



Air Quality Assessment: Plot E, Pencoed Technology Park

January 2024



Experts in air quality
management & assessment



Document Control

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1 Introduction

- 1.1 This report describes the potential air quality impacts associated with the proposed light industrial development of Plot E, Pencoed Technology Park (hereafter referred to as the “proposed development”). The proposed development involves the construction of three blocks comprising 16 units for general industrial, storage and distribution use. A total of 25 car parking spaces will be provided.
- 1.2 The proposed development will generate additional traffic on local roads, which may impact on air quality at existing residential properties along the affected road network. The main pollutants of concern related to road traffic emissions are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}). There will be no centralised combustion plant, thus an assessment of plant emissions is not necessary.
- 1.3 The location of the proposed development is shown in Figure 1. It is located within the boundary of Rhondda Cynon Taf County Borough Council (RCTCBC) and close to the boundaries of Bridgend County Borough Council (BCBC) to the west, and Vale of Glamorgan Council (VoGC) to the south.
- 1.4 This report describes existing local air quality conditions in the vicinity of the proposed development and considers air quality conditions in the future once the development is complete and operational. It has been prepared taking into account all relevant local and national guidance and regulations, and follows a methodology outlined to RCTCBC.

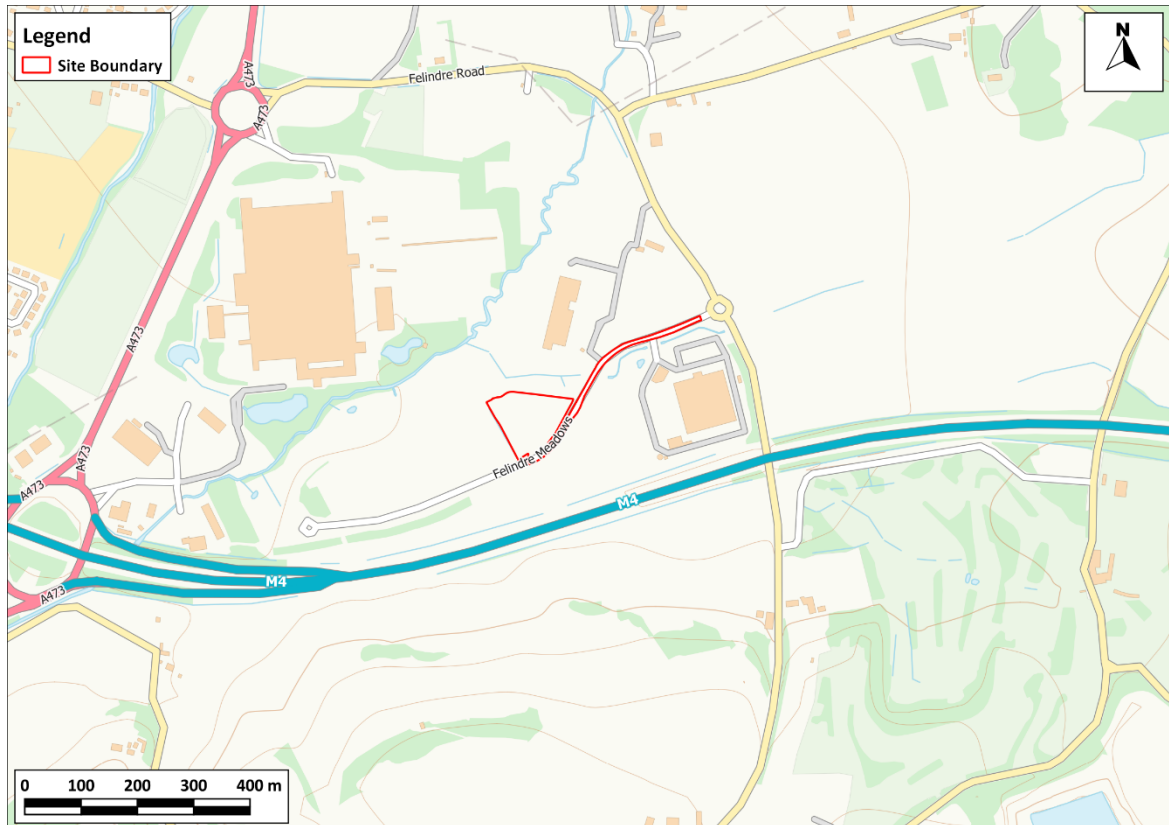


Figure 1: Location of the Proposed Development

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2 Policy Context

2.1 All European legislation referred to in this report is written into UK law and remains in place.

Air Quality Strategy

2.2 The Air Quality Strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA) and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Clean Air Strategy 2019

