Ceredigion County Council

2024 Air Quality Progress Report

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

Date: November 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Ceredigion

This Air Quality Strategy Progress Report confirms, as in previous years, that **all existing statutory air quality Standards and Objectives** were complied with in 2023, at all locations in Ceredigion. As in previous years, therefore, it is not considered necessary to progress to more detailed assessments of air quality in Ceredigion or to declare any Air Quality Management Areas (AQMAs).

Ceredigion's main source of air pollution is that of vehicle emissions, from the county's road network. The County's economy is also heavily reliant on tourism, with the population of the county doubling during summer school holiday periods leading to increases in vehicle emissions. Despite this, measured trends for NO_2 in recent years at "hot-spot" locations in the county have been downward with no exceedances of the standards detected at any locations (including road-side and "worst-case" locations). This downward trend was generally not seen to have continued in 2023 with the majority of locations experiencing concentrations similar to what was seen in 2022, albeit still well within the legal limit.

Data Modelling conducted by DEFRA, indicated that Ceredigion's air was subjected to less than 13µg/m3 as an annual mean of PM_{10} in 2023. This included our busiest town namely, Aberystwyth. Air pollution in Ceredigion, specially relating to Nitrogen Dioxide and PM_{10}, continues to be amongst the lowest in Wales.

Actions to Improve Air Quality

The monitoring data collected for 2023 did not identify any requirement to undertake a Detailed Assessment or for the declaration of an AQMA. The authority however, continues to monitor the air quality of the area and reviews captured data on an ongoing basis to inform whether reactive action is required.

Local Priorities and Challenges

Whilst the general trend of NO_2 concentrations in Ceredigion have been downward in recent years, it should be noted that the COVID-19 pandemic brought about data capture challenges in that diffusion tubes could not be collected for many months of the monitoring periods. This meant that data from continual monitoring sites in Pembrokeshire and Shropshire had to be

used as part of an annualization procedure for 2020 and 2021 Annual Progress Report data. The data captured in 2022 found that monitoring locations observed an approximate reduction of 20% in annual mean concentration of NO_2 in relation to 2021 levels, but it should be noted that this coincided with it being the first year whereby full localised data capture could be achieved again. This could suggest that the annualization procedure in 2020 and 2021 led to a higher than usual observed annual mean values at the monitoring locations.

Therefore, the intended focus of this year's report was to observe whether or not the downward trend in NO_2 concentrations would continue or whether the drop in levels observed between 2021 and 2022 could have been influenced by the necessary annualization procedure that was applied to the data in prior years. The data for 2023 found no continuation in a downward trend for NO_2 mean concentrations with only marginal variations (upward and downward) observed in all locations.

Due to all monitoring locations being well within legal compliance in recent years, another priority for the 2024 Air Progress report was to establish new monitoring locations identified as being of a higher risk of traffic congestion. A new monitoring location was established in Llanbadarn Road, Aberystwyth due to it being an area with daily traffic congestion from two primary schools and one secondary school subject to pupil drop offs and collection by both parents and school buses. The second newly established location was Llanon, identified as being of higher risk of traffic congestion due to the busy A487 Trunk road running through it, similar to the location observed with the highest mean NO_2 concentration in 2021 and 2022, Talybont.

In 2023, Lampeter High Street and Talybont were the locations which were found to have the highest annual mean concentrations of NO_2 at 16.3µg/m3 and 16.2µg/m3 respectively. This was marginally down from the highest mean of 17.2 µg/m3 observed in Talybont in 2022. The reasons for these areas having the highest mean is likely due to Lampeter being a town subject to periodic traffic congestion and Talybont having a relatively busy Trunk Road going through the village that is often subject to commuters to Aberystwyth, HGVs traveling through the county and tourists visiting the county in summer months. These concentrations however are still well within the statutory limit and the sites will continue to be monitored in future to verify legal compliance.

How to Get Involved

Members of the public can obtain further information on air quality by contacting the report author.

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1 Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

Ceredigion's Air Quality Progress Reports have continually established there to be no exceedances of air quality standards for any of the priority air pollutants contained in Regulations at any monitored location (including at congested roadsides). Furthermore, no exceedances were anticipated in the future on the basis of observed trends and modelled predictions which have been used.

A checklist approach and screening tools were used to identify potential sources of air pollution in the county over many years. All possible sources of air pollution suggested in Technical Guidance have been considered with only the ongoing monitoring of NO_2 having been deemed as necessary. Monitoring locations are regularly reviewed in line with emerging issues and developments as recommended in guidance etc. The last Progress Report for Ceredigion was submitted in 2023 and was accepted by Welsh Government as accurately representing the state of air quality in Ceredigion. Results presented in the report were generally in accord with national projections.

There are no significant sources of industrial air pollution in Ceredigion - industrial, road and other developments in recent years have been relatively low impacting in air quality terms.

It was reported in a previous Progress Report (using data modelled by DEFRA for 2015) that estimated PM2.5 concentrations approached a Scottish standard of 10µg/m_3 (also the World Health Organisation guideline standard) at some congested roadside locations in the main town of Aberystwyth. Results modelled by DEFRA at road-side locations in Aberystwyth in 2018, however, were lower (between 6 and 8µg/m_3). This is below the mandatory Scottish and World Health Organisation guideline standard. PM2.5 is an important health related parameter and the Scottish mandatory and WHO guideline standard is a stringent one that will be difficult to achieve at some roadside locations in the UK.

It has not been considered necessary to declare any air quality management areas in Ceredigion or to develop action plans to improve air quality in the county. There were no significant new developments in the county in 2023 (industry etc.) that significantly affected air quality. Local Transport Plans, a Carbon Management Plan and Economic Development and Planning Strategies acknowledge the importance of air quality and aim to limit or reduce the impact local emissions make in the county.

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

Ceredigion County Council has no Air Quality Management Areas (AQMAs) or any locations in the county where air pollutant concentrations exceed / approach national standards / objectives. It has not been necessary, therefore, to develop Air Quality Action Plans or an Air Quality Strategy.

1.3 Implementation of Action Plans

There are no Air Quality Management Areas in Ceredigion. It has not been necessary to develop and implement Action Plans or to produce an Air Quality Strategy.

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2023

2.1.1 Automatic Monitoring Sites

There are currently no automatic monitoring sites operating within Ceredigion.

2.1.2 Non-Automating Monitoring Sites

Ceredigion County Council undertook non- automatic (passive) monitoring of NO_2 at thirteen locations during 2023. Table 2.1 presents the details of the sites.

Maps showing the locations of the monitoring sites are provided in Figure 2.1. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Table 2.1 – Details of Non-Automatic Monitoring Sites

Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) [1]	Distance from Kerb to Monitor (m)
Terrace Road, Aberystwyth	Urban Centre	N/A	258470	281700	2.5	No	1	1
Thespian Street, Aberystwyth	Urban Centre	N/A	258630	281800	2.5	No	10	1
Railway Station, Aberystwyth	Urban Centre	N/A	258500	281620	2.5	No	1	1
Morrisons Roundabout, Aberystwyth	Roadside	N/A	259590	280570	1.5	No	200	1
Mill Street, Aberystwyth	Industrial	N/A	258379	281519	1.5	No	1	1
High Street, Lampeter	Urban Centre	N/A	257790	248140	1.5	No	1	1
High Street, Cardigan	Urban Centre	N/A	217790	246180	1.5	No	1	1
Quay Street, Cardigan	Urban Centre	N/A	217661	245959	1.5	No	1	1
Pendam	Rural	N/A	272240	283330	1.5	No	500	1
Talybont	Roadside	N/A	265462	289275	1.5	No	1	1

