO<sub>2</sub>).

34. In 2021, out of the 108 monitoring locations across the entire City, no monitoring sites recorded exceedances of the annual average objective set for NO<sub>2</sub> (40 µg/m<sup>3</sup>).

35. The results are indicative that the levels of air pollution were still being influenced from the ongoing impacts of the COVID lockdown restrictions that were in place in the first part of 2021 and have had an impact on pollution levels in Cardiff which is likely owing to traffic volumes having remained below pre-COVID levels.

36. However, it is evident that concentrations have increased compared to the results in 2020 and this is likely reflective of the easing of restrictions throughout 2021 and increased travel patterns detailed in Figure 1 below. It is therefore likely that the concentrations recorded in 2021 were still not fully representative of a business as usual scenario and the results have generated a small bias/underestimation of levels of pollution across Cardiff in 2021.

Figure 1 - Overall Traffic Levels in Cardiff Relative to 2019 (Pre-COVID)



37. It is anticipated that results from 2022 are likely to be more representative of 'settled' conditions owing to the easing of most Covid restrictions.

38. In accordance with Welsh Government's (WG) Local Air Quality Management Policy Guidance, July 2017, Cardiff Council recognise that there is no defined "safe level" when describing levels of air quality and work remains ongoing to reduce air pollution across Cardiff.

## Results in AQMAs

### City Centre AQMA

39. It is apparent that annual average NO<sub>2</sub> datasets in the City Centre, in and around the AQMA, were still being impacted by the pandemic as each monitoring location demonstrated compliance with the NO<sub>2</sub> objective of 40 µg/m<sup>3</sup> as an annual average. However it is evident that compared to 2020, there have been some slight increases in NO<sub>2</sub> concentrations in the City Centre AQMA. However the results are still significantly below pre pandemic levels, which may be influenced by the fact Castle Street remained closed to general traffic until the end of October 2021.
40. Using sites 186 & 187 located on Castle Street, levels measured in 2019 pre pandemic were 44 µg/m<sup>3</sup> at both sites. In comparison for 2020 the same locations recorded concentrations of 23 µg/m<sup>3</sup> and 26 µg/m<sup>3</sup>, and in 2021 both sites recorded concentrations of 26 µg/m<sup>3</sup>.

### **Ely Bridge AQMA**

41. Monitoring undertaken within the Ely Bridge AQMA, at the façade of residential properties (Site 117, 192 & 218) recorded annual average levels of NO<sub>2</sub> below 40 µg/m<sup>3</sup>. Although levels captured are compliant with the air quality objectives, they need to be considered in light of the Covid pandemic and thus it is considered necessary that the AQMA should remain in place and focussed monitoring has continued into 2022.
42. Results from 2021 shows slightly increased NO<sub>2</sub> concentrations compared to 2020, but still maintain a reduction compared to 2019 pre-Covid.

### **Llandaff AQMA**

43. Residential monitoring locations within the Llandaff AQMA, all indicate compliance with the annual average objective for NO<sub>2</sub> in 2021.
44. Site 212 which did indicate an exceedance of the annual average objective in 2019 with an annual average reading of 41.3 µg/m<sup>3</sup> recorded a concentration of 33 µg/m<sup>3</sup> in 2020. This has increased to 37 µg/m<sup>3</sup> in 2021 which is likely reflective of the easing of Covid restrictions and increase in journeys and traffic volumes compared to 2020.
45. As a result focussed monitoring in the Llandaff AQMA has continued in 2022, including use of real time data and any future actions to improve air quality in the AQMA will be considered as part of the review of the citywide Clean Air Strategy & Action Plan (CASAP) as detailed below in paragraph 55. Monitoring will also be further enhanced with a further increase in realtime monitors being installed in the AQMA.



## Stephenson Court AQMA

46. All three monitoring sites within the Stephenson Court AQMA (Sites, 81, 131 & 198) show compliance with the annual average objective, and no site recorded concentrations >30 µg/m<sup>3</sup>.

## Summary of Results in the AQMAs

47. Table 3 summarises the highest recorded annual average result at a residential location within each of the 4 AQMAs in 2021, thus representing worse case relevant exposure in terms of the annual objective for NO<sub>2</sub>. It should be noted that the results summarised below in some instances is not a portrayal of the same monitoring site year on year, owing to variations in concentrations and the addition of any new monitoring sites.

**Table 3 - Highest Annual Average NO<sub>2</sub> Concentration (µg/m<sup>3</sup>) in AQMAs**

| AQMA             | Annual Average NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) Air Quality Standard =40 µg/m <sup>3</sup> |      |      |      |      |      |      |      |
|------------------|--|------|------|------|------|------|------|------|
|                  | 2014   | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| City Centre      | 42.1   | 38.2 | 38.7 | 38.2 | 37.3 | 35.6 | 24.7 | 26.4 |
| Stephenson Court | 41.2   | 39.5 | 29.6 | 36.7 | 38.2 | 35.7 | 28.4 | 29.3 |
| Ely Bridge       | 42.3   | 39.5 | 41.3 | 38   | 39.9 | 38.6 | 30.4 | 31.7 |
| Llandaff         | 37.2   | 32.3 | 35.0 | 32.5 | 32.5 | 41.3 | 32.9 | 37.4 |

48. Whilst concentrations show compliance with the AQS for NO<sub>2</sub> the Council needs to be mindful of the ongoing influence of the continued COVID impacts which may have impacted these results particularly in the City Centre and Stephenson Court AQMAs. It is apparent that concentrations around Ely Bridge and particularly Llandaff AQMAs have increased in 2021.

49. Monitoring within the AQMAs has therefore continued in 2022, and consideration of any future actions for the AQMAs which could include reviewing the boundary or revoking the AQMA will be assessed by the Council once an assessment of the longer-term recovery from Covid has been determined.

50. The results to date for 2022 are currently suggesting a stabilisation of results owing to the removal of all Covid restrictions. It is therefore imperative that focussed monitoring within the AQMAs continues and the need for any further action reviewed accordingly once it is confident that a near normal/ new normal situation has stabilised following the pandemic.

51. Although the 2021 data indicates that compliance is met in all four AQMAs, the Welsh Government has stated that *'air just barely compliant with the objectives is not 'clean' and still carries long-term health risks and while compliance with the national air quality*

*objectives is essential, it is desirable to keep levels of pollution as low as reasonably practicable.*<sup>7</sup>

52. In accordance with LAQM best practise guidance, there are no monitoring sites in the district with annual average concentrations above 60 µg/m<sup>3</sup> in 2021. This is therefore indicative that it is unlikely that the hourly NO<sub>2</sub> objective was exceeded during this monitoring period.
53. Section 84 of the Environment Act 1995 ensures that action must then be taken at a local level which is outlined in a specific Air Quality Action Plan (AQAP) to ensure that air quality in the identified area improves. Therefore Cardiff Council has a statutory requirement to produce an Air Quality Action Plan (AQAP) for each identified AQMA.
54. In 2017 the Council gave a commitment to produce a Clean Air Strategy and Action Plan by 2018. This objective of this report was to develop an Action Plan to address air quality issues not only in the AQMAs, but across all of Cardiff.
55. Highlighting this commitment, in 2018, SRS & CC developed a citywide Clean Air Strategy & Action Plan (CASAP) for Cardiff. The strategy coincided with Cardiff's Capital Ambition report and helps to implement and deliver the priorities with an overarching aim to improve air quality to protect and improve public health in Cardiff. The CAS & Action Plan appoints strategic measures that will look to generate a positive impact to citywide air quality levels, in particular traffic derived NO<sub>2</sub> levels. Each measure has endured a cost benefit appraisal procedure by weighting the measures in terms of air quality impact, cost and timescale. The key theme of the strategic measures is to increase the uptake of sustainable modes of transport by influencing a behavioural change in Cardiff.
56. The CASAP fulfils the requirements of the LAQM process to produce an Air Quality Action Plan (AQAP).
57. It will be imperative that the CASAP is reviewed following the full implementation of the Clean Air Plan in order to further prioritise measures, to ensure air quality levels are continuously improved in Cardiff. Therefore, it is likely that the CASAP will need a full review and update in 2023/24.

### **School Monitoring - School Streets Project**

58. In view of the corporate commitment to deliver active travel plans for all schools, SRS was commissioned by Cardiff Council's Transportation, Policy and Strategy Team to assist with Cardiff Council's Schools Streets pilot project in October 2019, which

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<sup>7</sup> [Welsh Government Local air quality management in Wales Policy guidance June 2017](#)

involves the temporary closure of road links surrounding and initial 6 specific schools in Cardiff.

- Whitchurch High Lower;
- Ysgol Melin Gruffydd;
- Peter Lea Primary;
- Llandaff Church in Wales
- Primary; Pencaerau; and
- Lansdowne Primary

59. These initial schools were selected for the pilot project owing to an assessment made by the Road Safety Team following numerous concerns and correspondence received relating to road safety issues at these schools. The road layouts at these schools allowed for the project to be accommodated.

60. The Traffic Regulation Order (TRO) is effective during the schools' morning and afternoon drop-off and pick-up hours. This project is seen as an excellent opportunity to take action to encourage parents, staff and children to adopt an alternative mode of travel.

61. Shared Regulatory Services (SRS) have further supported this pilot project by providing additional air quality monitoring at an additional 9 schools. The monitoring at the additional schools commenced in December 2020 and the initial years data has been presented in the 2022 APR. The additional 9 schools are:

- St Cuthbert's School;
- Tredegarville School;
- St Peters School;
- St Monica's / Gladstone School;
- Lakeside School;
- Bryn Hafod School;
- Glan Yr Afon School;
- Willow Brook School; and
- Creigiau School

62. SRS gather monthly datasets for NO<sub>2</sub> using non-automated passive diffusion tubes, undertaken at the schools' premises, inside the TRO zone at a residential façade and outside the TRO zone at a residential façade. This strategic placement of monitoring sites allows the examination of potential displacement impacts as a result of the adopted TRO zone.

63. The results obtained from each of the school sites indicated **full compliance with the NO<sub>2</sub> annual average objective of 40 µg/m<sup>3</sup> at all sites.**

64. Full details of the results are presented in the Annual Progress Report.

**Clean Air Plan: Response to the Welsh Government Direction**

65. Following on from the development of the temporary approach to mitigating poor air quality impacts on Castle St, Welsh Government, working in full partnership with Cardiff Council, have issued the Council with a further legal direction under Part IV of the Environment Act 1995.<sup>8</sup> This direction sets out measures the Council needs to implement to ensure that compliance for the NO<sub>2</sub> limit value on Castle Street is maintained. A copy of the direction is contained in Appendix 2. Further detailed assessment work is currently being progressed in line with requirements of the Direction.
66. At the time of writing this report detailed assessment works on a number of potential options for Castle Street is being progressed in line with the requirements of the 2022 Direction and officers have continued on going dialogue with Welsh Government to ensure they are kept abreast of the assessment works. A Final Plan to comply with the Direction will set out a full business case/ funding requirements for the final scheme which will require final approval from Welsh Government early in 2023.

### **Electric Buses**

67. Cardiff Bus procured 36 EV buses Cardiff Council has been successful in supporting the transition of buses on the Cardiff network to becoming fully electric. Cardiff Bus were enabled to introduce 36 new electric buses into their fleet from January 2022. It was delivered through a collaboration between Cardiff Bus and Cardiff Council after a successful bid for funding from the Department for Transport's (DfT) Ultra-Low Emissions Bus (ULEB) Scheme that received funding of £5.7m.

### **Bus Retrofit Scheme**

68. As detailed in the 2021 report the Council awarded funding to two bus operators who applied to the bus retrofit scheme. As per the requirements of the grant 80% funding to cover capital costs has been awarded to Cardiff City Transport Services Ltd (Cardiff Bus) to retrofit 20 buses, and Stagecoach South Wales to retrofit 29 vehicles.
69. Both operators completed the programme of works in Q4 of 2021, and has ensured that their older buses have improved their NOx emissions by some 90%.

### **EV Taxi Scheme and Taxi Fleet**

70. In Q3 of 2021 the Council procured 5 fully electric wheel chair accessible Dynamo Hackney Carriage Taxis. In partnership with a local vehicle hire company the Council launched an EV Taxi Lease Scheme with for licensed Cardiff drivers to take up an EV Taxi at the

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<sup>8</sup> <https://gov.wales/environment-act-1995-activity-ensure-nitrogen-dioxide-compliance-air-quality-direction-2022-cardiff>

start of 2022. At the time of writing this report the Council is working further with our hire partner to further incentivise the scheme to improve take up of the scheme.

71. Previous engagement has taken place with the Taxi Trade on measures to further improve future emissions from the Taxi fleet in Cardiff. The Council needs to establish a policy pathway for the taxi fleet to be ULEV by 2028/30 in line with the Councils overall One Planet Cardiff. Over the coming months the Council will review available options to accelerate the transition of the taxi fleet to cleaner vehicles, including options for any financial grants to achieve this ambition.

### **Establishing a real-time city-wide air quality monitoring network**

72. As detailed in last year's report approval was sought to undertake a pilot programme of expanding the Councils real time monitoring capability. At the time of writing this report the locations of where the monitors will be located are being finalised and the installation of the monitors will be completed in early 2023. The location of the monitors has been undertaken on a risk based approach in line with government Technical Guidance and where sensitive receptors are likely to be exposed to potential air pollutants, including residential properties and primary schools.

### **Local Member consultation (where appropriate)**

#### **Reason for Recommendations**

73. To enable Cardiff Council to agree a final version of the Annual Progress Report on Local Air Quality Management to Welsh Government to meet statutory reporting requirements.

#### **Financial Implications**

74. The Shared Regulatory Service has an existing budget to complete a programme of air quality management and monitoring across Cardiff. This report sets out the annual progress report for approval and submission to Welsh Government in line with statutory reporting requirements.

75. Welsh Government issued an additional Air Quality Legal Direction in September 2022. Work is ongoing in this regard with additional assessment works planned to be completed to inform the business case for the final scheme at Castle Street which will be subject to Welsh Government approval.

76. Future reports will need to update on the ongoing work regarding the full review of the Clean Air Strategy and Action plan which is planned to take place in 2023/24. In addition, updates will be required on the delayed pilot programme for an expansion of the Air Quality Monitoring Network

which is currently planned to be implemented in early 2023. Any updates should clearly set out any additional outcomes and financial implications. In addition, consideration will need to be given as to how any ongoing revenue costs from any planned expansion of a successful pilot could be funded.

### **Legal Implications (including Equality Impact Assessment where appropriate)**

77. The recommendations in this report are to mainly to note the air quality monitoring results, the update to the Air Quality Legal Direct legal direction, and to approve the submission of the Annual Progress Report attached to this report. As part of the Council's ongoing reporting requirements.
78. The legislative framework is set out in the body of this report. The decision maker must be satisfied that it has all the relevant information available before making any decision and have regard to the further general advice set out in these implications.

### **General Advice**

79. Any decision must (a) be within the legal powers of the Council; (b) comply with any procedural requirement imposed by law; (c) be within the powers of the body or person exercising powers on behalf of the Council; (d) be undertaken in accordance with the procedural requirements imposed by the Council e.g. standing orders and financial regulations; (e) be fully and properly informed; (f) be properly motivated; (g) be taken having regard to the Council's fiduciary duty to its taxpayers; and (h) be reasonable and proper in all circumstances and comply with all equalities legislation.

### **Equality Act 2010**

80. In considering this matter the decision maker must have regard to the Council's duties under the Equality Act 2010 (including specific Welsh public sector duties). Pursuant to these legal duties Councils must, in making decisions, have due regard to the need to (1) eliminate unlawful discrimination, (2) advance equality of opportunity and (3) foster good relations on the basis of protected characteristics. Protected characteristics are: (a) Age, (b) Gender reassignment, (c) Sex (d) Race – including ethnic or national origin, colour or nationality, (e) Disability, (f) Pregnancy and maternity, (g) Marriage and civil partnership, (h) Sexual orientation (i) Religion or belief – including lack of belief.
81. When taking strategic decisions, the Council also has a statutory duty to have due regard to the need to reduce inequalities of outcome resulting from socio-economic disadvantage ('the Socio-Economic Duty' imposed under section 1 of the Equality Act 2010). In considering this, the Council must take into account the statutory guidance issued by the Welsh Ministers ([WG42004 A More Equal Wales The Socio-economic](#)

[Duty Equality Act 2010 \(gov.wales\)](#) and must be able to demonstrate how it has discharged its duty.

82. The decision maker should be mindful of the Welsh Language (Wales) Measure 2011 and the Welsh Language Standards.

### The Well-being of Future Generations (Wales) Act 2015

83. The Well-Being of Future Generations (Wales) Act 2015 ('the Act') places a 'well-being duty' on public bodies aimed at achieving 7 national well-being goals for Wales - a Wales that is prosperous, resilient, healthier, more equal, has cohesive communities, a vibrant culture and thriving Welsh language, and is globally responsible. In discharging its duties under the Act, the Council has set and published well being objectives designed to maximise its contribution to achieving the national well being goals. The wellbeing objectives are set out in Cardiff's Corporate Plan 2020 -23.

84. When exercising its functions, the Council is required to take all reasonable steps to meet its wellbeing objectives. This means that the decision makers should consider how the proposed decision will contribute towards meeting the wellbeing objectives and must be satisfied that all reasonable steps have been taken to meet those objectives.

85. The wellbeing duty also requires the Council to act in accordance with a 'sustainable development principle'. This principle requires the Council to act in a way which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. Put simply, this means that Council decision makers must take account of the impact of their decisions on people living their lives in Wales in the future. In doing so, the Council must:

- Look to the long term
- Focus on prevention by understanding the root causes of problems
- Deliver an integrated approach to achieving the 7 national well-being goals
- Work in collaboration with others to find shared sustainable solutions
- Involve people from all sections of the community in the decisions which affect them

86. The decision maker must be satisfied that the proposed decision accords with the principles above; and due regard must be given to the Statutory Guidance issued by the Welsh Ministers, which is accessible on line using the link below: <http://gov.wales/topics/people-and-communities/people/future-generations-act/statutory-guidance/?lang=en>

### **HR Implications**

87.

**Property Implications**

88.

**RECOMMENDATIONS**

Cabinet is recommended to:

1. Note and accept the monitored results gathered in 2021 and approve the 2022 Annual Progress Report (as attached as Appendix 1) for submission to Welsh Government for approval by the 31<sup>st</sup> of December 2022.
2. Note the receipt of the updated Air Quality Legal Direction issued on the 21<sup>st</sup> September 2022 and that work to comply with the Direction is being progressed.

|                                   |  |
|-----------------------------------|--|
| <b>SENIOR RESPONSIBLE OFFICER</b> | <b>Director Name</b><br>Andrew Gregory |
|                                   | Date submitted to Cabinet office       |

*The following appendices are attached:*

Appendix 1: Cardiff Council Annual Air Quality Progress Report 2022.

Appendix 2: Legal Direction from Welsh Government September 21<sup>st</sup> 2022





# Cardiff Council 2022 Air Quality Progress Report

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: 28<sup>th</sup> October 2022

| <b>Information</b>             | <b>Cardiff Council</b>   |
|--------------------------------|--|
| <b>Local Authority Officer</b> | Jason Bale   |
| <b>Department</b>              | Shared Regulatory Services   |
| <b>Address</b>                 | Cardiff Council, County Hall, Cardiff,. CF10<br>4UW                              |
| <b>Telephone</b>               | 0300 123 6696  |
| <b>E-mail</b>                  | <a href="mailto:jabale@valeofglamorgan.gov.uk">jabale@valeofglamorgan.gov.uk</a> |
| <b>Report Reference Number</b> | SRS/CC/APR2022   |
| <b>Date</b>                    | 28/10/2022   |

## Executive Summary: Air Quality in Our Area

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<sub>2</sub>). 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”<sup>1</sup>. 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)<sup>2</sup>, 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 Cardiff and Vale University Health Board area, the long term mortality burden attributable

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<sup>1</sup> COMEAP (2018). Associations of long-term average concentrations of nitrogen dioxide with mortality. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/734799/COMEAP\\_NO2\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/COMEAP_NO2_Report.pdf)

<sup>2</sup> Welsh Government StatsWales. <https://statswales.gov.wales/Catalogue/Environment-and-Countryside/Air-Quality/airqualityindicators>

to air pollution (fine particulate matter and nitrogen dioxide combined) is an estimated effect equivalent to 178- 227 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<sub>2.5</sub> and NO<sub>2</sub>), 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 Cardiff Council**

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 Cardiff Council's (CC) statutory duties under Part IV of the Environment Act 1995, Shared Regulatory Services (SRS) on behalf of CC undertakes regular air quality monitoring at specifically allocated locations across Cardiff using automated and non-automated principles for ambient air Nitrogen Dioxide (NO<sub>2</sub>), Particulate Matter (PM<sub>10</sub> & PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>), Carbon Monoxide (CO) & Ozone (O<sub>3</sub>).

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 Technical Guidance 16 (TG16), April 2021. 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."

## Monitoring Networks

In 2020, Cardiff had four automatic air quality monitoring sites, equivalent to Automated Urban Rural Network (AURN) standards, located at Frederick Street in the City Centre, Richard's Terrace, just off Newport Road, Castle Street and Lakeside Primary School.

### **Cardiff Frederick Street (Urban Background)- AURN 1**

The site monitors on a 24/7 basis measuring levels of NO<sub>2</sub>, PM<sub>10</sub> & PM<sub>2.5</sub>, SO<sub>2</sub>, CO and O<sub>3</sub> feeding data directly into Defra's Automatic Urban and Rural Network (AURN).

### **Richard's Terrace, Newport Road (Urban Traffic)- AURN 2**

The site monitors on a 24/7 basis measuring levels of NO<sub>2</sub> & PM<sub>10</sub> at that location, feeding data directly into Defra's Automatic Urban and Rural Network (AURN).

### **Cardiff Castle Street (Urban Traffic/ Roadside)**

Commissioned in October 2020 with the financial support of Welsh Government. The site monitors on a 24/7 basis measuring levels NO<sub>2</sub>, PM<sub>10</sub> & PM<sub>2.5</sub> at that location, forming part of the Welsh Air Quality Network.

### **Cardiff Lakeside (Urban Background)**

The site monitors on a 24/7 basis measuring levels of Polycyclic aromatic hydrocarbons (PAH) at that location, feeding data directly into Defra's PAH Digital (solid phase) Network. SRS serve as a local site operator to this site, however data interpretation is sanctioned by the consultants Ricardo Energy and Environment Ltd, whereby concentrations are compared to the national air quality objective for B[a]P in ambient air, based on an annual mean concentration of 0.25 ng/m<sup>3</sup>. Details can be found in the [UK Air Quality Strategy \(Defra, 2007\)](#). Therefore, the purpose of this site and results derived are not corresponded to any of the limit values outlined for the purposes of LAQM in Wales.

Summarised results for various pollutants for the outlined automatic monitoring stations can be found at <http://www.welshairquality.co.uk> & <https://uk-air.defra.gov.uk/interactive-map>

### **AQ Mesh Analysers**

In addition to the newly commissioned automated monitoring station on Castle Street, Cardiff Council has acquired the use of 7 near real time indicative air quality analysers. 5 analysers were purchased with the financial support of Welsh Government and the 6<sup>th</sup> & 7<sup>th</sup> analysers were facilitated by the SRS who had successfully accrued funding via a S106 planning contribution. The analysers have been specifically placed and represent relevant exposure. The monitors are located at the following locations:

#### **Clean Air Monitors**

- Westgate Street;
- Lower Cathedral Road;
- Tudor Street;
- North Road; and
- Penarth Road

#### **S106 Monitors**

- Llandaff – Bridge Street; and

- Canton – Lansdowne Rd (installed 2021).

The analysers continuously monitor for Nitric Oxide, Nitrogen Dioxide & Ozone, PM10 & PM2.5, and do so every 15 minutes (data uploaded every hour). Information regarding the specification of the monitors can be viewed at <https://www.aqmesh.com/product/>. These monitors do not form part of the regulated Welsh automated monitoring network, but as specified they are an indicative form of monitoring and a useful tool to look at datasets on a high-resolution basis. The results captured from these monitors are summarised below

| Site Name                | Valid Data Capture 2021 % | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) |
|--------------------------|---------------------------|--|---|--|
| Westgate Street*         | 0                         | N/A  | N/A   | N/A  |
| Lower Cathedral Road     | 100                       | 19.9   | 11.1  | 8.5  |
| Tudor Street             | 100                       | 20   | 13.9  | 10.7   |
| North Road               | 100                       | 22.1   | 9.5   | 7.8  |
| Penarth Road             | 100                       | 12.7   | 11.5  | 9.5  |
| Lansdowne Road, Canton** | 54                        | 25.6   | 16.6  | 11.4   |
| Llandaff AQMA            | 11                        | 12   | 9.3   | 20.72  |

\* Westgate Street Monitor suffered numerous technical issues which has meant data capture for 2021 was not valid. Instrument has been fully recommissioned in 2022. Similarly, technical issues were suffered with the Llandaff Monitor, resulting in poor data capture in 2021.

\*\* -data capture representative of period monitored was installed.

### Non-automatic Monitoring Sites

In 2021 there were 108 specifically allocated non automatic monitoring sites across Cardiff which monitored levels of nitrogen dioxide (NO<sub>2</sub>). These sites are supported and maintained by SRS on behalf of CC. 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/m<sup>3</sup>**) and 1-hour (**200µg/m<sup>3</sup> not to be exceeded > 18 times per year**) air quality objectives for NO<sub>2</sub>.

### **Summary of results collated in 2021**

**Automated monitoring-** Results highlighted in **Section 2.2** of this report indicate compliance with the relevant air quality standards applicable for the purpose of LAQM in Wales.

**Non- automated monitoring-** In 2021, compliance with the set annual average objective for NO<sub>2</sub> (40µg/m<sup>3</sup>) was achieved at all monitored locations. The results are indicative that the levels of air pollution were still being influenced from the ongoing impacts of the COVID lockdown restrictions that were in place in the first part of 2021 and have had an impact on pollution levels in Cardiff which is likely owing to traffic volumes having decreased. However it is evident that concentrations have increased compared to the results in 2020 and this is likely reflective of the easing of restrictions throughout 2021 and increased travel patterns. It is therefore likely that the concentrations recorded in 2021 were still not fully representative of a business-as-usual scenario and the results have generated a small bias/ underestimation of levels of pollution across Cardiff in 2021.

In accordance with Welsh Government's (WG) Local Air Quality Management Policy Guidance, July 2017, SRS and CC recognise that there is no defined "safe level" when describing levels of air quality. Although compliant levels were achieved at all monitored locations in 2021, subsequently as a result of COVID-19 impacts, Cardiff Council remains vigilant and will work towards sustaining/ improving these levels of compliance across the city for future years.

### **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 standard/ objective

Based on monitoring results and further detailed assessments, there are currently four Air Quality Management Areas (AQMAs) declared across Cardiff which have



all been declared due to exceedances of the annual mean NO<sub>2</sub> Air Quality Standard (40µg/m<sup>3</sup>), known to be predominantly derived from road transport sources.

1. **Cardiff City Centre**- declared 1<sup>st</sup> April 2013
2. **Llandaff**- declared 1<sup>st</sup> April 2013
3. **Stephenson Court**- declared 1<sup>st</sup> December 2010
4. **Ely Bridge**- declared 1<sup>st</sup> Feb 2007

Maps detailing the extend and fully boundaries of the 4 AQMAs are provided in Appendix D.

## Actions to Improve Air Quality

SRS and CC are very aware of the concerns for air quality impacts. SRS & CC is committed to achieving levels as low as reasonably practicable by demonstrating levels beyond the annual objectives set for pollutants. In order to improve the air quality in Cardiff, action needs to be taken across the city as a whole. The main air pollutants which cause a public health concern and primarily worsen air quality in Cardiff are particulate matter and primary/ secondary derived nitrogen dioxide (NO<sub>2</sub>), derived by transport vehicles.

Welsh Government's publication; Local Air Quality Management, Policy Guidance, June 2017 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.

Section 84 of the Environment Act 1995 ensures that action must then be taken at a local level which is outlined in a specific Air Quality Action Plan (AQAP) to ensure that air quality in the identified area improves. 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.

In view of the statutory obligation to produce an AQAP for each AQMA, in 2019 SRS & CC developed a citywide Clean Air Strategy & Action Plan (CASAP) for Cardiff. The strategy is an evolving document and coincides with Cardiff's Capital Ambition report, helping to implement and deliver the priorities outlined in the Ambition report with an overarching aim to improve air quality to protect and improve public health in Cardiff. The CAS & Action Plan appoints strategic measures that will look to generate a positive impact to citywide air quality levels, in particular traffic derived NO<sub>2</sub> levels. Each measure has endured a cost benefit appraisal procedure by weighting the measures in terms of air quality impact, cost and timescale. The key theme of the strategic measures is to increase the uptake of sustainable modes of transport by influencing a behavioural change in Cardiff. The CASAP fulfils the requirements of the LAQM process to produce an Air Quality Action Plan (AQAP).

It will be imperative that the CASAP is reviewed following the full implementation of the Clean Air Plan in order to further prioritise measures, to ensure air quality levels are continuously improved in Cardiff. Therefore, it is likely that the CASAP will need a full review and update in 2023/24

## **Local Priorities and Challenges**

### **Clean Air Plan**

In addition to Cardiff's 4 AQMAs and CASAP work, following the formal publication of Defra's UK detailed air quality plan to tackle roadside nitrogen dioxide (NO<sub>2</sub>) concentrations in July 2017, it was identified from air quality monitoring undertaken by Cardiff Council (CC) and modelled projections from WG that Cardiff would continue to exceed EU & UK Air Quality Directive Limit Values for NO<sub>2</sub> beyond 2020. The report detailed modelled projections from the Joint Air Quality Unit (JAQU) which showed continued non-compliance of the national

annual average NO<sub>2</sub> standard by 2021 along identified road networks. The roads which have been modelled as exceeding the annual limit value are the A4161, the A4232, the A4234, the A470 and the A48. These areas of exceedence are also featured in the CAS & Action Plan document as any mitigation measures implemented on the referenced road links will have an impact on the LAQM AQMAs.

As a result of the detail in the UK Plan, and a subsequent High Court ruling, in March 2018, under Part IV of the Environment Act 1995, Section 85(7), WG issued a formal direction to CC to address its air quality concerns, with particular reference to the specified 5 road links. The direction has been governed by the Welsh Minister for Environment who has determined that the direction deemed necessary to meet obligations placed upon the United Kingdom under the **EU Ambient Air Quality Directive (2008/50/EC)**.

The Direction specified that CC had to undertake a feasibility study in accordance with the HM Treasury's Green Book approach, to identify the option which will deliver compliance with legal limits for nitrogen dioxide in the area for which the authority is responsible, **in the shortest possible time**.

Cardiff Council has developed a Clean Air Project Team who have met the necessary reporting requirements outlined by the Direction.

The results of the local modelling presented in the Initial Plan, differed to that undertaken by Defra using the Pollution Climate Mapping model. Defra's modelling identified two road links under baseline conditions which were projected to show non-compliance beyond 2021, namely the A48 and the A4232. The localised modelling identified only one road link under baseline conditions projected to show non-compliance beyond 2021, this being the A4161 Castle Street, in the City Centre.

Within the Initial Plan Report a long list of measures developed from the CASAP were qualitatively assessed against a primary objective of achieving compliance with set air quality objectives in the shortest possible time. The measures were considered against secondary objectives and were subjected to further qualitative assessments against the WeITAG Well-being Aspects.

The Council's published [Full Business Case](#) (Final Clean Air Plan) documents early intervention measures as well as aspired measures the Council are

endorsing to improve localised air quality on the outlined A4161 Castle Street with a vision of improving citywide air quality levels. These measures include;

- Implementation of Electric Buses – 36 Electric Buses to be implemented on a number of routes within the City Centre;
- Bus Retro Fitting Programme;
- Taxi Mitigation Scheme;
- City Centre Transportation Improvements; and
- Active Travel Measures.

The Clean Air Plan initially demonstrated that the outlined package demonstrates the greatest level of compliance on Castle Street, with  $31.9\mu\text{g}/\text{m}^3$  forecasted in 2021 as a result of the implementation of the measures. In addition to achieving compliance on Castle Street, the impact of the package of measures was also been modelled at local air quality monitoring locations, including those locations within existing Air Quality Management Areas (AQMAs). The results of the modelling indicated that all monitoring locations are expected to have concentrations below the  $40\mu\text{g}/\text{m}^3$  which further demonstrates that the package of measures will improve local air quality including within existing AQMAs.

A key component of the Clean Air Plan to deliver compliance was the full implementation of the City Centre Schemes, particularly the City Centre North (Castle Street) Scheme. The schemes would establish a high quality active travel infrastructure for the city and improve connectivity between key developments by strategically aligning bus routes and enhancing links with the new Transport Interchange. These schemes were due to commence in early 2020, prior to the onset of the COVID pandemic.

In June 2021 Cabinet approved the construction of the original City Centre North Scheme as detailed in the Clean Air Plan, albeit on an interim basis. The decision to install the scheme as an interim measure was done so on the basis it would be necessary to assess any residual impacts following a full post Covid recovery period, to ensure that no detrimental impacts in terms of congestion and air quality would emerge.

Following implementation of the interim scheme the Council has maintained regular monitoring and assessment of traffic and air quality impacts on Castle Street to demonstrate that compliance is being maintained on Castle Street.

Constant dialogue and ongoing collaboration with Welsh Government officials has been to ensure that the Plan remains on course to deliver compliance in the shortest possible time.

In order to formalise a time period to bring forward a permanent scheme on Castle Street, the Welsh Government have issued the Council with a further legal direction under Part IV of the Environment Act 1995.<sup>3</sup> This direction sets on measures the Council needs to implement to ensure that compliance for the NO<sub>2</sub> limit value on Castle Street is maintained.

### **Electric Buses**

Cardiff Bus procured 36 EV buses Cardiff Council has been successful in supporting the transition of buses on the Cardiff network to becoming fully electric. Cardiff Bus were enabled to introduce 36 new electric buses into their fleet from January 2022. It was delivered through a collaboration between Cardiff Bus and Cardiff Council after a successful bid for funding from the Department for Transport's (DfT) Ultra-Low Emissions Bus (ULEB) Scheme that received funding of £5.7m

### **Bus Retrofit Scheme**

Following an open application process which ended on the 31<sup>st</sup> December 2020, and subsequent review process, two application submissions were deemed successful. Here 80% funding to cover capital costs has been awarded to two bus operators/ companies, a total of £561,612 awarded. Here

£191,920 has been awarded to Cardiff City Transport Services Ltd (Cardiff Bus) to retrofit 20 buses, and £369,692 has been awarded to Red and White Services Ltd, T/A Stagecoach South Wales to retrofit 29 vehicles.

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<sup>3</sup> <https://gov.wales/environment-act-1995-activity-ensure-nitrogen-dioxide-compliance-air-quality-direction-2022-cardiff>

Both operators completed the programme of works in Q4 of 2021, and has ensured that some of their older buses have improved their NOx emissions by some 90%.

### **EV Taxi Scheme**

In Q3 of 2021 the Council procured 5 fully electric wheel chair accessible Dynamo Hackney Carriage Taxis. In partnership with a local vehicle hire company the Council launched an EV Taxi Lease Scheme with for licensed Cardiff drivers to take up an EV Taxi. This scheme was initially launched in January 2022. At the time of writing this report the Council is working further with our hire partner to further incentivise the scheme to improve take up of the scheme.

## **How to Get Involved**

CC welcomes any correspondence relating to air quality enquiries or concerns. Shared Regulatory Services (SRS) Specialist Services Team represents CC for local air quality management and therefore is contactable using the following email address [AirQuality-SRSWales@valeofglamorgan.gov.uk](mailto:AirQuality-SRSWales@valeofglamorgan.gov.uk)

For any enquiries surrounding Cardiff's Clean Air Plan, specifically the roll out of mitigation measures please contact Cardiff's Clean Air Team on [cleanairproject@cardiff.gov.uk](mailto:cleanairproject@cardiff.gov.uk).

Hourly and Monthly average monitoring data for pollutants measured is available at <https://airquality.gov.wales/>

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# 1 Actions to Improve Air Quality

## 1.1 Previous Work in Relation to Air Quality

### Phase 1

The Local Air Quality Management regime commenced with the Air Quality Regulations 1997, which came into force in December of that year. These Regulations were revoked and superseded by the current Air Quality (Wales) Regulations 2000 (as subsequently amended in 2002).

The first phase of the review and assessment process concluded that for six of the seven pollutants included in the regulations there was little or no risk of the objectives being breached and that Air Quality Management Areas (AQMAs) for these pollutants were not necessary. Measures taken at the national level would be sufficient to ensure that there would be no local “hot-spots” of these pollutants and therefore local controls in addition to the national measures would not be required.

However, for the seventh of these pollutants, nitrogen dioxide (NO<sub>2</sub>), it was concluded that national control measures such as vehicle emission and fuel standards, controls on industrial emissions, etc., would not, of themselves, be sufficient to ensure that the air quality objectives for this pollutant would not be met in all areas of Cardiff.

Whilst the vast majority of the area would meet the objectives, there were predicted to be local “hot-spots” close to heavily-trafficked road junctions where there were buildings close to the road and significant amounts of queuing traffic where the objectives would not be met.

As a result, four AQMAs were declared, each having been declared on the basis of measurements and modelling showing predicted breaches of the annual average objective for NO<sub>2</sub>. These AQMAs were known as;

- The Cardiff West AQMA
- The Newport Road AQMA
- The Philog AQMA
- The St Mary Street AQMA

The first three of these came into force on 1st December 2000 and the latter on 1st September 2002. AQAPs the first three were published in November 2002 and for St Mary Street in February 2010.

## **Phase 2**

The Council's 2003 USA concluded that for five of the seven pollutants regulated under the LAQM regime there was no evidence to suggest that local "hot-spots" for these pollutants had been missed in the first phase of the review and assessment process and that there was no need to consider these pollutants further at this time.

The 2003 USA also concluded that no local hot-spots of nitrogen dioxide had been overlooked during the first phase of review and assessment and that further detailed assessment of this pollutant was not necessary.

However, whilst the USA concluded that there was no evidence to suggest a likely breach of the 2004 objective for particulate matter (PM10), there was considerable doubt that the provisional 2010 objectives for PM10 would be achieved.

As a result of the conclusions of the 2003 USA the Council issued Progress Reports in 2004 and 2005.

## **Phase 3**

Following the 2006 USA, the Council published and consulted upon an Air Quality Management Area (AQMA) Review during the autumn of 2006. This concluded that two of the four AQMAs could be revoked and that the then Cardiff West AQMA should be reduced in size and renamed as the Ely Bridge AQMA. Orders making the changes came into force on 1st February 2007.

The 2007 Progress Report highlighted a potential problem with regard to nitrogen dioxide concentrations on Newport Road in the immediate vicinity of Stephenson Court, where concentrations had been marginally, but consistently, above the Air Quality objective for a few years. It was concluded that the possibility of declaring a new AQMA would be assessed in the 2008 Progress Report.

The monitoring data for the Stevenson Court area presented in the 2008 Progress Report led to the conclusion that a further "watching brief" would be kept with a view to reaching a firm conclusion once ratified monitoring data for the 2008 calendar year became available.

The monitoring data for 2007 presented in the 2008 Progress Report provided reassurance that the Council's decisions in respect of the 2006 AQMA Review were soundly based.

#### **Phase 4**

The 2009 USA concluded that a Detailed Assessment for the Stephenson Court area of Newport Road was required as the annual mean concentration of nitrogen dioxide at three sites representative of relevant exposure in the area were above the air quality Objective.

A Detailed Assessment for this area was consulted upon during the summer of 2010 and the AQMA came into force on 1st December 2010.

The Council's 2010 Progress Report was submitted in December 2010 and the 2011 Progress Report in June 2011.