2.3 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government, in partnership with the Governments of Scotland, Wales and Northern Ireland, will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

The Clean Air Plan for Wales

2.4 In August 2020, the Welsh Government published the Clean Air Plan for Wales (Welsh Government, 2020), which aims to *“improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and our economy”*. The Plan sets out the following four themes, around which the plan is structured, with actions in order to enable collaborative approaches to reducing air pollution:

- People: Protecting the health and well-being of current and future generations;
- Environment: Taking action to support our natural environment, ecosystems and biodiversity;
- Prosperity: Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales; and
- Place: Creating sustainable places through better planning, infrastructure and transport.

- 2.5 The Plan details intentions to publish a Clean Air Zone Framework in Spring 2021, stating an expectation *“to see Clean Air Zones established in towns and cities throughout Wales to reduce the impact of transport emissions on health. Some of these may be supported by a charging element. Clean Air Zones, where appropriate, would enable a range of co-ordinated actions to deliver significant reductions in public and environmental exposure to harmful airborne pollutants from all sources”*.
- 2.6 The Plan also includes plans to *“introduce LAQM policy changes by 2023 to ensure the regime is public health focused and proactively finding and tackling areas of pollution”*. These changes include a focus on the human health impacts of PM_{2.5}, stating *“In the current regime, monitoring of PM_{2.5} is encouraged but not mandatory. In the context of the known health impacts associated with PM_{2.5}, we propose to investigate the extent to which Local Authorities can support monitoring, reporting and action on PM_{2.5} as part of their existing LAQM functions”*.
- 2.7 The Plan states that the Welsh Government will *“publish and consult on a White Paper on a Clean Air Act for Wales before the end of this Senedd Term”*, which will include:
- *“New powers for smoke control linked to tackling air pollution from domestic burning (PM_{2.5})”*
 - *A requirement for a Clean Air Plan / Strategy to be published / reviewed every 5 years*
 - *Potential new air quality targets (for example, taking account of WHO guidelines for air quality)*
 - *Clarified and strengthened local air quality management legislation*
 - *Strengthened powers to address road vehicle idling*
 - *Consolidated powers to implement Clean Air Zones / Low Emission Zones*
 - *Focused powers to protect vulnerable groups from the effects of air pollution*
 - *Enhanced air quality monitoring and modelling*
 - *A potential new duty on public bodies to adhere to guidance encouraging different ways of working and actions to reduce air pollution and support decarbonisation.”*

Reducing Emissions from Road Transport: Road to Zero Strategy

- 2.8 The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper (DfT, 2018) in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government’s pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have

zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.

- 2.9 The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government has recently announced that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NO_x emissions can be expected to reduce significantly over the coming decades.

Environment Act 2021

- 2.10 The UK's new legal framework for protection of the natural environment, the Environment Act (2021) passed into UK law in November 2021. The Act gives the Government the power to set long-term, legally binding environmental targets. It also establishes an Office for Environmental Protection (OEP), responsible for holding the government to account and ensuring compliance with these targets.

Planning Policy

National Policies

- 2.11 Land-use planning policy in Wales is established within the policy document Planning Policy Wales (PPW) (Welsh Government, 2021), which provides the strategic policy framework for the effective preparation of local planning authority development plans. Regarding pollution and health effects, it states:

“Planning authorities have a role to play in the prevention of physical and mental illnesses caused, or exacerbated, by pollution, disconnection of people from social activities (which contributes to loneliness) as well as the promotion of travel patterns which facilitate active lifestyles. The planning system must consider the impacts of new development on existing communities and maximise health protection and well-being and safeguard amenity. This will include considering the provision of, and access to, community and health assets, such as community halls, libraries, doctor’s surgeries and hospitals. Health impacts should be minimised in all instances, and particularly where new development could have an adverse impact on health, amenity and well-being. In such circumstances, where health or amenity impacts cannot be overcome satisfactorily, development should be refused”.