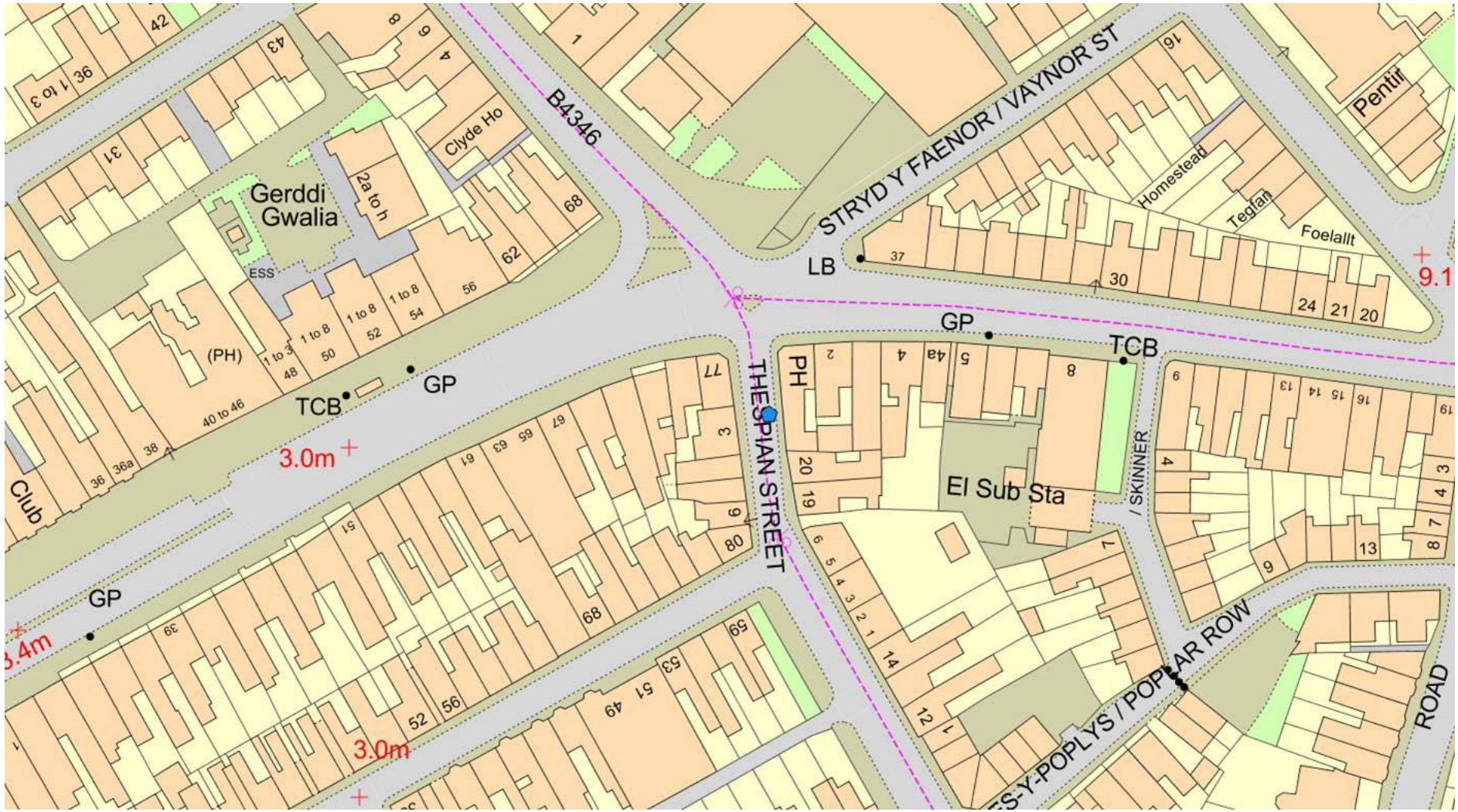
Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) (1)	Distance from Kerb to Monitor (m)
Great Darkgate Street, Aberystwyth	Urban Centre	N/A	258230	281631	1.5	No	1	3
Llanbadarn Road, Aberystwyth	Roadside	N/A	259514	281258	1.5	No	5	1
Llanon	Roadside	N/A	251574	267060	1.5	No	5	1

Notes:

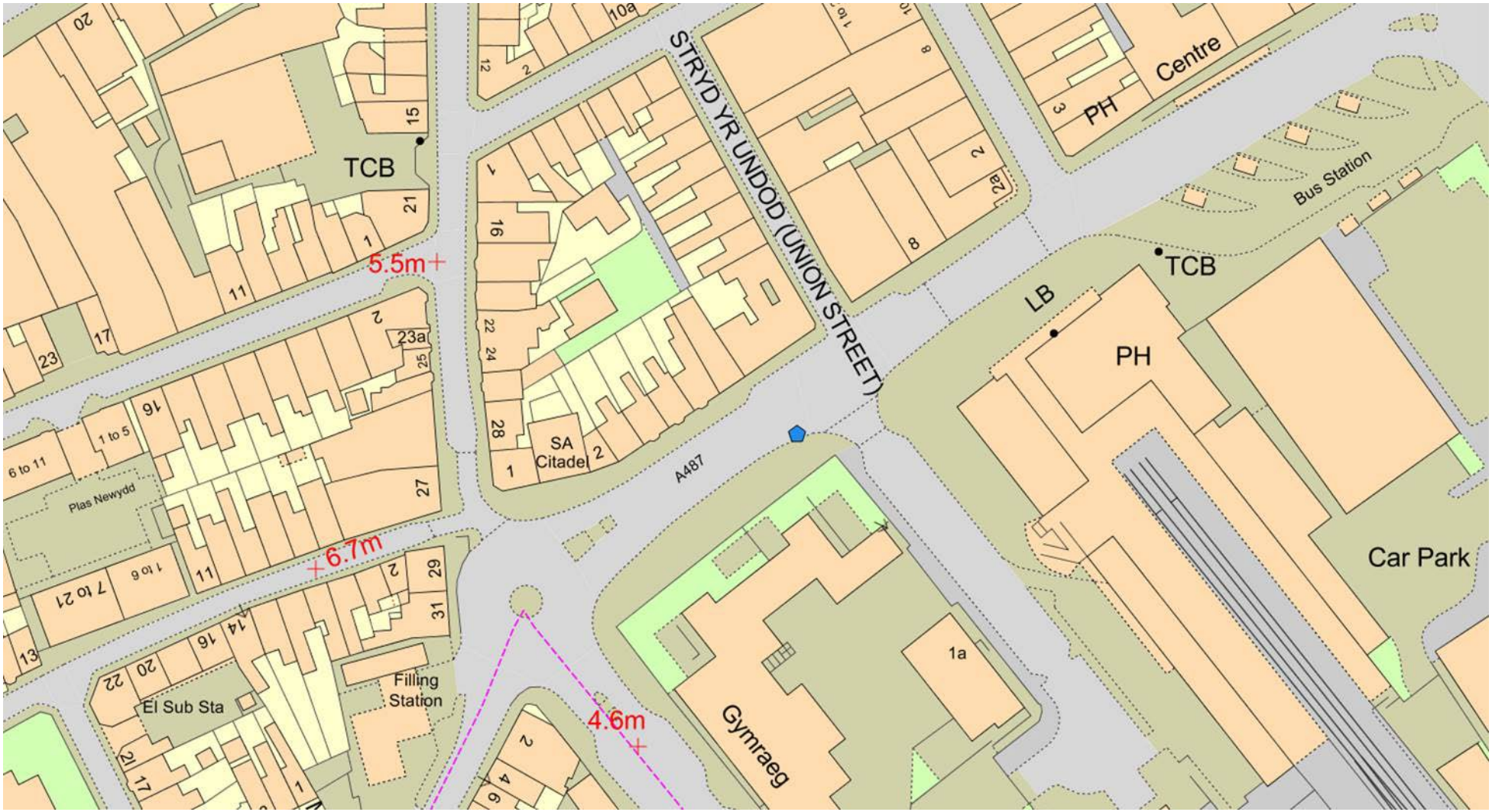
(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