The 2011 Progress Report highlighted abnormally high NO<sub>2</sub> 2010 annual mean concentrations across the Council's monitoring network which could not be attributed to a particular source and evidence was presented to show that this was a regional issue probably associated with a prolonged period of unusually cold weather during November and December 2010. After dialogue with Welsh Assembly Government with regard to the conclusions reached about this data it was concluded that the Council would proceed to Detailed Assessments for the Llandaff and Westgate Street areas of the city and review the situation with regard to other exceedences when 2011 data is available and reported in 2012.

A Further Assessment for the Stephenson Court AQMA was submitted to WAG for review in December 2011, i.e. one year after the AQMA was declared, in compliance with Section 84(2)(a) of the Environment Act 1995.

#### **Phase 5**

The 2012 USA was the first report in Phase 5 of the review and assessment process. Monitoring data for 2011 largely confirmed that the annual mean concentrations of nitrogen dioxide previously reported for 2010 were unusually elevated, both locally and regionally, and local concentrations had returned to more typical values in 2011. Detailed Assessments in respect of nitrogen dioxide in Westgate Street and for the Llandaff area were consulted upon during the summer of 2012 and as a result a new AQMA for Llandaff was declared on 1st April 2013 and Westgate Street was incorporated into the St Mary Street AQMA; this latter AQMA is now named Cardiff City Centre AQMA.

The Council's 2013 Progress Report recommended proceeding to a Detailed Assessment for the Fair oak Road Roundabout in the Plasnewydd Ward of the city as monitoring data over previous years indicated the need. This was submitted for review during 2014. The Assessment concluded that, as monitoring data for 2013 had returned to Objective compliance, there was no need to declare an AQMA at that time. It was proposed to continue monitoring in the area and review the results year-on-year.

The Further Assessment for the City Centre AQMA was submitted in April 2014 and the conclusion that the declaration of the AQMA was justified was accepted.

A Further Assessment for the Llandaff AQMA was also submitted for review in 2014. This concluded that the declaration of the AQMA was justified based upon monitoring data available at the time. However, as monitoring data for 2013 showed compliance with the Objective, it was concluded that there was no need to develop an Action Plan at that time. Monitoring would continue and the situation would be reviewed year-on-year.

In summary, there are currently four AQMAs in Cardiff; all have been declared in respect of NO<sub>2</sub> resulting from road-traffic emissions:

- Cardiff City Centre AQMA
- Ely Bridge AQMA
- Stephenson Court AQMA
- Llandaff AQMA

## **Phase 6**

The 2015 USA was the first report in Phase 6 of the review and assessment process. Monitoring data for 2014 largely confirmed that the annual mean concentrations of nitrogen dioxide previously reported for 2010 were unusually elevated, both locally and regionally, and local concentrations had returned to more typical values in 2011.

Monitoring data for 2015 indicated that annual mean concentrations of nitrogen dioxide were not unduly elevated during the year and that in some locations concentrations may have been lower than expected. The 2016 Progress Report showed a number of sites representative of relevant exposure with exceedences of the 40µgm<sup>3</sup> annual mean objective, however these sites and recorded exceedences were not out of character as were predominantly contained within the declared AQMAs.



## 2017 Annual Progress Report

There are a number of sites representative of relevant exposure with exceedences of the NO<sub>2</sub> annual mean objective (40µg/m<sup>3</sup>). These sites are predominantly contained within the declared AQMAs. However, there are four monitoring locations (Site IDs 172, 180, 181, 185) which are not located within AQMAs.

Site 172 (Ocean Way) is a kerbside location situated up to 650m from any relevant exposure, used to examine potential impacts of traffic resulting from industrial development in the area.

Sites 180 & 181 were implemented due to new developments with the potential for adverse air quality impacting the amenity of future occupants (Windsor House, Windsor Lane & Fitzalan Court, Newport Road). Both developments were under construction in 2016, therefore influencing any datasets recorded. Only recently has the student accommodation at Windsor House been completed and construction still continues at the Fitzalan Court site.

Site 185 is not representative of relevant exposure and does not apply to the annual mean objective set for NO<sub>2</sub>. Therefore, datasets collected at this monitoring location would apply to the 1-hour objective set for NO<sub>2</sub> (200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year).

Monitoring for other pollutants did not result in other exceedences of National Air Quality Standards.

Due to technical issues, Cardiff City Centre's AURN site recorded low data capture for PM<sub>10</sub> measured by a TEOM- FDMS sampler. The total data capture for the year was 47.1%. As outlined in LAQM (TG16) the data from the sampler has been annualised in accordance with Box 7.9 and the 90.4th Percentile value has been given to examine the 24 hour objective.

It was decided not to revoke the Llandaff AQMA. Since the declaration of the Llandaff AQMA in 2013, results have highlighted that levels of NO<sub>2</sub> are generally improving and are now below the national objective of 40µg/m<sup>3</sup> at locations of relevant exposure. Based on recent results the Council could be minded to revoke the AQMA. However, the 2017 APR highlighted that any decision made to revoke the AQMA needs to be mindful of the potential development of the strategic LDP sites to the north of the AQMA, Plasdwr and BBC Studios. Whilst detailed air quality assessments undertaken as part of the planning

process have modelled that there is unlikely to be a detrimental impact on air quality levels in the AQMA, this can only be fully verified through on going monitoring.

Therefore, in an effort to reassure local residents and to be totally satisfied that levels will remain compliant with the NO<sub>2</sub> standard, SRS on behalf of CC reviewed the non-automatic monitoring network of NO<sub>2</sub> diffusion tubes for 2018. As a result, new and amended monitoring sites have been allocated. Officers will further assess the potential to implement real-time capabilities in the Llandaff AQMA as part of the Council's statutory duties under Part IV of the Environment Act 1995. There are now four monitoring locations within the Llandaff AQMA.

Monitoring for other pollutants did not result in other exceedences of National Air Quality Standards.

### **2018 Annual Progress Report**

Monitoring data for 2017 indicates that annual mean concentrations of nitrogen dioxide recorded at sites of relevant exposure, within the already established AQMAs, continue to be elevated or exceed the annual mean NO<sub>2</sub> Air Quality Standard (40µg/m<sup>3</sup>).

The datasets indicate that the annual average objective for NO<sub>2</sub> was breached at monitoring locations outside of the existing AQMAs (Sites 172, 179, 180 & 181).

It is felt that at this stage no further detailed assessments are required;

Site 172 is placed on Ocean Way to monitor potential impacts of traffic resulting from industrial developments in the area. The site is not representative of relevant exposure, the nearest being >650m away. For 2018 Site 172 has been revoked from the monitoring network as it is felt that a strong trend of data has been collected at this location.

The 1-hour objective for NO<sub>2</sub> need only apply to site 179.

Sites 180 & 181 were implemented to monitor air quality levels and therefore the potential impacts to future occupants at new development sites. These developments were still under construction in 2017 and therefore datasets collected will be negatively influenced.

The report also documented the works ongoing to produce the CASAP document, as well as outlining the development of the Feasibility Study in line with the Legal Direction received from the Welsh Minister.

### **2019 Annual Progress Report**

Monitoring undertaken in 2018 confirmed annual average NO<sub>2</sub> levels continued to breach or encroach upon set limit values/ air quality standards within already established AQMAs (7 exceedances of the annual mean objective in total).

The report provided an update regarding the completion of the Clean Air Strategy and Action Plan document (CASAP), as well as an update of mitigation measures proposed to address air quality concerns for Cardiff. The report also documented the finalisation of the Full Business Case (FBC) and its outcome in accordance with Welsh Government's issued Legal Direction.

### **2020 Annual Progress Report**

The 2020 reported identified that in 2019, out of the 100 diffusion tube monitoring locations, 6 monitoring sites recorded exceedances of the annual average objective set for NO<sub>2</sub> (40 µg/m<sup>3</sup>). All 6 monitoring locations were recorded within the already established City Centre and Llandaff air quality management areas (AQMA).

The report provided an update on the monitoring undertaken at 9 schools across Cardiff where previous studies from Client Earth identified the schools to be in close proximity to road links likely to cause exceedances of the NO<sub>2</sub> air quality standards. Monitoring undertaken at the 9 schools fully demonstrated continuous compliance with the annual average air quality standard for NO<sub>2</sub> for two success years. The report also provided an update of monitoring undertaken at a further 6 schools as part of a citizens science project funded by Natural Resources Wales. Again monitoring at these 6 schools demonstrated compliance with the objective for NO<sub>2</sub>.

The report documented the approval from Welsh Government of the Final Clean Air Plan and awarding of funding to ensure the Council delivered compliance with the NO<sub>2</sub> limit value under the legal duties of the Ambient Air Quality Directive.

### **2021 Annual Progress Report**

Monitoring data for 2020 indicated that annual mean concentrations of nitrogen dioxide recorded at sites of relevant exposure, within the already established AQMAs, all showed compliance with the annual mean NO<sub>2</sub> Air Quality Standard (40µg/m<sup>3</sup>). The results are indicative that the impacts of the COVID lockdowns and restrictions therein have had an impact on pollution levels in Cardiff which is likely owing to traffic volumes having decreased. It is therefore likely that the concentrations recorded in 2020 are not

representative of a true business as usual scenario and the results have generated a bias/underestimation of levels of pollution across Cardiff in 2020.

## 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 an 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. AQMA(s) are seen by local authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

A summary of AQMAs declared by Cardiff Council can be found in **Error! Reference source not found.** Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at <https://uk-air.defra.gov.uk/aqma/list>.

Table 1 - Declared Air Quality Management Areas (AQMAs)

| AQMA                | Relevant Air Quality Objective(s) | Comments on Air Quality Trend  | Description   | Action Plan   |
|---------------------|-----------------------------------|--|---|---|
| Cardiff City Centre | NO <sub>2</sub> annual mean       | This year's monitoring results indicate an improvement in air quality compared to pre-covid data obtained in 2019. | Former St Mary Street AQMA with the addition of Westgate Street in Cardiff City Centre  | <a href="#">Cabinet 13 June 2019 Clean Air Appendix 1 Clean Air FBC.pdf (moderngov.co.uk)</a> |
| Llandaff            | NO <sub>2</sub> annual mean       | This year's monitoring results indicate an improvement in air quality compared to pre-covid data obtained in 2019. | Centre on Cardiff Road through Llandaff village   |   |
| Stephenson Court    | NO <sub>2</sub> annual mean       | This year's monitoring results indicate an improvement in air quality compared to pre-covid data obtained in 2019. | From NE and NW boundaries of Stephenson Court, NW boundary of Burgess Court, NW and SW boundaries of Four Elms Court, SW corner of Four Elms Court south across Newport road to the junction with Orbit street, West across Newport Road to the SE corner of Stephenson Court |   |
| Ely Bridge          | NO <sub>2</sub> annual mean       | This year's monitoring results indicate an improvement in air quality compared to pre-covid data obtained in 2019. | A number of residential premises along the A48 Cowbridge Road West,   |   |

AQMA boundary maps within Cardiff are included in Appendix D.

### 1.3 Implementation of Action Plans

Each of the outlined AQMAs was declared as a result of road-traffic derived Nitrogen Dioxide (NO<sub>2</sub>).

Section 84 of the Environment Act 1995 ensures that action must then be taken at a local level which is outlined in a specific Air Quality Action Plan (AQAP) to ensure that air quality in the identified area improves. 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.

In view of the statutory obligation to produce an AQAP for each AQMA, in 2019 SRS & CC developed a citywide Clean Air Strategy & Action Plan (CASAP) for Cardiff. The strategy is an evolving document and coincides with Cardiff's Capital Ambition report, helping to implement and deliver the priorities outlined in the Ambition report with an overarching aim to improve air quality to protect and improve public health in Cardiff. The CAS & Action Plan appoints strategic measures that will look to generate a positive impact to citywide air quality levels, in particular traffic derived NO<sub>2</sub> levels. Each measure has endured a cost benefit appraisal procedure by weighting the measures in terms of air quality impact, cost and timescale. The key theme of the strategic measures is to increase the uptake of sustainable modes of transport by influencing a behavioural change in Cardiff. The CASAP fulfils the requirements of the LAQM process to produce an Air Quality Action Plan (AQAP).

Table 2 - Progress on Measures to Improve Air Quality

| No.  | Measure          | Category                            | Focus  | Lead Authority | Planning Phase         | Implementation Phase | Indicator                                     | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|--|------------------|-------------------------------------|--|----------------|------------------------|----------------------|---|--|--|---------------------------|--|
| <b>Modal Shift &amp; Influencing Travel Choice</b> |                  |                                     |  |                |                        |                      |   |  |  |                           |  |
| .1   | Increase Bus Use | Alternatives to private vehicle use | Proposals are in place for a park and ride system at Junction 33 which would look to intercept traffic on the A470, north Cardiff. | CC             | No definite Start Date |                      | Bus patronage figures produced via telematics | Unknown                                      | The preparation of a draft Park and Ride Strategy for Cardiff has begun, and the Park and Ride at Junction 33 is being planned for delivery by the developer | Ongoing                   |  |



| No. | Measure                          | Category                      | Focus  | Lead Authority | Planning Phase | Implementation Phase | Indicator                             | Target Annual Emission Reduction in the AQMA | Progress to Date/ Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|----------------------------------|-------------------------------|--|----------------|----------------|----------------------|---------------------------------------|--|---|---------------------------|--|
| 1.2 | Promotion of cycling and walking | Promoting Travel Alternatives | DRAFT Cycling Strategy sets out to double number of cycling trips by 2026; 9.2% modal share in 2015 to 18.4% in 2026. Five cycleways proposed. The INM prioritises cycling and walking routes over 15 year period. | CC             | Ongoing        |                      | Cycle trips generated/ questionnaires | Unknown                                      | Draft report and Cabinet Report seeking approval to undertake statutory consultation has been prepared and will be considered by Cabinet in JThe number of responses and technical work required means that it will not be possible to evaluate | Ongoing                   |  |

| Comments<br>Relating to<br>Emission<br>Reductions | Estimated<br>Completion Date | Progress to Date/<br>Progress in Last<br>12 Months   | Target Annual<br>Emission<br>Reduction in the<br>AQMA | Indicator | Implementation<br>Phase | Planning Phase | Lead Authority | Focus | Category | Measure | No. |
|---|------------------------------|--|---|-----------|-------------------------|----------------|----------------|-------|----------|---------|-----|
|   |                              | <p>comments and make appropriate adjustments to draft Map and complete it in time to meet Welsh Government's (WG) 31st December 2021 deadline. WG officers to be informed that Cardiff unable to meet 31st December 2021 deadline and Council officers will seek</p> |   |           |                         |                |                |       |          |         |     |

| No. | Measure             | Category | Focus  | Lead Authority              | Planning Phase | Implementation Phase | Indicator                          | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------------------|----------|--|-----------------------------|----------------|----------------------|------------------------------------|--|--|---------------------------|--|
|     |                     |          |  |                             |                |                      |                                    |  | extension of deadline in light of exceptional level of engagement on Cardiff's Active Travel Network Map |                           |  |
| 3   | School Travel Plans |          | CC has engaged with 'Living Streets' charity and have developed a 'WOW' (Walk Once a Week) scheme in 7 allocated | CC & Living Streets Charity | Ongoing        |                      | Report updates from Living Streets | Unknown                                      | In 2021 this has increased to 43 schools   | Ongoing                   |  |

| No. | Measure             | Category | Focus   | Lead Authority | Planning Phase | Implementation Phase | Indicator  | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months    | Estimated Completion Date                         | Comments Relating to Emission Reductions |
|-----|---------------------|----------|---|----------------|----------------|----------------------|--|--|--|---|--|
|     |                     |          | schools in Cardiff.   |                |                |                      |  |  |  |   |  |
| 1.4 | School Travel Plans |          | Cardiff Council's Schools Streets Project and its Traffic Regulation Order (TRO) pilot project. | CC             | Ongoing        |                      | Monthly average NO <sub>2</sub> levels examined at School property, Inside TRO and Outside TRO zone at residential facades.<br><br>Questionnaires for school pupils and parents. | Unknown                                      | 15 schools assigned to the TRO Zone pilot project. | End of 2022 (Subject to funding, possibly longer) |  |

| No. | Measure                                    | Category                      | Focus                               | Lead Authority                                     | Planning Phase  | Implementation Phase | Indicator   | Target Annual Emission Reduction in the AQMA | Progress to Date/ Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions                                       |
|-----|--|-------------------------------|-------------------------------------|--|---|----------------------|---|--|--|---------------------------|--|
| 1.5 | Personalised Travel Planning               | Promoting Travel Alternatives | Public Service Board Staff Charter. | Public Health Wales/ Vale and Cardiff Health Board | Working initially through Cardiff Public Services Board, a Healthy Travel Charter for Cardiff has been developed with major public sector employers and was launched in April 2019. |                      | Modal shift counts.<br><br>Number of participating public sector organisations. | Unknown                                      | The Charter was signed by 11 public sector organisations at launch in April 2019, employing over 33,000 staff, with additional public and private sector organisations subsequently invited to sign up to the Charter. |                           |  |
| 1.6 | Increase awareness of air quality concerns | Public Information            | Cardiff 'car-free' day              | CC   | Completed 2019  |                      | Air Quality Measurements  | No target                                    | When comparing Sunday 19th May to Car-Free Day event 12th May, the daily average reduction for NO2 is as follows;<br><br>Duke Street/ Castle Street- 16.11%<br><br>Stephenson Court on Newport Road- 28.15%            |                           | Try to geographically expand and hold car-free days more regularly in Cardiff. |

| No. | Measure | Category | Focus  | Lead Authority | Planning Phase | Implementation Phase | Indicator  | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions                                     |
|-----|---------|----------|--|----------------|----------------|----------------------|--|--|---|---------------------------|--|
|     |         |          |  |                |                |                      |  |  | Westgate Street- 13.62%<br>Lower Cathedral Road- +9.14%   |                           |  |
| 1.7 |         |          | Tredegarville CIW Primary School "Green Wall" project. | CC             | Complete       | August 2019          | Air quality levels recorded at the school via non-automated principle diffusion tubes. | No target                                    | Successful application under the Landfill Communities Fund to cover the supply and installation of outdoor green walls at Tredegarville CIW Primary School. Successfully installed August 2019.<br><br>Additional Schools have been included in further Living Wall Projects in 2022. |                           | Investigate monthly average diffusion tube results following implementation. |
| 1.8 |         |          | Dusty Forge/ Kitchener Primary School                  | CC             | Ongoing        | November 2020        | Air quality levels recorded via non-automated  | No Target                                    | Welsh Government's 'Local Places for Nature' scheme. In summary it is proposed to install green walls   |                           | Investigate monthly average diffusion tube                                   |

| No.            | Measure               | Category                              | Focus   | Lead Authority | Planning Phase | Implementation Phase   | Indicator                  | Target Annual Emission Reduction in the AQMA  | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|----------------|-----------------------|---------------------------------------|---|----------------|----------------|--|----------------------------|---|--|---------------------------|--|
|                |                       |                                       |   |                |                |  | principle diffusion tubes. |   | at 2 Council owned buildings in areas of poor air quality and develop a citizen science project with the local community to monitor changes in air quality and biodiversity. |                           | results following implementation         |
| Infrastructure |                       |                                       |   |                |                |  |                            |   |  |                           |  |
| 1.1            | Bus Route Improvement | Transport Planning and Infrastructure | City Centre Improvement Schemes (3 elements East side/ City Centre North/ City Centre West) | CC & WG        | 2018           | 2019 (City Centre West Initiated)<br><br>2020 (city centre north and east initiated) | FBC                        | To ensure development does not cause any adverse impact and where possible reduce levels to as low as reasonably practicable. | City Centre West (central Sq Scheme) continued construction throughout 2021, with view of completion by 2023 for opening of Bus  | 2024                      |  |

| No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA  | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------|----------|-------|----------------|----------------|----------------------|-----------|---|--|---------------------------|--|
|     |         |          |       |                |                |                      |           | <p>Package of City Centre Schemes deemed to improve air quality levels for Castle Street. Revised modelling shows levels of 28 µg/m<sup>3</sup> will be achieved.</p> | <p>Interchange in 2023.<br/>Castle Street remained closed through most of 2021, with interim scheme installed and opened from Nov 2021.<br/>City Centre East scheme commenced site preparation works in November 2021, with main works</p> |                           |  |



| No. | Measure                  | Category | Focus                | Lead Authority | Planning Phase | Implementation Phase | Indicator   | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date                            | Comments Relating to Emission Reductions |
|-----|--------------------------|----------|----------------------|----------------|----------------|----------------------|---|--|--|--|--|
|     |                          |          |                      |                |                |                      |   |  | commencing early 2022.   |  |  |
| 2.2 | Public Cycle hire Scheme |          | Ovo Bike Hire Scheme | CC             | Ongoing        |                      | Daily reports on usage provided to CC. 150,000 rentals reported since March 2018. | Unknown                                      | 50 docking stations installed providing 500 bicycles for public use. Extra 500 bicycles assigned to Cardiff for the end of Summer 2019. Completion of the rollout of the Ebike | Completed and continues to be expanded and enhanced. |  |

| No. | Measure       | Category | Focus              | Lead Authority | Planning Phase | Implementation Phase | Indicator  | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------------|----------|--------------------|----------------|----------------|----------------------|--|--|--|---------------------------|--|
| 2.3 | Cycle Network |          |                    |                |                |                      |  |  | fleet by September 2021, delivering a new fleet of 125 bikes in up to 15 rental stations. Completion was delayed into Q1/2 of 2022 |                           |  |
|     |               |          | Proposed Cycleways | CC & WG        | Ongoing        | Cycling trip counts. | 3.5% modal shift which aligns with the assumptions | Cycleway 1 St Andrew's Crescent to Senghennydd | Ongoing  |                           |  |

| No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------|----------|-------|----------------|----------------|----------------------|-----------|--|--|---------------------------|--|
|     |         |          |       |                |                |                      |           | derived in the feasibility study.            | <p>Road (<b>works are complete for phase 1 of cycleway 1.Phase 2 will be constructed in 21/22</b>)</p> <p>Phase 1 between Cowbridge Road and Western Avenue via Sophia Gardens and Pontcanna Fields has been fully delivered and the Council</p> |                           |  |

| Comments<br>Relating to<br>Emission<br>Reductions | Estimated<br>Completion Date | Progress to Date/<br>Progress in Last<br>12 Months  | Target Annual<br>Emission<br>Reduction in the<br>AQMA | Indicator | Implementation<br>Phase | Planning Phase | Lead Authority | Focus | Category | Measure | No. |
|---|------------------------------|---|---|-----------|-------------------------|----------------|----------------|-------|----------|---------|-----|
|   |                              | <p>has completed a detailed consultation on the options for Phase 2 which will connect Western Avenue with Llandaff village.</p> <p><b>Pop Up Cycleways</b></p> <ul style="list-style-type: none"> <li>•Cross City Scheme complete and ready for junction switch on when traffic</li> </ul> |   |           |                         |                |                |       |          |         |     |

| Comments<br>Relating to<br>Emission<br>Reductions | Estimated<br>Completion Date | Progress to Date/<br>Progress in Last<br>12 Months  | Target Annual<br>Emission<br>Reduction in the<br>AQMA | Indicator | Implementation<br>Phase | Planning Phase | Lead Authority | Focus | Category | Measure | No. |
|---|------------------------------|---|---|-----------|-------------------------|----------------|----------------|-------|----------|---------|-----|
|   |                              | <p>conditions allow</p> <ul style="list-style-type: none"> <li>•Bay Pop Up complete, now requires new street lighting to be compliant with safety regulations.</li> <li>•Scheme to open officially once the lighting work is complete</li> </ul> <p>Hailey Park</p> <ul style="list-style-type: none"> <li>•Scheme awaiting tender</li> </ul> |   |           |                         |                |                |       |          |         |     |

| Comments<br>Relating to<br>Emission<br>Reductions | Estimated<br>Completion Date | Progress to Date/<br>Progress in Last<br>12 Months  | Target Annual<br>Emission<br>Reduction in the<br>AQMA | Indicator | Implementation<br>Phase | Planning Phase | Lead Authority | Focus | Category | Measure | No. |
|---|------------------------------|---|---|-----------|-------------------------|----------------|----------------|-------|----------|---------|-----|
|   |                              | <p>following consultation outcome</p> <p>Cycleway 5</p> <ul style="list-style-type: none"> <li>•Scheme out to consultation</li> <li>•Scheduled to be on site Q1/2 2022-23</li> </ul> <p>Cycleway 1</p> <ul style="list-style-type: none"> <li>•Scheme entered on site September 2021</li> </ul> |   |           |                         |                |                |       |          |         |     |

| No. | Measure   | Category | Focus                                       | Lead Authority | Planning Phase | Implementation Phase | Indicator  | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date  | Comments Relating to Emission Reductions |
|-----|---|----------|---|----------------|----------------|----------------------|--|--|---|--|--|
|     |   |          |   |                |                |                      |  |  | <ul style="list-style-type: none"> <li>•Work progressing well</li> <li>•Controlled Parking Scheme to follow early 2022</li> </ul> |  |  |
| 4   | Public transport improvements- interchanges stations and services |          | New Cardiff Central Interchange development | CC             | Ongoing        |                      | Detailed AQAs quantifying the level of impact to air quality levels. | To ensure development does not cause any adverse impact and where possible reduce levels to as low as reasonably practicable | Construction of the Interchange has continued throughout 2021, and remains on course to be completed in 2023.                     | S106 funding acquired for the amount of £10,000 to enhance air quality |  |

| No. | Measure   | Category | Focus   | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA                                     | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---|----------|---|----------------|----------------|----------------------|-----------|--|---|---------------------------|--|
|     |   |          |   |                |                |                      |           |  |   | monitoring capabilities.  |  |
| 2.4 | Public transport improvements- interchanges stations and services<br>20 mph zones |          | Cardiff Capital Region Metro -Proposed by WG (Rail and bus based rapid transit routes). | CC             | Ongoing        |                      |           | Unknown-supporting AQA will be a likely during the design and application stages | Good progress has been made to identify measures to encourage the use of sustainable travel as the economy recovers in partnership with the Welsh Government, the Burns Delivery Unit, Transport for Wales, City Region, public transport operators and key stakeholders. These measures include corridor improvements for Active Travel, bus priority, ongoing financial support for the bus services, integrated ticketing pilot between Cardiff and Newport in 2022, plans for |                           | Ongoing                                  |



| No. | Measure | Category | Focus  | Lead Authority | Planning Phase | Implementation Phase | Indicator  | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------|----------|--|----------------|----------------|----------------------|--|--|--|---------------------------|--|
|     |         |          |  |                |                |                      |  |  | new transport interchanges (Cardiff Central, Waungron and Cardiff Parkway) and study work on new Metro station and line improvements.    |                           |  |
| 5   |         |          | Implement further speed restrictions and enhance those already established "20mph Zones" | CC & WG        | Ongoing        |                      | Safety figures & Monthly Average Diffusion tube results. | Unknown                                      | CC has introduced 'signs only' 20mph limits in Cathays and Plasnewydd area. Approach coincides with the Safe Routes to School Programme. | Ongoing                   |  |

| No.      | Measure | Category     | Focus              | Lead Authority | Planning Phase | Implementation Phase | Indicator           | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions |
|----------|---------|--------------|--------------------|----------------|----------------|----------------------|---------------------|--|---|---------------------------|--|
| Page 178 |         |              |                    |                |                |                      |                     |  | Plans are in place to hopefully expand 20mph limit areas in Grangetown. This is complete.                                 |                           |  |
|          | 2.6     | 20 mph Zones | Traffic Management | CC             | Implementation |                      | Realtime Monitoring | Unknown                                      | Cardiff North Area has been included as a Pilot Area for WG assessment into 20 mph where existing limits are 30 mph. This | 2022                      |  |

| No. | Measure      | Category           | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator           | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|--------------|--------------------|-------|----------------|----------------|----------------------|---------------------|--|---|---------------------------|--|
|     |              |                    |       |                |                |                      |                     |  | study will assist in National roll out of 20 mph as default urban speed limit.  |                           |  |
| 2.7 | 20 mph Zones | Traffic Management |       | Welsh Gov      | Implementation |                      | Realtime Monitoring | Unknown                                      | Cardiff North Area has been included as a Pilot Area for WG assessment into 20 mph where existing limits are 30 mph. This study will assist | 2022                      |  |

| No.                            | Measure  | Category                         | Focus  | Lead Authority        | Planning Phase | Implementation Phase                          | Indicator   | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions |
|--------------------------------|--|----------------------------------|--|-----------------------|----------------|---|---|--|--|---------------------------|--|
| <b>Lower Emission Vehicles</b> |  |                                  |  |                       |                |   |   |  |  |                           |  |
| 3.1                            | Public Vehicle Procurement                                       |                                  | Ultra-Low Emission Bus (ULEB) fund made available by the Department for Transport (DfT). |                       | Ongoing        | Three year rolling programme 2019-2021        | Improvements to air quality levels (NO <sub>2</sub> ) monitored by indicative methods by CC at sensitive receptor locations on specified routes | Approximately >2µg/m <sup>3</sup> reductions in NO <sub>2</sub> sensitive receptor locations along Westgate Street | Application received by DfT and deemed successful. Initial buses delivered in November 2021 and all 36 launched in January 2022. |                           |  |
| 3.2                            | Company Vehicle Procurement- Prioritising uptake of low emission | Promoting Low Emission Transport | Sustainable fuels strategy- assessment of Cardiff Council vehicle fleets                 | CC, DfT & Cardiff Bus | Ongoing        | Economic savings and reduced Carbon footprint | Unknown   | End of 2021 59 charge points across 7 Council sites fully implemented.   | Ongoing  |                           |  |

| No. | Measure                 | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|-------------------------|----------|-------|----------------|----------------|----------------------|-----------|--|---|---------------------------|--|
|     | vehicles/ EV recharging |          |       |                |                |                      |           | <p>6 Rapid chargers which will support charging for 12 refuse Vehicles.</p> <p>7 E RCV in service with.</p> <p>11 EVs on order for purchase or being delivered prior 31st March. 1 on pre-order, which will be in by the end</p> |   |                           |  |

| No. | Measure       | Category | Focus   | Lead Authority | Planning Phase | Implementation Phase | Indicator                          | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------------|----------|---|----------------|----------------|----------------------|------------------------------------|--|---|---------------------------|--|
|     |               |          |   |                |                |                      |                                    | of the year.<br>The total will be 37 on fleet by the end of the year, which are all purchased, owned vehicles. |   |                           |  |
| 3.3 | EV recharging |          | Increase EV charging points for Cardiff residents/ workers. | CC             | Ongoing        |                      | EV vehicle counts/ EV point usage. | Unknown  | Progression of residential EV charging locations has ensured that 15 locations with a total of fast charging points have been installed across the City. Second | Ongoing                   |  |

| No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------|----------|-------|----------------|----------------|----------------------|-----------|--|---|---------------------------|--|
|     |         |          |       |                |                |                      |           |  | <p>phase of 5 sites with 1 charge points was being progressed before being impacted by COVID – these are now planned for late August/ early September.</p> <p>6 Rapid Charging stations have been installed with site operator Osprey</p> |                           |  |

| No. | Measure | Category | Focus | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA | Progress to Date/<br>Progress in Last 12 Months   | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------|----------|-------|----------------|----------------|----------------------|-----------|--|---|---------------------------|--|
|     |         |          |       |                |                |                      |           |  | <p>Charging at locations in the City Centre and Bay .</p> <p>Two additional schemes looking will increase to increase the number of publicly accessible charging stations in the city from 58 to around 75 before the end 2022.</p> |                           |  |



| No. | Measure                                    | Category | Focus  | Lead Authority | Planning Phase    | Implementation Phase | Indicator                         | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months  | Estimated Completion Date | Comments Relating to Emission Reductions  |
|-----|--|----------|--|----------------|-------------------|----------------------|-----------------------------------|--|--|---------------------------|---|
| 3.4 | Taxi incentive to operate cleaner vehicles |          | Improve the emission standard profile of Cardiff's licensed Hackney and Private Hire Vehicles. Clean Air Funding allocated to provide EV grants for taxis. | CC             | Ongoing           |                      | Uptake for the funding.           | To ensure development does not cause any adverse impact and where possible reduce levels to as low as reasonably practicable | Due to COVID-19, the launch of the scheme was impacted and ongoing discussions with WG on use of allocated funding.. |                           | To achieve greatest air quality improvements zero emission or ULEV classified vehicles need to be incentivised. |
| 3.5 | Cardiff Clean Bus Retrofit Scheme 2020-21  |          | Improve the emissions profile by improving the   | CC & WG        | COMPLETED 2021/22 |                      | Number of bus vehicles converted; | FBC identifies that the retrofit alone would achieve compliance  | Scheme went live on 1 <sup>st</sup> October 2020 and a total of 49 buses have been                                   |                           |   |

| No. | Measure | Category | Focus   | Lead Authority | Planning Phase | Implementation Phase | Indicator | Target Annual Emission Reduction in the AQMA                           | Progress to Date/<br>Progress in Last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|---------|----------|---|----------------|----------------|----------------------|-----------|--|---|---------------------------|--|
|     |         |          | euro standard composition of bus fleets operated in Cardiff. Via a competitive tender application process, Cardiff Council will administer a retrofit scheme aimed at improving the emission output of bus vehicles |                |                |                      |           | on Castle Street 39.6 µg/m <sup>3</sup> with 150 vehicles retrofitted. | retrofitted as of September 2021.               |                           |  |

| No.           | Measure   | Category                                | Focus   | Lead Authority | Planning Phase | Implementation Phase | Indicator  | Target Annual Emission Reduction in the AQMA   | Progress to Date/<br>Progress in Last 12 Months                              | Estimated Completion Date                    | Comments Relating to Emission Reductions |
|---------------|---|---|---|----------------|----------------|----------------------|--|--|--|--|--|
|               |   |   | operated in Cardiff.                                    |                |                |                      |  |  |  |  |  |
| <b>Policy</b> |   |   |   |                |                |                      |  |  |  |  |  |
| 4.1           | Citywide strategy to reduce emissions and improve air quality |   | Cardiff Clean Air Strategy and Action Plan (CASAP)      |                | 2018           |                      | Recorded Improvements to air quality levels (NO <sub>2</sub> ) monitored by indicative methods by CC at sensitive receptor locations | Annual average NO <sub>2</sub> levels to be recorded at <35µg/m <sup>3</sup> at residential façade locations with specified AQMAs. | Finalised and approved by Cabinet. Submitted to Welsh Government for review. | Ongoing                                      |  |
| 4.2           | Taxi Licensing Conditions                                     | Policy Guidance and Development Control | Amendments made to Cardiff taxi licensing conditions to | CC             | 2019- 2020     |                      | Taxi fleet composition %.  |  | Impacted owing to COVID impacts on Taxi trade                                | Ongoing and will need to be reviewed in 2023 |  |

| No. | Measure               | Category                         | Focus  | Lead Authority | Planning Phase | Implementation Phase | Indicator   | Target Annual Emission Reduction in the AQMA                     | Progress to Date/<br>Progress in Last 12 Months | Estimated Completion Date | Comments Relating to Emission Reductions |
|-----|-----------------------|----------------------------------|--|----------------|----------------|----------------------|---|--|---|---------------------------|--|
|     |                       |                                  | promote a cleaner fleet.   |                |                |                      |   |  | during 2020-21                                  |                           |  |
| 4.3 | Transport White Paper | Promoting Low Emission Transport | The Transport White Paper was launched on 15 January 2020 and lays out an ambitious 10-year plan to tackle the climate emergency, reduce congestion and improve air quality. | CC             | 2020- 2030     |                      | Improved air quality levels/ journey time. Sustainable modes patronage. | To generate air quality levels as low as reasonably practicable. | Published document 2020.                        |                           |  |
|     |                       |                                  |  |                |                |                      |   |  |   |                           |  |



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

### 2.1 Summary of Monitoring Undertaken in 2021

#### 2.1.1 Automatic Monitoring Sites

In 2021, Cardiff had four automatic air quality monitoring sites located at;

- Frederick Street in the City Centre;
- Richard's Terrace, just off Newport Road;
- Castle Street, Cardiff City Centre; and
- Lakeside Primary School.

Details for these sites can be found in Table 3 and <https://airquality.gov.wales/>.

A further seven indicative AQMesh monitors were also located at various locations across the city. AQMesh analysers continuously monitor for Nitric Oxide, Nitrogen Dioxide & Ozone, PM10 & PM2.5, and do so every 15 minutes (data uploaded every hour). The data from the monitor is sent to a cloud server where it is corrected for temperature, pressure, and relative humidity as well as cross gas interference. Details of these locations are described in table 2.1. It is important to note that the readings from indicative monitors give an indication of air quality only. Although useful for understanding air quality trends and patterns, they are not used for formal comparisons to Air Quality Objectives (AQO). Further information on AQMesh can be found at <https://www.aqmesh.com/>. Technical issue's were experienced at two AQMesh sites during 2021, Westgate Street and Llandaff AQMA. Insufficient data was captured at these sites to allow data to be accurately represented within this report.

#### **Cardiff City Centre, Frederick Street (Urban Background)- AURN 1**

The site was commissioned in May 1992 and monitors on a 24/7 basis measuring levels of NO<sub>2</sub>, PM<sub>10</sub> & PM<sub>2.5</sub>, SO<sub>2</sub>, CO and O<sub>3</sub> feeding data directly into Defra's Automatic Urban and Rural Network (AURN).

**Richard's Terrace, Newport Road (Urban Traffic)- AURN 2**

The site monitors on a 24/7 basis measuring levels of NO<sub>2</sub> & PM<sub>10</sub> at that location, feeding data directly into Defra's Automatic Urban and Rural Network (AURN).

**Castle Street, Cardiff City Centre (Roadside)- Site 3**

The site was commissioned in October 2020 and monitors on a 24/7 basis measuring levels of NO<sub>2</sub>, PM<sub>10</sub> & PM<sub>2.5</sub> at that location forming part of the Welsh Automated Monitoring Network.

Both sites AURN 1 & 2 are subject to six-monthly QA/QC audits by AEA, DEFRA's appointed contractor, and calibration gases are all traceable to National Standards. Calibrations have been carried out fortnightly by the appointed contractor.

**2.1.2 Non-Automating Monitoring Sites**

**SRS on behalf of Cardiff Council undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 108 sites during 2021.**

presents the details of the sites.