“Planning authorities should develop and maintain places that support healthy, active lifestyles across all age and socio-economic groups, recognising that investment in walking and cycling infrastructure can be an effective preventative measure which reduces financial pressures on public services in the longer term. The way a development is laid out and arranged can influence people’s behaviours and decisions and can provide effective mitigation against air and noise pollution.

Effective planning can provide calming, tranquil surroundings as well as stimulating and sensory environments, both of these make an important contribution to successful places”

“Green infrastructure can be an effective means of enhancing health and well-being, through linking dwellings, workplaces and community facilities and providing high quality, accessible green spaces. In all development and in public spaces especially, there should be sensitive management of light, and exposure to airborne pollution should be kept as low as reasonably practicable. The compatibility of land uses will be a key factor in addressing air quality and creating appropriate soundscapes which are conducive to, and reflective of, particular social and cultural activities and experiences, particularly in busy central areas of towns and cities. Equally, the provision of quiet, tranquil areas which provide peaceful sanctuaries in otherwise noisy environments can help to reduce general levels of pollution and promote both mental and physical well-being”.

- 2.12 PPW places a general presumption in favour of sustainable development, stressing the importance of local development plans, and states that the planning system should perform an environmental role to minimise pollution. Local development plans should enable consideration of the effects that the proposed development may have on air quality, as well as the effect that air quality may have on the proposed development. To prevent unacceptable risks from air pollution, planning decisions should ensure that new development is appropriate for its location.
- 2.13 PPW also places considerable emphasis on the Well-being of Future Generations Act (Welsh Government, 2015) with the intention to improve the social, economic, environmental and cultural well-being of Wales, and outlines how this can be achieved through the concept of ‘Placemaking’.
- 2.14 PPW is supported by a series of Technical Advice Notes (TANs) and National Assembly for Wales Circulars. Local planning authorities have to take PPW, TANs and Circulars into account when preparing Development Plans.
- 2.15 With respect to planning policy guidance, TAN 18 on transport (Welsh Government, 2007) makes reference to local air quality and the need for Air Quality Action Plans (AQAPs) to be prepared for any AQMAs declared.
- 2.16 The need for compliance with any statutory air quality limit values and objectives is stressed, and the presence of AQMAs must be accounted for in terms of the cumulative impacts on air quality from individual sites in local areas. New developments in AQMAs should be consistent with local AQAPs.

Local Transport Plan

- 2.17 The South East Wales Valleys Local Transport Plan (Blaenau Gwent, Caerphilly, Methyr Tydfil, Rhondda Cynon Taf and Torfaen Councils, 2015) notes that *“transport is a major source of pollution that can impact on public health and welfare”* and identifies AQMAs, including those within Rhondda Cynon Taf, as evidence of this. The Councils therefore aim to reduce the *“negative environmental impacts of transport”* with the following schemes:

- “Bus infrastructure improvements/corridor schemes
- Park and Ride/Park and Share schemes
- Public transport interchange improvements
- Action Travel Schemes
- Workplace Travel Plans
- Highways Improvements Schemes”.

Local Policies

2.18 The RCTCBC Local Development Plan (RCTCBC, 2011) was adopted in 2011 and sets out how the County Borough will be developed up to 2021. Within this Plan, ‘Policy AW 10 – Environmental Protection and Public Health’ states:

“Development proposals will not be permitted where they would cause or result in a risk of unacceptable harm to health and / or local amenity because of ... air pollution ... unless it can be demonstrated that measures can be taken to overcome any significant adverse risk to public health, the environment and / or impact upon local amenity.”

2.19 RCTCBC are preparing a Revised Local Development Plan for the period 2022 to 2037. This process formally began in April 2022. Once adopted, the Revised Local Development Plan will replace the current Local Development Plan for Rhondda Cynon Taf.