Figure 2.1 – Map(s) of Non-Automatic Monitoring Sites

Terrace Road, Aberystwyth

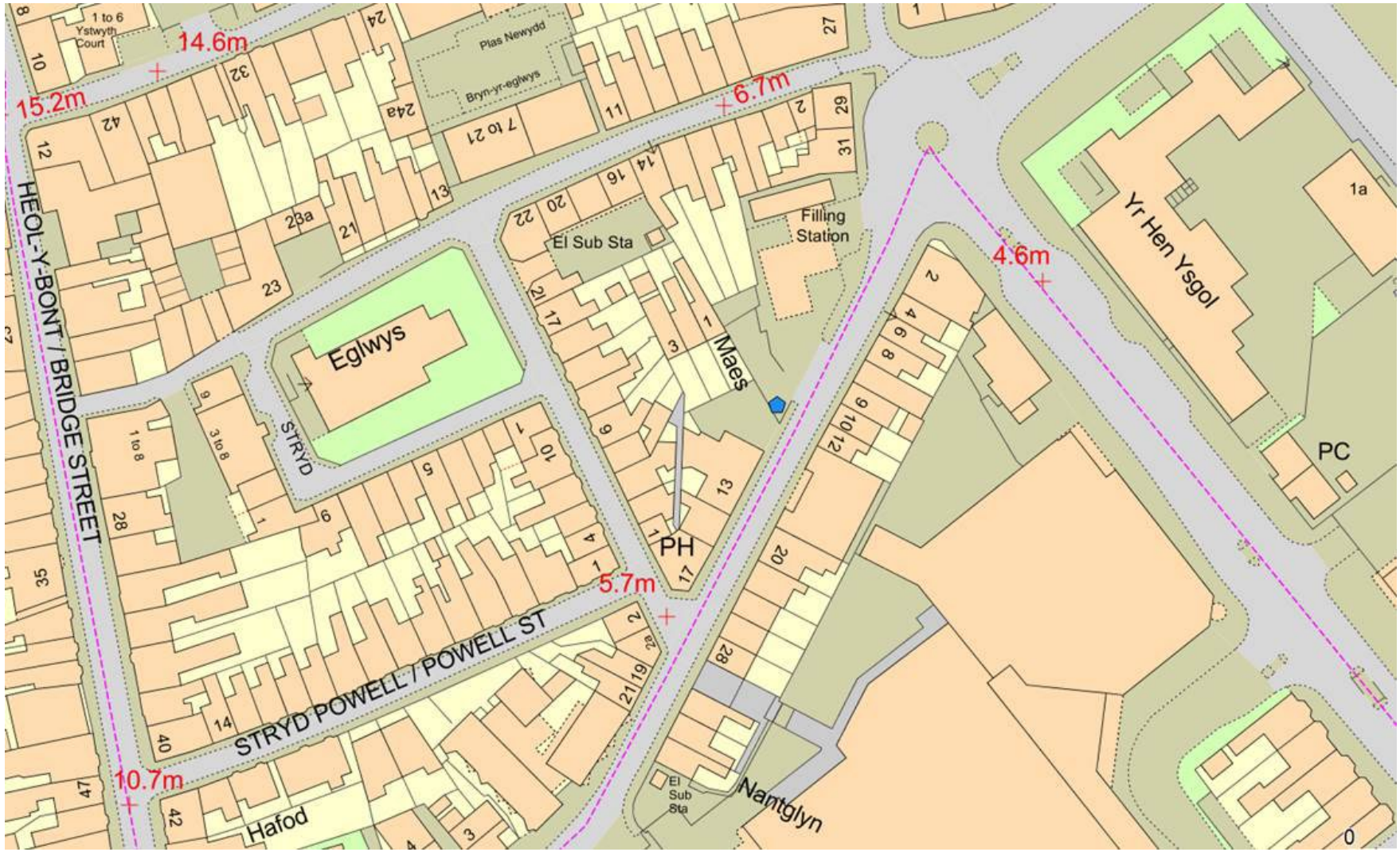


Thespian Street, Aberystwyth

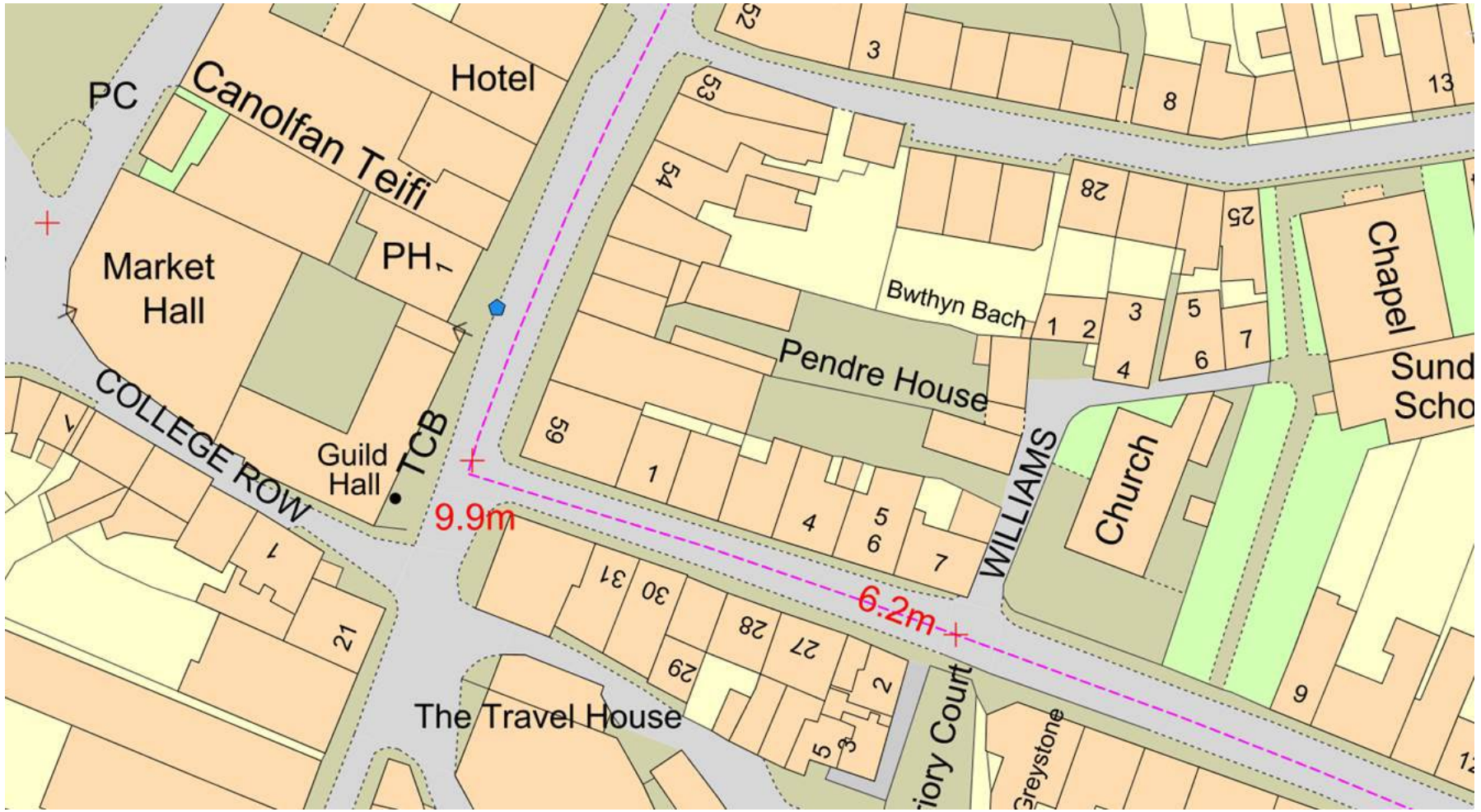


Railway Station, Aberystwyth

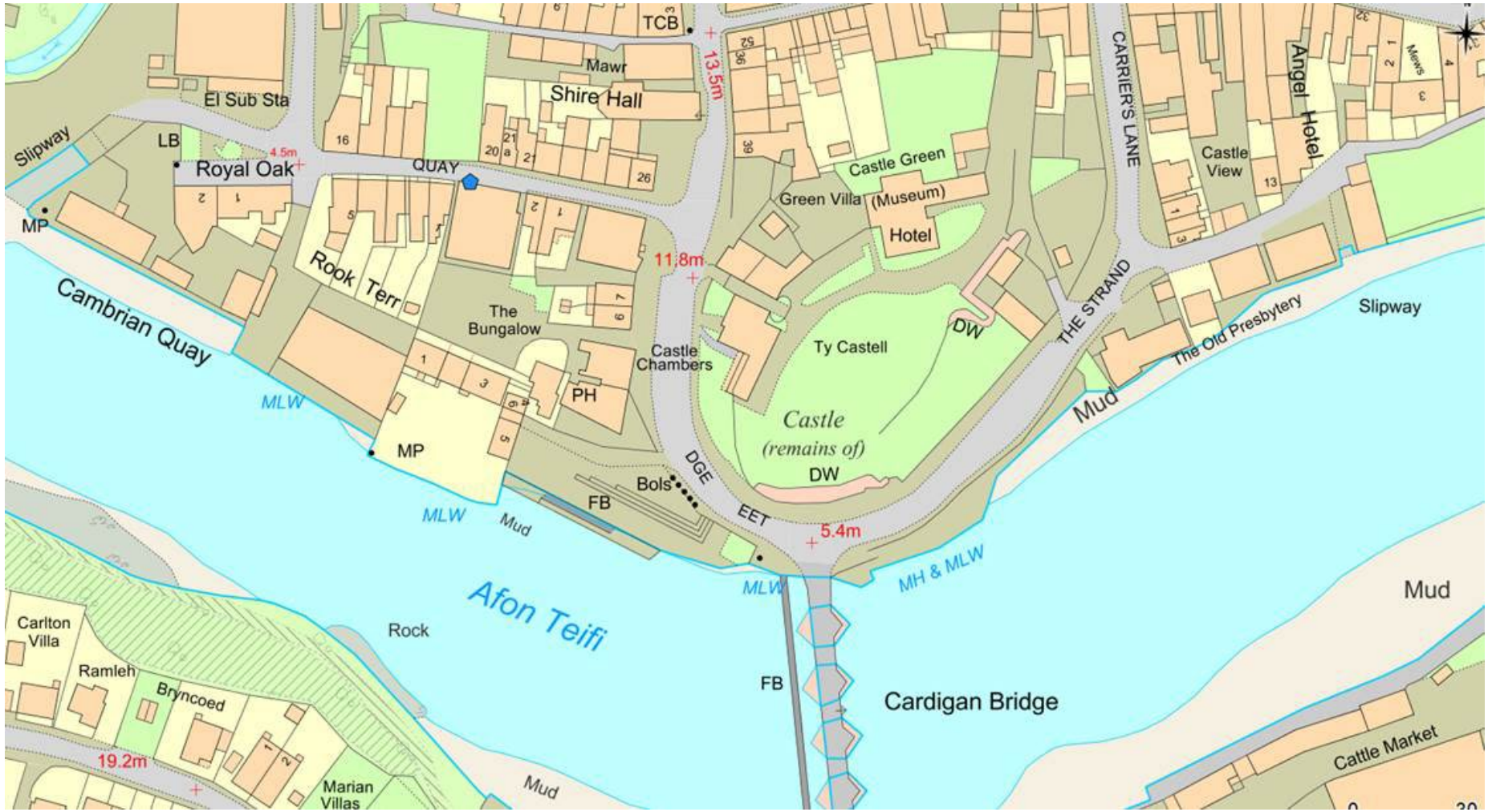
Morrison's Roundabout, Aberystwyth



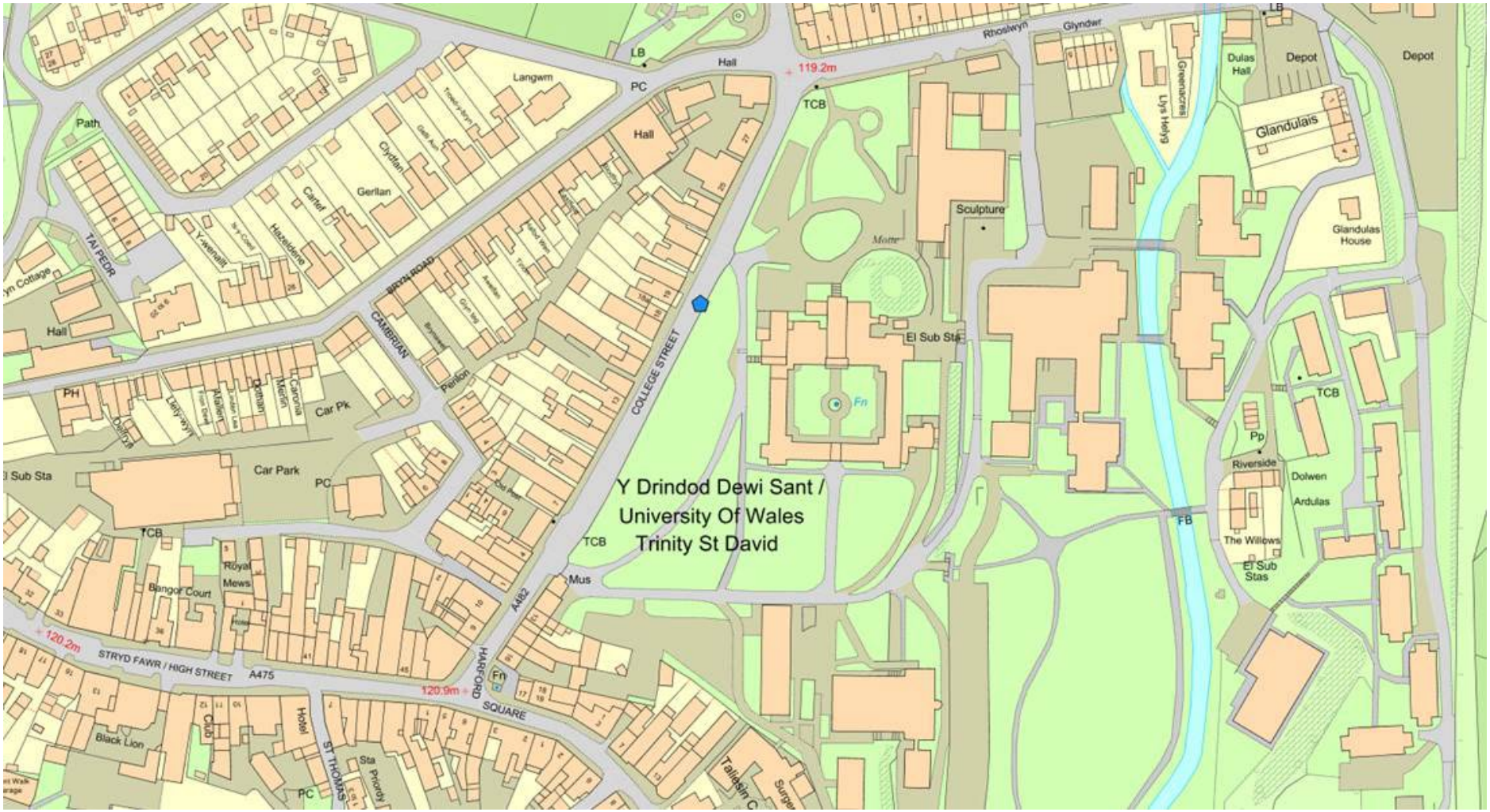
Mill Street, Aberystwyth



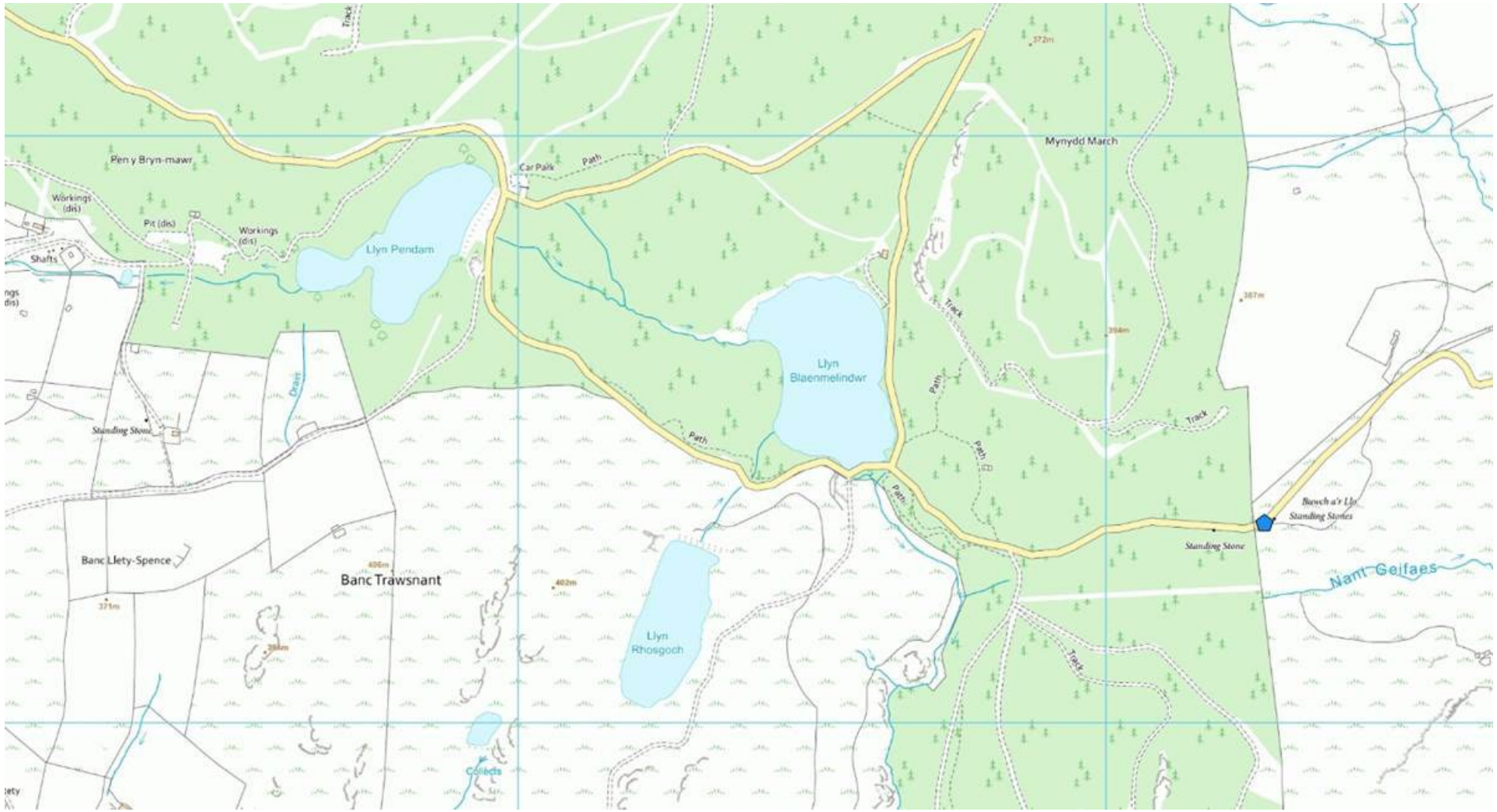
High Street, Cardigan



Quay Street, Cardigan



High Street, Lampeter


Pen y Bryn-mawr
Workings (dis)
Pit (dis)
Workings (dis)
Shafts
Car Park
Path
Llyn Pendam
Mynydd March
Track
372m
387m
394m
Llyn Blaenmelindwr
Path
Track
Standing Stone
Drain
Banc Llety-Spence
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Llyn Rhosgoch