Maps showing the location of the monitoring sites are provided in figures 7 - 15. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Table 3 - Details of Automatic Monitoring Sites

| Site Name                        | Site Type               | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored                 | In AQMA? | Monitoring Technique                                  | Relevant Exposure? (Y/N with distance (m) to relevant exposure) | Distance to kerb of nearest road (N/A if not applicable) | Does this location represent worst-case exposure? |
|----------------------------------|-------------------------|---------------|---------------|--------------------------------------|----------|---|---|--|---|
| <b>Cardiff City Centre AURN</b>  | Urban Background        | 318416        | 176525        | NO <sub>2</sub>                      | N        | Chemiluminescence                                     | Y (5m)  | 200m   | N   |
|                                  |                         |               |               | PM <sub>10</sub> , PM <sub>2.5</sub> |          | TEOM- FDMS  | Y (5m)  | 200m   | N   |
|                                  |                         |               |               | SO <sub>2</sub>                      |          | UV Fluorescence                                       | Y (5m)  | 200m   | N   |
|                                  |                         |               |               | CO                                   |          | Infra-Red GFC   | Y (5m)  | 200m   | N   |
|                                  |                         |               |               | O <sub>3</sub>                       |          | UV Absorption   | Y (5m)  | 200m   | N   |
| <b>Cardiff Newport Road AURN</b> | Roadside/ Urban Traffic | 320095        | 177520        | NO <sub>2</sub>                      | N        | Chemiluminescence                                     | Y (12m)   | 4.5m   | N   |
|                                  |                         |               |               | PM <sub>10</sub>                     |          | Beta Attenuation Monitor with Gravimetric Equivalence | Y (12m)   | 4.5m   | N   |



| Site Name                   | Site Type                  | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored                    | In AQMA? | Monitoring Technique                                  | Relevant Exposure?<br>(Y/N with distance (m) to relevant exposure) | Distance to kerb of nearest road<br>(N/A if not applicable) | Does this location represent worst-case exposure? |
|-----------------------------|----------------------------|---------------|---------------|---|----------|---|--|---|---|
| Cardiff Castle Street       | Roadside/<br>Urban Traffic | 318055,       | 176459        | NO <sub>2</sub>                         | N        | Chemiluminescence                                     | Y(2m)  | 2m  | Y   |
|                             |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> | N        | Beta Attenuation Monitor with Gravimetric Equivalence | Y(2m)  | 2m  | Y   |
| Westgate Street AQMesh      | Roadside/<br>Urban Traffic | 317957        | 176389        | NO <sub>2</sub>                         | Y        | Electrochemical Sensor                                | Y (2m)   | 0.5m  | N   |
|                             |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          |   |  |   |   |
| Lower Cathedral Road AQMesh | Roadside/<br>Urban Traffic | 317540        | 176437        | NO <sub>2</sub>                         | N        | Electrochemical Sensor                                | Y (0.5m)   | 1.5m  | Y   |
|                             |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          |   |  |   |   |
| Tudor Street AQMesh         | Roadside/<br>Urban Traffic | 317871        | 175929        | NO <sub>2</sub>                         | N        | Electrochemical Sensor                                | Y (2m)   | 1.5m  | N   |
|                             |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          |   |  |   |   |
|                             | Roadside/                  | 317516        | 177854        | NO <sub>2</sub>                         | N        |   | Y (2m)   | 1.5m  | N   |

| Site Name             | Site Type                  | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored                    | In AQMA? | Monitoring Technique   | Relevant Exposure?<br>(Y/N with distance (m) to relevant exposure) | Distance to kerb of nearest road<br>(N/A if not applicable) | Does this location represent worst-case exposure? |
|-----------------------|----------------------------|---------------|---------------|---|----------|------------------------|--|---|---|
| North Road AQMesh     | Urban Traffic              |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          | Electrochemical Sensor |  |   |   |
| Penarth Road AQMesh   | Roadside/<br>Urban Traffic | 317748        | 175292        | NO <sub>2</sub>                         | N        | Electrochemical Sensor | Y (2.5m)   | 1.5m  | Y   |
|                       |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          |                        |  |   |   |
| Lansdowne Road AQMesh | Roadside/<br>Urban Traffic | 315960        | 176345        | NO <sub>2</sub>                         | N        | Electrochemical Sensor | N (5m)   | 1.5m  | N   |
|                       |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          |                        |  |   |   |
| Llandaff AQMA AQMesh  | Roadside/<br>Urban Traffic | 315198        | 178220        | NO <sub>2</sub>                         | Y        | Electrochemical Sensor | Y (0.5m)   | 1.5m  | Y   |
|                       |                            |               |               | PM <sub>10</sub> ,<br>PM <sub>2.5</sub> |          |                        |  |   |   |

**Notes:**

(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

Figure 1 - Map of Automatic Monitoring Locations in Cardiff AQMA and Surrounding Areas

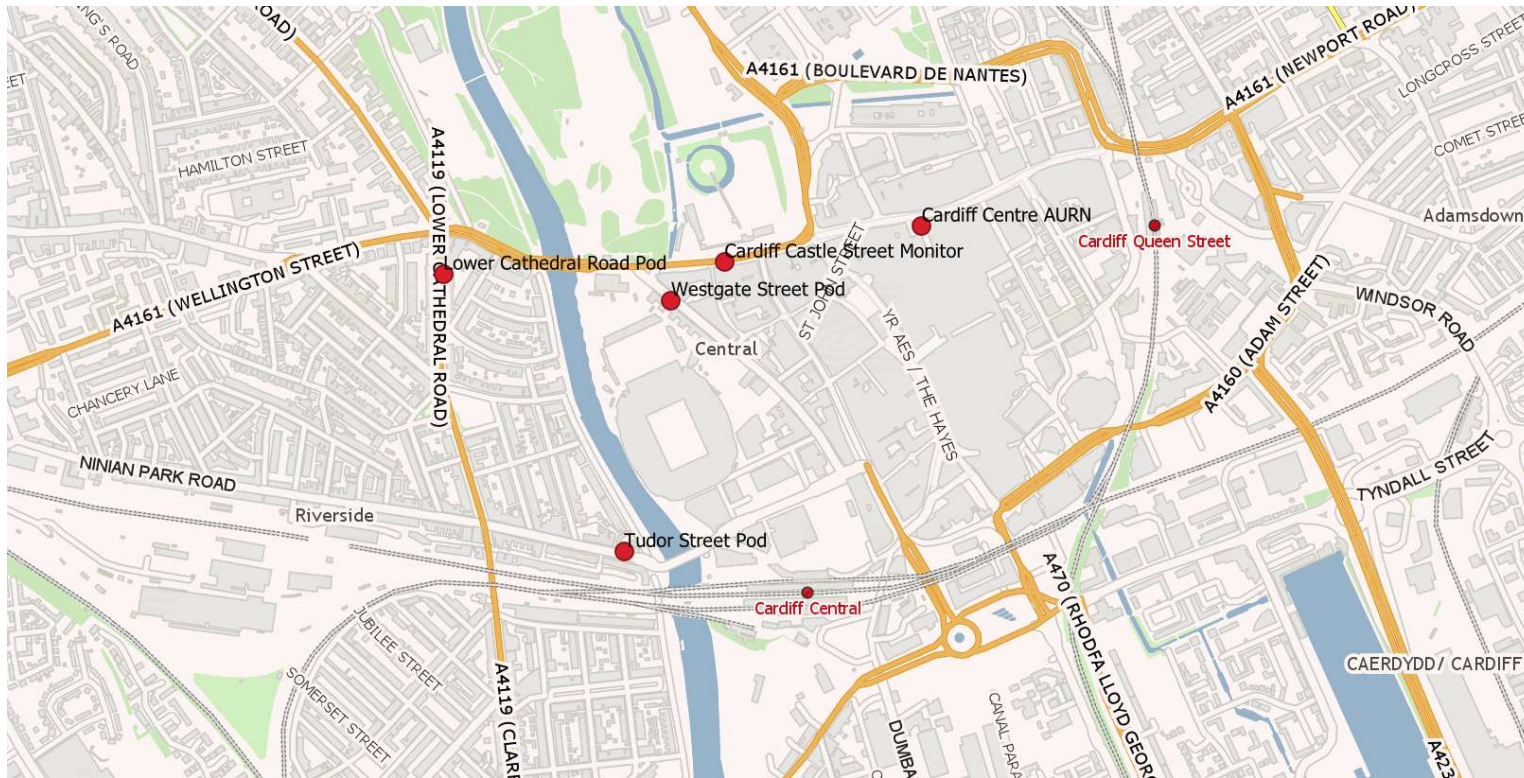


Figure 2 - Map of Automatic Monitoring Locations in Penarth Road and Tudor Street

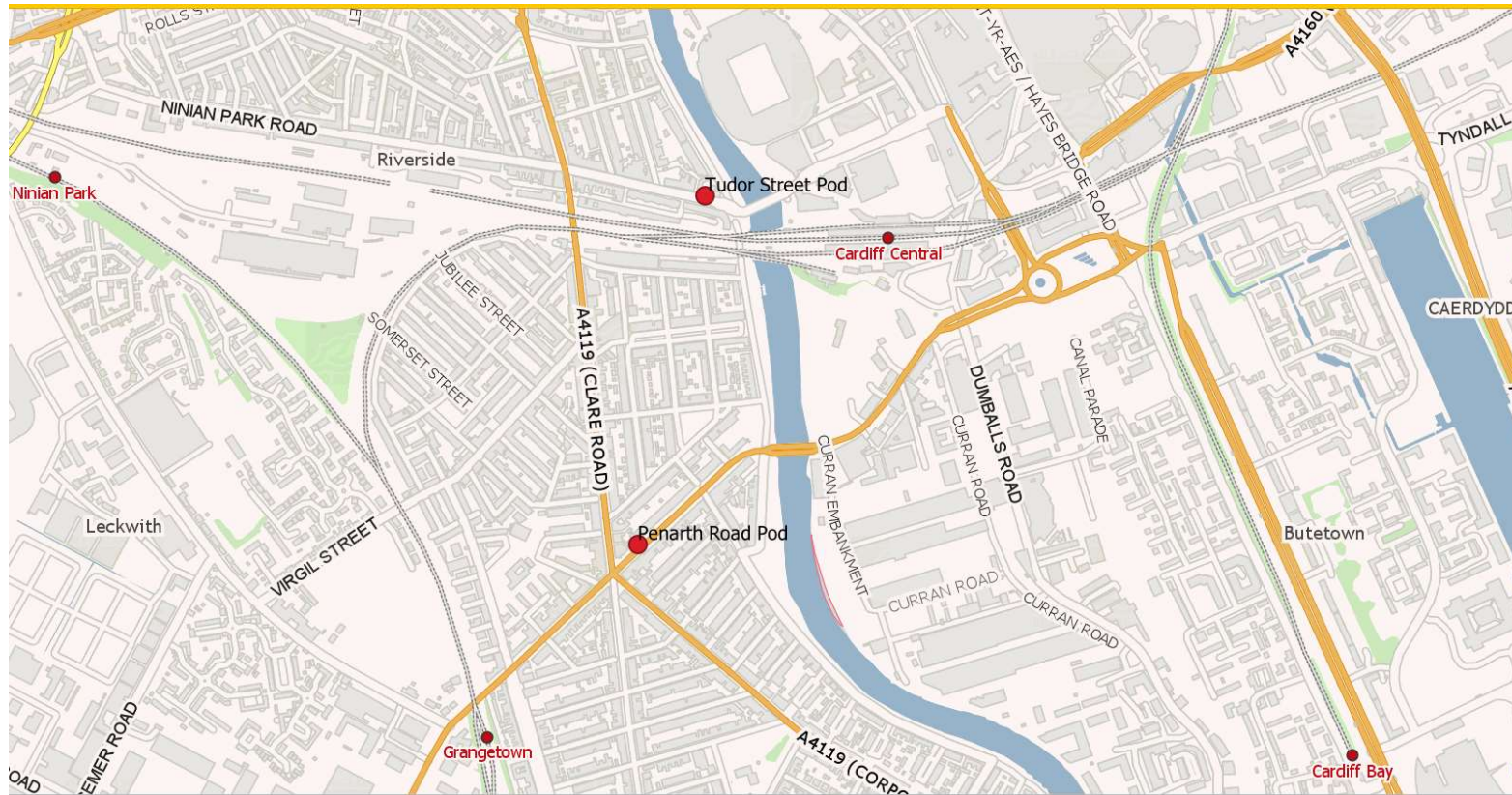


Figure 3 - Map of Automatic monitoring Location in North Road

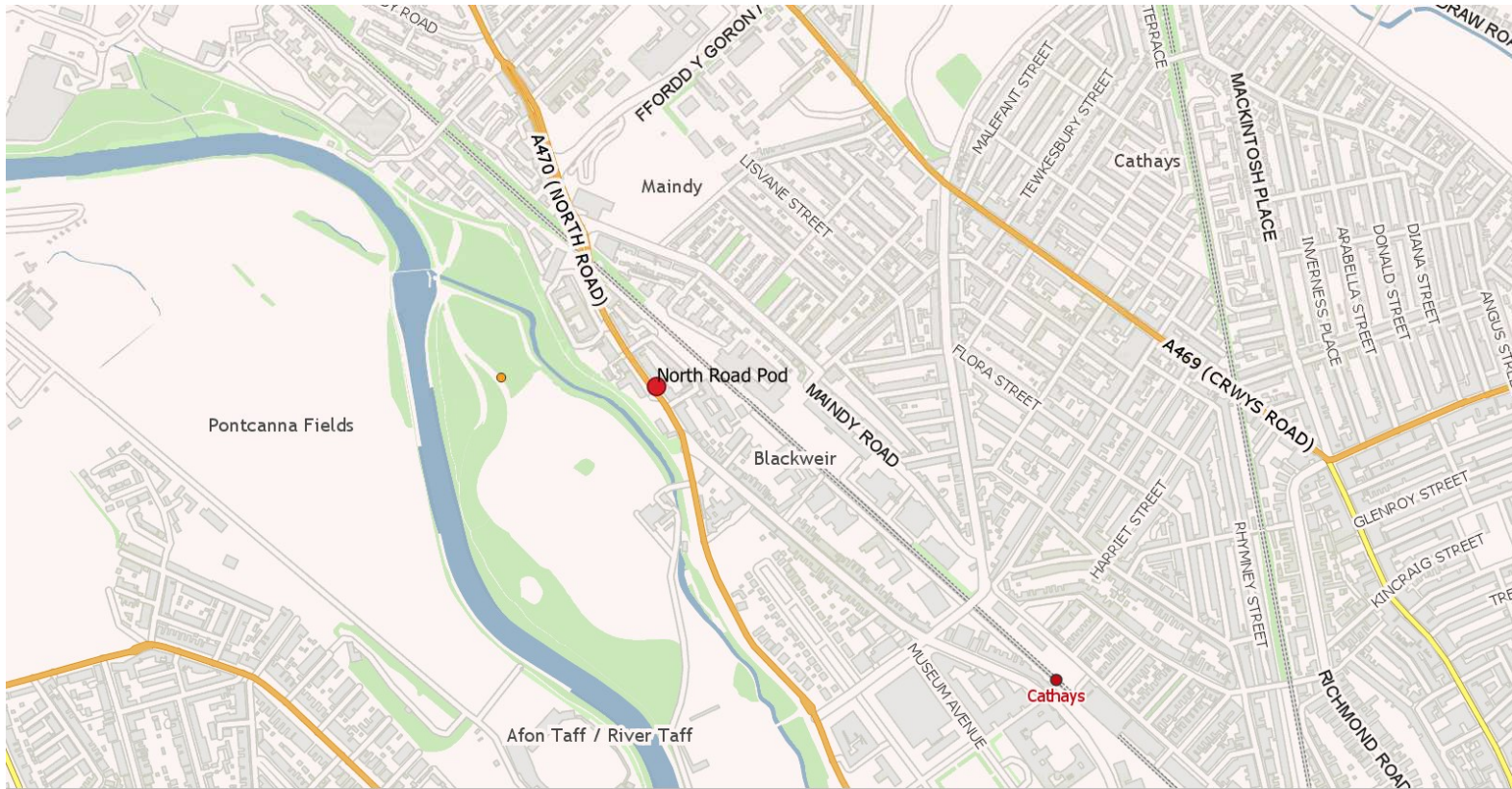




Figure 5 - Map of Automatic Monitoring Location in Llandaff AQMA



Figure 6 - Map of Automatic Monitoring Station near Lansdowne Road

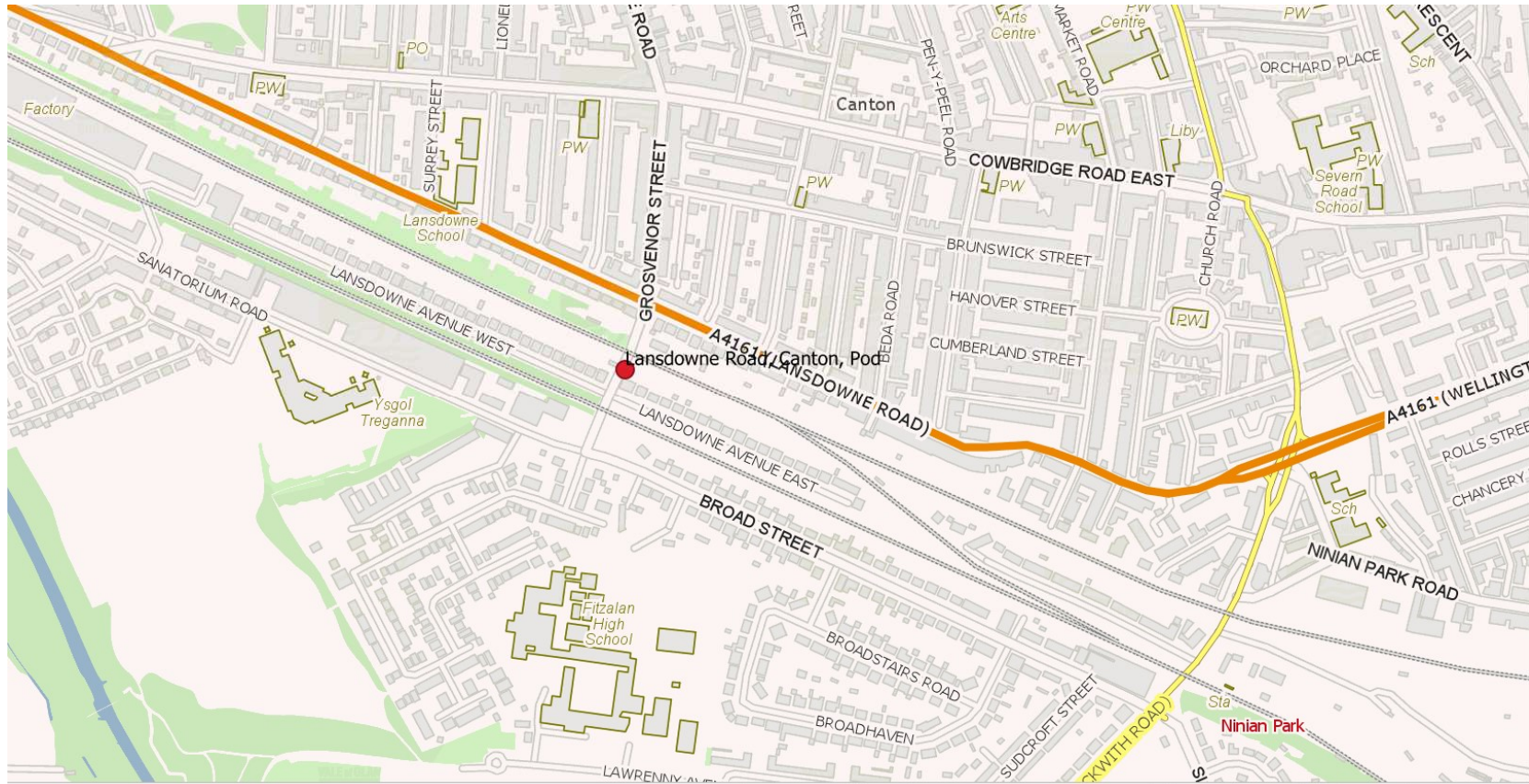




Table 4 - Details of Non-Automatic Monitoring Sites

| Site ID | Site Name                 | Site Type | X OS Grid Reference | Y OS Grid Reference | Site Height (m) | Pollutants Monitored | In AQMA? | Is Monitoring Co-located with a Continuous Analyser (Y/N) | 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? |
|---------|---------------------------|-----------|---------------------|---------------------|-----------------|----------------------|----------|---|--|--|---|
| 16      | Ninian Park Road          | Roadside  | 317040              | 176060              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 5m   | Y   |
| 58      | Westgate Street           | Kerbside  | 317937              | 176400              | 2.5             | NO <sub>2</sub>      | Y        | N   | N (5m)   | 0.5m   | Y   |
| 81      | Stephenson Court          | Roadside  | 319387              | 176980              | 2               | NO <sub>2</sub>      | Y        | N   | Y (0.05m)  | 5m   | Y   |
| 86      | 19 Fair oak Road          | Roadside  | 318452              | 178805              | 1.5             | NO <sub>2</sub>      | N        | N   | Y 0.10m)   | 10m  | Y   |
| 96      | Manor Way Junction        | Roadside  | 316601              | 179653              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 5m   | Y   |
| 98      | Western Avenue (premises) | Roadside  | 314805              | 177345              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 10m  | Y   |

|     |                        |              |        |        |      |                 |   |                                    |           |      |   |
|-----|------------------------|--------------|--------|--------|------|-----------------|---|------------------------------------|-----------|------|---|
| 99  | Cardiff Road Llandaff  | Roadside     | 315275 | 178117 | 1.5  | NO <sub>2</sub> | Y | N                                  | Y (0.05m) | 3m   | Y |
| 101 | Cardiff Centre AURN    | Urban Centre | 318416 | 176525 | 3    | NO <sub>2</sub> | N | Y, Triplicate with Tubes 102 & 103 | Y (0.10m) | 200m | Y |
| 102 | Cardiff Centre AURN    | Urban Centre | 318416 | 176525 | 3    | NO <sub>2</sub> | N | Y, Triplicate with Tubes 101 & 103 | Y (0.10m) | 200m | Y |
| 103 | Cardiff Centre AURN    | Urban Centre | 318416 | 176525 | 3    | NO <sub>2</sub> | N | Y, Triplicate with Tubes 101 & 102 | Y (0.10m) | 200m | Y |
| 106 | 30 Caerphilly Road     | Roadside     | 316851 | 179520 | 1.5  | NO <sub>2</sub> | N | N                                  | Y (0.05m) | 5m   | Y |
| 112 | 17 Sloper Road         | Roadside     | 316613 | 175910 | 1.5  | NO <sub>2</sub> | N | N                                  | Y (0.05m) | 5m   | Y |
| 115 | 21 Llandaff Road       | Roadside     | 316604 | 176641 | 1.5  | NO <sub>2</sub> | N | N                                  | Y (0.05m) | 3m   | Y |
| 117 | 25 Cowbridge Road West | Roadside     | 314458 | 176735 | 2    | NO <sub>2</sub> | Y | N                                  | Y (0.05m) | 2m   | Y |
| 126 | Westgate Street Flats  | Roadside     | 317946 | 176387 | 1.5  | NO <sub>2</sub> | Y | N                                  | Y (0.10m) | 5m   | Y |
| 128 | 117 Tudor Street       | Roadside     | 317540 | 175979 | 1.5  | NO <sub>2</sub> | N | N                                  | Y (0.05m) | 5m   | Y |
| 131 | Dragon Court           | Roadside     | 319292 | 176932 | 1.75 | NO <sub>2</sub> | Y | N                                  | Y (0.05m) | 5m   | Y |

|     |                         |          |        |        |     |                 |   |   |           |      |   |
|-----|-------------------------|----------|--------|--------|-----|-----------------|---|---|-----------|------|---|
| 143 | Windsor House           | Roadside | 318009 | 176337 | 1.5 | NO <sub>2</sub> | Y | N | Y (0.10m) | 6.5m | Y |
| 144 | Marlborough House       | Roadside | 318046 | 176307 | 1.5 | NO <sub>2</sub> | Y | N | Y (0.10m) | 6.5m | Y |
| 147 | 211 Penarth Road        | Roadside | 317636 | 175161 | 1.5 | NO <sub>2</sub> | N | N | Y (0.10m) | 7.0m | Y |
| 148 | 161 Clare Road          | Roadside | 317695 | 175389 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05)  | 5.0m | Y |
| 149 | 10 Corporation Road     | Roadside | 317764 | 175174 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05)  | 4.6m | Y |
| 156 | 2a/4 Colum Road         | Roadside | 317997 | 177412 | 1.5 | NO <sub>2</sub> | N | N | Y (0.10m) | 5.0m | Y |
| 157 | 47 Birchgrove Road      | Roadside | 316605 | 179703 | 1.5 | NO <sub>2</sub> | N | N | Y (0.10m) | 8.0m | Y |
| 158 | 64/66 Cathays Terrace   | Roadside | 318093 | 177716 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 3.0m | Y |
| 159 | IMO façade replacement  | Roadside | 320709 | 177918 | 1.5 | NO <sub>2</sub> | N | N | Y (0.10m) | 4.0m | Y |
| 166 | 163 Lansdowne Road      | Roadside | 315950 | 176424 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 5.4m | Y |
| 168 | 570 Cowbridge Road East | Roadside | 314856 | 176929 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 4.8m | Y |

|     |                                       |          |        |        |     |                 |   |   |           |       |   |
|-----|---------------------------------------|----------|--------|--------|-----|-----------------|---|---|-----------|-------|---|
| 174 | 76 North Road                         | Kerbside | 317508 | 177868 | 1.5 | NO <sub>2</sub> | N | N | Y (0.1m)  | 1m    | Y |
| 179 | Altolusso, Bute Terrace               | Roadside | 318627 | 176039 | 2   | NO <sub>2</sub> | N | N | N (5.1m)  | 2.1m  | N |
| 183 | Station Terrace                       | Kerbside | 318765 | 176623 | 2   | NO <sub>2</sub> | N | N | N (5.5m)  | 0.5m  | Y |
| 184 | Hopouse, St Mary Street               | Roadside | 318335 | 176074 | 2   | NO <sub>2</sub> | Y | N | Y (0.05m) | 3.0m  | Y |
| 186 | Dempsey's Public House, Castle Street | Roadside | 318044 | 176449 | 2   | NO <sub>2</sub> | Y | N | Y (0.05m) | 2.90m | Y |
| 187 | Angel Hotel                           | Roadside | 317944 | 176436 | 2   | NO <sub>2</sub> | Y | N | Y (0.05m) | 2.85m | Y |
| 188 | Westgate Street (45 Apartments)       | Roadside | 318229 | 176154 | 1.8 | NO <sub>2</sub> | Y | N | Y (0.05m) | 3.30m | Y |
| 190 | 3 Pearson Street                      | Kerbside | 319056 | 177343 | 2   | NO <sub>2</sub> | N | N | Y (0.05m) | 0.75m | Y |
| 191 | 7 Mackintosh Place                    | Roadside | 318724 | 177776 | 2   | NO <sub>2</sub> | N | N | Y (0.05m) | 3.0m  | Y |
| 192 | 3 Cowbridge Road West                 | Roadside | 314505 | 176769 | 2   | NO <sub>2</sub> | Y | N | Y (0.05m) | 3.0m  | Y |
| 194 | 115 Cowbridge Road West               | Roadside | 313870 | 176212 | 2   | NO <sub>2</sub> | N | N | Y (0.05m) | 12.5m | Y |

|     |                                   |          |        |        |   |                 |   |   |           |       |   |
|-----|-----------------------------------|----------|--------|--------|---|-----------------|---|---|-----------|-------|---|
| 195 | 244 Newport Road                  | Roadside | 320147 | 177523 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 6.0m  | Y |
| 196 | 2 Pencisely Road                  | Roadside | 316223 | 177305 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 6.5m  | Y |
| 198 | Next Building to Stephenson Court | Roadside | 319348 | 176958 | 2 | NO <sub>2</sub> | Y | N | Y (0.05m) | 4.6m  | Y |
| 199 | 157 Newport Road                  | Roadside | 319599 | 177174 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 12.6m | Y |
| 200 | 350 Whitchurch Road               | Roadside | 317038 | 179073 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 3.5m  | Y |
| 201 | 23 Lower Cathedral Road           | Roadside | 317547 | 176411 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m    | Y |
| 202 | 22 Clare Street                   | Roadside | 317604 | 176053 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 3.5m  | Y |
| 203 | 10 Fair oak Road                  | Roadside | 318255 | 178533 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 4.5m  | Y |
| 204 | 53 Neville Street                 | Roadside | 317487 | 176303 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 5m    | Y |
| 207 | 42 Waungron Road                  | Roadside | 314769 | 177343 | 2 | NO <sub>2</sub> | N | N | Y (0.05m) | 6.8m  | Y |
| 208 | 2 Llantrisant Road, Llandaff      | Roadside | 315152 | 178245 | 2 | NO <sub>2</sub> | Y | N | Y (0.05m) | 3m    | Y |

|            |   |          |        |        |      |                 |   |   |           |      |   |
|------------|---|----------|--------|--------|------|-----------------|---|---|-----------|------|---|
| <b>209</b> | 178 North Road                          | Roadside | 317200 | 178537 | 2    | NO <sub>2</sub> | N | N | Y (0.05m) | 3.5m | Y |
| <b>210</b> | 485 Caerphilly Road                     | Roadside | 316692 | 181088 | 2    | NO <sub>2</sub> | N | N | Y (0.05m) | 7.5m | Y |
| <b>211</b> | 19 Well Wood Close, Penylan             | Roadside | 320247 | 178903 | 2    | NO <sub>2</sub> | N | N | Y (0.05m) | 28m  | Y |
| <b>212</b> | 62 Bridge Road                          | Kerbside | 315197 | 178221 | 2    | NO <sub>2</sub> | Y | N | Y (0.05m) | 1m   | Y |
| <b>214</b> | Mitre Place, Llandaff                   | Roadside | 315254 | 178153 | 2    | NO <sub>2</sub> | Y | N | Y (0.05m) | 3.5m | Y |
| <b>218</b> | 16-18 Cowbridge Road West               | Roadside | 314471 | 176770 | 2    | NO <sub>2</sub> | Y | N | Y (0.05m) | 4.2m | Y |
| <b>220</b> | Fitzalan Court Newport Road             | Kerbside | 318955 | 176689 | 2    | NO <sub>2</sub> | N | N | N (6.5m)  | 1m   | N |
| <b>221</b> | Stuttgarter Strasse (New student flats) | Kerbside | 318530 | 176823 | 2    | NO <sub>2</sub> | N | N | N (8m)    | 1m   | N |
| <b>224</b> | 110 Cardiff Road                        | Roadside | 315714 | 177738 | 2    | NO <sub>2</sub> | N | N | Y (0.05m) | 4m   | Y |
| <b>243</b> | 25 Cardiff Road, Llandaff               | Kerbside | 315712 | 177740 | 1.75 | NO <sub>2</sub> | Y | N | N (4m)    | 1m   | N |
| <b>244</b> | 25 Bridge Road, Llandaff                | Roadside | 314910 | 178789 | 1.75 | NO <sub>2</sub> | N | N | Y (0.05m) | 4m   | Y |

|  |                                     |                  |        |        |      |                 |   |   |           |      |   |
|--|-------------------------------------|------------------|--------|--------|------|-----------------|---|---|-----------|------|---|
| 245                                    | 47 Willows Ave                      | Urban Background | 321006 | 176584 | 1.75 | NO <sub>2</sub> | N | N | N/A       | N/A  | N |
| 247                                    | Radyr Primary school                | Roadside         | 312857 | 180734 | 1.5  |                 |   |   |           |      |   |
| 249                                    | Wentloog Road, Rumney               | Roadside         | 321709 | 179081 | 1.75 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m   | Y |
| 250                                    | Central Square Cardiff, City Centre | Roadside         | 318201 | 176022 | 1.75 |                 | N | N | N (4m)    | 2m   | N |
| 251                                    | Heol Isaf, Radyr                    | Roadside         | 313244 | 180367 | 1.75 | NO <sub>2</sub> | N | N | Y (0.05m) | 5.2m | Y |
| 254                                    | Giraffe Nusery Cathedral Road       | Roadside         | 317529 | 176340 | 1.5  | NO <sub>2</sub> | N | N | Y (0.05m) | 2m   | Y |
| 255                                    | Castle Street Co-Location 1         | Kerbside         | 318075 | 176462 | 1.5  | NO <sub>2</sub> | N | Y | Y (0.05m) | 1.5m | Y |
| 256                                    | Castle Street Co-Location 2         | Kerbside         | 318075 | 176462 | 1.5  | NO <sub>2</sub> | N | Y | Y (0.05m) | 1.5m | Y |
| 257                                    | Castle Street Co-Location 3         | Kerbside         | 318075 | 176462 | 1.5  | NO <sub>2</sub> | N | Y | Y (0.05m) | 1.5m | Y |
| 258                                    | Lampost outside 116 Penarth Road    | Kerbside         | 317760 | 175310 | 1.5  | NO <sub>2</sub> | N | Y | Y (0.05m) | 7m   | Y |
| <b>Cardiff School Zone TRO Project</b> |                                     |                  |        |        |      |                 |   |   |           |      |   |

| Site ID | Site Name  | Site Type | X OS Grid Reference | Y OS Grid Reference | Site Height (m) | Pollutants Monitored | In AQMA? | Is Monitoring Co-located with a Continuous Analyser (Y/N) | 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? |
|---------|--|-----------|---------------------|---------------------|-----------------|----------------------|----------|---|--|--|---|
| TRO-001 | Whitchurch High Lower School                               | Kerbside  | 315621              | 180320              | 1.5             | NO <sub>2</sub>      | N        | N   | N (4m)   | 5m   | N   |
| TRO-002 | Glan-Y-Nant Terrace (inside)                               | Roadside  | 315589              | 180316              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 2m   | Y   |
| TRO-003 | Crossroads of Old Church Rd and Glan-Y-Nant terr (outside) | Kerbside  | 315548              | 180315              | 1.5             | NO <sub>2</sub>      | N        | N   | N (5m)   | 2m   | N   |
| TRO-004 | Ysgol Melin Gruffydd School                                | Roadside  | 315620              | 180360              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 2m   | Y   |
| TRO-005 | 34 Glan-Y-Nant Rd (inside)                                 | Roadside  | 315608              | 180151              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05)   | 3m   | Y   |
| TRO-006 | 36 Old Church Rd (outside)                                 | Roadside  | 315497              | 180140              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 2m   | Y   |
| TRO-007 | Peter Lea Primary  | Roadside  | 313878              | 178319              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 3m   | Y   |
| TRO-008 | 36 Carter Place  | Roadside  | 313894              | 178331              | 1.5             | NO <sub>2</sub>      | N        | N   | Y (0.05m)  | 4m   | Y   |



|                 |                                  |          |        |        |     |                 |   |   |           |    |   |
|-----------------|----------------------------------|----------|--------|--------|-----|-----------------|---|---|-----------|----|---|
| <b>TRO-0099</b> | 3 Carter Place                   | Roadsie  | 314022 | 178334 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 5m | Y |
| <b>TRO-010</b>  | Llandaff Church in Wales Primary | Kerbside | 315274 | 177784 | 1.5 | NO <sub>2</sub> | N | N | N (5m)    | 5m | N |
| <b>TRO-011</b>  | 20 Hendre Rd Llandaff            | Kerbside | 315279 | 177750 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |
| <b>TRO-012</b>  | 48 Hendre Rd Llandaff            | Roadside | 315209 | 177668 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m | Y |
| <b>TRO-013</b>  | Pencaeru School                  | Kerbside | 312803 | 175519 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m | Y |
| <b>TRO-014</b>  | 16 Cyntwell Avenue               | Roadside | 312809 | 175496 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 4m | Y |
| <b>TRO-015</b>  | 6A Cyntwell Avenue               | Roadside | 312734 | 175411 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m | Y |
| <b>TRO-016</b>  | 29 Norfolk St                    | Roadside | 315811 | 176555 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m | Y |
| <b>TRO-017</b>  | 209 Llandowne Rd                 | Roadside | 315801 | 176492 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 4m | Y |
| <b>TRO-018</b>  | Llandowne Primary School         | Roadside | 315801 | 176492 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 4m | Y |
| <b>TRO-019</b>  | St Cuthberts Primary School      | Kerbside | 319027 | 175493 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |

|                |  |          |        |        |     |                 |   |   |           |    |   |
|----------------|--|----------|--------|--------|-----|-----------------|---|---|-----------|----|---|
| <b>TRO-020</b> | Letton Road                            | Kerbside | 318910 | 175456 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-021</b> | 58 Letton Road                         | Kerbside | 318945 | 175546 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-022</b> | Tredegarville                          | Roadside | 319268 | 176804 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 4m | Y |
| <b>TRO-023</b> | Newport Road School Lane Zone          | Kerbside | 319228 | 176777 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-024</b> | Glossops Road                          | Kerbside | 319283 | 176827 | 1.5 | NO <sub>2</sub> | N | N | N (5m)    | 1m | Y |
| <b>TRO-025</b> | St Peters Primary School               | Roadside | 319394 | 177096 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |
| <b>TRO-026</b> | Southey Street                         | Kerbside | 319339 | 177006 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-027</b> | Wordsworth Avenue                      | Kerbside | 319327 | 177080 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-028</b> | St Monica's / Gladstone Primary School | Roadside | 317982 | 178180 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 3m | Y |
| <b>TRO-029</b> | Pentyrch Street                        | Kerbside | 317987 | 178156 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-030</b> | Cwmdare Street                         | Kerbside | 317855 | 178921 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |

|                |                             |          |        |        |     |                 |   |   |           |    |   |
|----------------|-----------------------------|----------|--------|--------|-----|-----------------|---|---|-----------|----|---|
| <b>TRO-031</b> | Lakeside Primary School     | Roadside | 319031 | 179949 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |
| <b>TRO-032</b> | Ontario Way                 | Kerbside | 319012 | 180050 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-033</b> | Woolaston Avenue            | Kerbside | 318898 | 180012 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-034</b> | Bryn Hafod Primary School   | Roadside | 321817 | 180406 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |
| <b>TRO-035</b> | 8 Blagdon Close             | Kerbside | 321847 | 180402 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-036</b> | Uphill Road                 | Kerbside | 321834 | 180331 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-037</b> | Glan Y Afon Primary School  | Roadside | 321705 | 181427 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |
| <b>TRO-038</b> | Browning Close              | Kerbside | 321738 | 181398 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-039</b> | Thackerey Crescent          | Kerbside | 321834 | 181282 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |
| <b>TRO-040</b> | Willow Brook Primary School | Kerbside | 324489 | 180953 | 1.5 | NO <sub>2</sub> | N | N | Y (0.05m) | 1m | Y |
| <b>TRO-041</b> | Bullrush Close              | Kerbside | 324519 | 180949 | 1.5 | NO <sub>2</sub> | N | N | N (2m)    | 1m | Y |

| <b>TRO-042</b>   | Sandbrook Road                | Kerbside         | 324529                     | 180975                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N (2m)  | 1m  | Y  |
|--|-------------------------------|------------------|----------------------------|----------------------------|------------------------|-----------------------------|-----------------|--|---|---|--|
| <b>TRO-043</b>   | Creigau Primary School        | Kerbside         | 307904                     | 181561                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 1m  | Y  |
| <b>TRO-044</b>   | Tregarth Court                | Kerbside         | 307896                     | 181569                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N (2m)  | 1m  | Y  |
| <b>TRO-045</b>   | TY-Nant Road                  | Kerbside         | 307967                     | 181585                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N (2m)  | 1m  | Y  |
| <b>Dusty Forge Community Centre Green Wall Project, Cowbridge Road West, Ely</b> |                               |                  |                            |                            |                        |                             |                 |  |   |   |  |
| <b>Site ID</b>   | <b>Site Name</b>              | <b>Site Type</b> | <b>X OS Grid Reference</b> | <b>Y OS Grid Reference</b> | <b>Site Height (m)</b> | <b>Pollutants Monitored</b> | <b>In AQMA?</b> | <b>Is Monitoring Co-located with a Continuous Analyser (Y/N)</b> | <b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b> | <b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b> | <b>Does this Location Represent Worst-Case Exposure?</b> |
| <b>GW-01</b>   | Dusty Forge Building Façade 1 | Roadside         | 312870                     | 175711                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>GW-02</b>   | Dusty Forge Building Façade 2 | Roadside         | 312822                     | 175719                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>GW-03</b>   | Dusty Forge Building Façade 3 | Roadside         | 312860                     | 175705                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>GW-04</b>   | Dusty Forge Kerbside 1        | Kerbside         | 312896                     | 175703                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N   | 2   | Y  |

| <b>GW-05</b>                                    | Dusty Forge Kerbside 2            | Kerbside         | 312877                     | 175705                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N   | 1   | Y  |
|---|-----------------------------------|------------------|----------------------------|----------------------------|------------------------|-----------------------------|-----------------|--|---|---|--|
| <b>GW-06</b>                                    | Dusty Forge Kerbside 3            | Kerbside         | 312884                     | 175712                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N   | 2   | Y  |
| <b>GW-07</b>                                    | Cowbridge Rd West 456             | Kerbside         | 312899                     | 175731                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>Kitchener Primary School, Kitchener Road</b> |                                   |                  |                            |                            |                        |                             |                 |  |   |   |  |
| <b>Site ID</b>                                  | <b>Site Name</b>                  | <b>Site Type</b> | <b>X OS Grid Reference</b> | <b>Y OS Grid Reference</b> | <b>Site Height (m)</b> | <b>Pollutants Monitored</b> | <b>In AQMA?</b> | <b>Is Monitoring Co-located with a Continuous Analyser (Y/N)</b> | <b>Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)</b> | <b>Distance to Kerb of Nearest Road (m) (N/A if not applicable)</b> | <b>Does this Location Represent Worst-Case Exposure?</b> |
| <b>GW-08</b>                                    | Kitchener Primary School Façade 1 | Roadside         | 316735                     | 176210                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>GW-09</b>                                    | Kitchener Primary Façade 2        | Roadside         | 316743                     | 176196                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>GW-10</b>                                    | Kitchener Primary Façade 3        | Roadside         | 316754                     | 176166                     | 1.5                    | NO <sub>2</sub>             | N               | N  | Y (0.05m)   | 10  | Y  |
| <b>GW-11</b>                                    | Kitchener Road Lampost 1          | Kerbside         | 316748                     | 176176                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N   | 2   | Y  |
| <b>GW-12</b>                                    | Kitchener Road Lampost 2          | Kerbside         | 316735                     | 176211                     | 1.5                    | NO <sub>2</sub>             | N               | N  | N   | 1   | Y  |