Building Standards

2.20 Part S(1) of Schedule 1, and Regulation 44D, of the Building Regulations 2010 (Ministry of Housing, Communities & Local Government, 2022) define a requirement for the provision of infrastructure for charging electric vehicles. Precise requirements are explained further within Approved Document S (HM Government, 2021) and depend on the overall number of parking spaces provided and the average financial cost of installation.

2.21 Compliance with the Building Regulations is not required for planning approval, but it is assumed that the Regulations will be complied with in the completed development.

Air Quality Action Plans

National Air Quality Plan

2.22 Defra and the devolved administrations have produced an Air Quality Plan to tackle roadside NO₂ concentrations in the UK (Defra, 2017); a supplement to the 2017 Plan (Defra, 2018) was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package

of national measures, the 2017 Plan and the 2018 Supplement require those identified Local Authorities to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ). There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the proposed development. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

Welsh Government Supplemental Air Quality Plan

- 2.23 The Welsh Government has produced a supplemental plan to the 2017 UK plan for tackling roadside NO₂ concentrations (Welsh Government, 2018). The document sets out the work done to date to identify how the Welsh Government will reduce concentrations of NO₂ around roads where levels are above legal limits. The plan expands on Section 7.6 (Additional Actions in Wales) of the 2017 UK plan for tackling roadside NO₂ concentrations and sets out how the Welsh Government will comply within the shortest possible time with the limit values for NO₂.

Local Air Quality Action Plan

- 2.24 RCTCBC currently has 16 declared AQMAs, each for exceedances of the annual mean NO₂ objective and one also for exceedances of the 1-hour mean NO₂ objective. None of the AQMAs are in close proximity to the proposed development; the closest is located in Llanharan, approximately 4 km northeast of the site.
- 2.25 The Council has produced individual AQAPs for each of the AQMAs which set out actions which may improve air quality within them. The actions detailed within the AQAPs include a broad range of aspirations and mechanisms to affect local air quality; some of the actions are specific to an AQMA, where other may provide borough-wide improvement. These actions are broadly outlined below (RCTCBC, 2024):
- *“Exploring potential locally targeted changes to existing traffic management to reduce or displace traffic congestion at high risk locations.*
 - *Exploring potential locally targeted increased traffic waiting and parking restrictions or the availability of alternative provisions and their enforcement at specific areas to improve traffic flow and reduce congestion.*
 - *Possible local rearrangement of a bus stop to reduce the impact of bus waiting on local traffic congestion.*
 - *Advocating the reduction in permitted speed along part of the A470.*

- *Supporting the effective implementation of the South East Wales Metro and electrification of the South Wales Central Valley Line.*
- *Encouraging borough wide behavioural change by the use of existing resources and policy mechanisms to influence greater uptake of public transport, car sharing and efficient journey planning.”*

2.26 BCBC declared an AQMA on 1 January 2019, covering an area on Park Street in Bridgend, for exceedances of the annual mean NO₂ objective. This AQMA is located approximately 7 km west of the proposed development site. The Council is in the process of preparing an AQAP, outlining proposed measures to improve air quality within the AQMA. At the time of writing, the AQAP has not been published due to timescale implications resultant from the Covid-19 pandemic.

2.27 VoGC revoked its only AQMA, incorporating properties on Windsor Road, Penarth, and declared for exceedances of the annual mean NO₂ objective, on 1 January 2021 following continual compliance with national air quality objectives. As such, VoGC does not have an active AQAP.

3 Assessment Criteria

- 3.1 The UK Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the UK Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (Wales) Regulations (2000) and the Air Quality (Amendment) (Wales) Regulations (2002).
- 3.2 The UK-wide objectives for NO₂ and PM₁₀ were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour mean NO₂ objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m³ (Defra, 2022). Measurements have also shown that the 24-hour mean PM₁₀ objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m³ (Defra, 2022).
- 3.3 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its LAQM Technical Guidance (Defra, 2022). The annual mean objectives for NO₂ and PM₁₀ are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for NO₂ applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.
- 3.4 For PM_{2.5}, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value (see Paragraph 3.5), originally set at 25 µg/m³ and currently set at 20 µg/m³.
- 3.5 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets limit values for NO₂, PM₁₀ and PM_{2.5}, and is implemented in UK law through the Air Quality Standards Regulations (2010)¹. The limit values for NO₂ and PM₁₀ are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local

¹ As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

3.6 The relevant air quality criteria for this assessment are provided in Table 1.

Table 1: Air Quality Criteria for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective
NO ₂	1-hour Mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
PM ₁₀	24-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
PM _{2.5}	Annual Mean	20 µg/m ³ ^a

^a There is no numerical PM_{2.5} objective for local authorities (see Paragraph 3.4). Convention is to assess against the UK limit value which is currently 20 µg/m³.

Screening Criteria for Road Traffic Assessments

3.7 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)² recommend a two-stage screening approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in Appendix A1, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m² of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

3.8 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in Appendix A1) inside an AQMA are a change in flows of more than 25 heavy duty vehicles (HDVs) or 100 light duty vehicles (LDVs) per day; outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that *"the criteria provided are precautionary and should be treated as indicative"*, and *"it may be appropriate to amend them on the basis of professional judgement"*.

² The IAQM is the professional body for air quality practitioners in the UK.

4 Assessment Approach

Consultation

4.1 The assessment follows a methodology outlined to RCTCBC via email correspondence between the Environmental Pollution team at RCTCBC and Samantha Sarlo (AQC) in March 2023. Specifically, the following key points were outlined:

- the site is not located within, or near to, an AQMA;
- the development-generated traffic flows provided by the project transport consultant are well below the relevant screening thresholds for use outside of an AQMA, therefore a qualitative assessment is appropriate; and
- the proposed development does not include any centralised combustion plant and therefore there is no need for an assessment of emissions relating to energy.

Existing Conditions

4.2 Existing sources of emissions and baseline air quality conditions within the study area have been defined using a number of approaches:

- industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2024a);
- local sources have been identified through examination of the RCTCBC's Air Quality Review and Assessment reports;
- information on existing air quality has been obtained by collating the results of monitoring carried out by RCTCBC, BCBC and VoGC; and
- whether or not there are any exceedances of the annual mean limit value for NO₂ in the study area has been identified using the maps of roadside concentrations published by Defra (2020) (2024b). These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to identify and report exceedances of the limit value. The national maps of roadside PM₁₀ and PM_{2.5} concentrations (Defra, 2024b), which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.

Road Traffic Impacts

4.3 The first step in considering the road traffic impacts of the proposed development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), as described in Paragraph 3.7 and detailed further in

Appendix A1. Where impacts can be screened out there is no need to progress to a more detailed assessment.

Assessment of Significance

- 4.4 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and the IAQM (Moorcroft and Barrowcliffe et al, 2017) has therefore been used. The overall significance of the air quality impacts is determined using professional judgement; the experience of the consultants preparing the report is set out in Appendix A2. Full details of the EPUK/IAQM approach are provided in Appendix A1.

5 Baseline Conditions

Relevant Features

- 5.1 The proposed development is located approximately 1.3 km to the southeast of Pencoed town centre and approximately 130 m to the north of the M4 motorway. The application site is bounded by Felindre Meadows to the south, existing commercial and light industrial units within the wider Pencoed Industrial Park to the east, and open green space to the west and north. The site is currently a field, and the wider area mainly consists of agricultural land.