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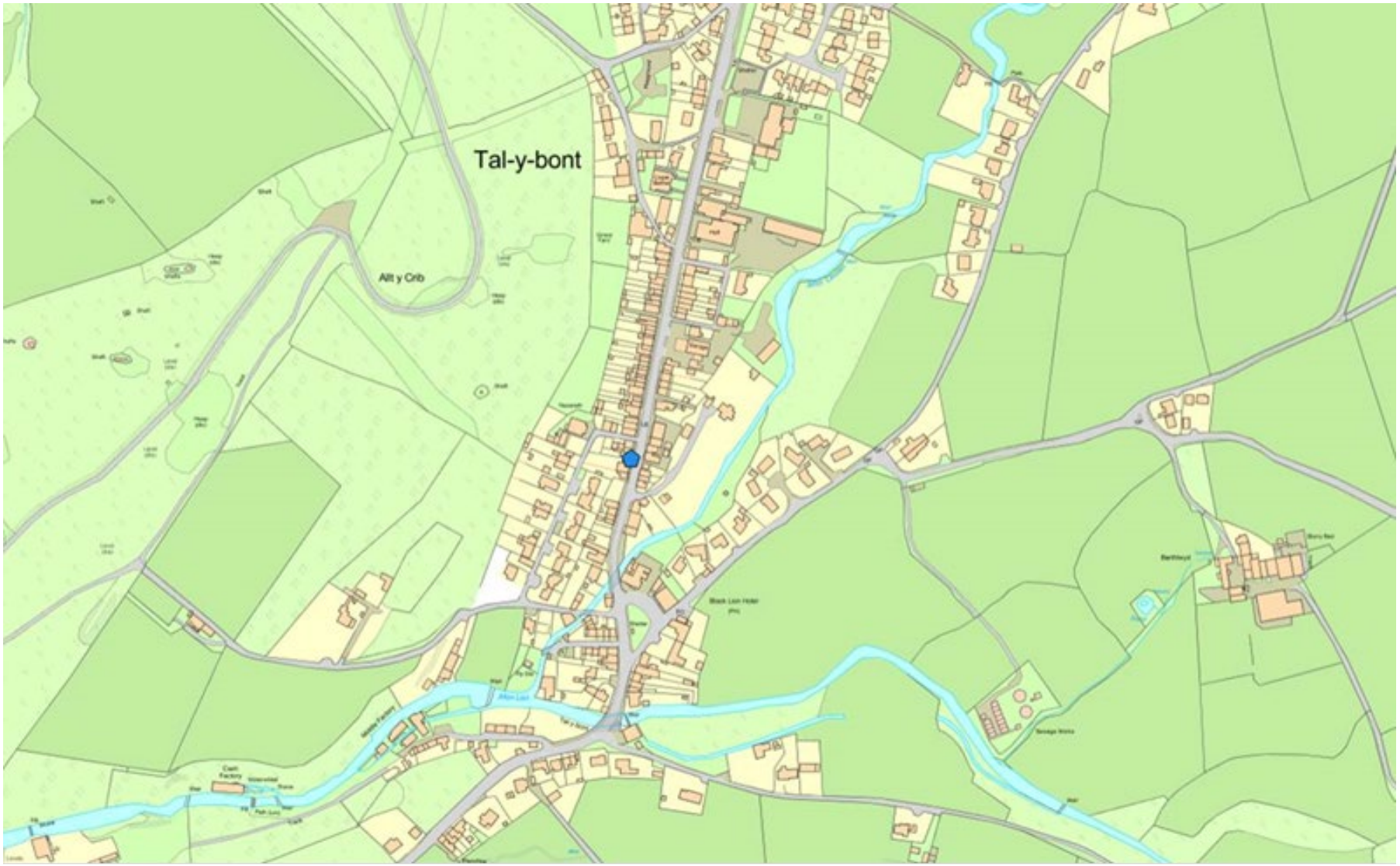
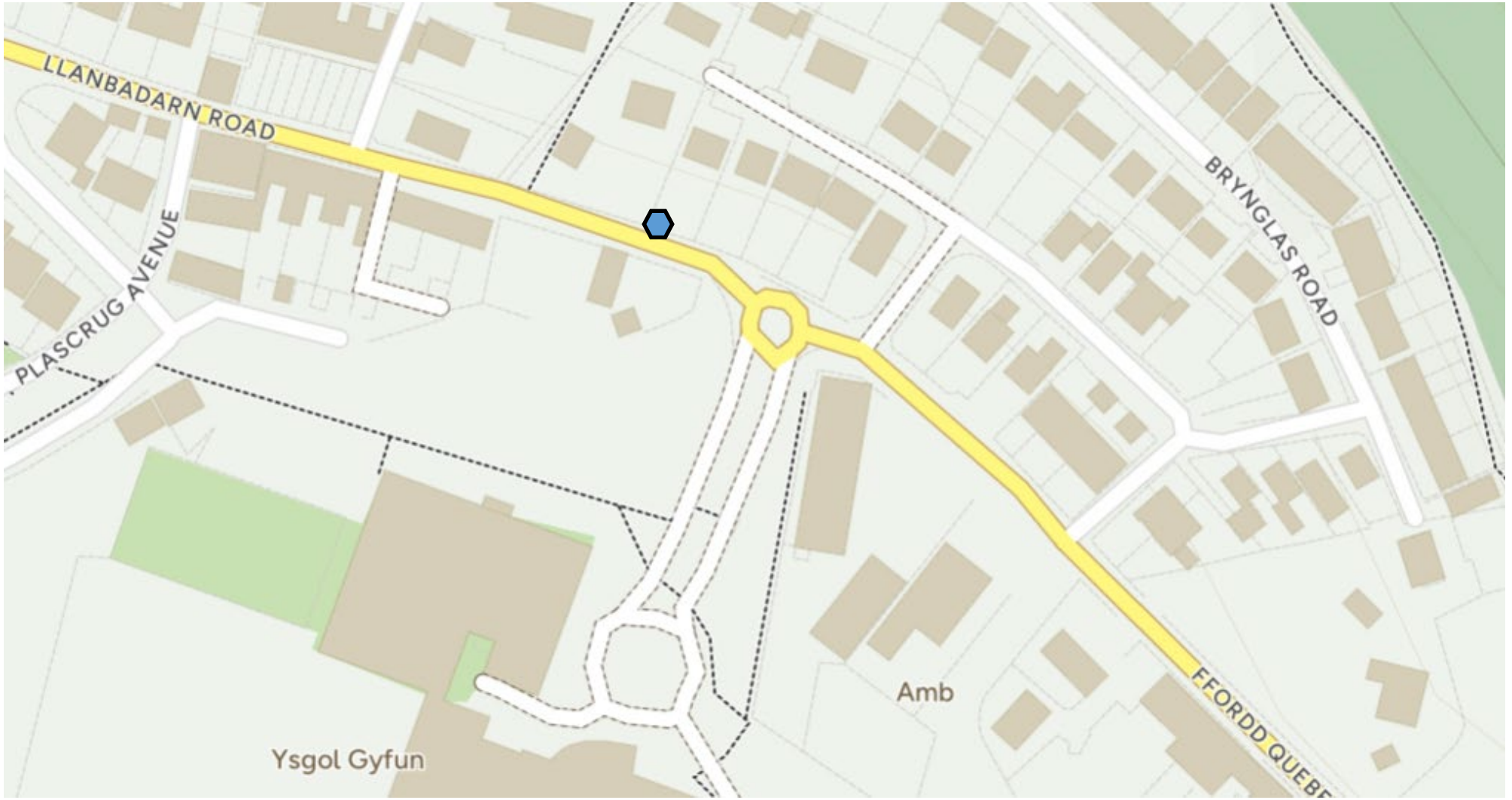
Pendam

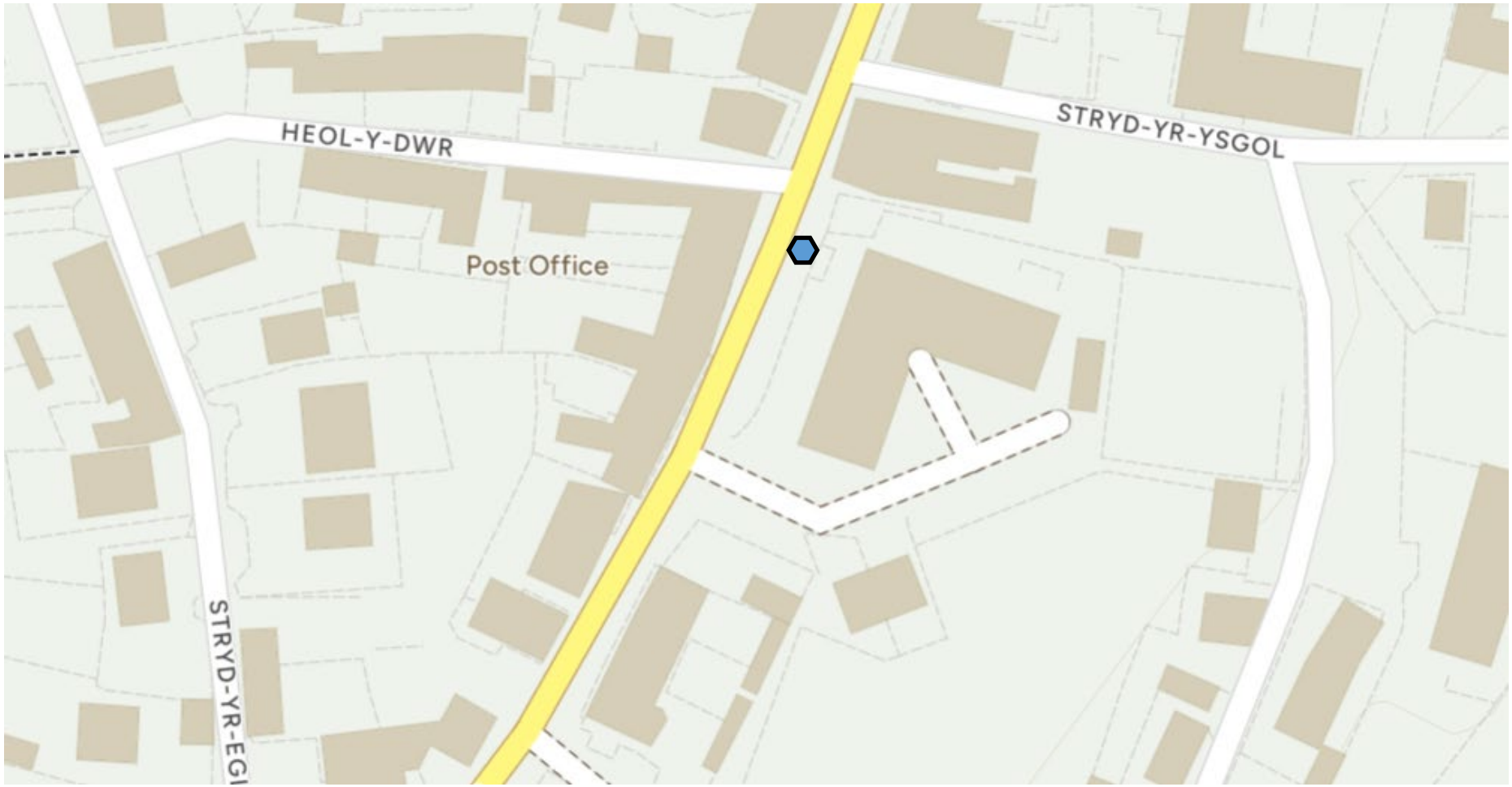


Talybont

Great Darkgate Street, Aberystwyth



Llanbadarn Road, Aberystwyth



Llanon

2.2 2023 Air Quality Monitoring Results

Table 2.2 – Annual Mean NO_2 Monitoring Results (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
Terrace Road, Aberystwyth	Urban Centre	Diffusion Tube	100	100	19.6	16.3	20.4	15.6	15.1
Thespian Street, Aberystwyth	Urban Centre	Diffusion Tube	100	100	18.3	15.8	20.3	15.8	14.5
Railway Station, Aberystwyth	Urban Centre	Diffusion Tube	100	100	20.3	17.0	20.7	15.1	14.2
Morrisons Roundabout, Aberystwyth	Roadside	Diffusion Tube	92	100	17.5	13.8	16.6	12.7	12.0
Mill Street, Aberystwyth	Urban Centre	Diffusion Tube	100	100	18.9	16.5	22.2	15.3	15.5
High Street, Lampeter	Urban Centre	Diffusion Tube	84	100	15.6	15.0	16. 2	12.9	16.3
Quay Street, Cardigan	Urban Centre	Diffusion Tube	100	100	n/a	10.1	8.2	6.4	6.1
High Street, Cardigan	Urban Centre	Diffusion Tube	100	100	18.4	17.7	16.6	13.0	12.0
Talybont	Roadside	Diffusion Tube	100	100	n/a	n/a	24.5	17.2	16.2
Great Darkgate Street, Aberystwyth	Urban Centre	Diffusion Tube	100	100	n/a	n/a	12.7	9.8	9.2
Pendam	Rural Background	Diffusion Tube	92	100	n/a	2.8	2.4	1.9	2.3
Llanbadarn Road, Aberystwyth	Roadside	Diffusion Tube	92	100	n/a	n/a	n/a	n/a	13.0
Llanon	Roadside	Diffusion Tube	100	100	n/a	n/a	n/a	n/a	8.3