**Notes:**

(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

Figure 7 - Map of Non-Automatic Monitoring Locations in Cardiff City Centre AQMA and Surrounding Areas

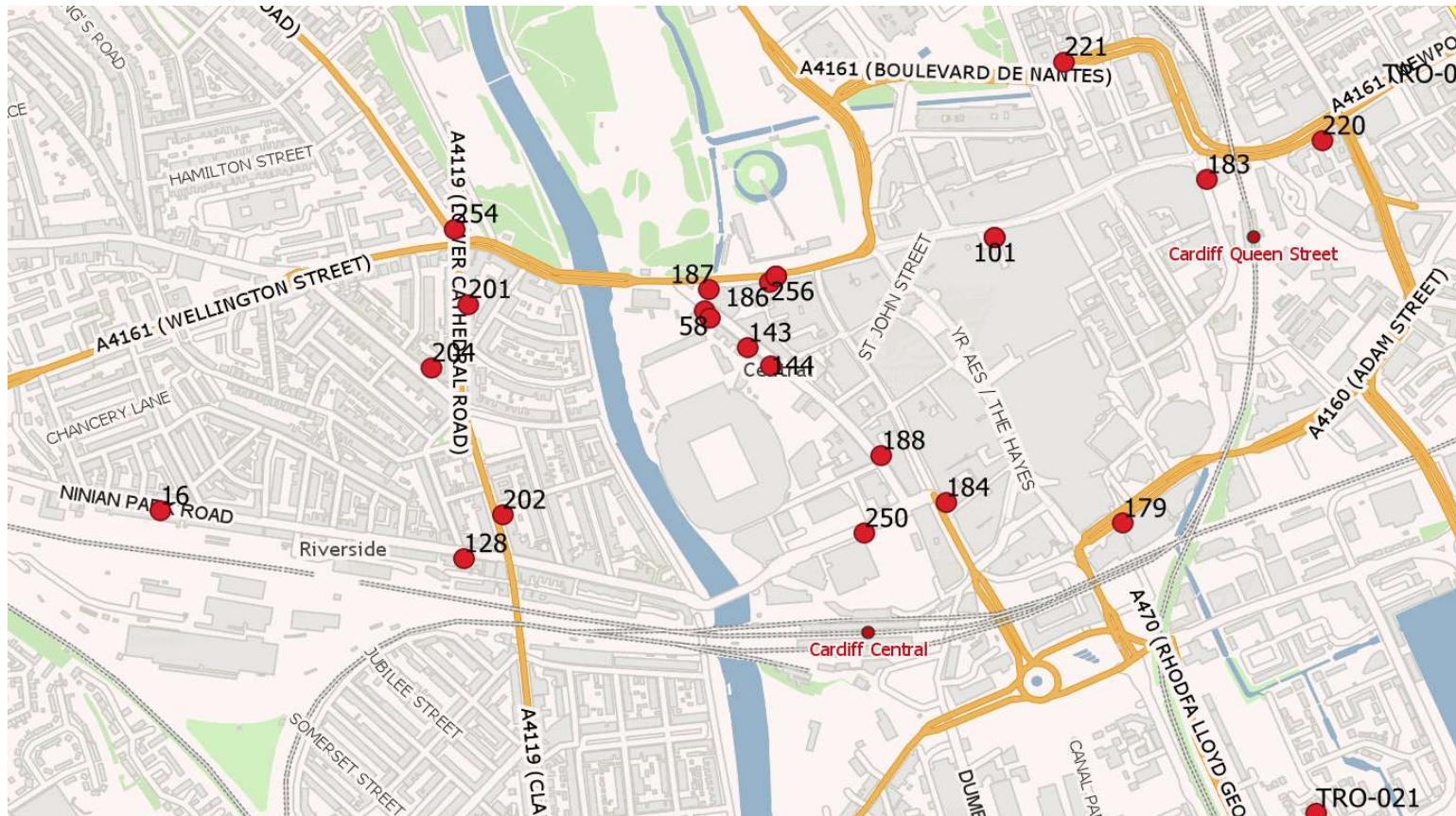


Figure 8 - Map of Non-Automatic Monitoring Locations in Stephenson Court AQMA and Surrounding Areas

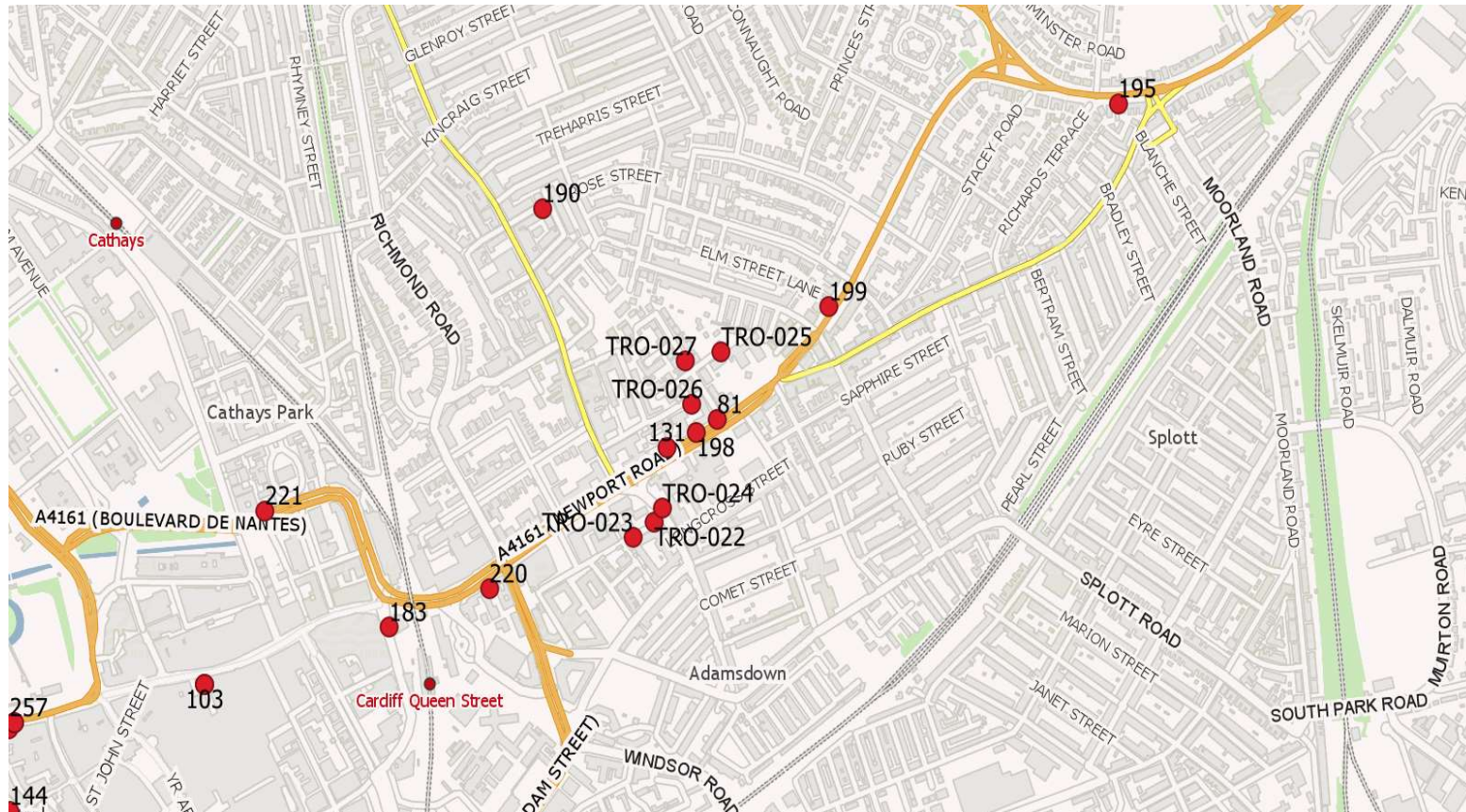




Figure 9 - Map of Non-Automatic Monitoring Locations in Llandaff AQMA and Surrounding Areas

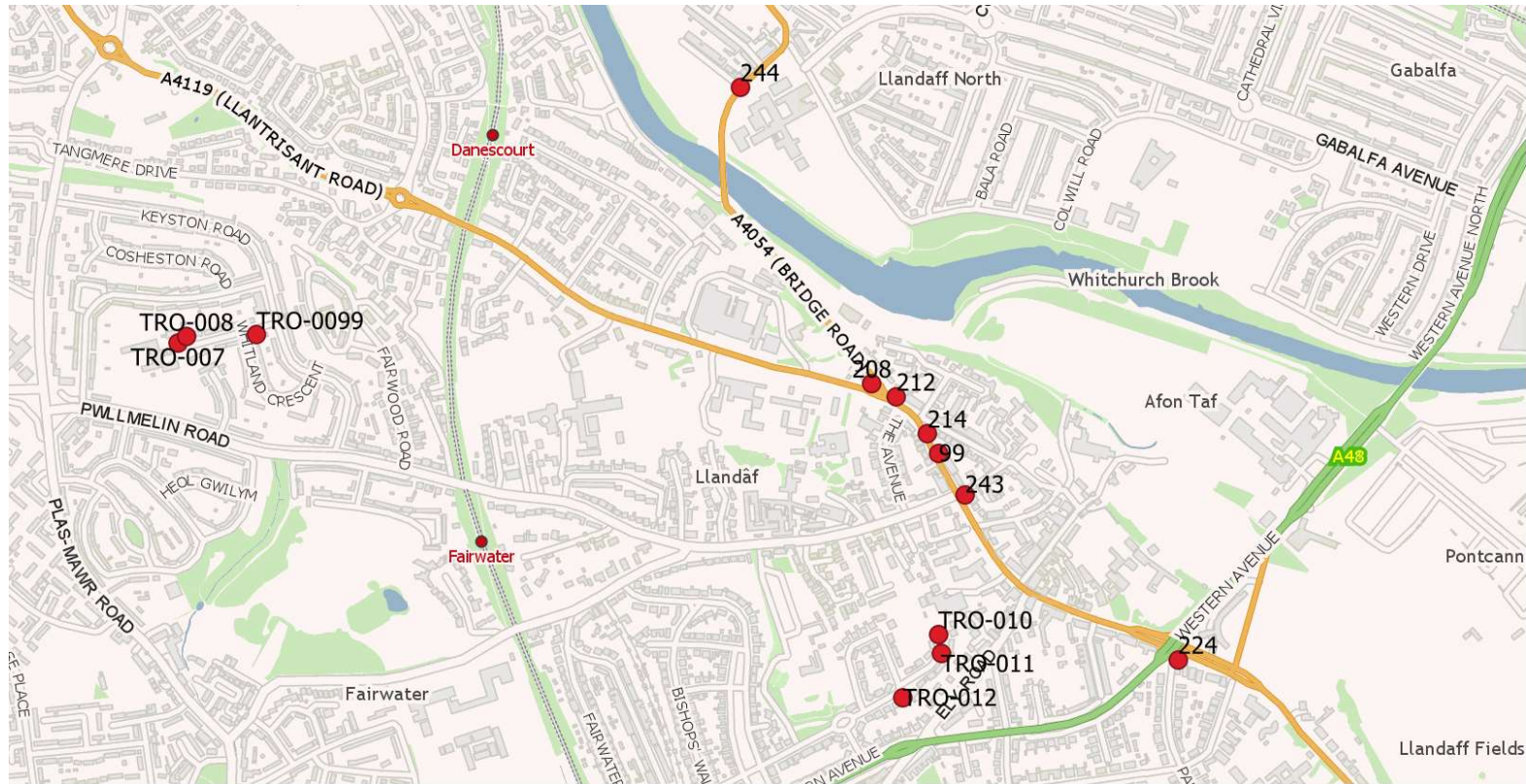


Figure 10 - Map of Non-Automatic Monitoring Locations In Ely Bridge AQMA and Surrounding Areas

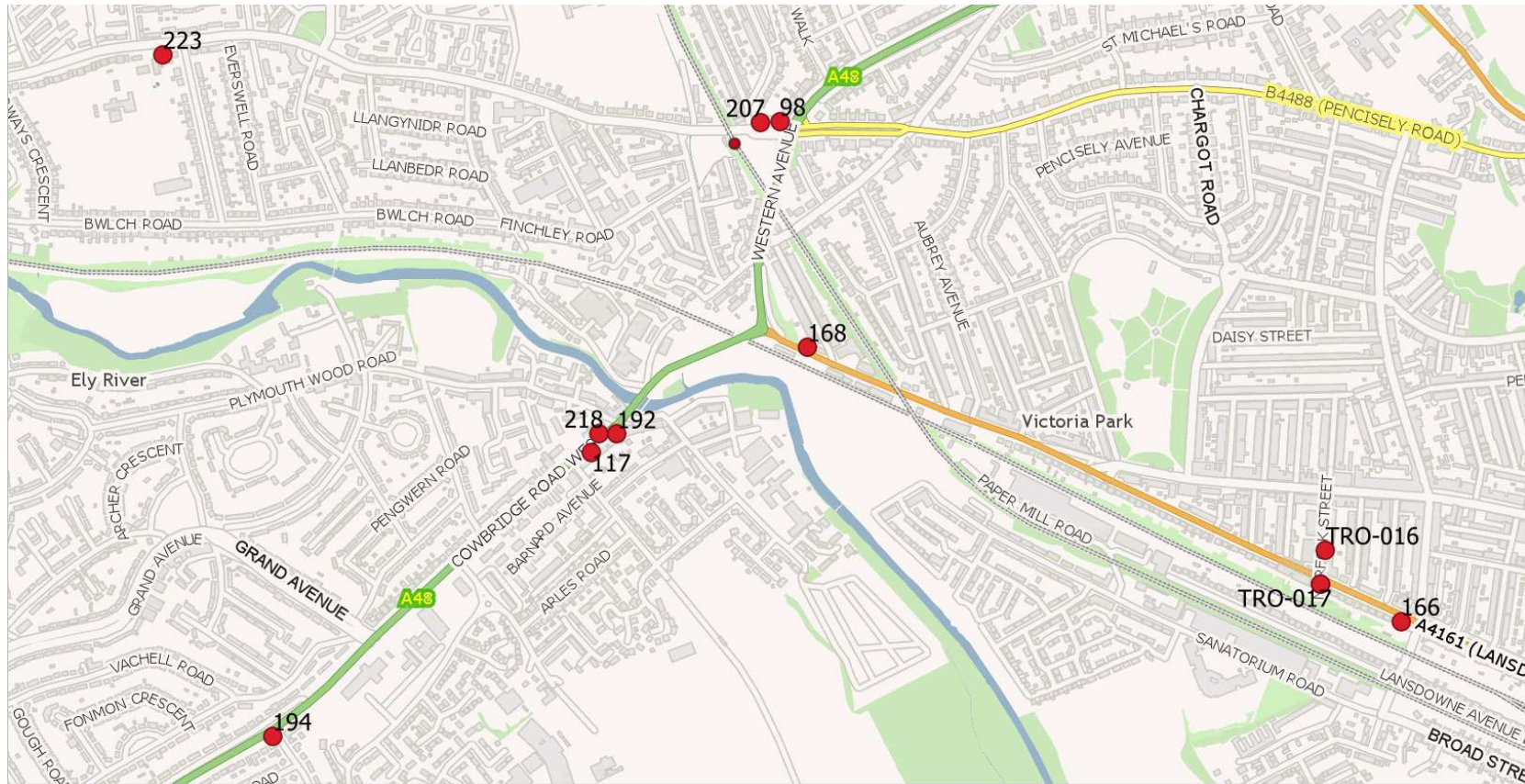


Figure 11 - Map of Non-Automatic Monitoring Locations in Cathays, Penylan and Surrounding Areas

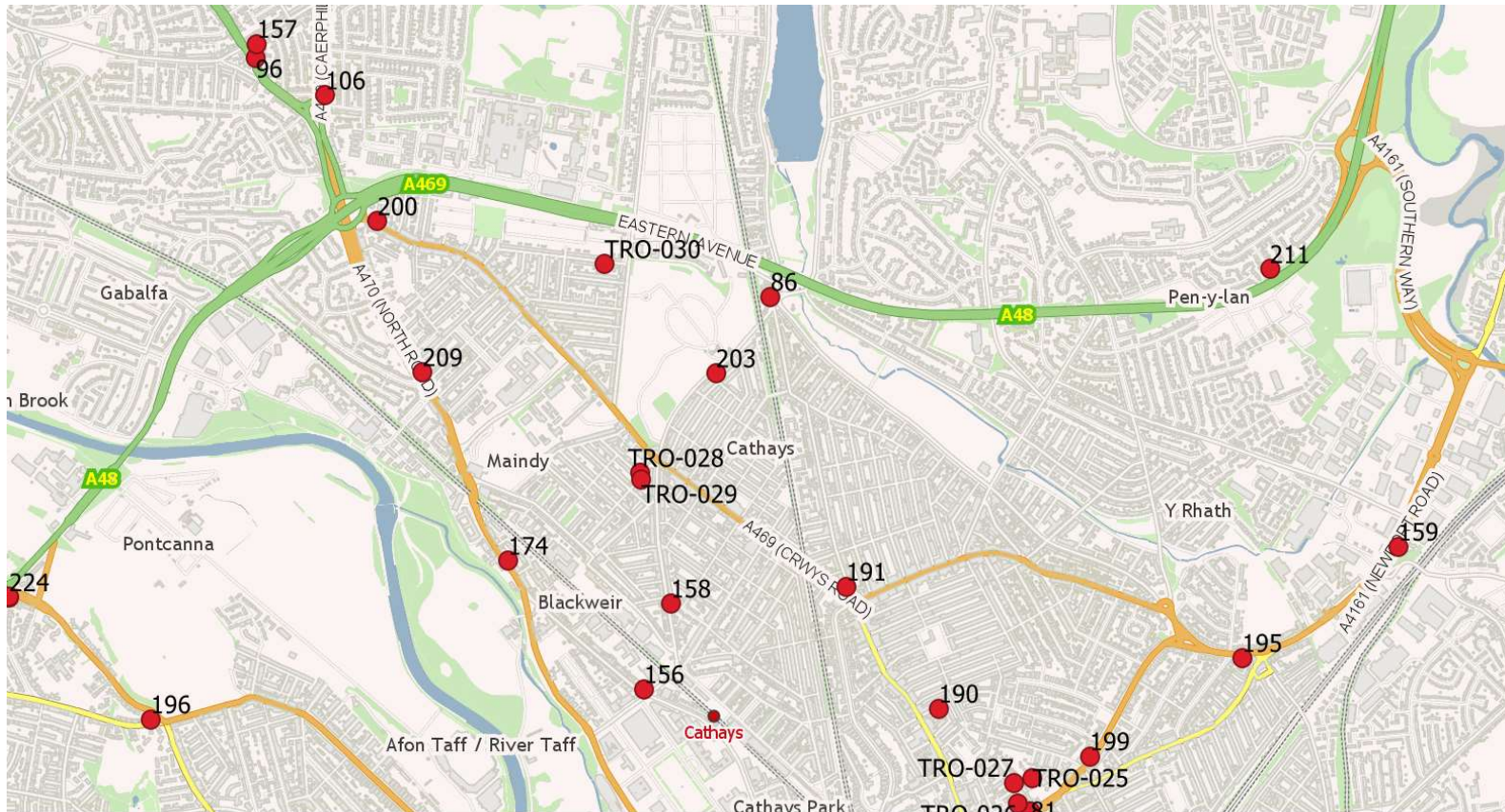


Figure 12 - Map of Monitoring Locations in Llanrumney, St Mellons and Surrounding Areas



Figure 13 - Map of Non-Automatic Monitoring Locations in Riverside, Canton and Surrounding Areas

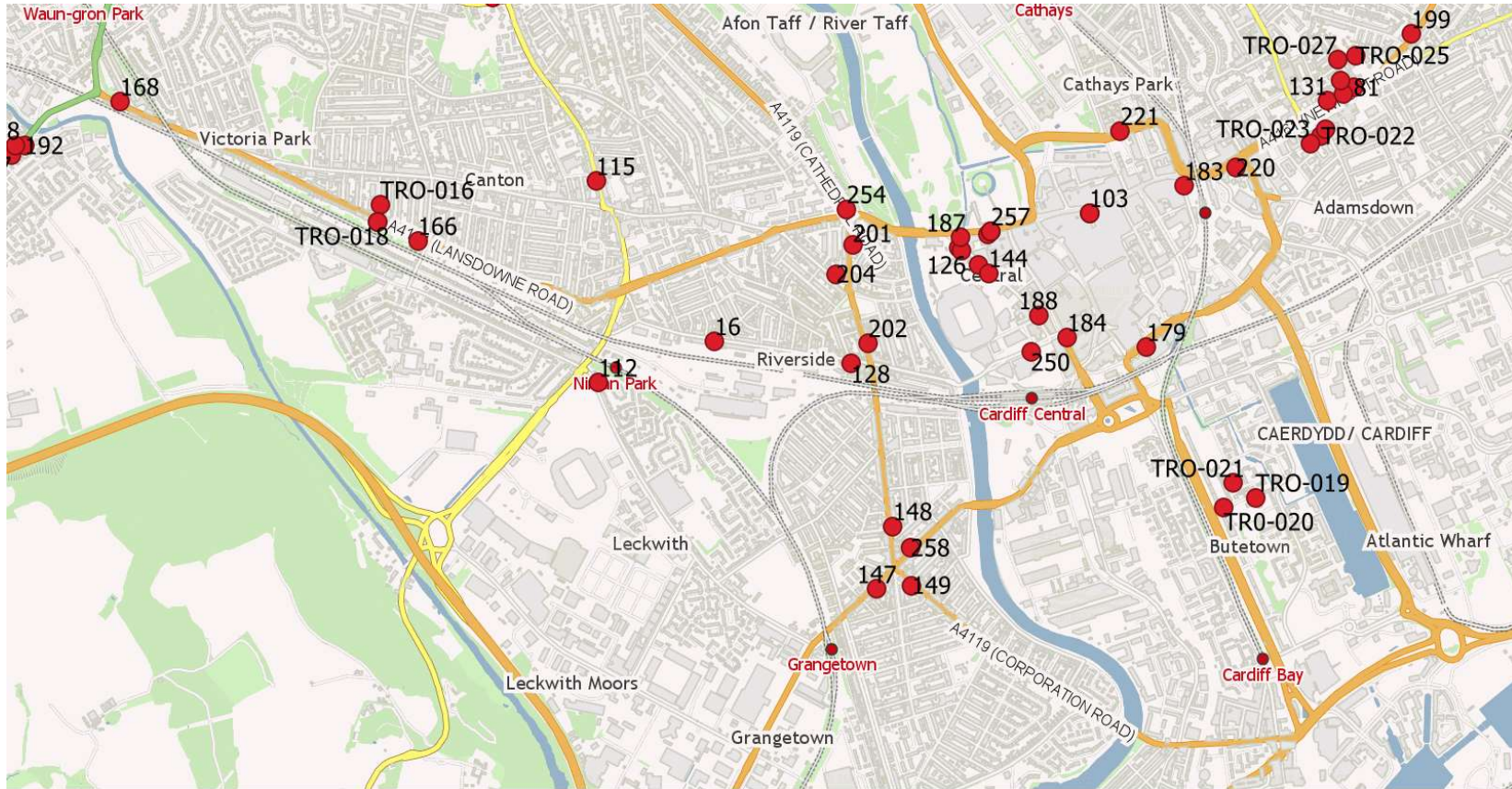


Figure 14 - Map of Non-Automatic Monitoring Locations in Cardiff North

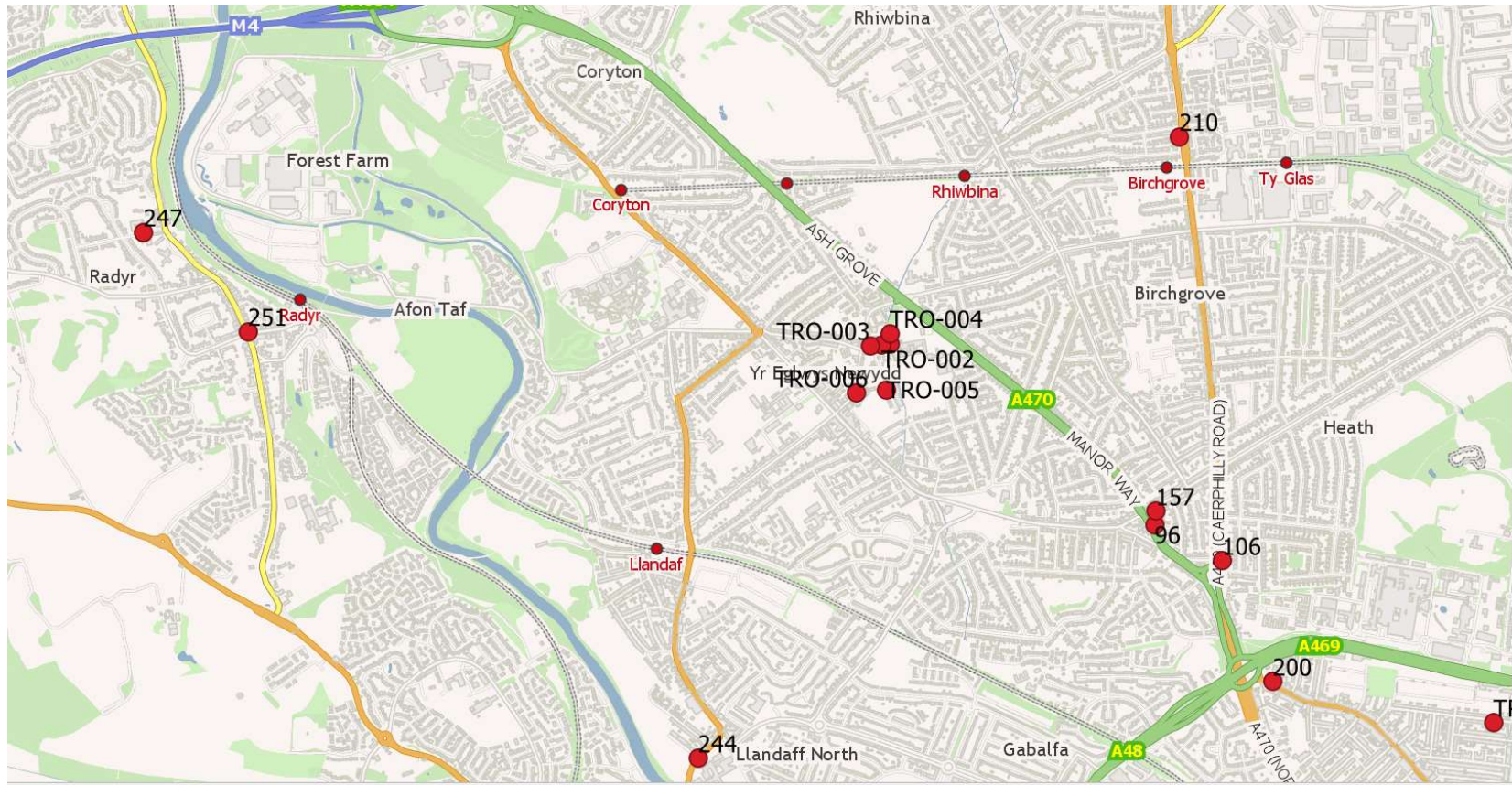
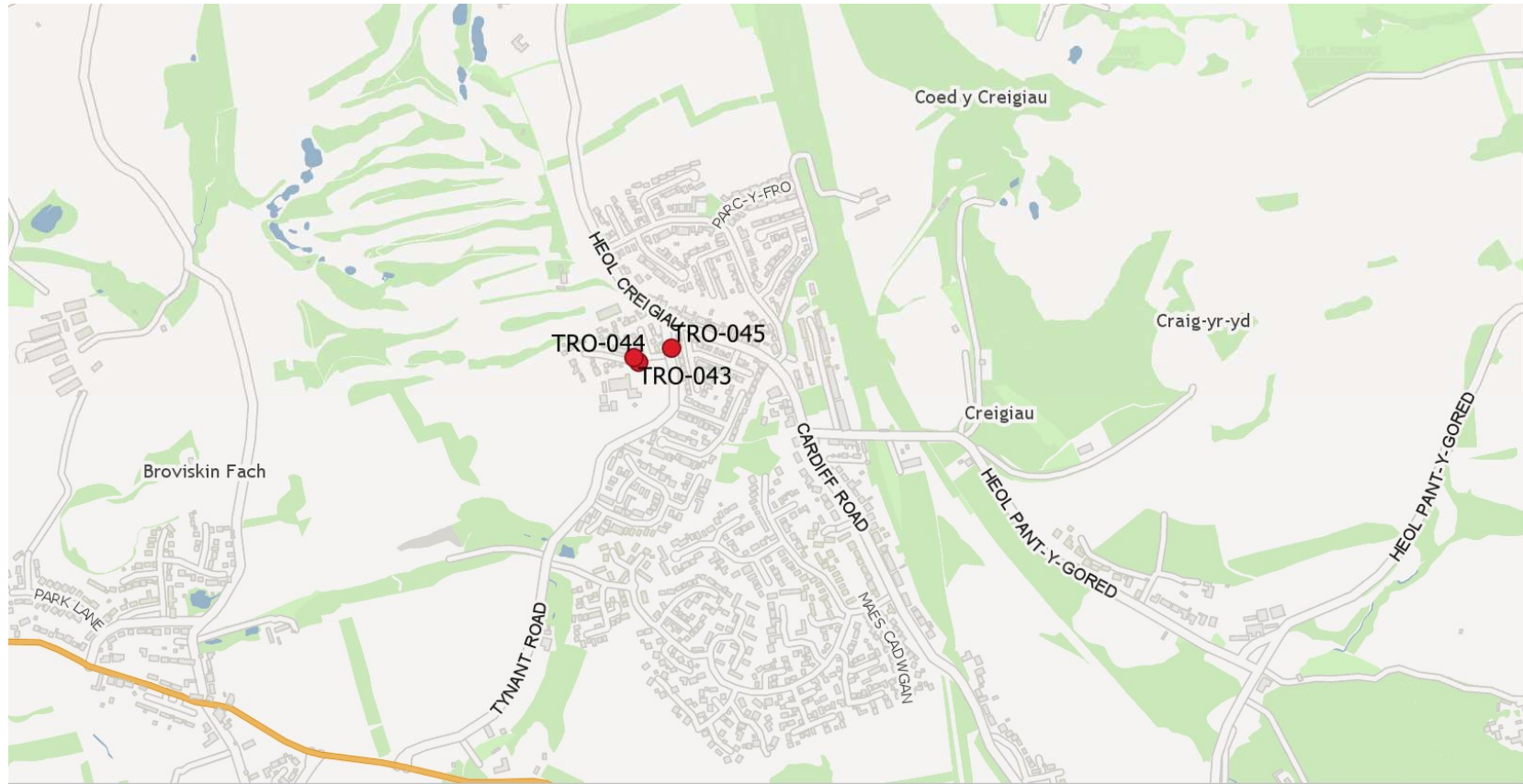


Figure 15 - Map of Non-Automatic Monitoring Locations in Creigiau



## 2.2 2021 Air Quality Monitoring Results

Table 5 – Non-Automatic Annual Mean NO<sub>2</sub> Monitoring Results (µg/m<sup>3</sup>)

| Site ID | Site Type    | Monitoring Type | Valid Data Capture 2021 (%) <sup>(1)</sup> | Within AQMA? | Annual mean concentration (adjusted for bias) µg/m <sup>3</sup> <sup>(2)</sup> |                                 |                                 |                                 |                                 |                                 |                                 |
|---------|--------------|-----------------|--|--------------|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|         |              |                 |  |              | 2015   | 2016                            | 2017                            | 2018                            | 2019                            | 2020                            | 2021                            |
|         |              |                 |  |              | (Bias Adjustment Factor = 0.79)  | (Bias Adjustment Factor = 0.78) | (Bias Adjustment Factor = 0.77) | (Bias Adjustment Factor = 0.76) | (Bias Adjustment Factor = 0.75) | (Bias Adjustment Factor = 0.76) | (Bias Adjustment Factor = 0.78) |
| 16      | Roadside     | Diffusion Tube  | 100  | N            | 27.9   | 28.9                            | 28.9                            | 27.8                            | 27.3                            | 23.6                            | 23.2                            |
| 58      | Kerbside     | Diffusion Tube  | 100  | Y            | 48.3   | 45.3                            | 44.5 <sup>2</sup>               | 45.8                            | 41.2                            | 30 <sup>2</sup>                 | 30.8                            |
| 81      | Roadside     | Diffusion Tube  | 100  | Y            | 35.3   | 37.6                            | 35.9                            | 34.9                            | 34.4                            | 27.2                            | 29.3                            |
| 86      | Roadside     | Diffusion Tube  | 100  | N            | 34.9   | 35.6                            | 37                              | 33.4                            | 31.7                            | 25.8                            | 27.0                            |
| 96      | Roadside     | Diffusion Tube  | 92   | N            | 31.1   | 36.9                            | 31.8                            | 31.4                            | 29.4                            | 22.2                            | 24.2                            |
| 98      | Roadside     | Diffusion Tube  | 100  | N            | 25.4   | 28.4                            | 26.2                            | 26.1                            | 24.6                            | 20                              | 20.8                            |
| 99      | Roadside     | Diffusion Tube  | 100  | Y            | 29.8   | 34.8                            | 31                              | 31.7                            | 30.4                            | 22.8                            | 25.1                            |
| 101     | Urban Centre | Diffusion Tube  | 50   | N            | 20.3   | 23.1                            | 21.3                            | 21.1                            | NR                              | 14.3 <sup>2</sup>               | 14.0                            |
| 102     | Urban Centre | Diffusion Tube  | 50   | N            | 21.1   | 22.5                            | 20.9                            | 20.6                            | NR                              | 14.7 <sup>2</sup>               | 13.4                            |
| 103     | Urban Centre | Diffusion Tube  | 50   | N            | 20.7   | 23.2                            | 21.6                            | 20.7                            | NR                              | 15.1 <sup>2</sup>               | 13.5                            |
| 106     | Roadside     | Diffusion Tube  | 100  | N            | 29.4   | 32.2                            | 31.5                            | 27.8                            | 28.3                            | 24.5                            | 23.7                            |



|     |          |                |     |   |      |      |                   |      |      |                   |      |
|-----|----------|----------------|-----|---|------|------|-------------------|------|------|-------------------|------|
| 112 | Roadside | Diffusion Tube | 100 | N | 27.1 | 29.5 | 27.4              | 26.7 | 25.8 | 20.7              | 23.1 |
| 115 | Roadside | Diffusion Tube | 83  | N | 32.5 | 32.8 | 32.7              | 30   | 30.6 | 25.3              | 25.6 |
| 117 | Roadside | Diffusion Tube | 100 | Y | 39.5 | 41.3 | 38                | 40   | 36.8 | 30.7 <sup>2</sup> | 36   |
| 126 | Roadside | Diffusion Tube | 92  | Y | 36   | 38.4 | 39.4 <sup>2</sup> | 35.1 | 33.3 | 22.3              | 24   |
| 128 | Roadside | Diffusion Tube | 100 | N | 29.6 | 31.2 | 29.8              | 28.3 | 29.8 | 25                | 25   |
| 131 | Roadside | Diffusion Tube | 100 | Y | 39.5 | 39.6 | 41.7              | 38.2 | 35.7 | 28.8              | 26.7 |
| 143 | Roadside | Diffusion Tube | 100 | Y | 38.2 | 38.7 | 38.4 <sup>2</sup> | 37.3 | 35.6 | 23.5              | 25.7 |
| 144 | Roadside | Diffusion Tube | 75  | Y | 37.2 | 38.3 | 36.8 <sup>2</sup> | 34.3 | 33.9 | 25                | 26.4 |
| 147 | Roadside | Diffusion Tube | 100 | N | 27.7 | 28.8 | 26.2              | 29.3 | 26.9 | 20.5              | 23.8 |
| 148 | Roadside | Diffusion Tube | 100 | N | 27.5 | 29.2 | 27.3              | 26.6 | 25.6 | 21.3              | 23.9 |
| 149 | Roadside | Diffusion Tube | 100 | N | 33.6 | 31.2 | 32.5              | 31.3 | 30.1 | 26.8              | 25.9 |
| 156 | Roadside | Diffusion Tube | 92  | N | 25.9 | 29.7 | 25.7              | 26.8 | 24.8 | 17.4              | 20.1 |
| 157 | Roadside | Diffusion Tube | 100 | N | 27.2 | 28.2 | 28.3              | 25.1 | 23.6 | 19.3              | 19.4 |
| 158 | Roadside | Diffusion Tube | 100 | N | 25.5 | 29   | 26.1              | 26.2 | 24.2 | 17.6              | 21.0 |
| 159 | Roadside | Diffusion Tube | 100 | N | 34   | 35.5 | 38.6              | 35.6 | 32.2 | 26.4              | 27.4 |
| 166 | Roadside | Diffusion Tube | 100 | N | 32.1 | 33.2 | 32.1              | 30.6 | 31.4 | 26.3              | 26.7 |
| 168 | Roadside | Diffusion Tube | 100 | N | 24.3 | 27.7 | 26.2              | 26   | 24.7 | 21.1              | 22.7 |