Industrial Sources

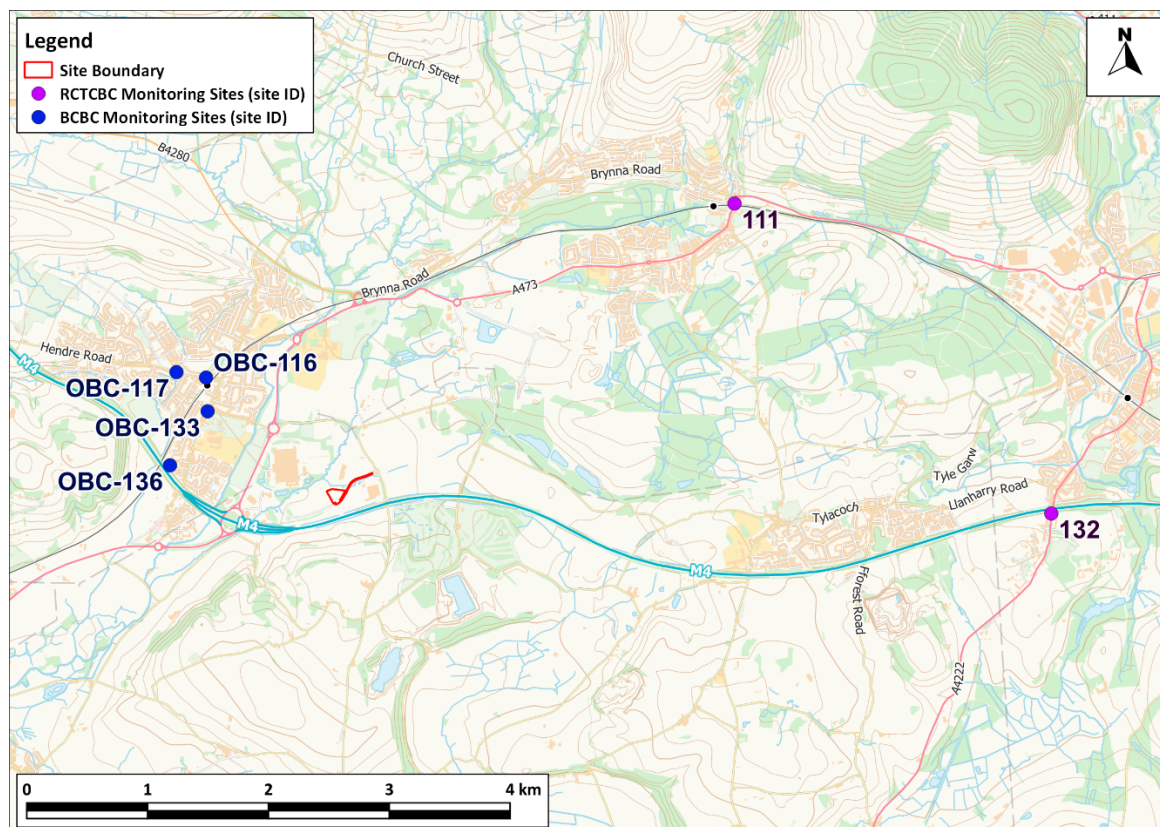
- 5.2 No significant industrial or waste management sources have been identified that are likely to influence air quality at receptors that could be affected by changes in road traffic; the majority of the surrounding area comprises light industrial and commercial premises.

Local Air Quality Monitoring

- 5.3 RCTCBC operates four automatic monitoring stations within its area, however, none of these are within proximity to the proposed development. The Council also operates a number of NO₂ monitoring sites using diffusion tubes prepared and analysed by Socotec UK Ltd Didcot (using the 20% TEA in water method). These include one deployed in Llanharan on Bridgend Road approximately 4.0 km northeast of the proposed development site, and one in Talygarn on Cowbridge Road close to the M4, approximately 5.8 km east of the site.
- 5.4 BCBC operates one automatic monitoring station within its area, however this is not close to the proposed development. The Council also operates a number of NO₂ monitoring sites using diffusion tubes prepared and analysed by Socotec UK Ltd Didcot (using the 50% TEA in water method). These include two on Hendre Road in Pencoed approximately 1.5 km to the northwest of the proposed development site, as well as one on Coychurch Road approximately 1.2 km to the northwest of the site and another along Maerdy Park approximately 1.3 km to the west.
- 5.5 There is no monitoring undertaken by VoGC in the study area.
- 5.6 Available annual mean results for the years 2018 to 2022 are summarised in Table 2 and the monitoring locations are shown in Figure 2. Data have been taken from RCTCBC's 2023 Air Quality Progress Report (RCTCBC, 2023) and BCBC's 2023 Air Quality Progress Report (BCBC, 2023).
- 5.7 While 2020 and 2021 results have been presented in this Section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

Table 2: Summary of Annual Mean NO₂ Monitoring (2018-2022) (µg/m³)

Site ID	Site Type	Location	2018	2019	2020	2021	2022
Diffusion tubes operated by RCTCBC							
111	Roadside	Bridgend Road, Llanharan	36.5	33.1	26.9	32.4	27.3
132	Roadside	Cowbridge Road, Talygarn	29.5	31.0	19.6	24.4	22.8
Diffusion tubes operated by BCBC							
OBC-116	Kerbside	Hendre Road, Pencoed	22.1	20.8	15.8	18.5	17.9
OBC-117	Roadside	Hendre Road, Pencoed	16.7	16.9	12.8	13.7	12.7
OBC-133	Roadside	Coychurch Road	-	-	-	17.8	18.8
OBC-136	Roadside	30 Maerdy Park	-	-	-	-	15.5
Objective			40				

**Figure 2: Monitoring Locations**

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- 5.8 There have been no recorded exceedances of the annual mean NO₂ objective at any of the roadside/kerbside monitoring sites during the monitoring period. Additionally, as the measured annual mean NO₂ concentrations at all diffusion tube monitoring sites have remained well below

60 $\mu\text{g}/\text{m}^3$, it is unlikely that the 1-hour mean NO_2 objective will have been exceeded (see Paragraph 3.2).

- 5.9 No monitoring of PM_{10} or $\text{PM}_{2.5}$ concentrations is undertaken by RCTCBC or BCBC in the study area.

Exceedances of Limit Value

- 5.10 There are no AURN (Defra, 2024c) monitoring sites within proximity to the proposed development with which to identify exceedances of the annual mean NO_2 limit value. Defra's roadside annual mean NO_2 concentrations (Defra, 2024b), which are used to identify and report exceedances of the limit value, do not identify any exceedances within the study area in 2022. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

6 Impact Assessment

- 6.1 Corun Associates Ltd (the Project Transport Consultant) has advised that the proposed development is expected to generate a total of 179 two-way vehicle trips per weekday (07:00 to 19:00, Monday to Friday), of which 10 will be heavy goods vehicles (HGVs). It is anticipated that flows outside of this period (including weekends) will be negligible and as such, the number of development-generated trips will be lower when averaged as an Annual Average Daily Traffic flow (AADT).
- 6.2 The proposed development-generated traffic flows will therefore be well below the screening threshold of 500 LDVs and/or 100 HDVs (HGV and buses) movements per day recommended for use outside of an AQMA, as published in EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017).
- 6.3 On this basis, it is judged that the effect of development-generated road traffic emissions on local air quality will be 'not significant' and further detailed assessment utilising dispersion modelling is not required.

7 Mitigation

Good Design and Best Practice

7.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required. The proposed development incorporates the following good design and best practice measures:

- provision of pedestrian and cycle access to the new development;
- provision of a 32 cycle parking spaces; and
- the proposed development will not include centralised combustion plant.

Recommended Mitigation

7.2 The assessment has demonstrated that the overall air quality effect of the proposed development will be 'not significant; the development-generated traffic emissions will not have a significant impact on local air quality. It is, therefore, not considered necessary to propose mitigation measures for this development.

7.3 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law).

8 Conclusions

- 8.1 The assessment has considered the impacts of the proposed development on local air quality in terms of emissions from road traffic generated by the development once operational.
- 8.2 The assessment has demonstrated that the additional road traffic generated by the proposed development will be below the relevant screening thresholds. The overall operational air quality effects of the proposed development are judged to be 'not significant'.
- 8.3 It is not considered necessary to recommend mitigation measures for the proposed development.
- 8.4 Taking into account these conclusions, it is judged that the proposed development is consistent with the PPW document, being appropriate for its location in terms of its effects on the local air quality environment. It is also consistent with Policy AW 10 of the RCTCBC Local Development Plan.

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10 Glossary

AADT	Annual Average Daily Traffic
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EPUK	Environmental Protection UK
EU	European Union
EV	Electric Vehicle
Exceedance	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
HGV	Heavy Goods Vehicle
HMSO	His Majesty's Stationery Office
IAQM	Institute of Air Quality Management
JAQU	Joint Air Quality Unit
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles (<3.5 tonnes)
µg/m³	Microgrammes per cubic metre
NO₂	Nitrogen dioxide
OEP	Office for Environmental Protection
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
OLEV	Office for Low Emission Vehicles
PM₁₀	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter

PM_{2.5}	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
PPW	Planning Policy Wales
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TAN	Technical Advice Note
TEA	Triethanolamine – used to absorb nitrogen dioxide

11 Appendices

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A1 EPUK & IAQM Planning for Air Quality Guidance

A1.1 The guidance issued by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

Air Quality as a Material Consideration

“Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- *the severity of the impacts on air quality;*
- *the air quality in the area surrounding the proposed development;*
- *the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and*
- *the positive benefits provided through other material considerations”.*

Recommended Best Practice

A1.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

“The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions”.

A1.3 The guidance sets out a number of good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m² of commercial floorspace;
- are carried out on land of 1 ha or more.

A1.4 The good practice principles are that:

- New developments should not contravene the Council’s Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new “street canyon”, as this inhibits pollution dispersion;

- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;
- The provision of at least 1 Electric Vehicle (EV) “rapid charge” point per 10 residential dwellings and/or 1000 m² of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- All gas-fired boilers to meet a minimum standard of <40 mgNO_x/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:
 - Spark ignition engine: 250 mgNO_x/Nm³;
 - Compression ignition engine: 400 mgNO_x/Nm³;
 - Gas turbine: 50 mgNO_x/Nm³.
- A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNO_x/Nm³ and 25 mgPM/Nm³.

A1.5 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

“It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the “damage cost approach” used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential”.

A1.6 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

Screening

A1.7 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m² of floor space for all other uses or a site area greater than 1 ha.

A1.8 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A1.9 If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of roads (i.e. changing the proximity of receptors to traffic lanes) where the change is 5m or more and the road is within an AQMA;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;
- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and

- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A1.10 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A1.11 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

“The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive ‘trigger’ for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality”.

A1.12 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

“The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer”.

A1.13 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

Assessment of Significance

A1.14 There is no official guidance in the UK in relation to development control on how to describe the nature of air quality impacts, nor how to assess their significance. The approach within the EPUK/IAQM guidance has, therefore, been used in this assessment. This approach involves a two stage process:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts.

A1.15 The guidance recommends that the assessment of significance should be based on professional judgement, with the overall air quality impact of the development described as either 'significant' or 'not significant'. In drawing this conclusion, the following factors should be taken into account:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts;
- the potential for cumulative impacts and, in such circumstances, several impacts that are described as '*slight*' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a '*moderate*' or '*substantial*' impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health; and
- the judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.

A1.16 The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the residents of any new development where the air quality is such that an air quality objective is not met will be judged as significant. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.

A1.17 A judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix A2.

A2 Professional Experience

Dr Denise Evans, BSc (Hons) PhD MEnvSc MIAQM

Dr Evans is an Associate Director with AQC, with more than 24 years' relevant experience. She has prepared air quality review and assessment reports for local authorities, and has appraised local authority air quality assessments on behalf of the UK governments, and provided support to the Review and Assessment helpdesk. She has extensive modelling experience, completing air quality and odour assessments to support applications for a variety of development sectors including residential, mixed use, urban regeneration, energy, commercial, industrial, and road schemes, assessing the effects of a range of pollutants against relevant standards for human and ecological receptors. Denise has acted as an Expert Witness and is a Member of the Institute of Air Quality Management.

Samantha Sarlo, MChem (Hons) AMEnvSc AMIAQM

Mrs Sarlo is a Senior Consultant with AQC, having joined the company in November 2017. She has carried out assessments of air quality impacts for a range of projects, including EIA schemes, residential, commercial and mixed-use schemes, energy centres and power generation schemes. Mrs Sarlo has also prepared construction dust risk assessments, Air Quality Neutral assessments, local authority Annual Status Reports (ASRs) and odour assessments. She has carried out numerous passive nitrogen dioxide monitoring surveys, and construction dust monitoring, at sites across Greater London.