Notes:

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

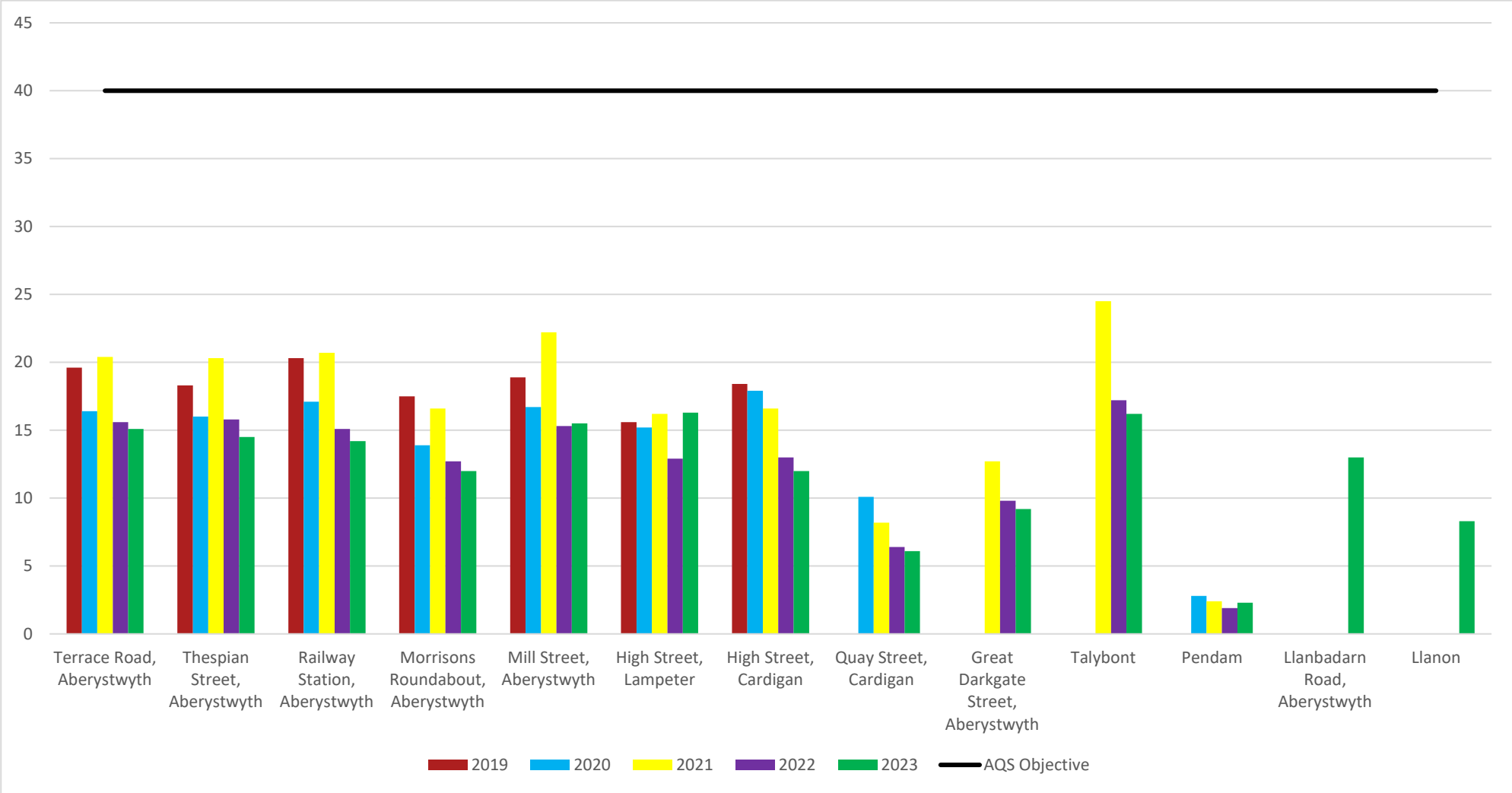
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

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%).

Figure 2.2 – Trends in Annual Mean NO_2 Concentrations (µg/m^3)



2.3 Comparison of 2023 Monitoring Results with Previous Years and the Air Quality Objectives

During 2023, Ceredigion County Council collected diffusion tube data for NO_2 at thirteen locations (including the Pendam, Rural Background site and the two new monitoring sites at Llanbadarn Road, Aberystwyth and Llanon). Site details are outlined in Table 2.1- 'Details of Non-Automatic Monitoring Sites' with maps of each site being provided in Figure 2.1- 'Non-Automatic Monitoring Sites'.

Comparison of 2023's data in relation to previous years is outlined in Table 2.2- 'Annual Mean NO_2 Monitoring Results' and is illustrated in Figure 2.2- 'Trends in Annual Mean NO_2 Concentrations'. A breakdown of monthly data gathered in 2023 is outlined in Table A.1- 'Full Monthly Diffusion Tube Results for 2023'.

2.3.1 Nitrogen Dioxide (NO_2)

Valid data capture was achieved at 100% for the majority of monitoring locations with the exception of High Street, Lampeter (84%), Pendam (92%) and Llanbadarn Road, Aberystwyth (92%) The high data capture meant that an annualisation procedure did not need to be implemented in 2023. Monitoring for NO_2 at Talybont and Great Darkgate Street, Aberystwyth was initiated in 2020 and monitoring in and Llanbadarn Road, Aberystwyth and Llanon was initated in 2023 hence the lack of data prior to these periods in Table 2.2.

The annual mean concentration data recorded for NO_2 during 2023 at each of the monitoring locations, as presented in Table 2.2, did not exceed the annual mean NO_2 AQS objective level of 40µg/m3 (see Appendix B). This included the two new monitoring sites of Llanbadarn Road, Aberystwyth and Llanon.

As displayed in Figure 2.2, the NO_2 annual mean concentrations monitored at all monitoring locations have seen a general steady decrease in recent years without interventions in the form of AQMAs having been implemented. Annual mean data from 2023 was not consistent with this downward trend however the variation from concentrations observed in 2022 was minimal and still well within the legal limit.

In 2023, Lampeter High Street and Talybont were the locations which was found to have the highest annual mean concentrations of NO_2 at **16.3µg/m3** and **16.2µg/m3** respectively. This was marginally down from the highest mean of 17.2 µg/m3 observed in Talybont in 2022. The reasons for these areas having the highest mean is likely due to Lampeter being a town subject to periodic traffic congestion and Talybont having a relatively busy Trunk Road going through the village that

is often subject to commuters to Aberystwyth, HGVs traveling through the county and tourists visiting the county in summer months

2.3.2 Particulate Matter (PM_{10})

Ceredigion County Council does not monitor for PM_{10} however data modelling conducted by DEFRA, indicated that Ceredigion's air was subjected to less than 13µg/m3 as an annual mean of PM10 in 2023. This included our busiest town namely, Aberystwyth.

2.3.3 Particulate Matter ($PM_{2.5}$)

Ceredigion County Council does not monitor for $PM_{2.5}$.

2.4 Summary of Compliance with AQS Objectives as of 2023

Ceredigion County Council has examined the results from monitoring in the county of Ceredigion. Concentrations are all below the objectives, therefore no further action is required.

3 New Local Developments

3.1 Road Traffic Sources (and Other Transport)

There were no new Road traffic Sources of significance identified in Ceredigion, in 2023, in accordance with the guidance.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

There were no new Industrial/Fugitive or Uncontrolled Sources/Commercial Sources of significance identified in Ceredigion, in 2023, in accordance with the guidance.

3.3 Other Sources

There were no other new sources of significance identified in Ceredigion, in 2023, in accordance with the guidance.

Other than road traffic sources, Ceredigion County Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Ceredigion County Council confirms that all the following have been considered:

- Road traffic sources
- Other transport sources
- Industrial sources
- Commercial and domestic sources
- New developments with fugitive or uncontrolled sources.

4 Policies and Strategies Affecting Airborne Pollution

4.1 Local / Regional Air Quality Strategy

There are no AQMAs declared in Ceredigion. Therefore, there are no AQAPs. As Ceredigion is a largely rural county Air Quality is generally good, and there are no policies or strategies that have been produced that specifically focus on Air Quality.

4.2 Air Quality Planning Policies

Pollution control and planning systems have tended to evolve over the years as separate entities. Authorisations under the pollution control regimes aim to control the ways in which prescribed processes operate, in order to limit and render harmless any pollution emitted to the atmosphere. The planning system, however, regulates the location of development and the control of operations in order to avoid or minimise the adverse effects that any potential for pollution may have on the use of land and the environment, to the extent that it may affect present or future land use.