|     |          |                |     |   |      |                   |                   |                   |                   |                   |                   |
|-----|----------|----------------|-----|---|------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 174 | Kerbside | Diffusion Tube | 100 | N | 28.7 | 33.3              | 27.5              | 28.2              | 26.8              | 17.7              | 20.0              |
| 179 | Roadside | Diffusion Tube | 100 | N | -    | 39.7 <sup>2</sup> | 45.4 <sup>2</sup> | 43. <sup>2</sup>  | 33.1 <sup>2</sup> | 32.4              | 37.6              |
| 183 | Kerbside | Diffusion Tube | 100 | N | -    | 35.9              | 31.2              | 31.1              | 30.9              | 23.5 <sup>2</sup> | 23.7              |
| 184 | Roadside | Diffusion Tube | 67  | Y | -    | 41.4              | 38.7 <sup>2</sup> | 39.9              | 40.5 <sup>2</sup> | 28.3 <sup>2</sup> | 27.5 <sup>2</sup> |
| 186 | Roadside | Diffusion Tube | 58  | Y | -    | 47.5              | 47.7 <sup>2</sup> | 45.8              | 42.7              | 23.1              | 24.5 <sup>2</sup> |
| 187 | Roadside | Diffusion Tube | 92  | Y | -    | 50.7              | 50.2 <sup>2</sup> | 50.8              | 43.9 <sup>2</sup> | 25.7 <sup>2</sup> | 26.1              |
| 188 | Roadside | Diffusion Tube | 42  | Y | -    | 49.8 <sup>2</sup> | 49.8 <sup>2</sup> | 52.4 <sup>2</sup> | 43.7 <sup>2</sup> | 32.5 <sup>2</sup> | 26.8 <sup>2</sup> |
| 190 | Kerbside | Diffusion Tube | 100 | N | -    | -                 | -                 | 23.2              | 23.4              | 20.7              | 20.1              |
| 191 | Roadside | Diffusion Tube | 100 | N | -    | -                 | -                 | 29.7              | 27.9              | 22.5              | 24.3              |
| 192 | Roadside | Diffusion Tube | 92  | Y | -    | -                 | -                 | 39.7              | 38.6              | 30.8              | 31.7              |
| 194 | Roadside | Diffusion Tube | 100 | N | -    | -                 | -                 | 22                | 20.4              | 15.8 <sup>2</sup> | 18.4              |
| 195 | Roadside | Diffusion Tube | 100 | N | -    | -                 | -                 | 31.6              | 31.2              | 24.2 <sup>2</sup> | 24.6              |
| 196 | Roadside | Diffusion Tube | 100 | N | -    | -                 | -                 | 24.9              | 25.2              | 19.4              | 22.0              |
| 198 | Roadside | Diffusion Tube | 100 | Y | -    | -                 | -                 | 35.1              | 33.5              | 25.7              | 28.7              |
| 199 | Roadside | Diffusion Tube | 100 | N | -    | -                 | -                 | 23.9              | 25                | 20.7              | 20.1              |
| 200 | Roadside | Diffusion Tube | 100 | N | -    | -                 | -                 | 33.4              | 31.1              | 27.4 <sup>2</sup> | 27.4              |
| 201 | Roadside | Diffusion Tube | 83  | N | -    | -                 | -                 | 30.3              | 28.9              | 22.1              | 24.0              |

|     |          |                |     |   |   |   |   |                   |                   |                   |                   |
|-----|----------|----------------|-----|---|---|---|---|-------------------|-------------------|-------------------|-------------------|
| 202 | Roadside | Diffusion Tube | 100 | N | - | - | - | 27.8              | 27.6              | 23.3              | 24.5              |
| 203 | Roadside | Diffusion Tube | 100 | N | - | - | - | 21.6              | 20.6              | 17.2              | 17.1              |
| 204 | Roadside | Diffusion Tube | 92  | N | - | - | - | 23.3              | 22.1              | 18.7              | 20.1              |
| 207 | Roadside | Diffusion Tube | 100 | N | - | - | - | 21.7              | 20.6              | 16.7              | 18.3              |
| 208 | Roadside | Diffusion Tube | 100 | N | - | - | - | 25.4              | 24.9              | 18.9              | 20.5              |
| 209 | Roadside | Diffusion Tube | 100 | N | - | - | - | 22.7              | 22.3              | 15.2 <sup>2</sup> | 16.6              |
| 210 | Roadside | Diffusion Tube | 100 | N | - | - | - | 21.7              | 20.4              | 16.6              | 17.5              |
| 211 | Roadside | Diffusion Tube | 92  | N | - | - | - | 21.7              | 21.8              | 18.1              | 19.7              |
| 212 | Kerbside | Diffusion Tube | 92  | Y | - | - | - | 47.1 <sup>2</sup> | 41.3              | 33.4              | 37.4              |
| 214 | Roadside | Diffusion Tube | 100 | Y | - | - | - | -                 | 32.3              | 24.8              | 25.4              |
| 218 | Roadside | Diffusion Tube | 100 | Y | - | - | - | -                 | 35.5              | 28.2              | 31.6              |
| 220 | Kerbside | Diffusion Tube | 67  | N | - | - | - | -                 | 38.4 <sup>2</sup> | 27.9 <sup>2</sup> | 30.4 <sup>2</sup> |
| 221 | Kerbside | Diffusion Tube | 50  | N | - | - | - | -                 | NA                | 30.4 <sup>2</sup> | 26.9 <sup>2</sup> |
| 224 | Roadside | Diffusion Tube | 92  | N | - | - | - | -                 | 23.1 <sup>2</sup> | 18.5 <sup>2</sup> | 18.8              |
| 243 | Roadside | Diffusion Tube | 100 | N | - | - | - | -                 | -                 | 25.7 <sup>2</sup> | 28.2              |
| 244 | Roadside | Diffusion Tube | 92  | N | - | - | - | -                 | -                 | 18.2              | 18.0              |
| 245 | Roadside | Diffusion Tube | 100 | N | - | - | - | -                 | -                 | 14.3              | 15.0              |

|         |          |                |     |   |   |   |   |   |   |                   |      |
|---------|----------|----------------|-----|---|---|---|---|---|---|-------------------|------|
| 247     | Roadside | Diffusion Tube | 83  | N | - | - | - | - | - | -                 | 11.4 |
| 249     | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 17.3              | 16.5 |
| 250     | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | 26.7 <sup>2</sup> | 28.4 |
| 251     | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 13.5              | 14.9 |
| 254     | Roadside | Diffusion Tube | 92  | N | - | - | - | - | - | -                 | 27.7 |
| 255     | Kerbside | Diffusion Tube | 100 | Y | - | - | - | - | - | -                 | 25.8 |
| 256     | Kerbside | Diffusion Tube | 92  | Y | - | - | - | - | - | -                 | 25.3 |
| 257     | Kerbside | Diffusion Tube | 100 | Y | - | - | - | - | - | -                 | 26.2 |
| 258     | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 29.4 |
| TRO-001 | Roadside | Diffusion Tube | 58  | N | - | - | - | - | - | 10.9 <sup>2</sup> | 11.9 |
| TRO-002 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 12.9 <sup>2</sup> | 13.4 |
| TRO-003 | Kerbside | Diffusion Tube | 92  | N | - | - | - | - | - | 15.6              | 16.0 |
| TRO-004 | Roadside | Diffusion Tube | 83  | N | - | - | - | - | - | 9.8 <sup>2</sup>  | 11.9 |
| TRO-005 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 11.5              | 11.6 |
| TRO-006 | Roadside | Diffusion Tube | 92  | N | - | - | - | - | - | 17.0 <sup>2</sup> | 17.0 |
| TRO-007 | Roadside | Diffusion Tube | 92  | N | - | - | - | - | - | 9.4               | 10.4 |
| TRO-008 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 8.4               | 8.6  |

|         |          |                |     |   |   |   |   |   |   |                   |      |
|---------|----------|----------------|-----|---|---|---|---|---|---|-------------------|------|
| TRO-009 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 9.3               | 9.2  |
| TRO-010 | Kerbside | Diffusion Tube | 83  | N | - | - | - | - | - | 10.5 <sup>2</sup> | 10.6 |
| TRO-011 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | 12.2              | 10.9 |
| TRO-012 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 10.6              | 10.4 |
| TRO-013 | Kerbside | Diffusion Tube | 92  | N | - | - | - | - | - | 9.9 <sup>2</sup>  | 9.0  |
| TRO-014 | Roadside | Diffusion Tube | 58  | N | - | - | - | - | - | 14.1              | 13.7 |
| TRO-015 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 11.5              | 11.8 |
| TRO-016 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 16.9              | 15.9 |
| TRO-017 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | 21.1              | 16.1 |
| TRO-018 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 23.3 |
| TRO-019 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 14.5 |
| TRO-020 | Kerbside | Diffusion Tube | 67  | N | - | - | - | - | - | -                 | 14.7 |
| TRO-021 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 17.2 |
| TRO-022 | Roadside | Diffusion Tube | 92  | N | - | - | - | - | - | -                 | 19.3 |
| TRO-023 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 19.5 |
| TRO-024 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 29.6 |
| TRO-025 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | -                 | 15.3 |

|         |          |                |     |   |   |   |   |   |   |   |      |
|---------|----------|----------------|-----|---|---|---|---|---|---|---|------|
| TRO-026 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 14.8 |
| TRO-027 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 16.4 |
| TRO-028 | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 13.4 |
| TRO-029 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 14.4 |
| TRO-030 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 13.8 |
| TRO-031 | Roadside | Diffusion Tube | 92  | N | - | - | - | - | - | - | 10.5 |
| TRO-032 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 10.0 |
| TRO-033 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 11.1 |
| TRO-034 | Roadside | Diffusion Tube | 92  | N | - | - | - | - | - | - | 10.3 |
| TRO-035 | Kerbside | Diffusion Tube | 92  | N | - | - | - | - | - | - | 11.1 |
| TRO-036 | Kerbside | Diffusion Tube | 67  | N | - | - | - | - | - | - | 11.3 |
| TRO-037 | Roadside | Diffusion Tube | 25  | N | - | - | - | - | - | - | 4.1  |
| TRO-038 | Kerbside | Diffusion Tube | 92  | N | - | - | - | - | - | - | 11.8 |
| TRO-039 | Kerbside | Diffusion Tube | 83  | N | - | - | - | - | - | - | 13.4 |
| TRO-040 | Kerbside | Diffusion Tube | 75  | N | - | - | - | - | - | - | 13.2 |
| TRO-041 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 11.5 |
| TRO-042 | Kerbside | Diffusion Tube | 83  | N | - | - | - | - | - | - | 13.4 |

|         |          |                |     |   |   |   |   |   |   |   |      |
|---------|----------|----------------|-----|---|---|---|---|---|---|---|------|
| TRO-043 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 7.9  |
| TRO-044 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 8.0  |
| TRO-045 | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 10.7 |
| GW-001  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 12.9 |
| GW-002  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 11.8 |
| GW-003  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 11.7 |
| GW-004  | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 22.4 |
| GW-005  | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 17.8 |
| GW-006  | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 19.6 |
| GW-007  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 10.0 |
| GW-008  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 17.9 |
| GW-009  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 18.4 |
| GW-010  | Roadside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 19.0 |
| GW-011  | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 22.5 |
| GW-012  | Kerbside | Diffusion Tube | 100 | N | - | - | - | - | - | - | 23.5 |

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

**Table 6 - Automatic Annual Mean NO<sub>2</sub> Monitoring Results (µg/m<sup>3</sup>)**

| Site Name             | Site Type        | Within AQMA? | Valid Data Capture 2021 % | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2017 | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2018 | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2019 | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2020 | NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2021 |
|-----------------------|------------------|--------------|---------------------------|---|---|---|---|---|
| City Centre AURN      | Urban Background | N            | 93                        | 20  | 18  | 12  | 16  | 16  |
| Newport Road AURN     | Roadside         | N            | 99                        | -   | -   | 29  | 19  | 22  |
| Cardiff Castle Street | Roadside         | Y            | 100                       | -   | -   | -   | -   | 25  |

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.



NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

**Table 7 - AQMesh Indicative Annual Mean NO<sub>2</sub> Monitoring Results**

| <b>AQMesh Site Name</b> | <b>Valid Data Capture 2021 %</b> | <b>NO<sub>2</sub> Annual Mean Concentration (µg/m<sup>3</sup>) 2021</b> |
|-------------------------|----------------------------------|---|
| Westgate Street         | 0                                | N/A   |
| Lower Cathedral Road    | 100                              | 19.9  |
| Tudor Street            | 100                              | 20  |
| North Road              | 100                              | 22.1  |
| Penarth Road            | 100                              | 12.7  |
| Lansdowne Road, Canton  | 54                               | 25.6  |
| Llandaff AQMA           | 11                               | 12  |

**Notes:**

AQMesh automatic monitors provide indicative data

Figure 16 – Trends in Non-Automatic Annual Mean NO<sub>2</sub> Concentrations in Cardiff City Centre AQMA

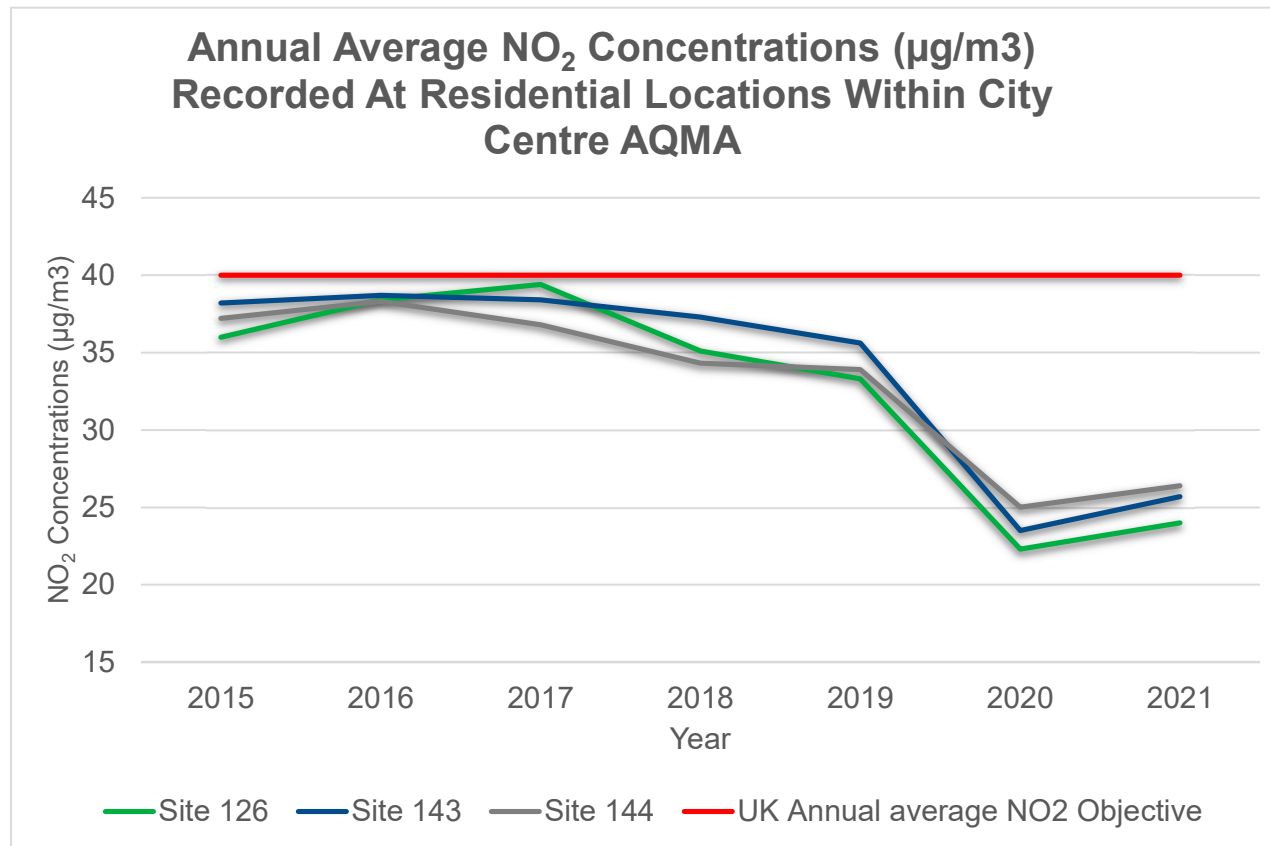


Figure 16 shows compliance with the Annual Air Quality Objective for NO<sub>2</sub> in 2021 within the Cardiff City Centre AQMA. An increase of up to 8% in NO<sub>2</sub> concentrations compared to 2020 was experienced at residential locations. In 2021 a reduction of 27% in NO<sub>2</sub> concentrations is seen, compared to pre-Covid 2019.

Figure 17 – Trends in Non-Automatic Annual Mean NO<sub>2</sub> Concentrations at Kerbside Locations Within Cardiff City Centre AQMA

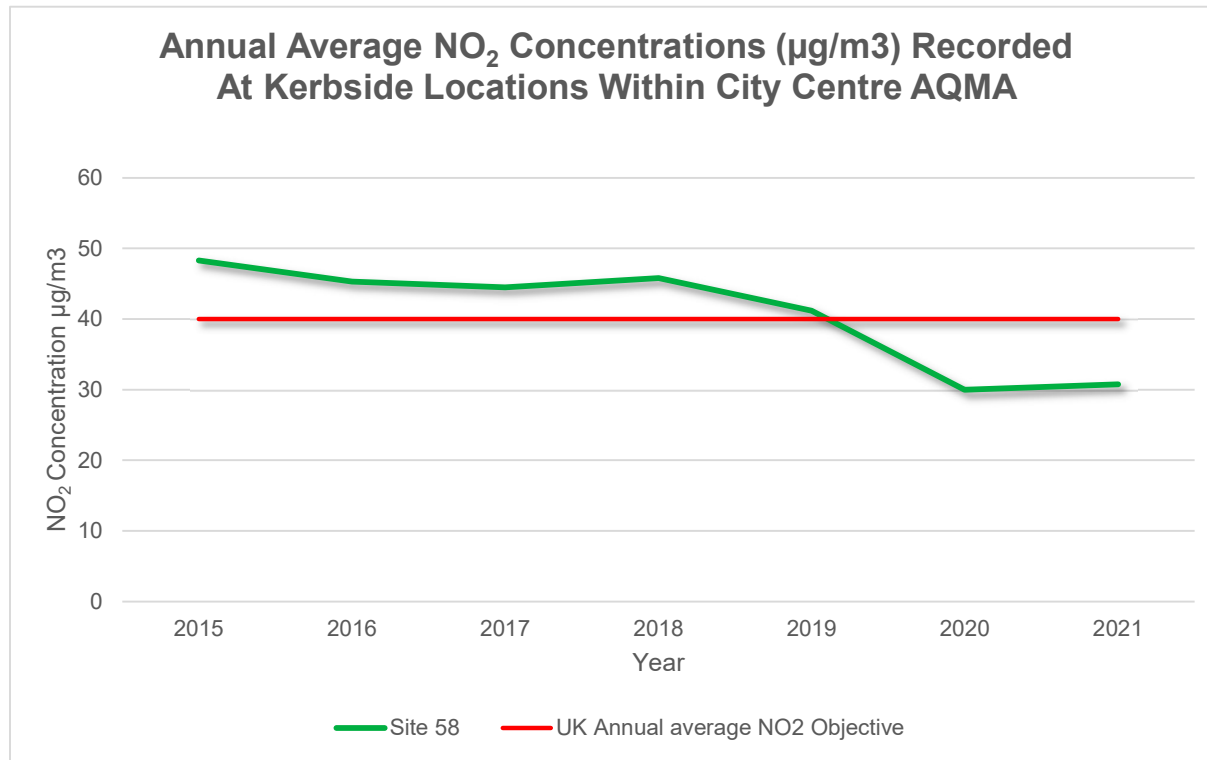


Figure 16 displays compliance in 2021 with the Annual Air Quality Objective for NO<sub>2</sub> within the Cardiff City Centre AQMA kerbside locations.

Figure 18 - Trends in Non-Automatic Annual Mean NO<sub>2</sub> Concentrations Ely Bridge AQMA

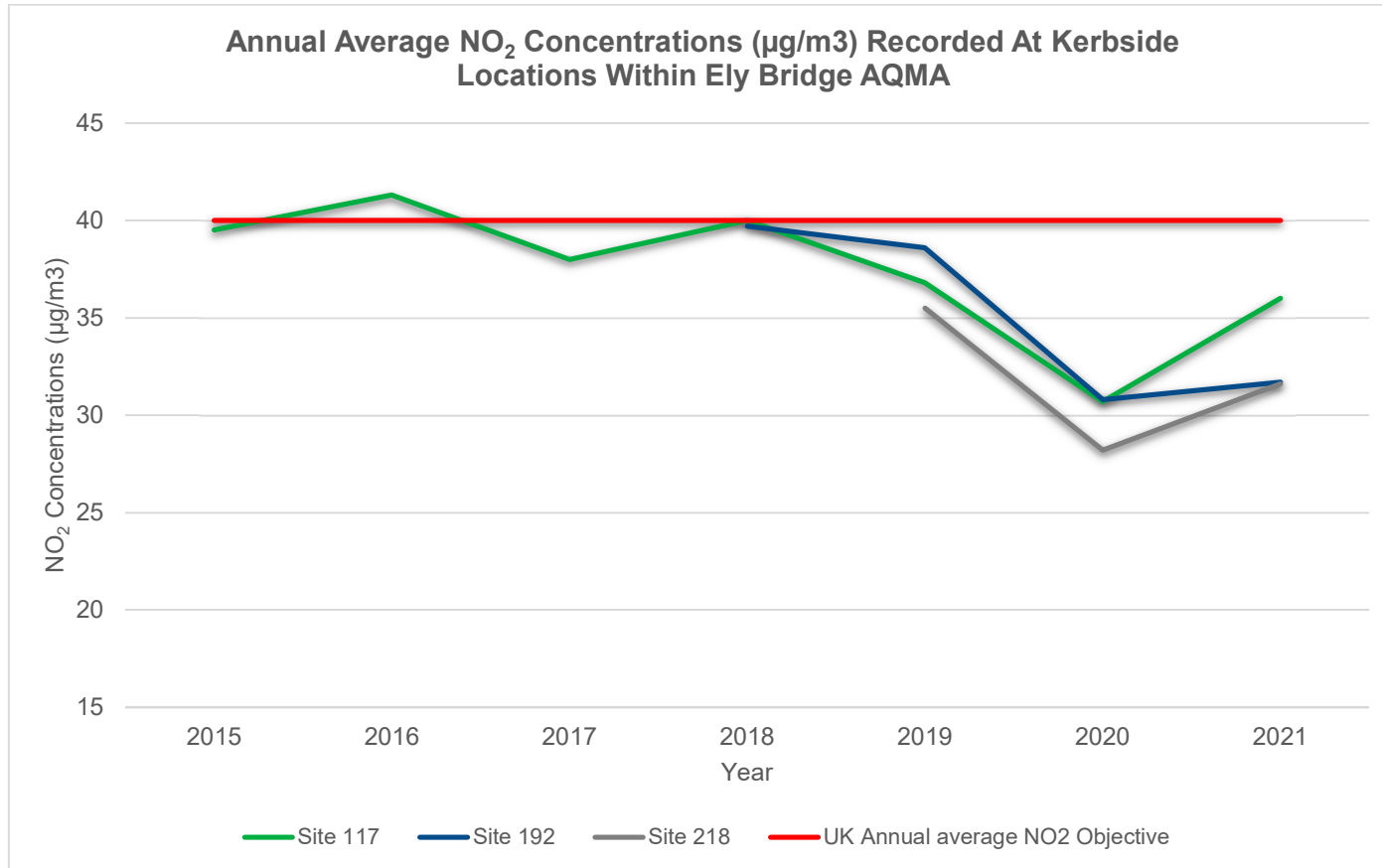


Figure 18 displays compliance with the Annual Air Quality Objective for NO<sub>2</sub> in 2021 within the Ely Bridge AQMA. An increase of up to 14% in NO<sub>2</sub> concentrations were experienced at residential locations compared to 2020.

**Figure 19 - Trends in Non-Automatic Annual Mean NO<sub>2</sub> Concentrations Llandaff AQMA**

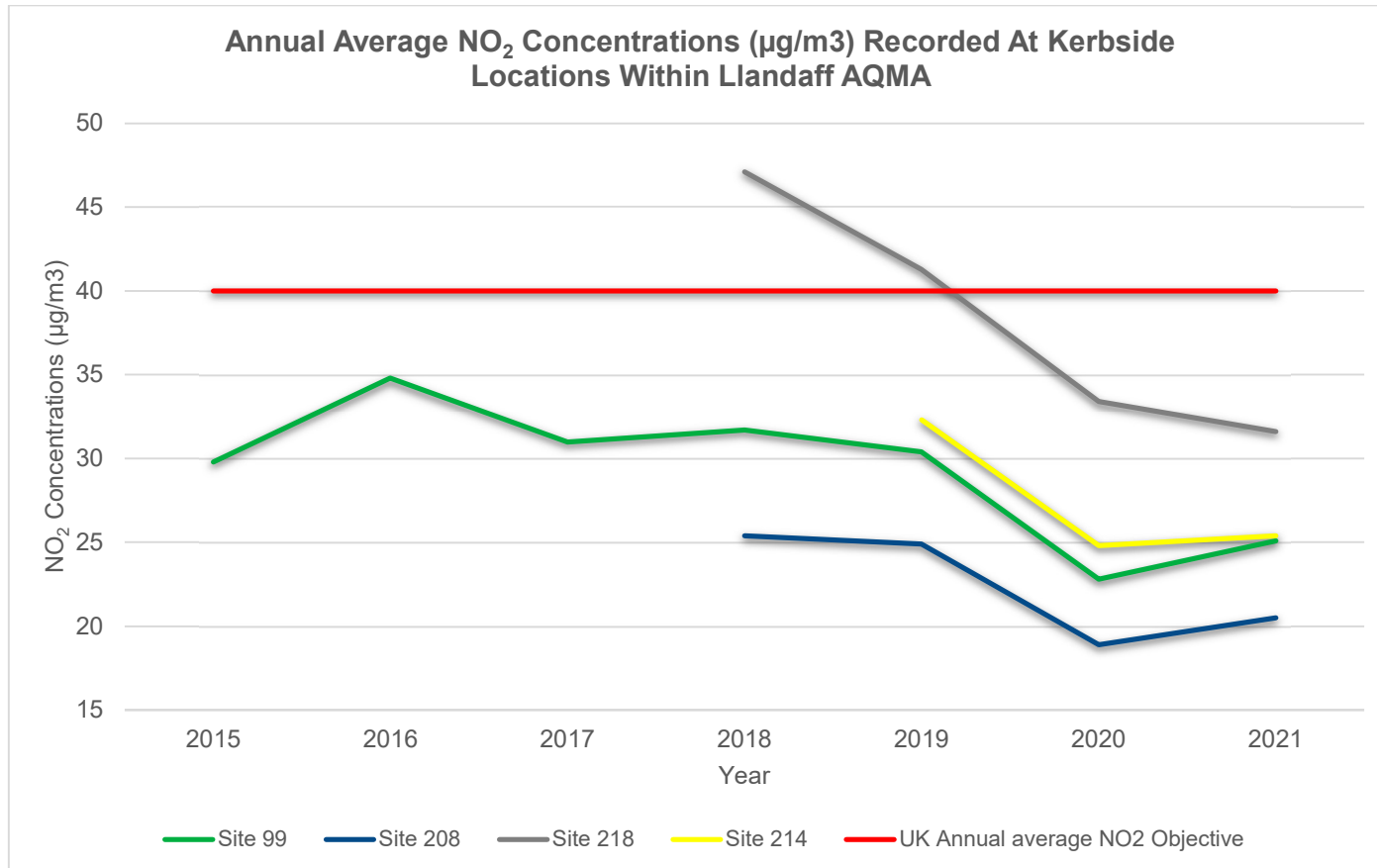


Figure 19 displays compliance in 2021 with the Annual Air Quality Objective for NO<sub>2</sub> within the Llandaff AQMA and a overall decreasing trend in NO<sub>2</sub> concentrations.

**Figure 20 – Trends Non-Automatic Annual Mean NO<sub>2</sub> Concentrations Stephenson Court AQMA**

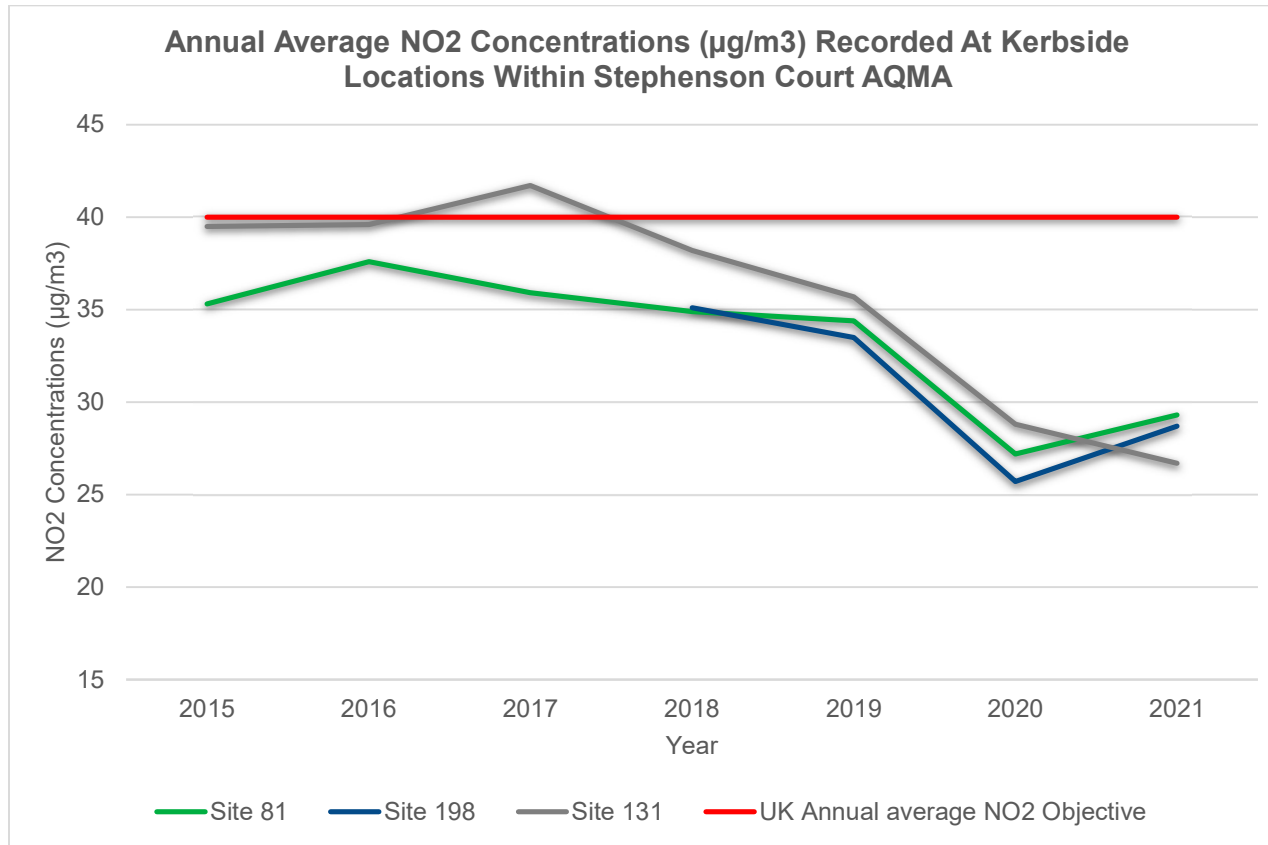


Figure 20 displays compliance in 2021 with the Annual Air Quality Objective for NO<sub>2</sub> within the Stephenson Court AQMA. A decreasing trend in NO<sub>2</sub> concentrations since 2017 can be observed.

Figure 21 - Trends in Automatic Annual Mean NO<sub>2</sub> Concentrations Cardiff City Centre AURN

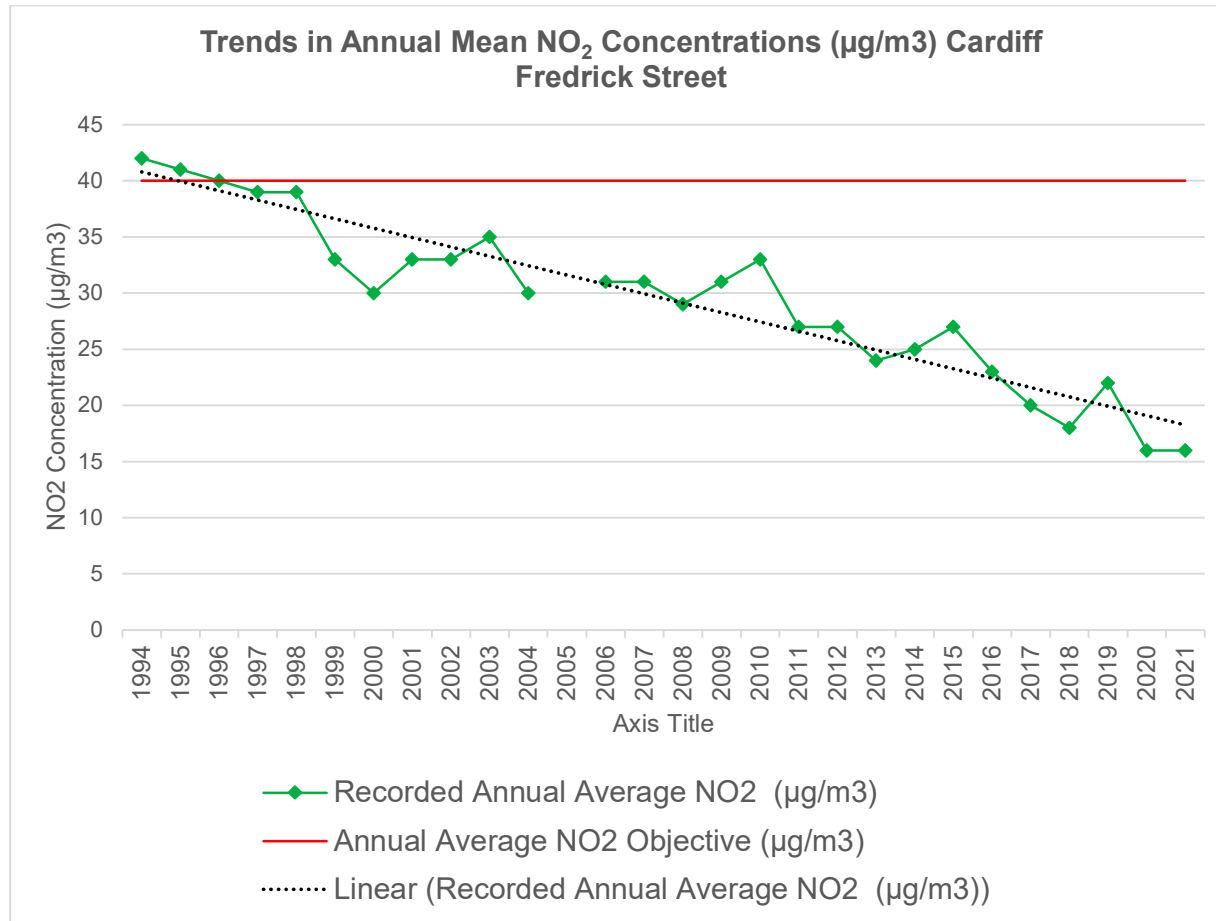


Figure 21 displays a decreasing trend in NO<sub>2</sub> concentrations experienced at the Cardiff City Centre AURN site.



**Figure 22 - Trends in Automatic Annual Mean NO<sub>2</sub> Concentrations Newport Road AURN**

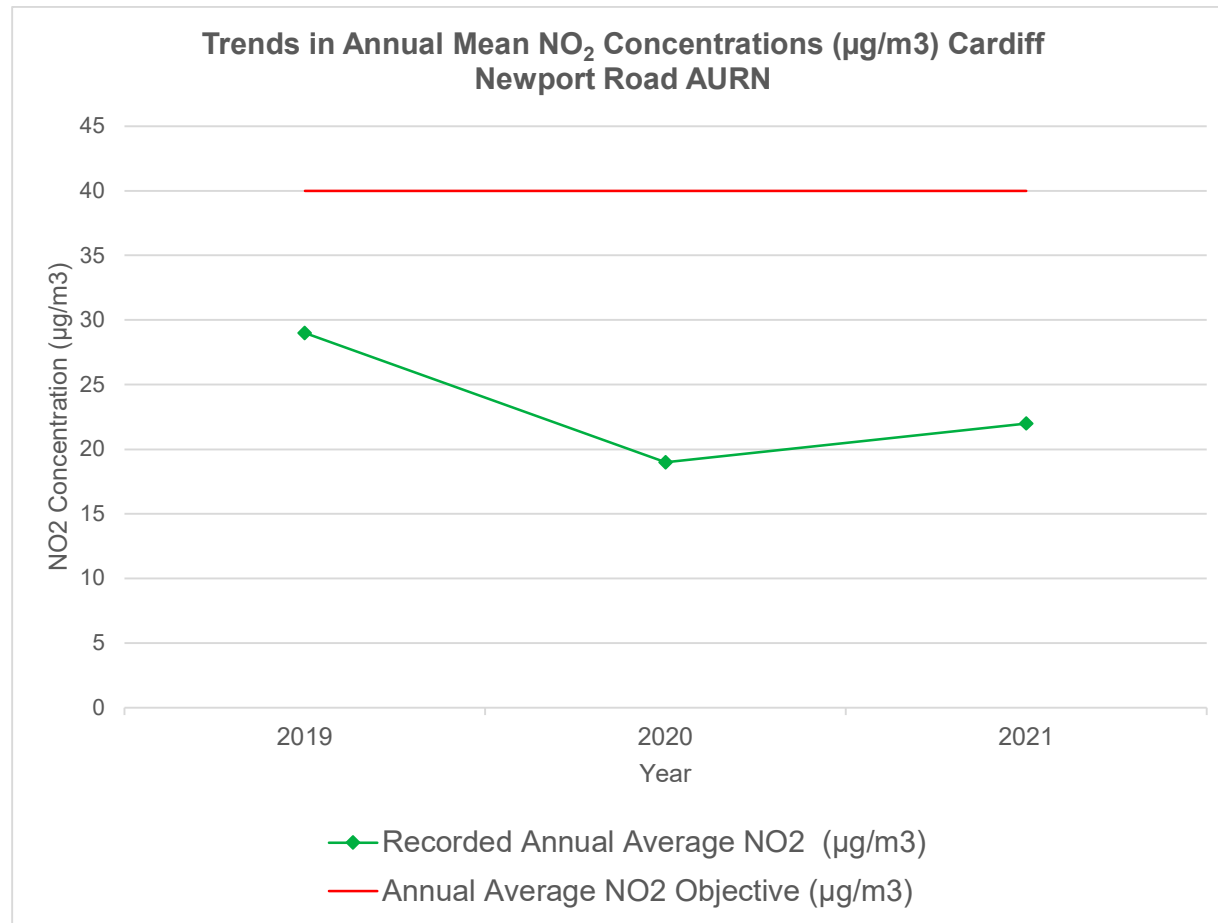


Figure 22 displays compliance with the Annual Air Quality Objective for NO<sub>2</sub> since 2019.

Table 8 - 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>

| Site Name             | Valid Data Capture 2021 % | Number of Hourly NO <sub>2</sub> Means (> 200µg/m <sup>3</sup> ) |      |      |
|-----------------------|---------------------------|--|------|------|
|                       |                           | 2019   | 2020 | 2021 |
| City Centre AURN      | 93                        | 0  | 0    | 0    |
| Newport Road AURN     | 99                        | 0  | 0    | 0    |
| Cardiff Castle Street | 100                       | -  | -    | 0    |

**Notes:**

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).

Table 9 - Non-Automatic Annual Mean PM<sub>10</sub> Monitoring Results (µg/m<sup>3</sup>)

| Site Name             | Valid Data Capture 2021 % | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2017 | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2018 | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2019 | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2020 | PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2021 |
|-----------------------|---------------------------|--|--|--|--|--|
| City Centre AURN      | 97                        | 16   | 17   | 23   | 14   | 13   |
| Newport Road AURN     | 97                        | -  | -  | 19   | 17   | 17   |
| Cardiff Castle Street | 98                        | -  | -  | -  | -  | 12   |

**Notes:**

Exceedances of the PM<sub>10</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

**Table 10 - AQMesh Indicative Annual Mean PM<sub>10</sub> Monitoring Results**

| <b>AQMesh Site Name</b> | <b>Valid Data Capture 2021 %</b> | <b>PM<sub>10</sub> Annual Mean Concentration (µg/m<sup>3</sup>) 2021</b> |
|-------------------------|----------------------------------|--|
| Westgate Street         | 0                                | N/A  |
| Lower Cathedral Road    | 100                              | 11.1   |
| Tudor Street            | 100                              | 13.9   |
| North Road              | 100                              | 9.5  |
| Penarth Road            | 100                              | 11.5   |
| Lansdowne Road, Canton  | 54                               | 16.6   |
| Llandaff AQMA           | 11                               | 9.3  |

**Notes:**

AQMesh automatic monitors provide indicative data

Figure 23 – Trends in Annual Mean PM<sub>10</sub> Concentrations Cardiff City Centre AURN

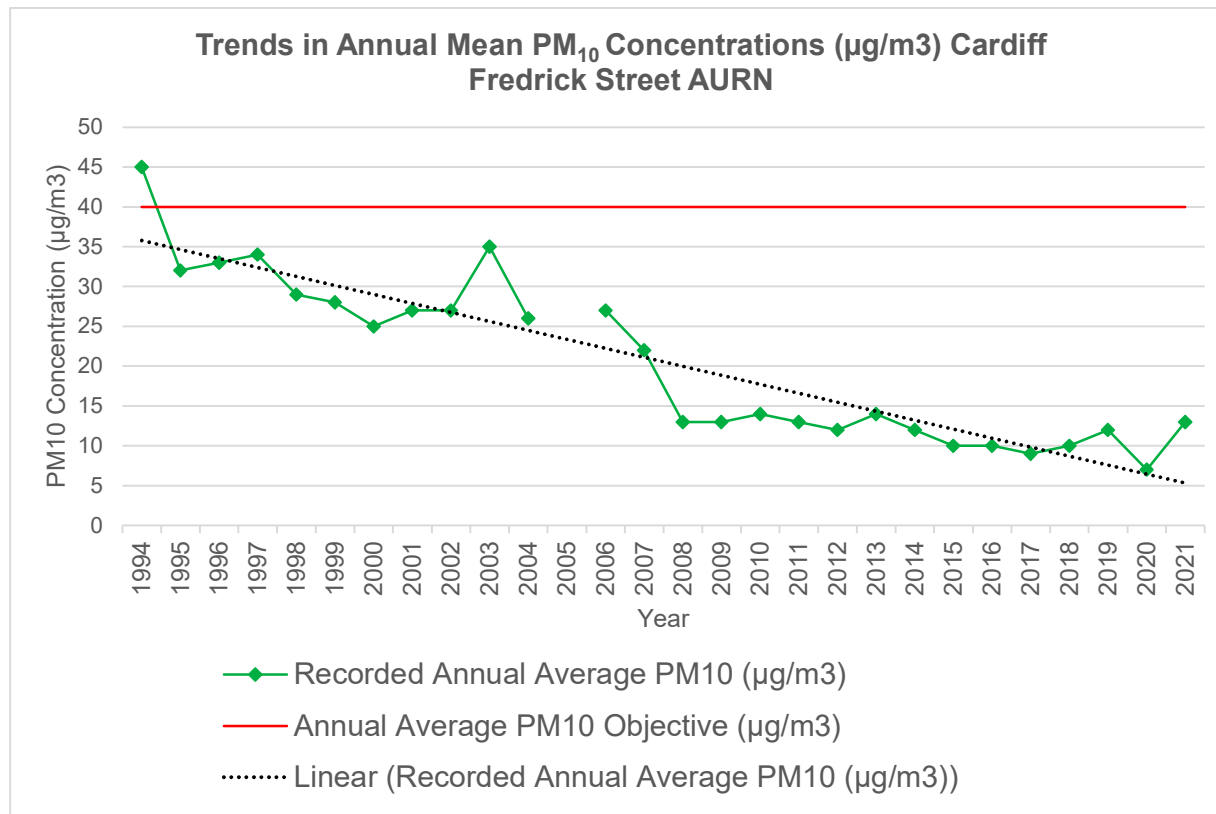


Figure 23 displays an overall decreasing trend in PM<sub>10</sub> concentrations at Cardiff City Centre AURN

**Figure 24 - Trends in Annual Mean PM<sub>10</sub> Concentrations Newport Road AURN**

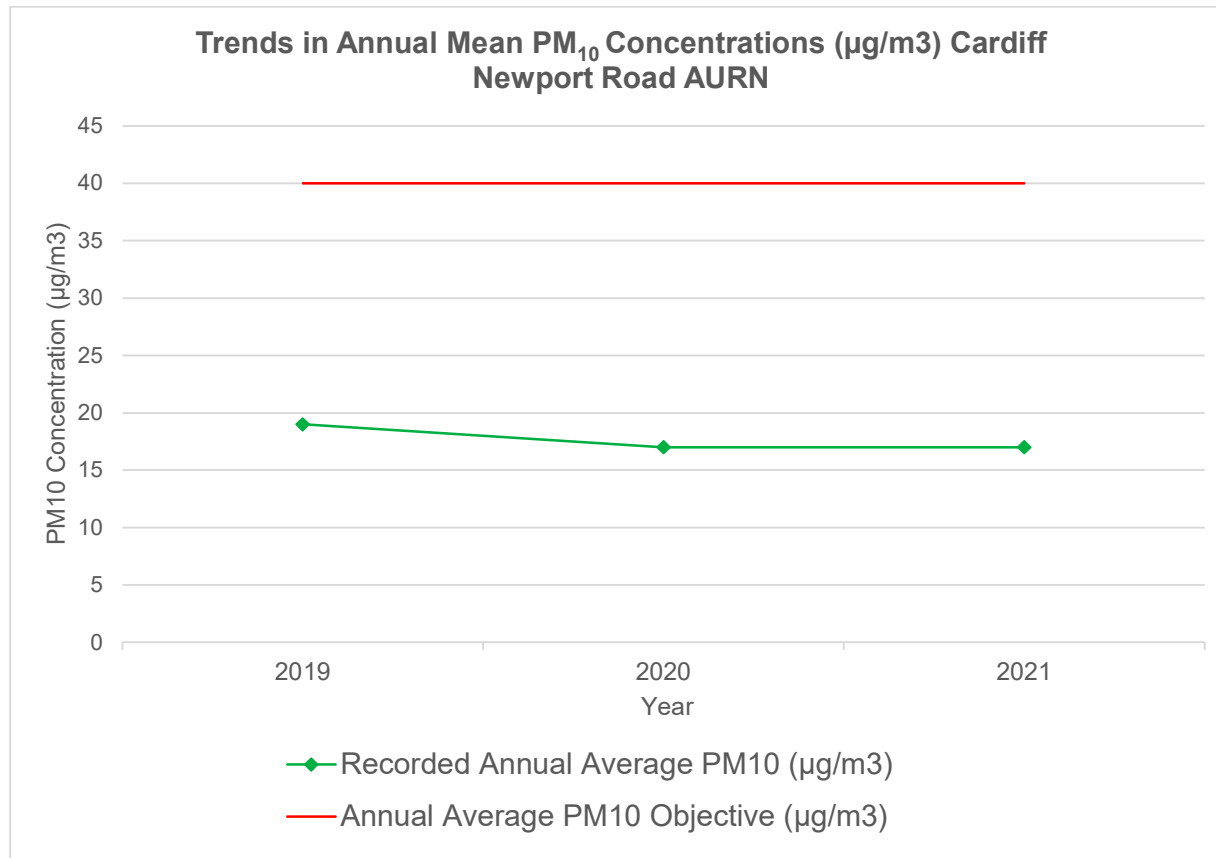


Figure 24 displays compliance with the Annual Air Quality Objective for PM<sub>10</sub> at the Newport Road AURN site since 2019.

**Table 11 - 24-Hour Mean PM<sub>10</sub> Monitoring Results, Number of PM<sub>10</sub> 24-Hour Means > 50µg/m<sup>3</sup>**

| Site Name             | Valid Data Capture 2021 % | PM <sub>10</sub> 24 Hour Objective (50 µg/m <sup>3</sup> ) Exceedances |      |      |
|-----------------------|---------------------------|--|------|------|
|                       |                           | 2019   | 2020 | 2021 |
| City Centre AURN      | 97                        | 0  | 0    | 0    |
| Newport Road AURN     | 97                        | 0  | 0    | 0    |
| Cardiff Castle Street | 98                        | -  | -    | 0    |

**Notes:**

Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4<sup>th</sup> percentile of 24-hour means is provided in brackets.

(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%).

**Table 12 – Automatic Annual Mean PM<sub>2.5</sub> Monitoring Results**

| Site Name             | Valid Data Capture 2021 % | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2020 | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2021 |
|-----------------------|---------------------------|---|---|
| Cardiff Castle Street | 91                        | 9   | 9   |

**Notes:**

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).



Table 13 - AQMesh Indicative Annual Mean PM<sub>2.5</sub> Data

| AQMesh Site Name       | Valid Data Capture 2021 % | PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) 2021 |
|------------------------|---------------------------|---|
| Westgate Street        | 0                         | N/A   |
| Lower Cathedral Road   | 99                        | 8.5   |
| Tudor Street           | 100                       | 10.7  |
| North Road             | 100                       | 7.8   |
| Penarth Road           | 100                       | 9.5   |
| Lansdowne Road, Canton | 54                        | 11.4  |
| Llandaff AQMA          | 11                        | 20.72   |

**Notes:**

AQMesh automatic monitors provide indicative data

**AQMesh indicative concentrations**

Indicative automatic monitoring was carried out at seven locations in Cardiff. The figures below display annual trend data for nitrogen dioxide and particulate matter for five of these sites. The data from Westgate Street and Llandaff AQMA AQmesh pods are not included due to insufficient data collection for the year due to technical issues.

Figure 25 – Aqmesh Indicative Annual Trend Chart Lower Cathedral Road

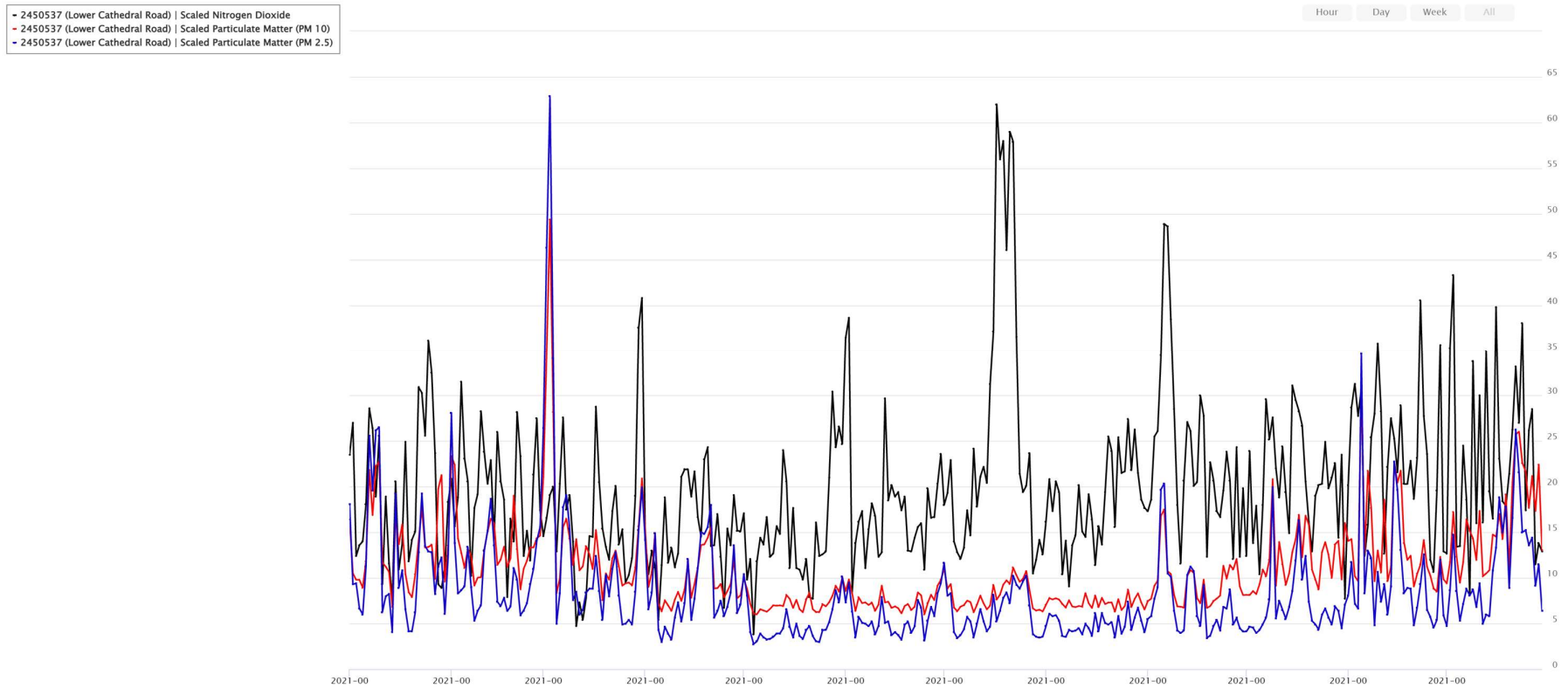
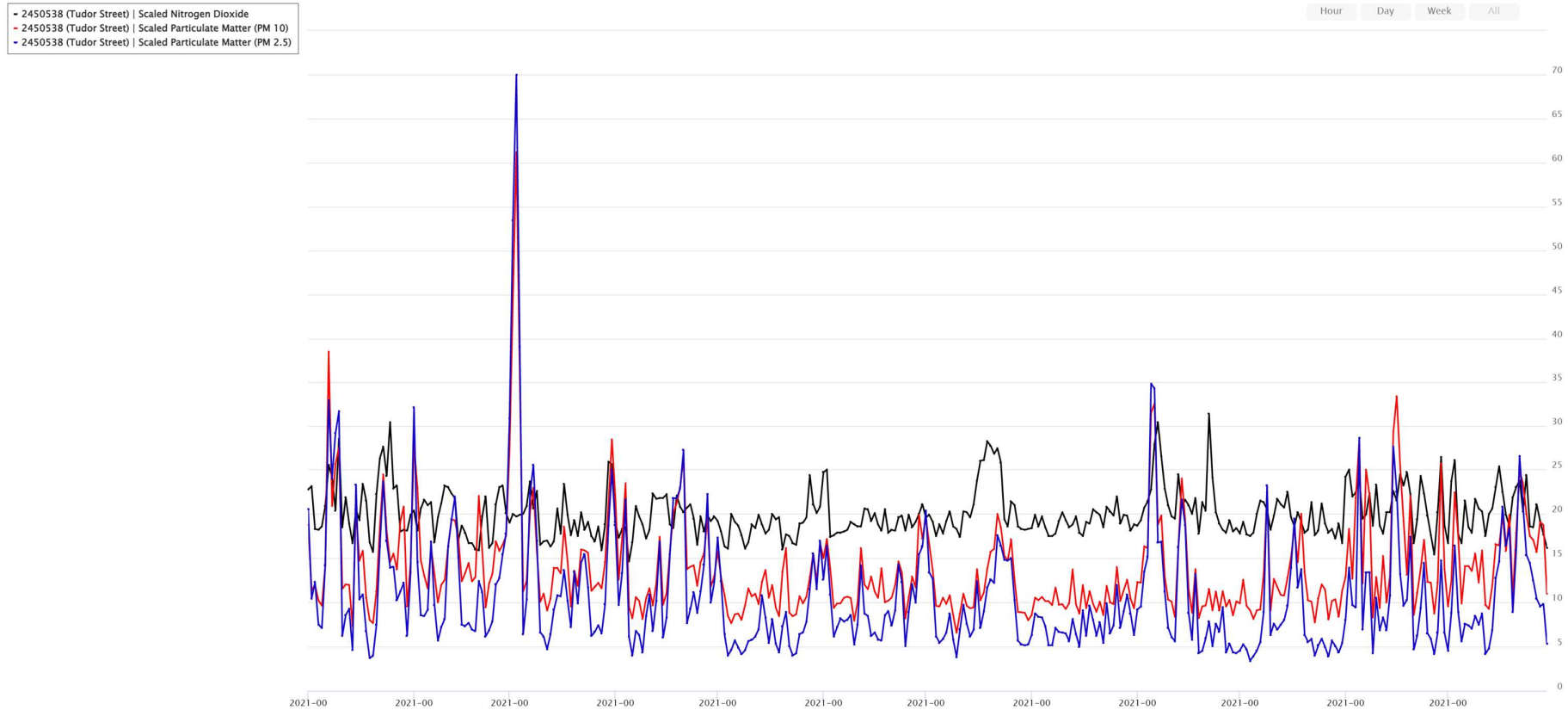


Figure 25 displays data from Lower cathedral Road indicative automatic monitor for 2021.

Figure 26 - AQMesh Indicative Annual Trend Chart Tudor Street



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Figure 26 displays data from Tudor Street indicative automatic monitor for 2021.

Figure 27 - AQMesh Indicative Annual Mean Trend Chart North Road

- 2450539 (North Road) | Scaled Nitrogen Dioxide  
- 2450539 (North Road) | Scaled Particulate Matter (PM 10)  
- 2450539 (North Road) | Scaled Particulate Matter (PM 2.5)

Hour Day Week All

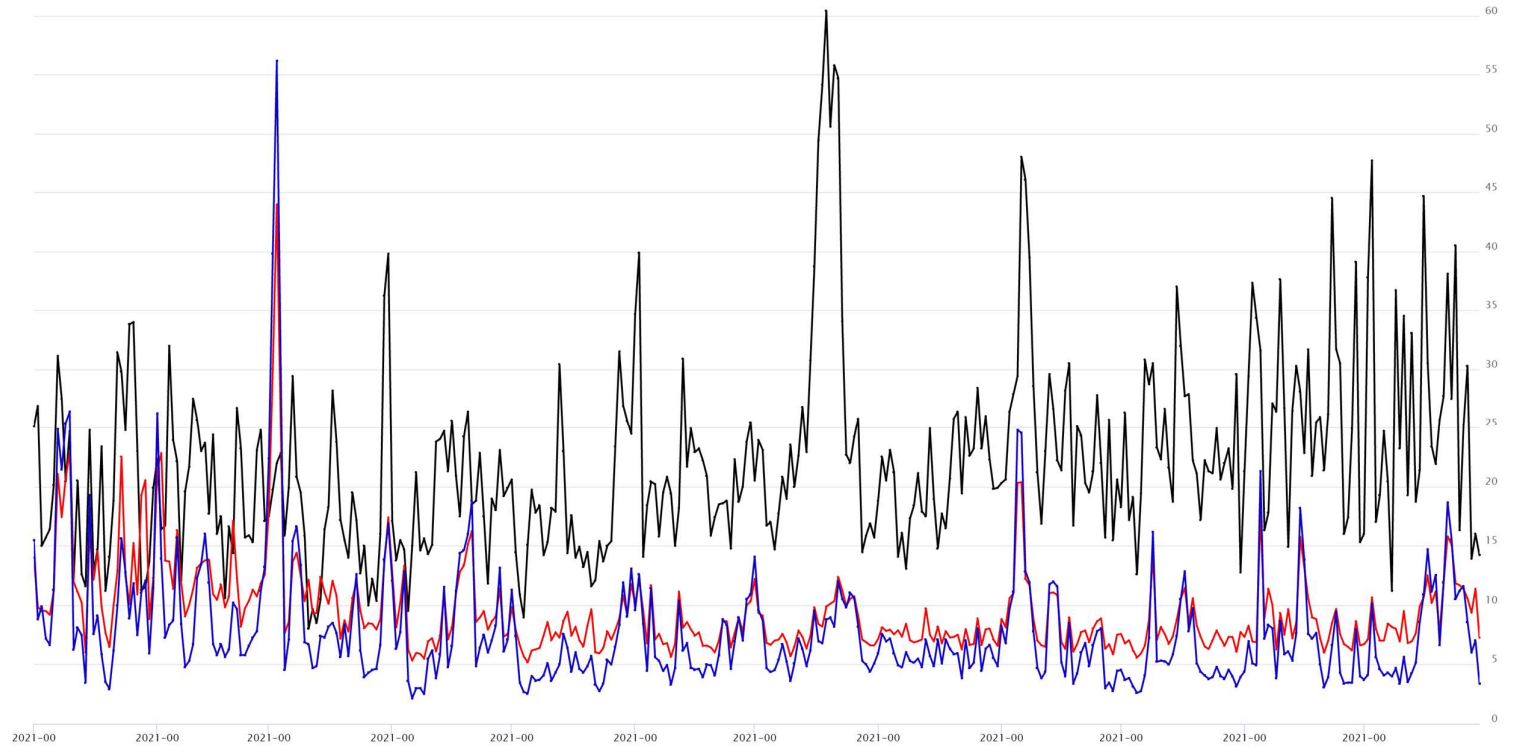


Figure 27 displays data from North Road indicative automatic monitor for 2021.

Figure 28 - AQMesh Indicative Annual Trend Chart Penarth Road

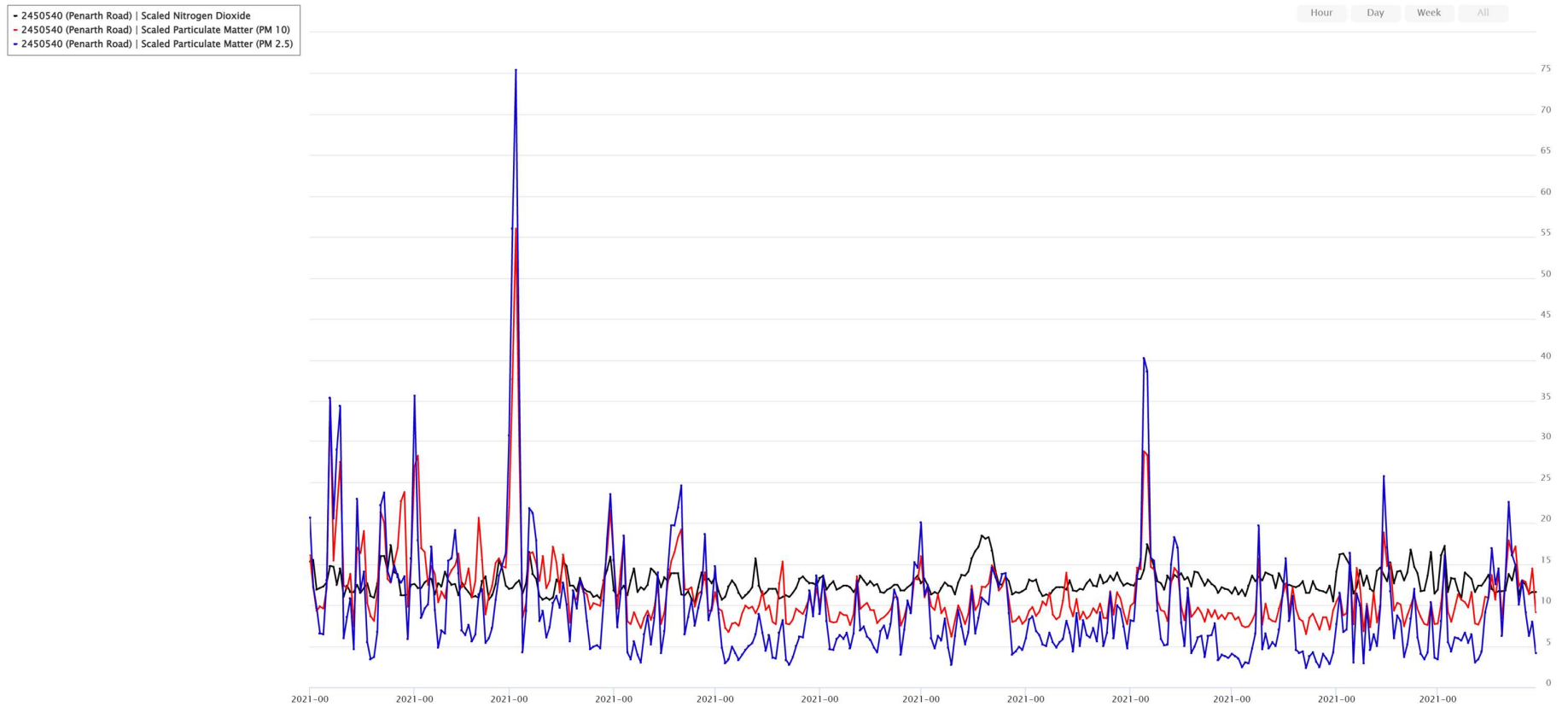
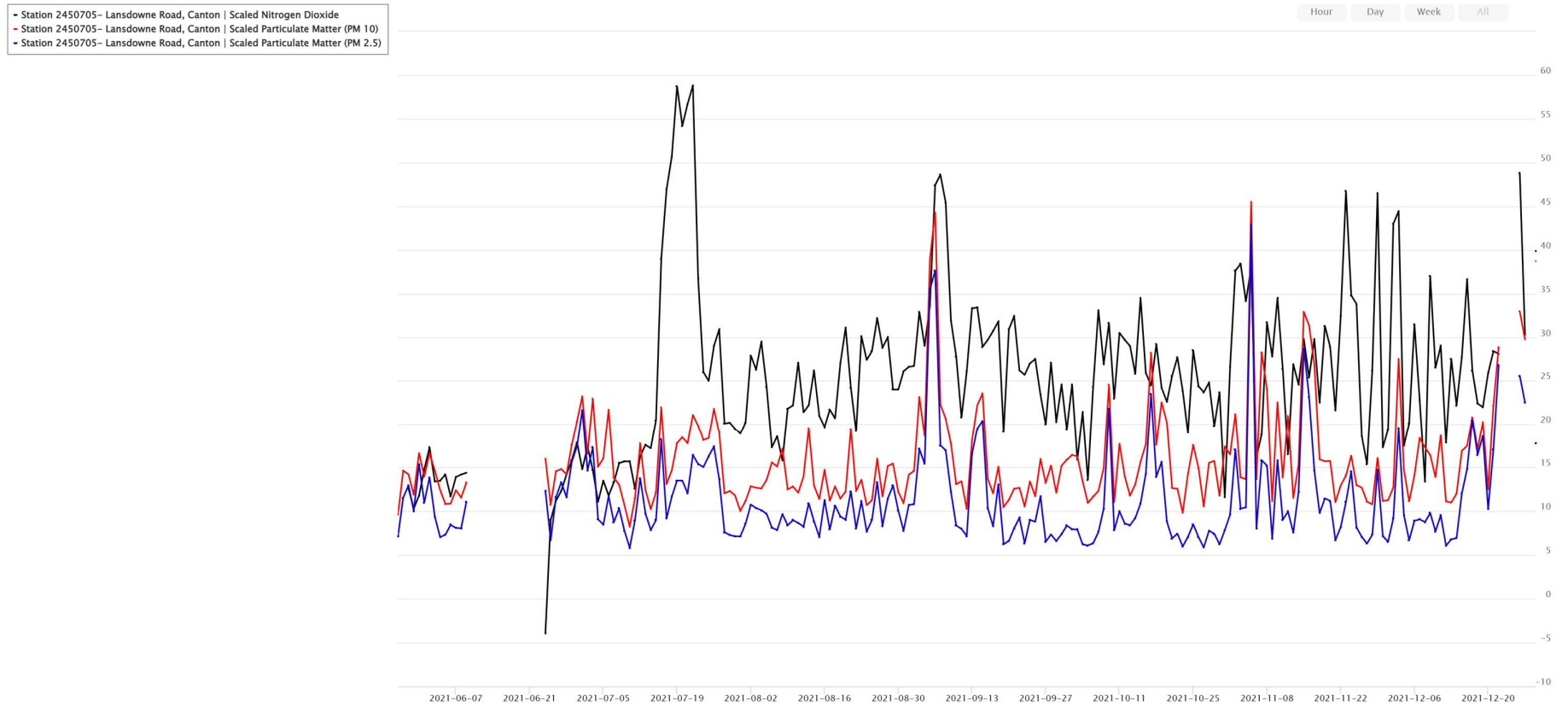


Figure 28 displays data from Penarth Road indicative automatic monitor for 2021.

Figure 29 - AQMesh Indication Annual Trend Chart Lansdowne Road, Canton



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Figure 29 displays data from Lansdowne Road indicative automatic monitor in 2021.

## 2.3 Comparison of 2021 Monitoring Results with Previous Years and the Air Quality Objectives

During 2021 monitoring was carried out for nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub>), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO) and ozone (O<sub>3</sub>). There was no monitoring undertaken for benzene or 1-3-butadiene in line with the requirements of the LAQM regime in Wales.

### 2.3.1 Nitrogen Dioxide (NO<sub>2</sub>)

Nitrogen dioxide was measured during 2021 at three sites equipped with an automatic NO<sub>x</sub> analyser and by a network of 96 diffusion tubes. NO<sub>2</sub> was also measured by seven indicative automatic monitors in various locations.

In order to ratify the 2021 diffusion tube dataset, a bias adjustment factor of 0.78 was applied to the annual average readings. The factor was derived from the Defra website which gave the average correction factor from 24 co-location studies across the UK, whereby the analytical laboratory and method used was the same as CC. The national bias correction factor was utilized as it would provide results representative of a worst-case scenario. The bias correction factor of 0.78 was obtained from the following website: <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

There were no exceedances in either the annual or short-term Air Quality Objectives for NO<sub>2</sub> at any automatic and non-automatic monitoring site during 2021. During 2020, due to COVID-19 restrictions resulting in decreased traffic numbers on our road, reductions in NO<sub>2</sub> concentrations were seen at most monitoring sites. Results from 2021 shows slightly increased NO<sub>2</sub> concentrations compared to 2020, but still maintain a reduction compared to 2019 pre-Covid.

### 2.3.2 Particulate Matter (PM<sub>10</sub>)

As described in previous sections, monitoring of PM<sub>10</sub> has been carried out at the Cardiff Centre AURN, Newport Road AURN and Cardiff Castle Street monitoring sites. Summary data is given in Tables 9 and 11. The results of the monitoring indicate that recorded PM<sub>10</sub> concentrations at these monitoring stations are compliant with both the annual mean (40µg/m<sup>3</sup>) and 24-hour mean (>50 µg/m<sup>3</sup> not to be exceeded more than 18 times per year) Air Quality Objectives set for PM<sub>10</sub>.



### 2.3.3 Particulate Matter (PM<sub>2.5</sub>)

Monitoring for PM<sub>2.5</sub> was carried out at the Cardiff Castle Street monitoring site. Results shown in Table 6 show an annual result of 9 µg/m<sup>3</sup>. There is no formal Air Quality Objective in Wales for PM<sub>2.5</sub>, although this concentration is compliant with the EU target value of 25 µg/m<sup>3</sup>.

### 2.3.4 Other Pollutants Monitored

#### Sulphur Dioxide (SO<sub>2</sub>)

Sulphur dioxide was measured at the Cardiff Centre AURN automatic monitoring site during 2021. The site is classified as “Urban Background” and is a relevant location for the 15-minute and 1-hour Objectives. There were no exceedences of the set objectives during 2021.

#### Ozone (O<sub>3</sub>)

Ozone monitoring is useful due to its potential correlations with other pollutants. In 2021, ozone was measured at the Cardiff City Centre AURN site. The results are compared with the running 8-hour mean objective as set by the Expert Panel on Air Quality Standards (EPAQs) which states the running 8-hour mean should not exceed 100µg/m<sup>3</sup> on more than 10 days per year. There were no exceedences of the ozone objective in Cardiff in 2021.

#### Carbon Monoxide (CO)

Carbon monoxide was also monitored at Cardiff City AURN site during 2021. There were no exceedences of the Air Quality Strategy Objective for (CO) 8-hour running mean > 10 mg/m<sup>3</sup> during this period.

## 2.4 Summary of Compliance with AQS Objectives as of 2021

Shared Regulatory Services on behalf of Cardiff Council have examined the results from monitoring in all non AQMA locations. Concentrations are all below the Objectives, therefore no further action is required.

Results from monitoring in AQMA locations show concentrations, although improving, are still relatively close to the Air Quality Objectives at some monitoring points. Therefore, these AQMAs will remain under review.

## 3 New Local Developments

### 3.1 Planning Applications

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

The following developments may either be of significance in respect of local air quality or be a proposed development where air quality is a consideration.

#### **20/01110/MJR Velindre construction access**

Application was received for the temporary construction access route for the construction of the approved Velindre Cancer Centre, for a period of no more than 48 months following the completion of the related highway improvement works.

A revised air quality assessment (AQA) was undertaken as part of this application to ascertain the likely air quality impacts associated with the amended proposal through its construction phase. The results from the assessment show that the changes in construction traffic on Pendwyallt Road and Park Road from using this access route is expected to have a negligible air quality impact on nearby sensitive human health or ecological receptors. The predicted concentrations of pollutants at receptors also remain well below the air quality objectives and therefore the air quality impacts associated with the southern access route are considered to be not significant in accordance with guidance set out by EPUK and IAQM.

As such no specific planning condition was initially requested for further mitigation in terms of air quality impacts. However the planning committee, took into consideration a number of concerns raised by local residents placed the following condition on the approval notice dated 2<sup>nd</sup> February 2021:

Condition 11: Prior to commencement of the development hereby approved details of an air monitoring unit and its location shall be submitted to and approved in writing with the Local Planning Authority. The monitoring unit shall be implemented in accordance with the approved details and remain operational until cessation of the development. Data from the air monitoring unit shall be provided to the Local Planning Authority on request.

Reason: To monitor air quality in accordance with Policy EN13 of the adopted Cardiff Local Plan (2006-2026).

The developer's appointed consultants have now installed automatic air monitoring units at various locations along the access road measuring nitrogen dioxide and particulate matter as well as implementation of a diffusion tube monitoring program. Monthly reports are issued displaying data collected in this area and can be found at the following link, <https://velindre.nhs.wales/transforming-cancer-services/news/tcs-news/air-quality/air-quality-documents/>.

**21/01666/MJR Land at Channel View Road, Grangetown, Cardiff**

*HYBRID APPLICATION FOR MIXED-USE DEVELOPMENT. OUTLINE PERMISSION FOR: THE REDEVELOPMENT AND EXTENSION OF PART OF THE CHANNEL VIEW ESTATE FOR UP TO 319 RESIDENTIAL APARTMENTS AND HOUSES, UP TO 285 SQ.M OF RETAIL FLOORSPACE (USE CLASS A1), COMMUNAL GARDENS INCORPORATING ALLOTMENTS AND PICNIC AREAS, FORMAL AND INFORMAL CHILDREN'S PLAY SPACE, LANDSCAPING, CYCLEPATHS/FOOTPATHS, DRAINAGE INFRASTRUCTURE, ROADS AND PARKING; THE REGENERATION OF THE MARL PUBLIC OPEN SPACE TO INCLUDE NEW/IMPROVED SPORTS PITCHES, CHILDREN'S PLAY SPACE, A NEW 'BEACH', WATER FEATURES, LANDSCAPING, AND CYCLEPATHS/FOOTPATHS; THE PROVISION OF A NEW BUS/CYCLE/PEDESTRIAN LINK BETWEEN CHANNEL VIEW ROAD AND SOUTH CLIVE STREET AND A NEW CYCLE/PEDESTRIAN LINK BETWEEN SOUTH CLIVE STREET AND FERRY ROAD; THE PROVISION OF A NEW PARKING AREA; TOGETHER WITH ASSOCIATED WORKS (ALL MATTERS RESERVED FOR FUTURE CONSIDERATION). FULL PERMISSION IS SOUGHT FOR A FIRST PHASE OF DEVELOPMENT COMPRISING OF NEW TOWER BLOCKS (8-13 STOREYS) PROVIDING 81 OLDER-PERSONS (OVER 55S), COMMUNITY-LIVING ACCOMMODATION UNITS, A 115SQ.M COMMUNITY CAFE, COMMUNAL GARDENS INCORPORATING ALLOTMENTS AND PICNIC AREAS, LANDSCAPING, DRAINAGE INFRASTRUCTURE, FOOTPATHS, ROADS, PARKING AND ASSOCIATED WORKS. | LAND AT CHANNEL VIEW ROAD, GRANGETOWN, CARDIFF.*

A planning application was received for a proposed 319 residential apartments and houses with associated redevelopment in the area. An air quality assessment was submitted for review, and it was determined that during the construction phase, without mitigation measures in place the risk of dust emissions are high at the worst effected receptors. The assessment detailed highly recommended mitigations to reduce or

eliminate dust emissions. With these mitigation measures in place, it was determined the risk of adverse effects due to emissions from the construction phase will not be significant.

For the operational phase of the assessment, detailed modelling has been carried out to assess the impact of air quality on existing and proposed human and ecological receptors within the area of the development. It concluded that in terms of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> exposure, the impact description of effects of changes in traffic flow as a result of the proposed development is determined to be 'negligible' at all existing receptors, and no mitigation measures are required. This application is awaiting decision.

**21/02687 Red dragon centre and County Hall, Atlantic Wharf,Cardiff**

*HYBRID PLANNING APPLICATION FOR THE PROPOSED DEVELOPMENT OF PART OF A MIXED USE MASTERPLAN WITHIN THE INNER HARBOUR, CARDIFF BAY. INCLUDING OUTLINE DETAILS FOR UP TO 890NO. RESIDENTIAL DWELLINGS (USE CLASS C3), 1,090NO. HOTEL BED SPACES (USE CLASS C1), 19,500SQM OF EMPLOYMENT FLOORSPACE (USE CLASS B1), 27,500SQM OF LEISURE FLOORSPACE (USE CLASSES D1 AND D2) AND 12,310SQM OF RETAIL FLOORSPACE (USE CLASSES A1 AND A3). PLUS ASSOCIATED PUBLIC REALM, OPEN SPACE, HARD AND SOFT LANDSCAPING, DRAINAGE, WALKING, CYCLING, CAR PARKING AND OTHER TRANSPORT INFRASTRUCTURE. TOGETHER WITH FULL DETAILS FOR A MULTI-USE, INDOOR ARENA (USE CLASS D2) WITH SUPPORTING USES AND CAFE (USE CLASS A3) A 182NO. BED SPACE HOTEL (USE CLASS C1) PLUS ASSOCIATED PUBLIC REALM, HARD AND SOFT LANDSCAPING, DRAINAGE, WALKING, CYCLING, CAR PARKING AND OTHER TRANSPORT INFRASTRUCTURE.*

A planning application was submitted detailing the above. An Air Quality Assessment (AQA) was carried out to assess the impact of the proposed development during construction and operational phases.

The significance of the overall effects of the Proposed Development has been assessed for baseline conditions only at this time. This assessment is based on professional judgement and takes into account a number of factors, including:

- Baseline pollutant concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> in 2019, 2025 and 2032 are below the relevant objectives and limit values at all existing receptors considered, with the exception of one exceedance for NO<sub>2</sub> at one specific modelled receptor (ESR 8) in 2019, which is predicted to be well below the objective level in 2025 and 2032;

- Impacts on concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are expected to be 'negligible' in all scenarios, with the exception of a 'slight beneficial' impact on NO<sub>2</sub> concentrations at ESR 1 in both the 2025 Opening Year and 2032 Future Year, which is a result of the proposed closure of Hemingway Road when the development is in place; and
- Concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are predicted to be below the objective and target levels at assessed Proposed Sensitive Receptor Locations representing the planned residential and hotel uses within the site.

It is considered that, with the application of mitigation measures during the construction phase as outlined within the AQA, the potential for generation of nuisance dust and particulate matter will be greatly reduced, and any residual effect will be 'Not Significant'.

Taking into account that there are no predicted exceedances of relevant air quality objectives and target levels and mainly negligible impacts, the residual effect of the proposed development on human receptors during the operational phase is considered to be 'Not Significant'. This application is awaiting decision.

## **3.2 Road Traffic Sources (and Other Transport)**

### **3.2.1 Narrow congested streets with residential properties close to the kerb**

Cardiff Council has considered road traffic sources extensively in both this and each year in earlier reports; the monitoring network is very largely focused on measuring concentrations of nitrogen dioxide close to many of them. These have been discussed either in previous reports or earlier in this report.

There are no newly identified road traffic sources which need to be considered.

For 2021 SRS on behalf of Cardiff Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

### **3.2.2 Busy streets where people may spend one hour or more close to traffic**

Datasets collected from improved monitoring locations along Kingsway/ Duke Street/ Castle Street Link area have been compared to the 1-hour objective set for NO<sub>2</sub> due to the fact each site is known for commercial use at ground floor level. Levels are shown to be compliant with the objective.

An air monitoring station has been operational on Castle Street since December 2020 as part of the Welsh Automated Monitoring Network. Details of this site can be found in Table 3 and <https://airquality.gov.wales/>.

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

### **3.2.3 Roads with high flows of buses or HGVs**

Other than Westgate Street, there are no roads in Cardiff where buses, coaches and HDVs account for >20% of road traffic, where flow of these vehicles is >2500 and there is relevant exposure within 10m of the kerb.

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

### **3.2.4 Junctions**

Junctions have been fully considered in previous annual reviews and assessments.

SRS on behalf of Cardiff Council can confirm that there are no new/newly identified busy junctions/busy roads where exceedances of either the nitrogen dioxide or PM<sub>10</sub> objectives are likely.

### **3.2.5 New roads constructed or proposed since the last assessment**

SRS on behalf of Cardiff Council confirms that there are no new/newly constructed roads since the last assessment.

### **3.2.6 Roads with significantly changed traffic flows**

Ratified traffic data has been examined and there are no roads in Cardiff which have experienced traffic flow (AADT) growth of 25% or more in the preceding three years.

There is increasing evidence from the traffic measurements both locally and regionally to suggest that, for economic and other reasons, traffic growth on major routes has stopped year-on-year and may even have declined recently. This has, for example, resulted in a number of air quality assessments submitted with planning applications assuming current levels of road traffic as a worst-case scenario.

It should be noted that Cardiff Council is actively implementing its traffic management policy of a 50:50 modal split, i.e. 50% of journeys being made other than by the private car. This is not just for new developments but also for the local road network as a whole.

The Council is currently considering planning applications for significant housing and mixed used developments at a number of “strategic sites” across the city.

SRS on behalf of Cardiff Council can confirm that there are no new/newly identified roads with significantly changed traffic flows.

### **3.2.7 Bus or Coach Stations**

SRS on behalf of Cardiff Council can confirm that there are no new/newly identified bus or coach stations since the last assessment.

Work at the Central Square Transport Interchange is ongoing and is due for completion in 2022.

### **3.2.8 Airports/ Diesel or Steam Trains / Ports and Shipping**

There are no airports in Cardiff. The nearest airport is Cardiff International which is located approximately 15 miles to the west of Cardiff in The Vale of Glamorgan Council's area.

There are no airports planned or proposed within the Council's area.

Cardiff is well-served by passenger rail transport. The main Swansea to London Paddington line is served by Cardiff Central Station. Additionally, there is a network of local-line services running, in the main, to the valleys north of Cardiff. LAQM.TG(22) suggests that SO<sub>2</sub> emissions from diesel locomotives may be significant if there are outdoor locations where locomotives are regularly stationary for more than 15minutes and where members of the public could be regularly exposed over this period at such locations. LAQM.TG(22) also requires consideration exposure to nitrogen dioxide within 30m of certain specified railway lines in those areas where the annual mean background concentration is above 25µgm<sup>-3</sup>

Stationary trains have been considered fully in earlier reports with regard to potential exceedances of the sulphur dioxide objective. No potential exceedances were found, and nothing has changed in this regard since then. There is no need to further assess this source.

It should be recorded that works are now underway in preparation for the electrification of

the main Swansea/Cardiff to London Paddington line. The effects of this on local emissions can be only beneficial.

Discussions with regard to the electrification of the local line network are ongoing.

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

### **3.3 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources**

#### **3.3.1 Industrial installations: new or proposed installations for which an air quality assessment has been carried out.**

SRS on behalf of Cardiff Council can confirm that in 2021 there were no new or proposed industrial installations for which an air quality assessment has been carried out.

#### **3.3.2 Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.**

SRS on behalf of Cardiff Council can confirm that in 2021 there were no existing industrial installations where emissions have increased substantially or a new relevant exposure has been introduced.

#### **3.3.3 Industrial installations: new or significantly changed installations with no previous air quality assessment.**

SRS on behalf of Cardiff Council can confirm that in 2021 there were no new or significantly changed installations with no previous air quality assessment.

#### **3.3.4 Major fuel storage depots storing petrol**

As reported in the 2012 USA, there is one major fuel (petrol) storage depot in Cardiff in Cardiff Docks which was assessed in previous reports. This installation is subject to an EPR Permit and regulated by the Council. Capacity and throughput at this site has not altered significantly for the worse since the last assessment and no new relevant exposure exists.



SRS on behalf of Cardiff Council can confirm that there are major fuel (petrol) storage depots within the Local Authority area, but these have been considered in previous reports.

### **3.3.5 Petrol Stations**

There are no new petrol stations in Cardiff with throughputs greater than 2000m<sup>3</sup> per annum with a busy road nearby where there is relevant exposure within 10m of the pumps.

It is not necessary, therefore, to consider this further.

SRS on behalf of Cardiff Council can confirm that there are no petrol stations meeting the specified criteria.

### **3.3.6 Poultry Farms**

The criteria for assessing poultry farms are set out in Table 7.3, point 4 of TG(22) (Defra, 2022). No farms exceeding the relevant criteria (turkey units with greater than 100,000 birds, naturally ventilated units with greater than 200,000 birds or mechanically ventilated units with greater than 400,000) have been identified.

SRS on behalf of Cardiff Council can confirm that there are no poultry farms meeting the specified criteria.

### **3.3.7 New Developments with Fugitive or Uncontrolled Sources**

There are no new locations where fugitive could occur which have not been covered by previous rounds of review and assessment and no locations where new relevant exposure has been introduced to existing locations.

It is not considered necessary to consider this further at this time.

SRS on behalf of Cardiff Council can confirm that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

## 3.4 Other Sources

### 3.4.1 Domestic Wood Burners

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

It should be noted that the Council receives a number of enquiries each year from residents in respect of national or local requirements were they to wish to install log-burners or similar appliances in their homes. There are no smoke control area in Cardiff and hence no legal requirements with regard to appliances that may be installed.

However, residents are always reminded of the legislation in respect of statutory smoke nuisance and, where they can't be persuaded otherwise for reasons of air quality and health, recommended to seek out an appliance certified for use in a smoke control area.

SRS on behalf of Cardiff Council can confirm that there are no areas of significant domestic fuel use in the Local Authority area.

## **4 Policies and Strategies Affecting Airborne Pollution**

### **4.1 Local / Regional Air Quality Strategy**

#### **4.1.1 Cardiff's Clean Air Strategy and Action Plan**

SRS on behalf of Cardiff Council have coordinated and developed a Clean Air Strategy (CAS) & Action Plan document. The document outlines a citywide approach to mitigate poor air quality in Cardiff and recognises that interventions to address poor air quality cannot be utilised in silo and implemented locally. Therefore citywide measures need to be put into practise to hopefully provide citywide improvements to air quality.

The document fulfils the requirements of the LAQM process to produce an Air Quality Action Plan (AQAP). The document also captures the Direction given to CC in March 2018 by WG for Cardiff to address its air quality concerns along highlighted major road networks

### **4.2 Air Quality Planning Policies**

#### **4.2.1 Cardiff's Local Development Plan 2006-2026**

Cardiff's LDP 2006-2026, forms the basis for decisions on land use planning in Cardiff up to 2026 and assumes that, within the plan's time frame, approximately 40,000 new jobs and 41,100 new dwellings will be developed in Cardiff as a direct response to Cardiff's role as the economic driver of the City- region.

In addition to its independent examination, the LDP was subject to a Strategic Environmental Assessment (SEA) to ensure that the policies reflect sustainability principles and take into account environmental impacts.

Policy KP2 of the LDP allocates 8 Strategic Sites to help meet the need for new dwellings and jobs. These strategic allocations on both greenfield and brownfield sites will include 500 homes or more and/or include significant employment/mixed uses which will bring significant benefits to the city. The sites are:

- (i) Cardiff Central Enterprise Zone;
- (ii) Former Gas Works, Ferry Road;

- (iii) North West Cardiff;
- (iv) North of Junction 33 on the M4;
- (v) South of Creigiau;
- (vi) North East Cardiff (West of Pontprennau);
- (vii) East of Pontprennau Link Road; and
- (viii) South of St. Mellons Business Park – Employment Only.

The LDP identifies that sustainable transportation solutions are required in order to respond to the challenges associated with new development by setting out an approach aimed at minimising car travel, maximising access by sustainable transportation and improving connectivity between Cardiff and the wider region.

The Plan sets out a strategy to achieve this by making the best use of the current network, managing demand and reducing it where possible by widening travel choices. The aim is to secure a modal split of 50% car and 50% non-car modes.

The following LDP policies are of relevance to air quality;

#### **KP8: SUSTAINABLE TRAVEL**

*For Cardiff to accommodate the planned levels of growth, existing and future residents will need to be far less reliant on the private car. Therefore, ensuring that more everyday journeys are undertaken by sustainable modes of transport, walking, cycling and public transport, will be essential.*

Development in Cardiff will be integrated with transport infrastructure and services in order to:

- i. Achieve the target of a 50:50 modal split between journeys by car and journeys by walking, cycling and public transport.
- ii. Reduce travel demand and dependence on the car;
- iii. Enable and maximise use of sustainable and active modes of transport;
- iv. Integrate travel modes;
- v. Provide for people with particular access and mobility requirements;
- vi. Improve safety for all travellers;
- vii. Maintain and improve the efficiency and reliability of the transport network
- viii. Support the movement of freight by rail or water; and
- ix. Manage freight movements by road and minimise their impacts

#### **KP14: HEALTHY LIVING**

*Cardiff will be made a healthier place to live by seeking to reduce health inequalities through encouraging healthy lifestyles, addressing the social determinants of health and providing accessible health care facilities. This will be achieved by supporting*

*developments which provide for active travel, accessible and useable green spaces, including allotments.*

#### **KP18: NATURAL RESOURCES:**

*In the interests of the long-term sustainable development of Cardiff, development proposals must take full account of the need to minimise impacts on the city's natural resources and minimise pollution, in particular the following elements.....minimising air pollution from industrial, domestic and road transportation sources and managing air quality.*

#### **EN13: AIR, NOISE, LIGHT POLLUTION AND LAND CONTAMINATION**

*Development will not be permitted where it would cause or result in unacceptable harm to health, local amenity, the character and quality of the countryside, or interests of nature conservation, landscape or built heritage importance because of air, noise, light pollution or the presence of unacceptable levels of land contamination.*

#### **C6: HEALTH**

*Priority in new developments will be given to reducing health inequalities and encouraging healthy lifestyles through:*

- i. Identifying sites for new health facilities, reflecting the spatial distribution of need, ensuring they are accessible and have the potential to be shared by different service providers; and*
- ii. Ensuring that they provide a physical and built environment that supports interconnectivity, active travel choices, promotes healthy lifestyles and enhances road safety.*

The LDP also outlines the approach the Council will take to increase the proportion of people travelling by sustainable modes and to achieve the 50:50 modal split target.

This will involve:

- enabling people to access employment, essential services and community facilities by walking and cycling through, for example, high quality, sustainable design and measures to minimise vehicle speed

- and give priority to pedestrians and cyclists;
- developing strategic bus and rapid transit corridor enhancements and facilitating their integration with the wider transport network;
- facilitating the transfer between transport modes by, for example, improving existing interchanges and developing new facilities such as strategically located park and ride facilities; and
- maximising provision for sustainable travel within new developments and securing infrastructure investment which can support modal shift within existing settlements.

#### **4.2.2 Replacement LDP**

The Council agreed with Welsh Government in March 2021 a timetable to prepare a Replacement LDP to cover the period 2021 to 2036. The timetable proposes a 3.5 year preparation process with adoption of the Replacement LDP due at the end of 2024.

The first stage in preparation of the Replacement LDP was consultation on the Vision, Issues and Objectives for the plan which was completed in summer 2021. Following this consultation Cabinet and Council agreed a Vision and Objectives for the plan in September 2021. The agreed Vision and Objectives includes a commitment to create healthier environments, reduce inequalities and enhance wellbeing including specifically setting out how air quality can be enhanced. This agreed Vision and Objectives will set the context for the plan as it evolves in more detail through the preparation process over the next few years.

### **4.3 Local Transport Plans and Strategies**

#### **4.3.1 Transport White Paper**

The Transport White Paper was launched on 15 January 2020 and lays out an ambitious 10- year plan to tackle the climate emergency, reduce congestion and improve air quality. It includes proposals for developing the South East Wales Metro, including new Metro lines connecting new and existing communities in the city, Rapid Bus Transport, Active Travel and improvements to our streets and the future of the car, including reducing car ownership through car clubs and greening through the expansion of EV charging infrastructure. Key regional projects are identified, with significant improvements proposed for all the major routes into the city. It also outlines the intention to consider all delivery options and to work with Welsh Government to develop a comprehensive investment plan. The timescale for the White Paper was

amended in line with ongoing developments in relation to the Clean Air Plan to ensure alignment. The document is available at;

<https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/transport-policies-plans/transport-white-paper/Documents/White%20Paper%20for%20Cardiff%20Transport%202019.pdf>

## 4.4 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.

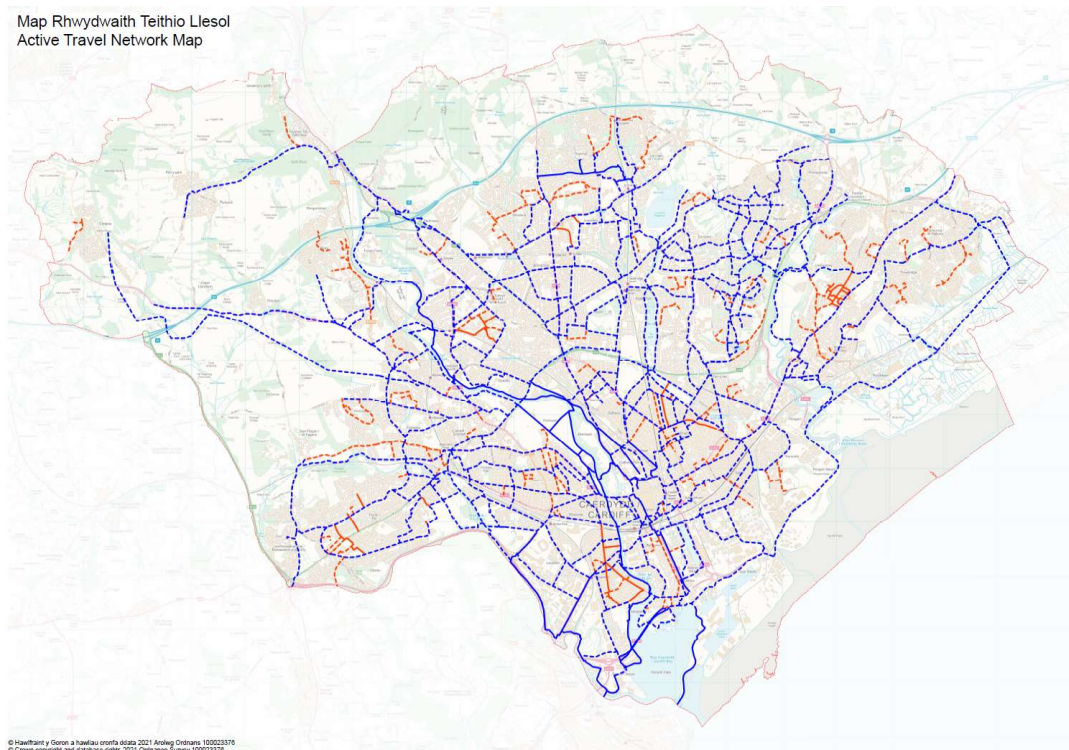
The Cardiff Cycling Strategy sets out an ambitious vision to double the number of cycling trips by 2026, from a 9.2% modal share in 2015 to 18.4% in 2026. In order to achieve this vision, it will be necessary to develop a comprehensive network of cycling infrastructure which is suitable for use by people of all ages and abilities, and to work with key partners from employers, retail and schools to ensure that appropriate cycling facilities are provided at destinations and to promote cycling.

In 2021 the Council commenced a detailed consultation on an updated draft Active Travel Network Map for Cardiff has been developed to take account of:

- Proposals to improve routes for walking and cycling set out in the Transport White Paper, including a network of segregated Cycleway routes;
- Routes required to connect strategic development sites to existing communities and key destinations, including the City Centre and Cardiff Bay; and
- Routes required to access important local destinations across the city, including schools and local shops

Analysis of the feedback received to the Commonplace engagement undertaken between November 2020 and January 2021, which identified additional locations where improvements for walking and/or cycling are required. A 12 week statutory consultation on the draft plan was undertaken by the CC between August and October 2021.

**Figure 30 - Draft Active Travel Network Map**



## 4.5 Local Authorities Well-being Objectives

In 2015 Welsh Government made a new law called the Well-being of Future Generations (WFG) (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. There are seven national well-being goals that form the basis of the Act and five ways of working which support the goals.

CC 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.

#### 4.5.1 Cardiff Well-Being Plan 2018-23

Under the WFG Act the Cardiff Public Services Board (PSB) has produced its Well-Being Plan for 2018- 2023, which sets out the Cardiff PSB's priorities for action over the next 5 years, and beyond. The Plan contains Well-being Objectives, high-level priorities that the Cardiff PSB have identified as being most important. It also contains 'Commitments,' or practical steps that the city's public services, together, will deliver over the next 5 years. The Well-Being Plan has set out Well-Being Objectives as follows:

- **Objective 1** - A Capital City that Works for Wales;
- **Objective 2** - Cardiff grows in a resilient way;
- **Objective 3** - Safe, Confident and Empowered Communities
- **Objective 4** - Cardiff is a great place to grow up;
- **Objective 5** - Supporting People out of poverty;
- **Objective 6** - Cardiff is a great place to grow older; and
- **Objective 7** - Modernising and Integrating Our Public Services

Within the Well-Being Plan Objective 2 details the following; *Cardiff is one of Britain's fastest growing cities, and is by far the fastest growing local authority area in Wales. Successful cities are those in which people want to live and this growth is welcomed and a sure sign of strength for the city. However, this growth will bring challenges too, putting pressure on both the city's physical infrastructures, community cohesion, its natural environment and public services. Managing the impacts of this population growth and of climate change in a resilient and sustainable fashion will be a major long term challenge for Cardiff.*

Improving levels of NO<sub>2</sub> and particulate matter (PM<sub>10</sub>, 2.5) is a City level outcome indicator that the PSB will seek to impact in order to meet this specific Objective. The Plan forecasts a future Cardiff with improved air quality and has committed to taking 'a *city-wide response to air pollution through supporting the development and delivery of a Cardiff Clean Air Strategy.*

## 4.6 Green Infrastructure Plans and Strategies

Outlined in Cardiff's Local Development Plan (LDP) 2006- 2026, Policy **KP16** focuses upon Green infrastructure.

### **Policy KP16 Green Infrastructure**

The policy aims to ensure that Cardiff's green infrastructure assets are strategically planned and delivered through a green infrastructure network. Other policies in the Plan provide more detailed guidance on aspects of these assets, together with supporting SPG.

Where development is permitted, planning conditions and/or obligations will be used to protect or enhance the natural heritage network.

New developments should incorporate new and / or enhanced green infrastructure of an appropriate size, type and standard to ensure no fragmentation or loss of connectivity.

Where the benefits of development outweigh the conservation interest, mitigation and/or compensation measures will be required to offset adverse effects and appropriate planning obligations sought. The implementation of policies designed to provide and protect public open space throughout Cardiff would also serve to offset any increase in recreational pressure on the Cardiff Beech Woods SAC, thereby helping to avoid likely significant effect upon that site.

Management of Cardiff's green infrastructure network should be in place prior to development, and appropriate planning obligations sought. SPG on this topic will more fully outline the extent of Cardiff's green infrastructure and how this policy can be implemented in more detail.

As previously mentioned a new Supplementary Planning Guidance (SPG) concerning Green Infrastructure was approved in 2017 by CC to provide a detailed understanding to the elements raised in the LDP.

- This document provides planning advice on a number of areas relating to development and the environment, including protection and provision of open space, ecology and biodiversity, trees, soils, public rights of way, and river corridors.
- The new document also differs from previous SPGs by providing more in depth design advice, aimed at giving developers a clearer understanding of the approach expected when submitting designs for new developments. By having this information up-front developers are better able to provide suitable designs to the Council through the planning process.

## 4.7 Climate Change Strategies

Cardiff Council declared a climate emergency in 2019 and has since been preparing the One Planet Strategy which sets out how we will respond and tackle this emergency and become carbon neutral Zero as a Council and a City by 2030. A draft One Planet strategy was published for consultation in October 2020 and public feedback on this, alongside a detailed analysis of the Council and city's current carbon position, have informed and shaped the final 2021 One Planet Cardiff Strategy report and action plan.

In producing the 2021 OPC Strategy the Council has completed a detailed carbon baselining and impact assessment. This key milestone has enabled an understanding of the current carbon position, both of Council operations and also of the wider City.

The OPC Strategy confirms the Council's commitment to ensuring that Cardiff will become a Carbon Neutral Council by 2030. It also confirms the Council's commitment to work in partnership with city wide stakeholders to determine a pathway to achieve a Carbon Neutral City by 2030. Full details of the final strategy are available at <https://www.oneplanetcardiff.co.uk/>

## **5 Conclusion and Proposed Actions**

### **5.1 Conclusions from New Monitoring Data**

Monitoring data for 2021 indicates that annual mean concentrations of nitrogen dioxide recorded at sites of relevant exposure within the already established AQMAs are compliant with the annual mean NO<sub>2</sub> Air Quality Standard (40µg/m<sup>3</sup>). The results are indicative that the impacts of the COVID lockdowns and restrictions at the beginning of 2021, and the subsequent behavioural changes once restrictions were lifted, may have influenced pollution levels in Cardiff in 2021. It is therefore likely that the concentrations recorded in 2021 are not representative of a true business as usual scenario and the results have generated a bias/ underestimation of levels of pollution across Cardiff in 2021.

Therefore, monitoring within the AQMAs has continued in 2022, consideration of any future actions for the AQMAs will be assessed by the Council once an assessment of the longer term recovery from Covid has been determined.

### **5.2 Conclusions relating to New Local Developments**

SRS on behalf of Cardiff Council will continue to monitor data gathered by the developer's air quality consultants for Velindre Construction Access 20/01110/MJR, as part of planning condition 11.

*Condition 11: Prior to commencement of the development hereby approved details of an air monitoring unit and its location shall be submitted to and approved in writing with the Local Planning Authority. The monitoring unit shall be implemented in accordance with the approved details and remain operational until cessation of the development. Data from the air monitoring unit shall be provided to the Local Planning Authority on request*

### **5.3 Other Conclusions**

The implementation of COVID measures in the City Centre accelerated the Council's achievement of compliance with limit values for NO<sub>2</sub> under the Ambient Air Quality Directive, on Castle Street. The Interim implementation of the Castle

Street Scheme as approved by Welsh Government, was completed at the end of October 2021. The Council has ensured ongoing monitoring has been undertaken. At the time of writing this report further assessments using updated traffic data, collected post Covid, is being undertaken so as the Council can undertake further detailed assessments in order to identify the most suitable permanent solution for Castle Street. The assessments will enable the Council to comply with the most recent legal direction from Welsh Government.

## **5.4 Proposed Actions**

As a result of the information provided herein it is proposed to

1. Deliver and implement the proposed mitigation measures quantified within the Clean Air Plan;
2. Continue monitoring within and around the existing AQMAs and other areas of concern. The diffusion tube network appointed by SRS on behalf of Cardiff Council will be reviewed and an assessment on locations made;
3. Ensure implementation of the updated Realtime Monitoring Network is completed early 2023.
4. Continue to drive Air Quality as a major aspect to be considered during any planning applications, most importantly Cardiff Central Development;
5. Submit an Annual Progress Report (APR) in 2023; and
6. Update the existing Clean Air Strategy and Action Plan to represent most recent actions in 2023.

## References

Department for Environment, Food and Rural Affairs, 2003. *Part IV of the Environment Act 1995, Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management, Technical Guidance LAQM.TG(16)*. London: DEFRA (August 2021).

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

Cardiff Council 2021 Annual Progress Report

Cardiff Council Clean Air Plan 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 D: AQMA Boundary Maps

# Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Table 14 - Full Diffusion Tube Monthly Results 2021 (µg/m3)

| WAQF Number 2021 | Cardiff Council Site ID | Site Name   | X (Easting) | Y (Northing) | Site Type    | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | AVE  | Blended Adjusted Annualise d |      |
|------------------|-------------------------|---|-------------|--------------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------------|------|
| CCC-096          | 16                      | 167 Nislan Park Road                                    | 317040      | 176080       | Roadside     | 33.4 | 41.6 | 31.7 | 25.2 | 26.5 | 17.4 | 25.3 | 20.3 | 31.9 | 34.2 | 34.0 | 35.2 | 29.8 | 23.2                         |      |
| CCC-093          | 258                     | Lampoot outside 116 Penarth Road (REPLACES Co-Location) | 317760      | 175310       | Roadside     | 29   | 43.5 | 44.2 | 40.6 | 31.6 | 22.9 | 33.8 | 34.7 | 41.4 | 37.8 | 52.3 | 40.2 | 37.7 | 29.4                         |      |
| CCC-092          | 58                      | Westgate Street   | 317937      | 176400       | Kerbside     | 51.9 | 33.3 | 33.6 | 36.2 | 37.7 | 32.3 | 32.4 | 31.7 | 46.3 | 41.6 | 50.3 | 46.1 | 39.5 | 30.8                         |      |
| CCC-115          | 81                      | Stephenson Court  | 319387      | 176980       | Roadside     | 45.9 | 36.2 | 38.4 | 33.4 | 36   | 31   | 29.2 | 32.8 | 37.8 | 39   | 49.3 | 41.2 | 37.5 | 29.3                         |      |
| CCC-120          | 86                      | 19 Fair Oak Road  | 318452      | 178805       | Roadside     | 38.6 | 35.2 | 36.2 | 27.4 | 33.4 | 28   | 28.4 | 24.7 | 36.4 | 42.4 | 45.4 | 39   | 34.6 | 27.0                         |      |
| CCC-130          | 96                      | Manor Way Junction                                      | 316601      | 179653       | Roadside     |      | 32.5 | 29.5 | 35.5 | 32.2 | 24.4 | 25.6 | 24.5 | 27   | 32.8 | 40.8 | 36.6 | 31.0 | 24.2                         |      |
| CCC-132          | 98                      | Western Avenue (premises)                               | 314805      | 177345       | Roadside     | 25.4 | 28.3 | 25.2 | 25.8 | 26.2 | 22.3 | 22.2 | 20.1 | 29.1 | 28.7 | 31.0 | 34.1 | 26.6 | 20.8                         |      |
| CCC-133          | 99                      | Cardiff Road Llandaff                                   | 315275      | 178117       | Roadside     | 30.6 | 40.5 | 34.2 | 34.8 | 31.7 | 25.1 | 25.7 | 20.6 | 37.8 | 31.9 | 37   | 36.3 | 32.2 | 25.1                         |      |
| CCC-135          | 101                     | Cardiff AURN  | 318416      | 176525       | Urban Centre | 26.6 | 20.2 | 20   | 18.6 | 13.1 | 14.4 |      |      |      |      |      |      | 18.8 | 14.1                         |      |
| CCC-136          | 102                     | Cardiff AURN  | 318416      | 176525       | Urban Centre | 23.7 | 22.2 | 17.6 | 18   | 13.1 | 13   |      |      |      |      |      |      |      | 17.9                         | 13.4 |
| CCC-137          | 103                     | Cardiff AURN  | 318416      | 176525       | Urban Centre | 26   | 19.1 | 20.2 | 18.3 | 11.9 | 13.2 |      |      |      |      |      |      | 18.1 | 13.5                         |      |
| CCC-140          | 106                     | 30 Caerphilly Road                                      | 316851      | 179520       | Roadside     | 36.2 | 33.4 | 31.6 | 23.6 | 29.5 | 18.6 | 21.6 | 18   | 32.1 | 40.6 | 42.8 | 36.6 | 30.4 | 23.7                         |      |
| CCC-146          | 112                     | 17 Sloper Road  | 316613      | 175910       | Roadside     | 31.1 | 36.2 | 26.8 | 29.2 | 27   | 23.5 | 21.6 | 25.6 | 35   | 30.1 | 39.7 | 29.4 | 29.6 | 23.1                         |      |
| CCC-149          | 115                     | 21 Llandaff Road  | 316604      | 176641       | Roadside     | 34.1 |      |      | 30.1 | 34.5 | 25.9 | 29.9 | 23.9 | 21.7 | 42.6 | 46.7 | 38.5 | 32.8 | 25.6                         |      |
| CCC-151          | 117                     | 25 Cowbridge Road West                                  | 314458      | 176735       | Roadside     | 46.3 | 53.1 | 43.4 | 48.2 | 42.5 | 36.3 | 37.6 | 36.3 | 60.5 | 45   | 49.2 | 48.1 | 45.5 | 35.5                         |      |
| CCC-160          | 126                     | Westgate Street Flats                                   | 317946      | 176387       | Roadside     | 30.1 | 24.3 | 28.7 |      | 30.3 | 26.1 | 28.4 | 27.1 | 35.1 | 35.4 | 40.7 | 34.2 | 30.9 | 24.1                         |      |
| CCC-162          | 128                     | 117 Tudor Street  | 317540      | 175979       | Roadside     | 36.8 | 37.1 | 35.7 | 26   | 28.4 | 20.8 | 28.8 | 21.2 | 36.3 | 39.2 | 38.4 | 38.3 | 32.3 | 25.2                         |      |
| CCC-165          | 131                     | Dragon Court  | 319292      | 176932       | Roadside     | 38.9 | 34.9 | 37.1 | 34.8 | 37.9 | 6.9  | 29.8 | 34   | 36.7 | 36.6 | 48.4 | 34.8 | 34.2 | 26.7                         |      |
| CCC-177          | 143                     | Windsor House   | 318009      | 176337       | Roadside     | 36.2 | 25.6 | 29.8 | 27.6 | 27.2 | 27.5 | 31.7 | 29.9 | 41.1 | 38.7 | 43.9 | 35.5 | 32.9 | 25.5                         |      |
| CCC-178          | 144                     | Marlborough House                                       | 318046      | 176307       | Roadside     |      |      | 29.2 | 31   | 34.6 | 31.8 | 33   | 24.6 | 40.4 | 39.5 |      | 40.1 | 33.8 | 26.4                         |      |
| CCC-181          | 147                     | 211 Penarth Road  | 317636      | 175161       | Roadside     | 35.5 | 32.6 | 31.2 | 35.5 | 29.3 | 23   | 22.3 | 22.9 | 33.7 | 31   | 36.2 | 30.2 | 30.5 | 23.8                         |      |
| CCC-182          | 148                     | 161 Clare Road  | 317695      | 175389       | Roadside     | 30.6 | 35.3 | 31.9 | 36.5 | 28.3 | 24   | 28.4 | 23.2 | 33.5 | 28.6 | 37.5 | 30.4 | 30.7 | 23.9                         |      |
| CCC-183          | 149                     | 10 Corporation Road                                     | 317764      | 175174       | Roadside     | 34.9 | 32   | 36.4 | 34.9 | 32.7 | 25.6 | 31.6 | 25.7 | 30.7 | 38.7 | 45.8 | 29.3 | 33.2 | 25.9                         |      |
| CCC-190          | 156                     | 2a/4 Colum Road   | 317997      | 177412       | Roadside     | 25.6 | 27.3 | 26.5 | 25.8 | 25.2 | 19.9 | 19.5 | 20.9 |      | 26.8 | 34.1 | 21.4 | 25.7 | 20.1                         |      |
| CCC-191          | 157                     | 47 Birchgrove Road                                      | 316605      | 179703       | Roadside     | 25.9 | 27   | 25.2 | 20   | 24.5 | 15.1 | 19.2 | 15   | 34.1 | 28.2 | 33.7 | 30.3 | 24.9 | 19.4                         |      |
| CCC-192          | 158                     | 64/66 Cathays Terrace                                   | 318093      | 177716       | Roadside     | 30.4 | 30.1 | 28   | 24.4 | 24.2 | 20.7 | 19.8 | 17   | 30.2 | 28.3 | 36.5 | 32.9 | 26.9 | 21.0                         |      |
| CCC-193          | 159                     | IMD facade replacement                                  | 320709      | 177918       | Roadside     | 30.3 | 35.5 | 34.6 | 35.9 | 36.2 | 25.6 | 31.4 | 28.7 | 40.1 | 39.1 | 44.3 | 39.8 | 35.1 | 27.4                         |      |
| CCC-200          | 166                     | 163 Lansdowne Road                                      | 315950      | 176424       | Roadside     | 40.6 | 38.7 | 27   | 32.4 | 37   | 29.5 | 33.3 | 15.2 | 34.5 | 40.5 | 43.3 | 38   | 34.2 | 26.7                         |      |
| CCC-202          | 168                     | 570 Cowbridge Road East                                 | 314856      | 176929       | Roadside     | 30.9 | 30.6 | 28.4 | 29.6 | 25.7 | 24.4 | 25.2 | 24.8 | 32.9 | 28.1 | 36.8 | 31.7 | 29.1 | 22.7                         |      |
| CCC-208          | 174                     | 76 North Road   | 317508      | 177868       | Kerbside     | 24.8 | 24.8 | 27   | 21.9 | 22.5 | 18.1 | 19.7 | 19.2 | 29.4 | 31.5 | 36.6 | 32.3 | 25.7 | 20.0                         |      |
| CCC-213          | 179                     | Altouso, Bute Terrace                                   | 318627      | 176039       | Roadside     | 56.4 | 31.6 | 47.9 | 48.3 | 41.2 | 45   | 47.1 | 42.8 | 53.4 | 48.8 | 60.2 | 55.9 | 48.2 | 37.6                         |      |
| CCC-217          | 183                     | Station Terrace   | 318765      | 176623       | Kerbside     | 36.5 | 27.9 | 28.7 | 28.9 | 28   | 20.4 | 23.8 | 26.1 | 37.4 | 32.1 | 38.4 | 36.9 | 30.4 | 23.7                         |      |
| CCC-218          | 184                     | Hophouse, St Mary Street                                | 318335      | 176074       | Roadside     | 45.4 | 37.5 | 33.7 | 42.3 | 39.2 |      |      |      | 45.1 |      |      |      | 40.8 | 27.5                         |      |
| CCC-220          | 186                     | Dempsey's Public House, Castle Street                   | 318044      | 176449       | Roadside     | 33.1 |      |      |      | 27.6 | 22.9 | 27   | 23.2 | 34   |      |      |      | 43.8 | 30.2                         | 24.5 |
| CCC-221          | 187                     | Angel Hotel   | 317944      | 176436       | Roadside     | 16.6 | 28.6 | 26.2 |      | 34   | 26.4 | 32   | 30.4 | 37.3 | 42.8 | 46.7 | 47.3 | 33.5 | 26.1                         |      |
| CCC-222          | 188                     | Westgate Street (46 Apartments)                         | 318229      | 176154       | Roadside     | 47.3 |      | 38.2 |      | 39.8 |      |      |      |      |      |      | 43.4 | 40.3 | 41.8                         | 26.8 |
| CCC-224          | 191                     | 7 Mackintosh Place                                      | 318724      | 177776       | Roadside     | 29.3 | 31.9 | 30.4 | 25.2 | 29.4 | 24   | 27.4 | 21.9 | 34   | 41.1 | 40.7 | 37.9 | 31.1 | 24.3                         |      |
| CCC-227          | 194                     | 115 Cowbridge Road West                                 | 313870      | 176212       | Roadside     | 27.8 | 24.7 | 23.5 | 21.1 | 18.6 | 19.3 | 17.3 | 23.1 | 24.7 | 22.1 | 32.1 | 28.3 | 23.6 | 18.4                         |      |
| CCC-228          | 195                     | 244 Newport Road  | 320147      | 177523       | Roadside     | 38.8 | 29.8 | 27.3 | 30   | 31   | 25.1 | 29.2 | 14.6 | 36.3 | 39.5 | 39.8 | 36.5 | 31.5 | 24.6                         |      |
| CCC-229          | 196                     | 2 Pencelose Road  | 316223      | 177305       | Roadside     | 29.9 | 33.5 | 24.7 | 29.6 | 26.3 | 20.1 | 21.4 | 20.7 | 31.4 | 33.2 | 34.7 | 33.3 | 28.2 | 22.0                         |      |
| CCC-231          | 198                     | New Building to Stephenson Court                        | 319348      | 176958       | Roadside     | 37.3 | 30.8 | 34   | 32.4 | 29.1 | 35.6 | 35.7 | 40.5 | 38.7 | 36.6 | 49.3 | 39.5 | 36.8 | 28.7                         |      |
| CCC-232          | 199                     | 157 Newport Road  | 319599      | 177174       | Roadside     | 30.8 | 23.4 | 27.6 | 22   | 23.5 | 14.7 | 20.4 | 21.4 | 26.8 | 29.8 | 37   | 31.6 | 25.8 | 20.1                         |      |
| CCC-233          | 200                     | 350 Whitchurch Road                                     | 317038      | 179073       | Roadside     | 42.1 | 33.5 | 33.8 | 34.8 | 29.2 | 30.7 | 27.8 | 28.8 | 36.3 | 38.3 | 48.7 | 38.4 | 35.2 | 27.4                         |      |
| CCC-234          | 201                     | 23 Lower Cathedral Road                                 | 317547      | 176411       | Roadside     | 36.5 |      | 28.9 | 29.5 | 23.5 | 18.3 |      | 21.7 | 32.5 | 31.5 | 41.5 | 39.9 | 30.8 | 24.0                         |      |
| CCC-235          | 202                     | 22 Clare Street   | 317604      | 176053       | Roadside     | 33.2 | 37.1 | 30.2 | 30.5 | 31.6 | 20.7 | 25.3 | 17.9 | 38.8 | 36.9 | 36.2 | 39   | 31.5 | 24.5                         |      |
| CCC-236          | 203                     | 10 Fair Oak Road  | 318255      | 178533       | Roadside     | 20.8 | 24.8 | 22.4 | 19.8 | 19.9 | 16.7 | 18.1 | 15.5 | 23.4 | 25.9 | 29.7 | 26.5 | 21.9 | 17.1                         |      |
| CCC-237          | 204                     | 53 Neville Street                                       | 317487      | 176303       | Roadside     | 32.9 | 28.8 | 24.6 | 23.9 | 21.2 | 15.6 |      | 16.8 | 28.2 | 29.6 | 32.5 | 29.7 | 25.8 | 20.1                         |      |
| CCC-240          | 207                     | 42 Waungron Road  | 314769      | 177343       | Roadside     | 30.3 | 32   | 24.8 | 20   | 21.2 | 17   | 18.2 | 16.3 | 23.2 | 24.2 | 29.5 | 25.6 | 23.5 | 18.3                         |      |
| CCC-241          | 208                     | 2 Llantrisant Road                                      | 315152      | 178245       | Roadside     | 28.4 | 30.2 | 24.9 | 24.4 | 24.2 | 19.9 | 21.7 | 16.2 | 28.6 | 34.4 | 33   | 29.4 | 26.3 | 20.6                         |      |
| CCC-242          | 209                     | 178 North Road  | 317200      | 178537       | Roadside     | 23.5 | 21.5 | 20.7 | 20.6 | 17.4 | 13.3 | 16.8 | 15.3 | 24.3 | 25.4 | 30.5 | 25.9 | 21.3 | 16.6                         |      |
| CCC-243          | 210                     | 485 Caerphilly Road                                     | 316692      | 181088       | Roadside     | 27   | 26.2 | 24   | 19.8 | 18.2 | 16.1 | 17.7 | 15.2 | 23.1 | 25.4 | 31.7 | 25.2 | 22.5 | 17.5                         |      |
| CCC-244          | 211                     | 19 Wall Wood Close, Penylan                             | 320247      | 178903       | Roadside     | 52   |      | 25.6 | 18.3 | 22.8 | 17.1 | 18.4 | 13.6 | 26.4 | 27.8 | 27.6 | 28.2 | 25.3 | 19.7                         |      |
| CCC-245          | 212                     | Bridge Road   | 315197      | 178221       | Kerbside     | 49.6 | 60.5 | 38   | 52.1 | 48.2 | 38.7 | 31.8 |      | 55.3 | 49.3 | 55.3 | 48.2 | 47.9 | 37.4                         |      |
| CCC-267          | 214                     | Mitre Place   | 315254      | 178153       | Roadside     | 36   | 39.5 | 31.9 | 32.5 | 36.1 | 24.1 | 28.8 | 15.1 | 36.4 | 38.1 | 37.9 | 34.9 | 32.6 | 25.4                         |      |
| CCC-271          | 218                     | 16-18 Cowbridge Road West                               | 314471      | 176889       | Roadside     | 42.2 | 40   | 37   | 43.5 | 38.7 | 36.5 | 36.2 | 32.7 | 42.7 | 42.3 | 52.5 | 41.2 | 40.5 | 31.6                         |      |
| CCC-288          | 254                     | Qiraffe Nursery Cathedral Road                          | 317529      | 176340       | Roadside     | 38.6 | 39.7 | 33.9 | 30.8 | 35.9 | 21.8 | 32   | 30.8 |      | 41.1 | 41.6 | 44.8 | 35.5 | 27.7                         |      |
| CCC-273          | 220                     | Fitzalan Court Newport Road                             | 318955      | 176823       | Kerbside     | 49.5 | 35   | 37.6 |      | 38.9 | 35.7 |      |      | 49   | 44.2 | 46.2 |      | 42.0 | 30.4                         |      |
| CCC-274          | 221                     | Student Flats (New student flats)                       | 318530      | 177468       | Kerbside     | 43.6 | 31.1 | 35.2 | 34.5 |      |      | 36.8 | 30.1 |      |      |      |      | 35.2 | 26.9                         |      |
| CCC-273          | 190                     | 3 Pearson Street  | 313668      | 177738       | Roadside     | 36.7 | 26.3 | 27.4 | 19.1 | 16.8 | 18.9 | 21.7 | 13.7 | 25.9 | 31.5 | 36.7 | 33   | 25.8 | 20.1                         |      |
| CCC-277          | 224                     | 110 Cardiff Road  | 315714      | 177          |              |      |      |      |      |      |      |      |      |      |      |      |      |      |                              |      |



| Site Number | Nitrogen Dioxide Sites, Cardiff TRO Project Schools                  | Grid Ref       | Class    | Distance of measurement from Kerb (m) | Distance from Kerb to Receptor | 06/01/2021 - 03/02/2021 | 02/02/2021 - 03/03/2021 | 03/03/2021 - 28/03/2021 | 28/03/2021 - 04/05/2021 | 04/05/2021 - 01/06/2021 | 01/06/2021 - 01/07/2021 | 01/07/2021 - 02/08/2021 | 02/08/2021 - 01/09/2021 | 01/09/2021 - 27/09/2021 | 27/09/2021 - 04/11/2021 | 04/11/2021 - 03/12/2021 | 03/12/2021 - 05/01/2022 | AVERAGE SINCE Jan 21 | Bias Corrected and annualised (Correction Factor 0.76) | Percentage of Data Capture |    |
|-------------|--|----------------|----------|---------------------------------------|--------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------------------|--|----------------------------|----|
| TRO-001     | Whitchurch High Lower School   | ST 15621 80320 | Roadside | 20.00                                 | 20.00                          |                         | 19.1                    | 14.7                    | 17                      |                         |                         |                         |                         | 15                      | 16                      | 23.1                    | 18                      | 17.6                 | <b>11.9</b>  | 58                         |    |
| TRO-002     | Glan-Y-Nant Terrace (inside TRO zone)                                | ST 15589 80316 | Roadside | 1.00                                  | 1.00                           | 32.5                    | 18.9                    | 18.3                    | 14.8                    | 11.7                    | 11.4                    | 11.8                    | 11.4                    | 15.5                    | 16.7                    | 23.8                    | 20.1                    | 17.2                 | <b>13.4</b>  | 100                        |    |
| TRO-003     | Cross roads of Old Church Rd and Glan-Y-Nant terr (outside TRO zone) | ST 15548 80315 | Roadside | 1.00                                  | 3.00                           | 30.2                    | 23.4                    | 19.5                    | 20.1                    |                         | 14.1                    | 14.9                    | 13.9                    | 17.9                    | 22.3                    | 24.5                    | 24.5                    | 20.5                 | <b>16.0</b>  | 92                         |    |
| TRO-004     | Ysgol Meiriad Gruffydd School  | ST 15620 80160 | Roadside | 2.00                                  | 4.00                           | 21.8                    | 17.7                    | 15.8                    | 14.5                    | 7.9                     | 9.8                     |                         |                         | 8.5                     | 15.1                    |                         | 21.3                    | 20.1                 | 15.3   | <b>11.9</b>                | 83 |
| TRO-005     | 34 Glan-Y-Nant Rd (inside TRO zone)                                  | ST 15608 80151 | Roadside | 3.00                                  | 3.00                           | 19.8                    | 17.7                    | 16.4                    | 14.7                    | 11.5                    | 9.3                     | 10.7                    | 9.2                     | 13.4                    | 16.3                    | 21.2                    | 18.3                    | 14.9                 | <b>11.6</b>  | 100                        |    |
| TRO-006     | 36 Old Church Rd (outside TRO zone)                                  | ST 15497 80140 | Kerbside | 1.00                                  | 1.00                           | 29.3                    | 25.7                    | 22.2                    | 23.7                    | 18.1                    | 16.9                    | 16.9                    |                         | 22                      | 24.4                    | 15.1                    | 25.8                    | 21.8                 | <b>17.0</b>  | 92                         |    |
| TRO-007     | Peter Lea Primary  | ST 13878 78319 | Roadside | 5.00                                  | 5.00                           | 18.8                    | 14.8                    |                         | 13                      | 8.8                     | 9.8                     | 9.5                     | 8.7                     | 12.2                    | 14.2                    | 18.9                    | 18.2                    | 13.3                 | <b>10.4</b>  | 92                         |    |
| TRO-008     | 36 Carter Place (inside TRO zone)                                    | ST 13894 78331 | Roadside | 4.00                                  | 4.00                           | 17.3                    | 11.6                    | 11.3                    | 12.3                    | 6.8                     | 6.4                     | 8                       | 6.2                     | 10.3                    | 11.7                    | 15.1                    | 14.6                    | 11.0                 | <b>8.6</b>   | 100                        |    |
| TRO-009     | 3 Carter Place (outside TRO zone)                                    | ST 14022 78334 | Roadside | 4.00                                  | 4.00                           | 17.6                    | 15.5                    | 11                      | 13.4                    | 8.1                     | 8.2                     | 6.9                     | 6.6                     | 11.3                    | 11.1                    | 16.1                    | 16.2                    | 11.8                 | <b>9.2</b>   | 100                        |    |
| TRO-010     | Llandaff Church in Wales Primary                                     | ST 15274 77784 | Roadside | 5.00                                  | 5.00                           |                         |                         | 15.3                    | 14.1                    | 9.7                     | 9.2                     | 10.0                    | 8                       | 12.7                    | 17                      | 22                      | 17.6                    | 13.6                 | <b>10.6</b>  | 83                         |    |
| TRO-011     | Hendre Close Llandaff (inside TRO zone)                              | ST 15279 77750 | Roadside | 1.00                                  | 5.00                           | 15.5                    | 19.9                    | 16.9                    | 15.1                    | 8.8                     | 9                       | 11                      | 9.3                     | 7.2                     | 14                      | 20                      | 20.3                    | 13.9                 | <b>10.9</b>  | 100                        |    |
| TRO-012     | 48 Hendre Gardens Llandaff (outside TRO zone)                        | ST 15209 77668 | Roadside | 4.00                                  | 4.00                           | 17.4                    | 17.9                    | 15.3                    | 14.2                    | 9.6                     | 8.1                     | 9.9                     | 9                       | 6.6                     | 14.7                    | 18.9                    | 18.6                    | 13.4                 | <b>10.4</b>  | 100                        |    |
| TRO-013     | Pencaeru School  | ST 12803 75519 | Roadside | 5.00                                  | 5.00                           | 18.4                    |                         | 15.9                    | 12.9                    | 9.2                     | 8.8                     | 7.7                     | 7.3                     | 10.6                    | 10.1                    | 12.6                    | 13.4                    | 11.5                 | <b>9.0</b>   | 92                         |    |
| TRO-014     | 16 Cynntwell Avenue (inside TRO zone)                                | ST 12809 75496 | Roadside | 4.00                                  | 4.00                           | 45                      | 14.6                    |                         | 15.2                    | 12.7                    | 8.6                     | 9.5                     | 10.3                    |                         |                         |                         |                         | 16.6                 | <b>13.7</b>  | 58                         |    |
| TRO-015     | 6A Cynntwell Avenue (outside TRO zone)                               | ST 12734 75411 | Roadside | 3.00                                  | 3.00                           | 21                      | 16.5                    | 20.2                    | 14.1                    | 11.3                    | 10.1                    | 11.4                    | 9.8                     | 14.5                    | 15.5                    | 21.5                    | 16.4                    | 15.2                 | <b>11.8</b>  | 100                        |    |
| TRO-016     | Lansdowne Primary School   | ST 15801 76568 | Roadside | 2.00                                  | 2.00                           | 30.3                    | 14.6                    | 20.2                    | 20.6                    | 14.6                    | 14.3                    | 15.0                    | 13.8                    | 21.1                    | 24.3                    | 30.4                    | 25.9                    | 20.4                 | <b>15.9</b>  | 100                        |    |
| TRO-017     | 29 Norfolk St (inside TRO zone)                                      | ST 15811 76555 | Roadside | 3.00                                  | 3.00                           | 32.1                    | 12.2                    | 17.4                    | 20.1                    | 14.1                    | 12.6                    | 14.5                    | 14.2                    | 21.8                    | 23.5                    | 29.4                    | 35.7                    | 20.6                 | <b>16.1</b>  | 100                        |    |
| TRO-018     | 209 Llandowne Rd (outside TRO zone)                                  | ST 15801 76492 | Roadside | 3.00                                  | 3.00                           | 35.1                    | 25.6                    | 32.4                    | 29.1                    | 26.7                    | 24.0                    | 27.3                    | 23.3                    | 31.1                    | 38.5                    | 40.9                    | 24.5                    | 29.9                 | <b>23.3</b>  | 100                        |    |
| TRO-019     | St Cuthberts School  | ST 19027 75490 | Kerbside | 2.00                                  | 5.00                           | 21.6                    | 19.4                    | 19.8                    | 19.6                    | 15.3                    | 14.6                    | 14.6                    | 13                      | 19.7                    | 18.4                    | 27.9                    | 21.7                    | 18.5                 | <b>14.5</b>  | 100                        |    |
| TRO-020     | Letton Road (inside TRO Zone)  | ST 18990 75480 | Roadside | 2.00                                  | 2.00                           | 27.4                    | 19.3                    |                         |                         | 14.6                    |                         |                         | 11.9                    | 20.8                    | 18.9                    | 31.4                    | 20.9                    | 20.6                 | <b>14.7</b>  | 67                         |    |
| TRO-021     | 58 Letton Road (Outside TRO Zone)                                    | ST 18908 75456 | Kerbside | 2.00                                  | 3.00                           | 30.5                    | 23.2                    | 23.3                    | 24                      | 17                      | 16.3                    | 16.4                    | 14.9                    | 23                      | 22                      | 32                      | 26.6                    | 22.1                 | <b>17.2</b>  | 100                        |    |
| TRO-022     | Tredegaville School  | ST 19263 76807 | Roadside | 5.00                                  | 5.00                           | 29.8                    | 24.5                    | 21.3                    | 21.8                    | 19.2                    | 17.8                    | 31.6                    |                         | 23.9                    | 27.3                    | 30.1                    | 27.3                    | 24.7                 | <b>19.3</b>  | 92                         |    |
| TRO-023     | Newport Road Lane (inside TRO Zone)                                  | ST 19217 76776 | Kerbside | 1.00                                  | 2.00                           | 34.2                    | 28.2                    | 25.6                    | 22.7                    | 18.8                    | 17.6                    | 17.6                    | 18.5                    | 26.5                    | 27                      | 38.2                    | 26.3                    | 25.0                 | <b>19.5</b>  | 100                        |    |
| TRO-024     | Glossops Road (Outside TRO Zone)                                     | ST 19271 76833 | Kerbside | 1.00                                  | 20.00                          | 45.2                    | 39.6                    | 33.2                    | 31.9                    | 35.1                    | 30.7                    | 32                      | 34                      | 41.4                    | 43.6                    | 50.9                    |                         | 38.0                 | <b>29.6</b>  | 92                         |    |
| TRO-025     | St Peters School   | ST 19395 77098 | Kerbside | 2.00                                  | 10.00                          | 29.3                    | 23.9                    | 20.2                    | 20.1                    | 17.3                    | 11.8                    | 12.6                    | 12.1                    | 18                      | 22.2                    | 28.9                    | 26.6                    | 19.7                 | <b>15.3</b>  | 100                        |    |
| TRO-026     | Southey Street (inside TRO Zone)                                     | ST 19376 77086 | Kerbside | 1.00                                  | 3.00                           | 29.4                    | 18.3                    | 19.5                    | 19.2                    | 16.3                    | 11.7                    | 13.2                    | 13.9                    | 19.9                    | 22.6                    | 25.1                    | 14.1                    | 19.0                 | <b>14.8</b>  | 100                        |    |
| TRO-027     | Wordsworth Avenue (Outside TRO Zone)                                 | ST 19338 77063 | Kerbside | 1.00                                  | 3.00                           | 26.9                    | 26.6                    | 21                      | 20.7                    | 16.7                    | 15.2                    | 14.8                    | 15.6                    | 21.3                    | 24.7                    | 27.8                    | 29.4                    | 21.0                 | <b>16.4</b>  | 100                        |    |
| TRO-028     | St Monica's / Gladstone School                                       | ST 17989 78182 | Roadside | 3.00                                  | 3.00                           | 23.2                    | 20.7                    | 16.2                    | 17.4                    | 11.6                    | 13.1                    | 8.3                     | 9.7                     | 20                      | 21.1                    | 28.2                    | 29.1                    | 17.2                 | <b>13.4</b>  | 100                        |    |
| TRO-029     | 3 Penttyrch Street (inside TRO Zone)                                 | ST 17983 78158 | Kerbside | 1.00                                  | 3.00                           | 28.6                    | 23.9                    | 21                      | 21                      | 13.3                    | 12.2                    | 12.2                    | 10.9                    | 16                      | 18.5                    | 24.9                    | 21.9                    | 18.4                 | <b>14.4</b>  | 100                        |    |
| TRO-030     | Cwmdare Street (Outside TRO Zone)                                    | ST 17860 78302 | Kerbside | 1.00                                  | 3.00                           | 26                      | 17.7                    | 17.5                    | 16.8                    | 13.9                    | 10.8                    | 12.6                    | 12                      | 18.3                    | 21.2                    | 27.6                    | 24.4                    | 17.7                 | <b>13.8</b>  | 100                        |    |
| TRO-031     | Lakeside School  | ST 19045 79937 | Roadside | 5.00                                  | 5.00                           | 24.5                    | 17.4                    | 14.2                    | 13.6                    | 10.4                    | 10.5                    | 9.5                     | 6.3                     | 12.8                    | 15.4                    |                         | 16.6                    | 13.5                 | <b>10.5</b>  | 92                         |    |
| TRO-032     | Ontario Way (inside TRO Zone)  | ST 19040 80023 | Kerbside | 1.00                                  | 2.00                           | 20.6                    | 15.3                    | 11.1                    | 11.9                    | 9.9                     | 8.9                     | 8.8                     | 9.2                     | 12.4                    | 14.6                    | 18.4                    | 17.3                    | 12.8                 | <b>10.0</b>  | 100                        |    |
| TRO-033     | Woolaston Avenue (Outside TRO Zone)                                  | ST 18907 80015 | Kerbside | 1.00                                  | 3.00                           | 22.1                    | 17                      | 13.7                    | 11.7                    | 11.1                    | 12.2                    | 8.4                     | 8.3                     | 13.8                    | 16.5                    | 21.5                    | 19                      | 14.2                 | <b>11.1</b>  | 100                        |    |
| TRO-034     | Bryn Hafod School  | ST 21817 80407 | Kerbside | 2.00                                  | 10.00                          | 22.7                    | 19.8                    |                         | 12.4                    | 7.5                     | 9.1                     | 7.9                     | 7.3                     | 10.8                    | 14.8                    | 19.3                    |                         | 13.2                 | <b>10.3</b>  | 83                         |    |
| TRO-035     | 8 Blagdon Close (inside TRO Zone)                                    | ST 21869 80400 | Kerbside | 1.00                                  | 3.00                           | 22.5                    |                         | 15.7                    | 13.8                    | 7.6                     | 10.5                    | 9.4                     | 7.4                     | 14.9                    | 17.1                    | 23.2                    | 19.9                    | 14.2                 | <b>11.1</b>  | 92                         |    |
| TRO-036     | Uphill Road (Outside TRO Zone)                                       | ST 21825 80317 | Kerbside | 1.00                                  | 3.00                           | 21.4                    | 19.9                    | 14.6                    | 13.6                    |                         | 9.9                     | 10                      | 9.5                     |                         |                         |                         |                         | 14.1                 | <b>11.3</b>  | 58                         |    |
| TRO-037     | Glan Yr Afon School  | ST 21703 81427 | Kerbside | 2.00                                  | 5.00                           |                         |                         |                         |                         |                         | 7.9                     |                         |                         |                         |                         | 2.5                     |                         | 5.2                  | <b>4.1</b>   | 17                         |    |
| TRO-038     | Browning Close School Zone (inside TRO Zone)                         | ST 21760 81378 | Kerbside | 1.00                                  | 3.00                           | 24.6                    |                         | 17.1                    | 15.4                    | 6.7                     | 9.4                     | 10.5                    | 10.4                    | 13.6                    | 18                      | 25.3                    | 20.7                    | 15.1                 | <b>11.8</b>  | 92                         |    |
| TRO-039     | Lampost 65 Thackeray Crescent (Outside TRO Zone)                     | ST 21835 81275 | Kerbside | 1.00                                  | 3.00                           | 24.9                    |                         | 17.8                    | 16.6                    | 13.8                    | 10                      |                         | 11.1                    | 15.6                    | 18.9                    | 26.1                    | 21.1                    | 17.2                 | <b>13.4</b>  | 83                         |    |
| TRO-040     | Willow Brook School  | ST 24492 80968 | Kerbside | 2.00                                  | 5.00                           | 19.6                    | 18.4                    | 15.5                    | 16.3                    | 10                      |                         |                         |                         | 15.1                    | 16.2                    | 23.9                    | 18.3                    | 16.9                 | <b>13.2</b>  | 75                         |    |
| TRO-041     | Bullrush Close (inside TRO Zone)                                     | ST 24519 80947 | Kerbside | 1.00                                  | 3.00                           | 25.3                    | 16.5                    | 15.2                    | 15.8                    | 8.6                     | 10.2                    | 12.8                    | 8.7                     | 13.4                    | 14.8                    | 20.6                    | 18.5                    | 14.7                 | <b>11.5</b>  | 100                        |    |
| TRO-042     | Sandbrook Road (Outside TRO Zone)                                    | ST 24514 80975 | Kerbside | 1.00                                  | 3.00                           | 27                      | 19.8                    | 15.5                    | 13                      |                         | 15                      | 11.7                    | 11.1                    | 16.6                    |                         | 24.6                    | 19.7                    | 17.1                 | <b>13.4</b>  | 83                         |    |
| TRO-043     | Creigiau School  | ST 07903 81561 | Kerbside | 2.00                                  | 5.00                           | 16.5                    | 7.8                     | 11.2                    | 10                      | 7.6                     | 7.6                     | 6.5                     | 6                       | 9.6                     | 11.2                    | 17.9                    | 11.4                    | 10.2                 | <b>7.9</b>   | 100                        |    |
| TRO-044     | Tregarth Court (inside TRO Zone)                                     | ST 07914 81574 | Kerbside | 1.00                                  | 3.00                           | 14.5                    | 13.3                    | 11                      | 8.1                     | 7.7                     | 7.7                     | 6.5                     | 7                       | 10.1                    | 10.1                    | 16.8                    | 11.1                    | 10.3                 | <b>8.0</b>   | 100                        |    |
| TRO-045     | Ty - nant Road (Outside TRO Zone)                                    | ST 07968 81577 | Kerbside | 1.00                                  | 3.00                           | 16.1                    | 14.4                    | 11.7                    | 14.3                    | 13                      | 13                      | 9.9                     | 9.7                     | 12.8                    | 13.3                    | 22.9                    | 14.5                    | 13.7                 | <b>10.7</b>  | 100                        |    |

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 the 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 an Air Quality Action Plan (AQAP) within 18 months of declaration setting out the measures it intends to put in place in pursuit of the objectives. Action plans should then be reviewed and updated where necessary at least every five 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 **Error! Reference source not found..**

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

**Table 15 - Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales**

| <b>Pollutant</b>                            | <b>Air Quality Objective: Concentration</b>                         | <b>Air Quality Objective: Measured as</b> | <b>Date to be achieved by</b> |
|---|---|---|-------------------------------|
| <b>Nitrogen Dioxide (NO<sub>2</sub>)</b>    | 200µg/m <sup>3</sup> not to be exceeded more than 18 times a year   | 1-hour mean                               | 31.12.2005                    |
| <b>Nitrogen Dioxide (NO<sub>2</sub>)</b>    | 40µg/m <sup>3</sup>   | Annual mean                               | 31.12.2005                    |
| <b>Particulate Matter (PM<sub>10</sub>)</b> | 50µg/m <sup>3</sup> , not to be exceeded more than 35 times a year  | 24-hour mean                              | 31.12.2010                    |
| <b>Particulate Matter (PM<sub>10</sub>)</b> | 40µg/m <sup>3</sup>   | Annual mean                               | 31.12.2010                    |
| <b>Sulphur dioxide (SO<sub>2</sub>)</b>     | 350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year | 1-hour mean                               | 31.12.2004                    |
| <b>Sulphur dioxide (SO<sub>2</sub>)</b>     | 125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year  | 24-hour mean                              | 31.12.2004                    |
| <b>Sulphur dioxide (SO<sub>2</sub>)</b>     | 266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year | 15-minute mean                            | 31.12.2005                    |
| <b>Benzene</b>                              | 16.25µg/m <sup>3</sup>  | Running annual mean                       | 31.12.2003                    |
| <b>Benzene</b>                              | 5µg/m <sup>3</sup>  | Annual mean                               | 31 12 2010                    |
| <b>1,3 Butadiene</b>                        | 2.25µg/m <sup>3</sup>   | Running annual mean                       | 31.12.2003                    |
| <b>Carbon Monoxide</b>                      | 10.0mg/m <sup>3</sup>   | Maximum Daily Running 8-Hour mean         | 31.12.2003                    |
| <b>Lead</b>                                 | 0.25µg/m <sup>3</sup>   | Annual Mean                               | 31.12.2008                    |

# Appendix C: Air Quality Monitoring Data QA/QC

## QA/QC of Diffusion Tube Monitoring

### 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 06/21) was used to obtain an overall adjustment factor of 0.78 from the input data shown in the following screenshot. This overall factor is based on 24 co-location studies where the tube preparation method and analysis laboratory used were the same as those used by CC.

| National Diffusion Tube Bias Adjustment Factor Spreadsheet   |   |  |  |                                  |                          |   | Spreadsheet Version Number: 06/21   |            |                             |                                    |
|--|---|--|--|----------------------------------|--------------------------|---|---|------------|-----------------------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies  |   |  |  |                                  |                          |   | This spreadsheet will be updated at the end of Sept 2021  |            |                             |                                    |
| 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.                                     |   |  |  |                                  |                          |   | LAQM Helpdesk Version   |            |                             |                                    |
| The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory. |   |  |  |                                  |                          |   | Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.     |            |                             |                                    |
| Step 1:  | Step 2:   | Step 3:                                  | Step 4:  |                                  |                          |   |   |            |                             |                                    |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List   | Select a Preparation Method from the Drop-Down List                                       | Select a Year from the Drop-Down List    | 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 a laboratory is not shown, we have no data for this laboratory.   | If a preparation method is not shown, we have no data for this method at this laboratory. | If a year is not shown, we have no data. | If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953                   |                                  |                          |   |   |            |                             |                                    |
| Analysed By <sup>1</sup>   | Method  | Year                                     | Site Type  | Local Authority                  | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> ) | Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )  | Bias (B)   | Tube Precision <sup>1</sup> | Bias Adjustment Factor (A) (Cm/Dm) |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | East Suffolk Council             | 12                       | 30  | 25  | 19.6%      | G                           | 0.84                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | UB   | Canterbury City Council          | 10                       | 13  | 10  | 28.1%      | G                           | 0.78                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Canterbury City Council          | 9                        | 26  | 20  | 29.6%      | G                           | 0.77                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | UB   | Kingston upon Hull City Council  | 12                       | 24  | 18  | 34.8%      | G                           | 0.74                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Ipswich Borough Council          | 12                       | 27  | 21  | 28.5%      | G                           | 0.78                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Ipswich Borough Council          | 12                       | 36  | 26  | 36.3%      | G                           | 0.73                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Thanet District Council          | 9                        | 20  | 17  | 21.2%      | G                           | 0.83                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Medway Council                   | 12                       | 26  | 18  | 41.7%      | G                           | 0.71                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | B  | Medway Council                   | 11                       | 20  | 10  | 96.3%      | G                           | 0.51                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | B  | Gravesham Borough Council        | 12                       | 23  | 22  | 5.6%       | G                           | 0.95                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | B  | Gravesham Borough Council        | 12                       | 27  | 24  | 16.1%      | G                           | 0.86                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Monmouthshire County Council     | 10                       | 32  | 24  | 35.3%      | G                           | 0.74                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | LI   | North Lincolnshire Council       | 13                       | 18  | 14  | 26.6%      | G                           | 0.79                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | City of York Council             | 12                       | 24  | 19  | 29.0%      | G                           | 0.78                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | City of York Council             | 11                       | 22  | 17  | 34.3%      | G                           | 0.74                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | City of York Council             | 12                       | 33  | 23  | 40.4%      | G                           | 0.71                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Cambridge City Council           | 10                       | 30  | 20  | 47.6%      | G                           | 0.68                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | R  | Wrexham County Borough Council   | 9                        | 17  | 13  | 26.6%      | G                           | 0.79                               |
| SOCOTEC Didcot   | 50% TEA in acetone  | 2020                                     | KS   | Marylebone Road Intercomparison  | 11                       | 59  | 43  | 38.0%      | G                           | 0.72                               |
| Socotec Didcot   | 50% TEA in acetone  | 2020                                     | R  | Horsham District Council         | 10                       | 23  | 23  | 2.2%       | G                           | 0.98                               |
| Socotec Didcot   | 50% TEA in acetone  | 2020                                     | R  | Horsham District Council         | 12                       | 22  | 19  | 18.6%      | G                           | 0.84                               |
| Socotec Didcot   | 50% TEA in acetone  | 2020                                     | R  | Horsham District Council         | 9                        | 25  | 18  | 42.0%      | G                           | 0.70                               |
| Socotec Didcot   | 50% TEA in acetone  | 2020                                     | R  | Dacorum Borough Council          | 10                       | 24  | 19  | 25.2%      | G                           | 0.80                               |
| Socotec Didcot   | 50% TEA in acetone  | 2020                                     | R  | Huntingdonshire District Council | 12                       | 36  | 25  | 47.1%      | G                           | 0.68                               |
| <b>Overall Factor<sup>2</sup> (24 studies)</b>   |   |  |  |                                  |                          |   |   | <b>Use</b> | <b>0.76</b>                 |                                    |

## Discussion of Choice of Factor to use

The bias adjustment factor applied to all 2021 data is 0.78. The applied bias adjustment factor has been calculated using the national diffusion tube bias adjustment factor spreadsheet version 03/22.

## 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>**

**Table 16 - Bias Adjustment Factor**

| Year | Local or National | National Reference | Adjustment Factor |
|------|-------------------|--------------------|-------------------|
| 2021 | National          | 03/22              | 0.78              |
| 2020 | National          | 09/20              | 0.76              |
| 2019 | National          | 06/19              | 0.75              |

## NO<sub>2</sub> Fall-off with Distance from the Road

No diffusion tube NO<sub>2</sub> monitoring locations within the Vale of Glamorgan required distance correction during 2021.

## PM<sub>10</sub> and PM<sub>2.5</sub> Monitoring Adjustment

The PM monitors at the Cardiff AURN sites and the Castle Street automatic monitor use Beta Attenuation Monitor (BAM) with gravimetric equivalence. Therefore, to present the data as gravimetric equivalence, a conversion factor of 0.83 has been applied, using the European Standards.

### Automatic Monitoring Annualisation

There are no automatic monitoring locations that required annualization during 2021.

### NO<sub>2</sub> Fall-off with Distance from the Road

No automatic NO<sub>2</sub> monitoring locations within the Cardiff area required distance correction during 2021.

**Table 17 - Annualisation Summary (concentrations presented in µg/m<sup>3</sup>)**

| Diffusion Tube ID | Annualisation Factor Cardiff City Centre AURN | Annualisation Factor St Julians School, Newport | Average Annualisation Factor |
|-------------------|---|---|------------------------------|
| 101               | 0.9350  | 0.9821  | 0.9585                       |
| 102               | 0.9350  | 0.9821  | 0.9585                       |
| 103               | 0.9350  | 0.9821  | 0.9585                       |
| 184               | 0.8333  | 0.8939  | 0.8636                       |
| 186               | 1.0234  | 1.0586  | 1.0410                       |
| 188               | 0.7853  | 0.8612  | 0.8233                       |
| 220               | 0.9008  | 0.9537  | 0.9272                       |
| 221               | 0.9465  | 1.0133  | 0.9799                       |
| TRO-001           | 0.8332  | 0.9100  | 0.8716                       |
| TRO-020           | 0.8782  | 0.9491  | 0.9136                       |
| TRO-036           | 0.9907  | 1.0541  | 1.0224                       |
| TRO-014           | 1.0473  | 1.0806  | 1.0640                       |

## Appendix D: AQMA Boundary Maps

Figure 31 - Cardiff City Centre AQMA



Figure 32 - Stephenson Court AQMA





Figure 33 - Ely Bridge AQMA



**Figure 34 - Llandaff AQMA**



## 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)   |
| 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 <sub>2</sub>   | Nitrogen Dioxide  |
| NO <sub>x</sub>   | Nitrogen Oxides   |
| PM <sub>10</sub>  | Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less   |
| PM <sub>2.5</sub> | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less   |
| QA/QC             | Quality Assurance and Quality Control   |
| SO <sub>2</sub>   | Sulphur Dioxide   |

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**WG22-38**

**ENVIRONMENT ACT 1995**

Environment Act 1995 (Activity to  
ensure Nitrogen Dioxide  
Compliance) Air Quality Direction  
2022

**EXPLANATORY NOTE**

*(This note is not part of the Direction)*

This direction directs Cardiff Council to carry out the specified activities listed in the Schedule by the specified deadlines, in relation to its duties in respect of Air Quality under Part 4 of the Environment Act 1995 and as part of the UK plan for tackling roadside nitrogen dioxide concentrations 2017. Under section 85(7) of that Act it is the duty of Cardiff Council to comply with a direction given to it. A copy of this direction is available from the Welsh Government, Cathays Park, Cardiff, CF10 3NQ.

**WG No. 22-38**

**ENVIRONMENT ACT 1995**

Environment Act 1995 (Activity to  
ensure Nitrogen Dioxide  
Compliance) Air Quality Direction  
2022

*Made* 20 September 2022

*Coming into force* 21 September 2022

The Welsh Ministers, in exercise of the power conferred by section 85(5) of the Environment Act 1995(1) give the following direction.

In accordance with section 85(6) a copy of this direction will be published in the London Gazette.

The Welsh Ministers make this direction having determined that the steps specified in this direction are appropriate in order to secure the meeting of the retained EU obligations under the Air Quality Standards (Wales) Regulations 2010(2).

**Title, commencement and application**

**1.**—(1) The title of this direction is the Environment Act 1995 (Activity to ensure Nitrogen Dioxide Compliance) Air Quality Direction 2022.

(2) This direction comes into force on 21 September 2022.

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(1) 1995 c. 25. The functions of the Secretary of State under section 85(5) were transferred to the National Assembly for Wales in relation to Wales by article 2 of, and Schedule 1, to the National Assembly for Wales (Transfer of Functions) Order 1999 (S.I. 1999/672). By virtue of section 162 of, and paragraph 30 of Schedule 11 to, the Government of Wales Act 2006 (c. 32), the functions conferred on the Assembly are now exercisable by the Welsh Ministers. Section 85(5)(a) Environment Act 1995 was amended by regulation 3(7) of the Environment (Amendment etc.) (EU Exit) Regulations 2019 (S.I. 2019/458).

(2) SI 2010/1433 W.126.

(3) This direction applies to Cardiff Council.

**Interpretation**

2. In this direction—

“specified authority” means Cardiff Council;

“specified activities” means the activities described in the Schedule.

**Requirement to take certain steps**

3. The specified authority must complete the specified activities by the dates specified in the Schedule.

*Julie James*

Minister for Climate Change, one of the Welsh Ministers

20 September 2022

## SCHEDULE Articles 2 and 3

### Specified Activities

| <i>Activity</i>   | <i>Description of activity</i>  | <i>Deadlines</i>  |
|---|---|---|
| <p><b>Implementation of permanent variation of preferred option for Castle Street identified in <i>Cardiff Council Clean Air Feasibility Study Revised Final Plan – October 2019</i> as City Centre North (CCN).</b></p>  | <p><b>Delivery of City Centre North (CCN) Scheme:</b></p> <ul style="list-style-type: none"> <li>• Reduction of highway space.</li> <li>• Installation of two-way dedicated cycleway along the length of Castle Street.</li> </ul>  | <p><b>To be delivered without delay and according to the agreed implementation timetable.</b></p> |
| <p><b>Should Cardiff Council prefer to review options for a permanent scheme for Castle Street to deliver an equal, or greater, level of ambition - undertake, as part of the UK plan for tackling roadside nitrogen dioxide concentrations 2017, a feasibility study in accordance with the HM Treasury's Green Book approach, to identify the alternative option which will ensure sustained, long-term compliance with legal limits for nitrogen dioxide, in the shortest possible time.</b></p> | <p><b>Initial scoping proposals:</b><br/>Setting out the proposed approach to the feasibility study and including scope of work, governance, resourcing, procurement approach, indicative costs and timings.</p>  | <p><b>As soon as possible and by 30 September 2022 at the latest.</b></p>                         |
| <p><b>As above.</b></p>   | <p><b>Initial Plan:</b><br/>Setting out the case for change and identifying, exploring, analysing, and developing options for measures which the local authority will implement to ensure sustained, long-term compliance in the shortest possible time, with indicative costs for those options.</p> | <p><b>As soon as possible and by 28 November 2022 at the latest.</b></p>                          |



|   |  |  |
|---|--|--|
| <b>As above.</b>  | <b>Final Plan:</b><br>Identifying in detail the preferred (permanent scheme) option for delivering compliance in the shortest possible time and including a full business case setting out value for money considerations and implementation arrangements and timings. | <b>As soon as possible and by 31 January 2023 at the latest.</b>         |
| <hr/> <b>Whilst delivering the specified activities, maintain legal compliance with NO<sub>2</sub> limits at Castle Street.</b> | <b>Monitoring plan:</b><br>Including timings/trigger points, and specific actions to be taken, to ensure concentrations on Castle Street remain compliant.   | <hr/> <b>As soon as possible and by 30 September 2022 at the latest.</b> |

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CYNGOR CAERDYDD

CARDIFF COUNCIL

ENVIRONMENTAL SCRUTINY COMMITTEE

08 DECEMBER 2022

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**COMMITTEE BUSINESS**


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**Purpose of Report**

1. This report seeks to provide the Committee with an update in relation to the recommendations made by the Committee since May 2022.

**Structure of the Papers**

- **Appendix A** provides further details of those recommendations that have not had a response from Cabinet to date

**Scrutiny Recommendations**

2. Since May 2022, the start of this administration Committee has made 22 recommendations:

| Directorate                      | RECOMMENDATIONS |                 |
|----------------------------------|-----------------|-----------------|
|                                  | Open            | Closed          |
| Planning Transport & Environment | 9               | 7               |
| Economic Development             | 0               | 6               |
| <b>TOTAL</b>                     | <b>9 (41%)</b>  | <b>13 (59%)</b> |

3. Of the 13 closed recommendations:
  - 9 (69%) were Accepted
  - 3 (23%) were Partially accepted
  - 1 (8%) were Not Accepted

4. The 22 recommendations made were in relation to the following items:

| Topic   | RECOMMENDATIONS |                 |
|---|-----------------|-----------------|
|   | Open            | Closed          |
| Welsh Government Bus White Paper Consultation | 0               | 6               |
| Planning Transport & Environment DDP          | 4               | 0               |
| Recycling Strategy for Cardiff                | 0               | 5               |
| Shared Regulatory Services                    | 0               | 1               |
| Electric Bus Scheme                           | 0               | 1               |
| LDP AMR                                       | 5               | 0               |
| <b>TOTAL</b>                                  | <b>9 (41%)</b>  | <b>13 (59%)</b> |

5. No Cabinet response has been received in relation to the recommendations and requests made following the meeting held in July to discuss the Planning Transport and Environments Directorate Delivery Plan

### Way Forward

6. The Principal Scrutiny Officer continues to monitor and manage the receipt of Cabinet letters to ensure that all recommendations are responded to in a timely manner.

### Legal Implications

7. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters, there are no direct legal implications. However, legal implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any legal implications arising from those recommendations. All decisions taken by or on behalf of the Council must (a) be within the legal powers of the Council; (b) comply with any procedural requirement imposed by law; (c) be within the powers of the body or person exercising powers on behalf of the

Council; (d) be undertaken in accordance with the procedural requirements imposed by the Council e.g. Scrutiny Procedure Rules; (e) be fully and properly informed; (f) be properly motivated; (g) be taken having regard to the Council's fiduciary duty to its taxpayers; and (h) be reasonable and proper in all the circumstances.

### **Financial Implications**

8. The Scrutiny Committee is empowered to enquire, consider, review and recommend but not to make policy decisions. As the recommendations in this report are to consider and review matters, there are no direct financial implications at this stage in relation to any of the work programme. However, financial implications may arise if and when the matters under review are implemented with or without any modifications. Any report with recommendations for decision that goes to Cabinet/Council will set out any financial implications arising from those recommendations.

### **RECOMMENDATION**

9. The Committee is recommended to:
  - i. Note the content of this report.
  - ii. Support action to reduce the number of recommendations with no cabinet response, where appropriate.

**Davina Fiore**

**Director of Governance & Legal Services**

**2 December 2022**

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### Overview of Recommendations made by the Environmental Scrutiny Committee 2022/2023

Date of Meeting

01/05/2022

14/11/2022

Scrutiny Committee

- Select all
- CASSC
- E&CSC
- ESC
- PRAP

Directorate / Service Area

- Select all
- Economic Development
- Planning, Transport & Environment

## Overview

#### Recommendations Accepted/Partially Accepted/Not Accepted

| Status             | Count | Percentage |
|--------------------|-------|------------|
| Accepted           | 8     | 66.7%      |
| Partially Accepted | 3     | 25.0%      |
| Not Accepted       | 1     | 8.3%       |

Total number of Recommendations OPEN

12

Number of Task & Finish Inquiry Recommendations OPEN

0

Number of other recommendations OPEN for more than 2 months

0

Number of Recommendations CLOSED

10

#### Recommendations Open/Closed

| Status | Count | Percentage |
|--------|-------|------------|
| Open   | 12    | 54.5%      |
| Closed | 10    | 45.5%      |

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