It is recognised in Ceredigion that land use planning is an important part of an integrated approach to achieving air quality objectives and reducing the emissions of air pollutants. A Ceredigion Local Development plan (LDP) provides guidance on how planning applications should be viewed by the Local Planning Authority. One of the Key issues identified in the LDP is Key Issue 6 in relation to the Environment and Climate Change. In particular, Key Issue 6.4 outlines “The need to ensure the protection and enhancement of ecosystem services as well as air, soil and water quality generally; protection against noise and light pollution and land instability; and to reduce demand for water and protect local geodiversity”. For this the LDP stipulates that the planning authority must ensure that any new development does not negatively impact water, air and soil and does not lead to increased light and noise pollution. Consultation with the Public Protection department in relation to any application for a development posing a potential impact on localised air quality forms an integral part of addressing this key issue both in the consideration of outright refusal or the setting of relevant conditions to protect air quality in relation to any proposed development.

4.3 Local Transport Plans and Strategies

The Mid Wales Joint Local Transport Plan (LTP) was jointly produced by the three Mid Wales Local Authorities (LAs) of Ceredigion, Powys and Gwynedd (for Meirionnydd). The LTP is a statutory document that sits alongside the LDP. The vision outlined for the LTP was for the Mid Wales LAs to plan for and deliver in partnership an integrated and affordable transport system in the region that facilitates economic development, ensures access for all to services and opportunities, sustains and improves the quality of community life, and makes an active contribution to the management of carbon and the quality of the environment. Outcomes of the LTP that benefit Air Quality includes:

• **Improving Health and Well-being by Increasing Walking and Cycling**: Levels of cycling and walking for both necessary active travel and recreation, by residents and visitors, will be increased.

• **Benefits and Minimised Impacts on the Environment**: The potential for transport movements to reduce carbon emissions and improve the local and global natural and built environment will have been maximised and negative impacts minimised, including adaption to the effects of climate change.

A set of higher-level interventions have been developed that together aim to deliver the outcomes sought for the LTP, which includes:

• **Improving Strategic Connections.**

• **Improving Accessibility to Employment and Services.**

• **Encouraging Walking and Cycling.**

• **Integrated Public Transport Networks.**

Work to commission and deliver a new Regional Transport Delivery Plan (RTP) was undertaken between April 2023 to March 2024 by the newly established Mid Wales Corporate Joint Committee (of Powys and Ceredigion County Council). The RTP will be approved by Welsh ministers prior to publication, with its aim being that of regionally implementing the vision set out in the Llwybr Newydd- Wales Transport Strategy, namely the provision of an accessible, sustainable, and efficient transport system in Wales through the implementation of

regional policy. The aforementioned Local Transport Plan will be in place until its replacement with the new Regional Transport Delivery Plan.

4.4 Active Travel Plans and Strategies

The Active Travel (Wales) Act 2013 was introduced in 2014 and requires local authorities to continuously improve facilities and routes for pedestrians and cyclists and to prepare maps identifying current and potential future routes for their use. The Act required new road schemes (including road improvement schemes) to consider the needs of pedestrians and cyclists at the design stage. The Act is intended to enable more people to walk and cycle and generally travel by non-motorised means. Making walking and cycling safer and more practical encourages healthier lifestyles, reduces air pollution, reduces noise, reduces carbon emissions and improves the environment.

The aim of the Active Travel Plan in Ceredigion is to improve Health and Well-being of locals and visitors by increasing walking and cycling. Infrastructure improvements and behavioural change initiatives in Ceredigion aim to increase levels of walking and cycling both for necessary, active travel and for leisure and includes factors such as road bridges, cycle routes, footway/ footpath provision, safe routes to school, travel planning as well as road safety measures to assist vulnerable users. Ceredigion County Council submitted its route maps to Welsh Government in 2015 which set out a 15-year programme of improvements to active travel routes.

4.5 Local Authorities Well-being Objectives

Air pollution is considered to be the biggest environmental contributor to the burden of disease in the UK. People already suffering from poor health and/or who live in the areas of poorest air quality are more likely to be affected by air pollution with poorer urban communities being disproportionately affected. The associated health effects do not only relate to the more obvious and direct impacts of air pollution. Air pollution affects the growth of crops and contributes to the acidification of inland and coastal waters. This can lead to important impacts on the food chain.

The Welsh Government considers it important that all local authorities commit themselves to ensuring that air pollution remains below objective levels. The Welsh Government has suggested that local authorities should include air quality management in corporate and

over-arching strategies to raise its profile and deliver actions in an integrated manner. To this end, it is important that local authorities apply the sustainable development ideal in their work and are able to demonstrate to the public that they are making progress towards achieving the seven well-being goals defined in the Well-being of Future Generations (Wales) Act 2015.

The Act requires local authorities to set well-being objectives and publish an annual report showing the progress made in achieving the objectives. Local authorities are required to ensure that information from reviews and assessments of local air quality informs local well-being and is incorporated into the local well-being plan. This should emphasise the local authority's role in delivering cleaner air. It should aim to raise the profile of air quality keeping the issue high on its list of local priorities. Welsh Government encourages local authorities to deliver air quality improvements in a corporate and multi-disciplinary way enabling them to build air quality considerations into wider policy areas - such as land use planning, transport planning, energy efficiency, waste management, economic development and regeneration. Local authorities are also urged to attempt to work more closely with neighbouring authorities - thereby strengthening the role of regional groupings.

In 2023 Ceredigion Public Services Board published Ceredigion's Local Wellbeing Plan 2023-2028. One of the objectives of this plan is "Work together to deliver decarbonisation initiatives within Ceredigion to protect and enhance our natural resources". The Local Authority has a Carbon Management team that has successfully reduced local carbon emissions and now works to reduce emissions further with the aim of making the Council net carbon neutral by 2030 (in line with the Welsh Government target). This aim is actioned through initiatives such as Ceredigion County Council ULEV Strategy and Action Plan which was introduced in 2022 in order to increase uptake of electric vehicles through improved charging point provision across the county. Such initiatives could have a positive long-term impact on air quality through associated reduction in localised vehicle emissions.

4.6 Green Infrastructure Plans and Strategies

The preparation of Green Infrastructure Policies, Plans and Strategies is a requirement under Edition 10 of Planning Policy Wales. It is coordinated by the Planning Policy Team of Ceredigion County Council.

Local authorities are required to adopt a strategic and proactive approach to green infrastructure and biodiversity by producing up-to-date inventories and maps of existing green infrastructure and ecological assets and networks. Such Green Infrastructure assessments should make timely, pragmatic and inclusive use of existing datasets and the best available information to develop an integrated map-based evidence resource. Doing so will facilitate a proactive approach and enable contributions towards the Council's well-being goals to be maximised.

A Green Infrastructure Assessment is being used in Ceredigion to develop a robust approach to enhancing biodiversity, increasing ecological resilience and improving wellbeing outcomes. Stakeholder engagement events have been held in the county to guide its Green Infrastructure Assessment. The engagement exercises generated lots of interest, responses and ideas. Outputs have been collated and summarised and have identified key strategic opportunities where the restoration, maintenance, creation or connection of green features and functions can be used to deliver the most significant benefits. Detailed maps for market towns in Ceredigion, for example, reveal the current extent (and loss) of hedgerows and woodland etc in and around these town. Hedgerow and tree loss over a period of time will be used as a starting point for tree re-instatement / planting plans in Ceredigion.

Planning authorities are required to use the best available data to monitor a set of key species and habitats, and incorporate these indicators into their Annual Monitoring Reports. This data will be used to indicate whether there has been a net gain or loss of biodiversity and trends will be used to determine future priorities for planning and decision making. The need for ecosystems, habitats and species to adapt to climate change will be considered as part of the Green Infrastructure Assessment.

Parks, open spaces, playing fields, woodlands, wetlands, road verges, allotments and private gardens are examples of green infrastructure while sustainable drainage systems, swales, wetlands, rivers, canals and their banks and other water courses are often referred to as blue infrastructure. Access to, and engagement with, this natural environment is associated with positive health outcomes, including improved physical and

mental health, and reduced risk of cardiovascular disease and other chronic conditions. Access to recreational infrastructure, such as parks and playgrounds, has been found to be associated with reduced risk of obesity among adolescents and increased physical activity levels. Similarly, park improvements can increase visits / use and physical activity levels of children and older people. Living near green spaces, such as parks and other open spaces can improve health, regardless of social class.

Improving access to green infrastructure and spaces also contributes to reducing exposure to environmental hazards and air pollution, improving air quality, reducing the impact of climate change, protecting against flooding and erosion, and increasing social participation among older adults.

5 Conclusion and Proposed Actions

5.1 Conclusions from New Monitoring Data

Ceredigion County Council has no Air Quality Management areas and has no areas close to Air Quality Strategy Objectives. It has not been considered necessary, therefore, to declare any Air Quality Management Areas or to prepare a Local / Regional Air Quality Strategy.

5.2 Conclusions relating to New Local Developments

Ceredigion County Council confirms that there are currently no new local developments that will require more detailed consideration and none that give rise for any Detailed Assessments. As in previous rounds of Review and Assessment, results reported in this Report indicate that all statutory air quality Standards and Objectives are complied with in Ceredigion by specified dates at all locations (including the most heavily trafficked roadside locations).

Monitoring and new assessments for this report have not revealed any places in Ceredigion where the combustion of fuels (in motor vehicles, industry, or in domestic properties) or fugitive emissions are causing, or are likely to cause, significant air quality problems. The review suggests that there are no traffic-related air quality problems at the busiest road locations and in the most congested towns in Ceredigion. There are no major industries close to heavily populated areas and only a small number of Part B processes and small combustion plants, in the county (mostly categorised as “low risk”).

5.3 Other Conclusions

To summarise, Ceredigion is rural area with very few air-polluting industries. This list of air polluting industries has not changed since the last Progress Report for Ceredigion and road traffic continues to be the dominant source of air pollution in Ceredigion with the volume of road traffic increasing though remaining relatively low in national terms. Air quality continues to be monitored in some of the most congested and sensitive areas of Ceredigion. The purpose of this is to check compliance and confirm local and national

projections. Monitoring is also undertaken as required to identify any changes associated with changes in industrial activity, the volume and composition of traffic, road layouts, new local developments, as a result of local concerns and requests and any other factors that contribute to air pollution in the county. Monitoring for nitrogen dioxide using passive diffusion tubes is used from time-to-time in periodic baseline and screening exercises to identify any new, emerging air pollution “hot-spots” focusing in particular on schools, industrial sites, residential areas, various businesses, garages, the rail network, bus stations, dry cleaning and paint shops, and in the vicinity of new road layouts etc. Passive samplers are inexpensive and can be deployed in relatively large numbers to provide the spatial coverage and resolution necessary to effectively map an area and identify potential sources of pollution. Volumes of traffic in the county, even in the most congested town are relatively low when compared with other parts of the country and do not approach the heavily trafficked classification described in Guidance. The ratio of heavy goods vehicles to the total number of vehicles is also low in Ceredigion because of the lack of industry.

5.4 Proposed Actions

This air quality review for Ceredigion has not identified the need to progress to more detailed assessments for any of the priority air pollutants. National Air Quality Indicators are very low for nitrogen dioxide and PM_{10} Ceredigion – amongst the lowest in Wales. Monitoring will be undertaken as necessary at any emerging hot-spot locations or as a result of any new concerns or developments. Monitoring at our Lampeter location will continue due to it being the location with the highest observed nitrogen dioxide levels, however the levels in this area as well as all others are expected to remain within the legal limit.

As it stands, nitrogen dioxide in recent years at all “hot-spot” locations have presented no exceedances of the legal standards at any locations (including road-side and worst-case scenario locations). Monitoring will be continued at these locations in the future to ensure continuing compliance with the most stringent standards. The next Progress Report for Air Quality in Ceredigion will be prepared and submitted in September 2025.

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Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results

Appendix B: A Summary of Local Air Quality Management

Appendix C: Air Quality Monitoring Data QA/QC

Appendix A: Monthly Diffusion Tube Monitoring Results

Table A.1 – Full Monthly Diffusion Tube Results for 2023 (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted	Annual Mean: Distance Corrected to Nearest Exposure
CERE/23A/NA10S7 (Terrace Road, Aberyswtyth)	258470	281700	17.7	27.4	21.6	20.1	19.5	20.1	12.2	14.1	20.6	23.3	18.5	17.3	19.4	15.1	n/a
CERE/23A/NA10S4 (Thespian Street, Aberystwyth)	258630	281800	18.4	27.8	18.8	17.2	19.0	21.2	10.1	13.4	21.0	22.4	18.8	14.5	18.6	14.5	n/a
CERE/23A/NA10S9 (Railway Station, Aberystwyth)	258500	281620	18.8	26.6	19.5	15.4	19.5	17.6	14.0	15.1	19.9	17.4	16.4	17.9	18.2	14.2	n/a
CERE/23A/NA10S12 (Morrison, Aberystwyth)	259590	280570	15.6	18.9		12.9	15.5	15.4	11.2	14.6	16.9	16.4	16.3	15.3	15.4	12.0	n/a
CERE/23A/NA10S13 (Mill Street, Aberystwyth)	258379	281519	20.6	28.9	19.3	19.7	19.5	20.2	16.7	14.9	21.0	18.3	17.8	21.1	19.8	15.5	n/a
CERE/23A/NA10S1 (High Street, Lampeter)	257790	248140	20.1	23.3	13.2	15.6	15.3		22.2	21.0		28.0	26.7	24.0	20.9	16.3	n/a
CERE/23A/NA10S11 (High Street, Cardigan)	217790	246180	15.4	21.8	12.0	15.3	18.2	17.1	11.1	11.1	15.4	17.1	13.9	16.6	15.4	12.0	n/a
CERE/23A/NA10S5 (Quay Street, Cardigan)	217661	245959	9.0	11.3	5.9	6.8	6.2	6.0	5.2	5.8	8.3	10.9	8.5	9.3	7.8	6.1	n/a
CERE/23A/NA10S2 (Pendam)	272240	283330	5.0	2.4	1.9	5.0	3.5	1.6	1.7	2.4	3.8	2.4	3.2		3.0	2.3	n/a
CERE/23A/NA10S6 (Talybont)	265462	289275	21.4	24.8	20.4	21.9	18.9	23.2	14.7	20.5	20.4	20.8	22.2	19.4	20.7	16.2	n/a
CERE/23A/NA10S15 (Great Darkgate Street, Aberystwyth)	258230	281631	11.0	16.9	10.0	10.1	11.2	12.8	7.7	8.4	13.2	16.4	12.3	10.8	11.7	9.2	n/a
CERE/23A/NA10S14 (Llanon)	251574	267060	8.7	14.9	10.9	10.2	11.2	13.6	8.5	9.4	10.9	10.5	8.2	10.9	10.7	8.3	n/a
CERE/23A/NA10S10 (Llanbadarn Road, Aberystwyth)	259514	281258	15.6	25.1	17.3	16.9	14.3	17.6	10.5	11.2	19.7	21.2		14.2	16.7	13.0	n/a

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table A.1**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Ceredigion County Council confirms that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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 Table B.1.

The table shows the objectives in units of micrograms per cubic metre μg/m^3 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table B.1 – Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as	Date to be achieved by
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	40µg/m^3	Annual mean	31.12.2010
Sulphur dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	16.25µg/m^3	Running annual mean	31.12.2003
Benzene	5µg/m^3	Annual mean	31 12 2010
1,3 Butadiene	2.25µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m^3	Maximum Daily Running 8-Hour mean	31.12.2003
Lead	0.25µg/m^3	Annual Mean	31.12.2008

Appendix C: Air Quality Monitoring Data QA/QC

QA/QC of Diffusion Tube Monitoring

Diffusion Tube Bias Adjustment Factors

The diffusion tube supply analyst was SOCOTEC Didcot, the method was 50% TEA in acetone and the bias adjustment factor used was the 2023 overall factor of 0.78 (Spreadsheet Version Number: 06/24), which was sourced from the Defra database of national bias adjustment factors [https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html].

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/24

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2024
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	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[3] 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[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953								
Analysed By[1]	**Method** To undo your selection, choose (All) from the pop-up list	**Year[2]** To undo your selection, choose (All)	**Site Type**	**Local Authority**	**Length of Study (months)**	**Diffusion Tube Mean Conc. (Dm) (µg/m³)**	**Automatic Monitor Mean Conc. (Cm) (µg/m³)**	**Bias (B)**	**Tube Precision[5]**	**Bias Adjustment Factor (A) (Cm/Dm)**	
Socotec Didcot	50% TEA in acetone	2023	R	Dacorum Borough Council	11	21	18	12.0%	P	0.89	
Socotec Didcot	50% TEA in acetone	2023	R	Derry City And Strabane District Council	10	33	34	-3.8%	G	1.04	
Socotec Didcot	50% TEA in acetone	2023	UB	Derry City And Strabane District Council	10	11	8	37.1%	P	0.73	
Socotec Didcot	50% TEA in acetone	2023	R	Horsham District Council	12	21	16	31.4%	G	0.76	
Socotec Didcot	50% TEA in acetone	2023	R	Waverley Borough Council	12	24	18	31.9%	G	0.76	
Socotec Didcot	50% TEA in acetone	2023	R	Waverley Borough Council	12	26	19	35.8%	G	0.74	
SOCOTEC Didcot	50% TEA in acetone	2023		**Overall Factor[3] (34 studies)**				Use		0.78	

Factor from Local Co-location Studies

No co-location data was available.

Discussion of Choice of Factor to Use

No opportunity for a co-location study was available so the national adjustment factor was used, which was sourced from the Defra database of national bias adjustment factors [https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html].

QA/QC of Diffusion Tube Monitoring

Data for the laboratory precision of NO2 diffusion tube analysis is provided by Defra https://laqm.defra.gov.uk/diffusion-tubes/precision.html

As advised by Defra, for the purposes of LAQM, laboratory diffusion tube precision is separated into two categories, “Good” and “Poor” as follows: tubes are considered to have "good" precision where the coefficient of variation (CV) of duplicate or triplicate diffusion

tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%. Tubes are considered to have "poor" precision where the CV of four or more periods is greater than 20% and/or the average CV is greater than 10%.

In relation to the summary results that Defra provide the following is advised:

"Please note that the performance of a laboratory may change from one year to another. Therefore, when assessing the performance of a laboratory using the findings [provided in the summary results]*, account should be taken of the proportion of "poor" precision co-location results, not just the presence or absence of poor*

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Ceredigion County Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

Ceredigion County Council have applied a national bias adjustment factor of 0.76 to the 2023 monitoring data. A summary of bias adjustment factors used by Ceredigion County Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	06/24	0.78
2022	National	09/23	0.76
2021	National	06/22	0.78
2020	National	06/21	0.76
2019	National	09/20	0.75
2018	National	06/19	0.76
2017	National	09/18	0.77

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Ceredigion required distance correction during 2023.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Annualisation was not required for 2023 data due to sufficient data capture.

Table E.1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

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_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide