



Candwr Solar Farm

Pre Application Consultation

Environmental Statement

Chapter 12: Air Quality

2 July 2026



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12. Air Quality

12.1. Introduction

12.1.1. This draft chapter of the ES provided for Statutory Consultation assesses the likely significant effects of the Site on air quality during the construction and decommissioning stage. It outlines measures incorporated to avoid or minimise adverse environmental effects and enhance beneficial effects. The nature and significance of residual effects are reported.

12.1.2. The Site has the potential to affect air quality via the following processes:

- Emissions from road traffic during the construction and decommissioning phases on human health;
- Emissions from onsite Non-Road Mobile Machinery (NRMM) during the construction and decommissioning phases on human health; and
- Dust and particulate matter emissions during the construction and decommissioning phases on human health.

12.1.3. The pollutants of concern for human health from construction equipment and road traffic are nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). As a result of onsite works and activities (e.g. ground disturbance, movement of vehicles over unpaved ground) during the construction phase, there is also the potential for impacts to occur from dust soiling and elevated PM₁₀ emissions.

12.1.4. This chapter is supported by the following technical appendices:

- **Appendix 12.1: EPUK & IAQM Planning Guidance**
- **Appendix 12.2: Construction Dust Assessment Procedure**
- **Appendix 12.3: Construction Dust Mitigation**

12.1.5. This chapter is supported by the following figures:

- **Figure 12.1: Study Area**
- **Figure 12.2–12.4: Monitoring Locations**
- **Figure 12.5: 250m Buffer around Site**
- **Figure 12.6: 50m Buffer around Roads Used by Construction Traffic within 250m of the Site Exit**

12.2. Assessment Approach

Legislative and Policy Framework

- 12.2.1. The assessment has considered relevant policy, guidance and good practice documents at national, regional and local scales.

Legislation

The Air Quality Standards Regulations 2010

- 12.2.2. The Air Quality Standards Regulations¹ transposed EU ambient air quality directives (EU Directive 2008/50/EC²) into UK law. They set legally binding limit values, target values and long-term objectives for various pollutants, including nitrogen dioxide and particulate matter in ambient air. These regulations empower local authorities to develop action plans to address air quality concerns and improve baselines. These regulations define how pollutants must be reported by local authorities.

The Environmental Protection Act 1990

- 12.2.3. The Environmental Protection Act 1990³ sets out the legal framework for pollution control within England, Wales and Scotland. Regarding air quality, this act sets controls which work towards reducing air pollution. Part III of the Act is particularly relevant, as it details information on statutory nuisances and associated penalties. The statutory nuisances include “any dust, steam, smell or other effluvia arising on industrial, trade or business premises”.

The Environment Act 1995

- 12.2.4. The Environment Act 1995⁴ established the Environment Agency and conferred powers relating to pollution control and environmental protection. Part IV focuses specifically upon the management of air quality, introducing a statutory framework for local air quality management. Under this framework, local authorities are required to evaluate air quality in their regions and develop actions if improvement is required, through the implementation of Air Quality Management Areas (AQMAs). If an AQMA is declared, the local authority is required to produce an Air Quality Action Plan.

- 12.2.5. The national air quality objectives relevant to this assessment, as well as to the local air quality management regime, were set by the Air Quality Standards (Wales) Regulations⁵.

The Environment (Air Quality and Soundscapes) (Wales) Act 2024

¹ The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available: http://www.legislation.gov.uk/ukxi/2010/1001/pdfs/ukxi_20101001_en.pdf.

² The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050>.

³ Environmental Protection Act 1990 (1990), Available: <http://www.legislation.gov.uk/ukpga/1990/43/contents>.

⁴ Environment Act (1995), HMSO, Available: <http://www.legislation.gov.uk/ukpga/1995/25/contents>.

⁵ The Air Quality (Wales) Regulations 2010, Welsh Statutory Instrument 1433, HMSO, Available: <https://www.legislation.gov.uk/wsi/2010/1433/contents>.

- 12.2.6. The Environment (Air Quality and Soundscapes) (Wales) Act⁶ became law on 14 February 2024 and seeks to reduce airborne pollution to protect public health, the economy and the natural environment. The Act empowers Welsh Ministers to set binding, long-term national air quality standards alongside target achievement dates, with a requirement to set a target for PM_{2.5}.
- 12.2.7. The Act amends the Environment Act 1995 to alter how local councils monitor and address pollution hot spots under local air quality management. It also introduces specific traffic-calming measures – road user charging and anti-idling enforcement. The Act updates existing smoke control rules to simplify enforcement, alongside updated guidance. Finally, the Act also creates new duties for the Welsh Ministers to take steps to promote awareness of the risks to human health and the natural environment caused by air pollution, managed through frameworks such as the Promoting Awareness of Air Pollution Delivery Plan⁷. Both Ministers and public bodies are legally bound to promote active travel as a mechanism to lower urban vehicle emissions..
- 12.2.8. Under the Act, the Welsh Government have set two country-wide targets for the reduction of PM_{2.5}. However, at the time of writing, the Air Quality Target Regulations for fine particulate matter⁸ were draft regulations and therefore not yet legally binding legislation.

National Planning Policy

Planning Policy Wales

- 12.2.9. Planning Policy Wales (PPW)⁹ sets out the Welsh Government's land-use planning policies and is the primary material consideration in the determination of planning applications in Wales. PPW provides the overarching framework for achieving sustainable development through the preparation of development plans and decision-making. The Infrastructure (Wales) Act 2024¹⁰ has introduced a new consenting regime for Significant Infrastructure Projects (SIPs), which replaces the Developments of National Significance (DNS) regime for new applications from 15 December 2025. However, this application was notified prior to that date, and therefore falls under the DNS regime. As such, the application will be examined by Planning and Environment Decisions Wales (PEDW) and ultimately determined by Welsh Ministers under DNS

⁶ Environment (Air Quality and Soundscapes) (Wales) Act 2024. Available: <https://www.legislation.gov.uk/asc/2024/2>

⁷ Promoting awareness of air pollution in Wales: delivery plan 2025 to 2028: Available: <https://www.gov.wales/promoting-awareness-air-pollution-wales-delivery-plan-2025-2028-html>

⁸ (Draft) The Air Quality Targets (Fine Particulate Matter) (Wales) Regulations 2026. Available: <https://www.gov.wales/sites/default/files/consultations/2025-11/the-air-quality-targets-fine-particulate-matter-wales-regulations-2026.pdf>

⁹ Welsh Government, 2024. *Planning Policy Wales: Edition 12*. Welsh Government. Available at: <https://www.gov.wales/planning-policy-wales-edition-12>

¹⁰ Senedd Cymru, 2024. *Infrastructure (Wales) Act 2024*. The Stationery Office. Available at: <https://www.legislation.gov.uk/asc/2024/3/contents>

procedures. The principles and policy direction set out in PPW are therefore directly relevant to the assessment and determination of the planning application.

12.2.10. Although PPW does not include specific policies relating solely to air quality, it sets out a number of policy requirements and principles that are directly relevant to the consideration of air quality effects. Key policy requirements of relevance include:

- PPW requires planning policies and decisions to ensure that development is appropriate for its location, taking account of environmental capacity and sensitivity, and the likely effects of pollution on health, living conditions and the natural environment, including cumulative effects. This establishes the need to consider air quality impacts where development may give rise to emissions affecting sensitive receptors.
- PPW expects pollution to be prevented or minimised wherever possible, with suitable mitigation secured where adverse effects cannot be avoided. The policy framework also encourages the identification of opportunities to improve environmental quality through the design and location of development, transport and movement choices, and the provision of green infrastructure, all of which are relevant to the assessment and mitigation of air quality impacts.

Future Wales: The National Plan

12.2.11. Future Wales: The National Plan 2040¹¹ (Future Wales) is the Welsh Government's national development framework and forms part of the statutory development plan for Wales. It sets out a long-term spatial strategy for development and infrastructure, providing direction on how nationally significant development should be planned and delivered in support of sustainable development objectives.

12.2.12. Although Future Wales does not include policies which relate solely to air quality it establishes a number of policy principles that are relevant to the consideration of air quality effects. In particular:

- Future Wales promotes development patterns which support sustainable transport and reduce reliance on private car use, including directing development to appropriate locations and encouraging modal shift. This approach is relevant to air quality as it seeks to minimise traffic-related emissions and associated impacts on sensitive receptors.
- Future Wales places emphasis on the delivery of health and resilient places and the protection of environmental quality, including through strategic green infrastructure provision and well-designed development. These principles support the consideration and mitigation of air quality impacts arising from new

¹¹ Welsh Government, 2021. *Future Wales: The National Plan 2040*. Welsh Government. Available at: <https://www.gov.wales/future-wales-national-plan-2040>

development, particularly where opportunities exist to avoid or reduce emissions through design and layout.

Local Planning Policy

- 12.2.13. Local planning policy relevant to the Site is set out below. The Site extends across the administrative areas of Monmouthshire Country Council (MCC), Newport City Council (NCC) and Torfaen County Borough Council (TCBC). Local planning policy for each of these authorities has been considered.

Monmouthshire Local Development Plan

- 12.2.14. The Monmouthshire Local Development Plan¹² was adopted in February 2014, and within this is Policy EP1 which refers to air pollution and states that:

"...Development proposals that would cause or result in an unacceptable risk/harm to local amenity, health, the character /quality of the countryside or interests of nature conservation, landscape or built heritage importance due to the following will not be permitted, unless it can be demonstrated that measures can be taken to overcome any significant risk to [sic]

- *Air pollution...*
- *...Or any identified risk to public health or safety."*

- 12.2.15. Policy SD1 – Renewable Energy states:

"Renewable energy schemes will be permitted where:...

...(3) There are no unacceptable adverse impacts on the amenities of nearby residents by way of noise, dust, odour or increases in traffic..."

- 12.2.16. The adopted Monmouthshire Local Development Plan is currently under review. The revised replacement plan has been submitted for examination to PEDW and it is anticipated that the Inspectors Report will be presented to Council for consideration of formal adoption of the Plan in Autumn 2026.

Newport City Council Local Development Plan

- 12.2.17. The NCC Local Development Plan¹³ was adopted in 2015. Within the Plan, Objective 9 of the Local Development Plan relates to Health and Well-being which is:

¹² Monmouthshire County Council, 2014. *Monmouthshire Local Development Plan*. Available at: <https://www.monmouthshire.gov.uk/planning-policy/monmouthshire-local-development-plan/>

¹³ Newport City Council, 2015. *Newport Local Development Plan*. Available at: <https://www.newport.gov.uk/planning-policy/local-development-plan.aspx>

"To provide an environment that is safe and encourages healthy lifestyle choices and promotes well-being."

12.2.18. The Plan states that:

"Many of the factors that contribute to health and well-being have some basis in the planning system...These include locating development near safe, accessible and sustainable travel routes; attention to air quality issues..."

12.2.19. Within the Plan there are three General Development Principles (GDP) policies which refer to air quality:

- GDP 2 refers to general amenity and states that:

"Development will be permitted where, as applicable:

- There will not be a significant adverse effect on local amenity, including in terms of noise, disturbance, privacy, overbearing, light, odours and air quality..."*

- GDP 4 refers to highways and accessibility, stating:

"Development proposals should....

... iii) Be designed to avoid or reduce transport severance, noise and air pollution..."

- GDP 7 relates to environmental protection and public health, and states:

"Development will not be permitted which would cause or result in unacceptable harm to health because of...dust...air pollution [sic]...or any other identified risk to environment, local amenity or public health and safety."

12.2.20. Policy CE10 Renewable Energy states

"Renewable energy schemes will be considered favourably, subject to there being no over-riding environmental and amenity considerations. ... The cumulative impacts of renewable schemes will be an important consideration."

12.2.21. NCC are currently preparing a Replacement Local Development Plan to cover the period 2021-2036.

Torfaen County Borough Council Local Development Plan

12.2.22. The TCBC Local Development Plan¹⁴ was adopted in 2013. Policy BW1 – General Policy – Development Proposals states:

¹⁴ Torfaen County Council, Local Development Plan, Available at: <https://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/Adopted-Torfaen-LDP-Written-Statement.pdf>

"All development proposal will be considered favourably providing they comply with the following criteria where they are applicable: ...

... A. Amenity and Design...

... vi) The proposal does not have an unacceptable impact upon the amenities of the occupiers of adjoining and neighbouring properties; ...

...B Natural Environment

i) The proposal does not result in unacceptable adverse effects in respect of ... air, heat, noise or light pollution ... from or to the proposal;

ii) The proposal does not result in significant adverse effects on the integrity of a European designated site or its designated features in the context of the site's conservation objectives;

iii) The proposal does not result in a significant adverse effect on a nationally designated site..."

- 12.2.23. TCBC are currently preparing a replacement joint Local Development Plan with Blaenau Gwent Council which will set out local planning policy until 2041. The Replacement Local Development Plan is expected to be adopted in 2030.

Other Policy

Clean Air Strategy

- 12.2.24. The Clean Air strategy 2019¹⁵ is not a formal planning policy itself, but it acts as a material consideration in the UK planning system. The Strategy sets out the UK government's approach to tackling air quality. It outlines targeted actions across sectors, including transport, homes, farming and other industry, to reduce emissions and improve public health.

Clean Air Plan for Wales: Healthy Air, Healthy Wales

- 12.2.25. The Clean Air Plan for Wales¹⁶ sets out the Welsh Government's national strategy for improving air quality. The Plan establishes a framework of policies and actions aimed at reducing emissions and limiting public exposure to air pollution, with the overarching objective of protecting human health, biodiversity and the natural environment, as well as supporting sustainable economic growth. It adopts a cross-sector approach, including measures relating to transport, planning, industry and agriculture, and places emphasis on the role of development and land-use planning in delivering improved air quality outcomes.

¹⁵ Defra (2019) Clean Air Strategy 2019, Available: <https://www.gov.uk/government/publications/clean-air-strategy-2019>.

¹⁶ Welsh Government, 2020. Clean Air Plan for Wales: Healthy Air, Healthy Wales. Cardiff: Welsh Government. Available at: <https://www.gov.wales/sites/default/files/publications/2020-08/clean-air-plan-for-wales-healthy-air-healthy-wales.pdf>

Reducing Emissions from Road Transport: Road to Zero Strategy

- 12.2.26. The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper¹⁷ 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.
- 12.2.27. 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's 'Zero Emission Vehicle' (ZEV) mandate requires that 80% of new cars and 70% of new vans sold in Great Britain must be zero exhaust emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

Guidance*Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM)
Guidance: Land-Use Planning & Development Control: Planning for Air Quality 2017*

- 12.2.28. The EPUK and IAQM have jointly produced guidance¹⁸ to help ensure that air quality considerations are included within the planning and development control process across the UK. This document is aimed at local authorities as well as developers. The guidance outlined here is relevant for helping to screen traffic data generation associated with the construction and decommissioning phases to determine whether there are any significant impacts on air quality at nearby receptors. The guidance acts as industry best practice, and full details of the approach set out in the document are provided in **Appendix 12.1**.

Design Manual for Roads and Bridges (DMRB) LA 105 – Air Quality (2024)

- 12.2.29. The DMRB LA 105: Air Quality²³ provides guidance for the assessment of air quality effects associated with highways projects. The document is intended for use in the planning, assessment and design of road schemes and sets out a structured approach to identifying, screening and assessing potential impacts on local air quality arising from

¹⁷ Department for Transport, 2018. *Reducing Emissions from Road Transport: Road to Zero Strategy*. Available at: <https://www.gov.uk/government/publications/reducing-emissions-from-road-transport-road-to-zero-strategy>

¹⁸ Moorcroft and Barrowcliffe et al (2017) *Land-Use Planning & Development Control: Planning For Air Quality v1.2*, IAQM, London, Available: <http://iaqm.co.uk/guidance/>.

changes in traffic emissions. The methodology outlined within LA 105 includes criteria for determining when a detailed air quality assessment is required based on traffic data and sensitive receptor locations.

Newport City Council Supplementary Planning Guidance

- 12.2.30. NCC has Supplementary Planning Guidance (SPG)¹⁹ dealing with air quality, which sets out the “*Circumstances when an assessment for air quality purposes is required and clarifies the appropriate minimum amount of information required...Mitigation measures and off-setting of impacts through compensation are also provided*”.

IAQM Guidance on the Assessment of Dust from Demolition and Construction 2024

- 12.2.31. This guidance document²⁰ is aimed at general practitioners and developers, and details how to undertake an assessment of impacts from construction practices from a proposed development. Regarding air quality, the guidance focuses on dust emissions and quantifies its risk, to then formulate the level and type of mitigation measures required.

Defra Local Air Quality Management Technical Guidance (TG22) 2025

- 12.2.32. This is a technical guidance document²¹ to aid local authorities to carry out their statutory duties under the Environment Act 1995 (as amended) in regard to air quality. In summary, this guidance helps local authorities to improve air quality through the effective declaration of air quality non-compliance and subsequent action plans to address these localised issues.

Air Quality Action Plan

Newport City Council Air Quality Action Plan 2024 – 2029

- 12.2.33. NCC’s Air Quality Action Plan²² sets out a series of measures by which they seek to achieve the air quality objectives in their AQMAs. The St Julian’s AQMA is of relevance to this assessment, as construction traffic associated with the Site is anticipated to pass through this area. However, monitoring data shows sustained compliance with the nitrogen dioxide objective, and Newport City Council has stated its intention to revoke the St Julian’s AQMA, subject to continued compliance.

Methodology

¹⁹ Newport City Council, *Supplementary Planning Guidance (SPG)*. Available at: <https://www.newport.gov.uk/planning-policy/supplementary-planning-guidance.aspx>

²⁰ IAQM (2024) *Guidance on the Assessment of Dust from Demolition and Construction v2.2*, Available: <http://iaqm.co.uk/guidance/>.

²¹ Defra (2025) *Review & Assessment: Technical Guidance LAQM.TG22 May 2025 Version*, Available: <https://iaqm.defra.gov.uk/wp-content/uploads/2025/05/LAQM-TG22-May-25-v2.0.pdf>.

²² Newport City Council (2024). *Air Quality Action Plan 2024–2029*. Available at: <https://live.newport.gov.uk/sites/default/files/media/media-documents/Air%20Quality%20Action%20Plan%202024-2029.pdf>

Study Area

- 12.2.34. The assessment of dust and particulate emissions during construction considered the potential effects within 250m of the Site, and/or within 50m of roads used by construction vehicles within 250m of the Site exits. This is in line with IAQM guidance²⁰ (the IAQM is the professional body for air quality practitioners in the UK).
- 12.2.35. The study area for the assessment of pollutant emissions from road traffic exhausts is based on criteria in the Design Manual for Roads and Bridges (DMRB)²³, which considers there is a potential for air quality road traffic impacts *“on sensitive receptors within 200m of a road.”* A distance of 200m is used as concentrations from road sources decrease rapidly with distance from the source and beyond this distance the road source contribution is not typically discernible.
- 12.2.36. The study area is illustrated in **Figure 12.1 Study Area**.

Baseline Desk Study

- 12.2.37. The baseline conditions within the study were defined by reviewing the following information sources:
- Any industrial sources that may affect the study area have been identified using Defra’s Pollutant Release and Transfer Register²⁴ (no major sources identified);
 - Any specific local sources have been identified through examination of the local authorities’ Air Quality Review and Assessment reports (no major sources identified);
 - Information on existing air quality was obtained by collating the results of monitoring conducted by the host local authorities, which are published in their air quality Annual Progress Reports^{25,26,27}. These reports are submitted to the UK Government as part of the local authorities’ statutory responsibility to monitor and where necessary improve air quality conditions; and
 - Background concentrations as defined using Defra’s background maps²⁸. These maps cover the whole of the UK on a 1x1 km grid and are based on air quality monitoring data, along with meteorological data for 2024. The background maps also predict concentrations in the future.

²³ Standards For Highways (2024) Design Manual For Roads and Bridges: LA 105 – Air quality

²⁴ Defra (2026) UK Pollutant Release and Transfer Register, [Online], Available: <http://prtr.defra.gov.uk/map-search>.

²⁵ Monmouthshire County Council (2025). *Air Quality Progress Report 2025* Available at: https://www.monmouthshire.gov.uk/app/uploads/2025/03/MCC_AQPR_Final_2024.pdf

²⁶ Newport City Council (2025). *Air Quality Progress Report 2025* Available at: <https://live.newport.gov.uk/sites/default/files/media/media-documents/Air%20quality%20progress%20report%202024.pdf>

²⁷ Torfaen County Borough Council (2025). *Air Quality Progress Report 2025* Available at: <https://swoop.torfaen.gov.uk/en/Related-Documents/Pollution-Control/PollutionControl-AirQuality/Torfaen-AQ-Progress-Report.pdf>

²⁸ Defra (2026) Local Air Quality Management (LAQM) Support Website

- 12.2.38. The future baseline conditions (i.e. in the absence of the Site) have been determined by considering the following:
- Background concentrations have again been defined using Defra's background maps²⁸; and
 - Future trends in road traffic emissions have been identified using data from Defra's Emissions Factor Toolkit (EFT)²⁹ and baseline traffic flow data collected as part of the assessment set out in **Chapter 11: Transport and Access**.

Assessment Methodology

Insignificant Effects Scope Out of the ES

- 12.2.39. The scope of the air quality assessment has been informed by the nature of the Site and the EIA Scoping Direction. The assessment focuses on the construction and decommissioning phases, during which there is potential for temporary air quality effects associated with construction traffic, NRMM and dust.
- 12.2.40. During the operational phase, the Site would not give rise to notable sources or emissions. Solar photovoltaic (PV) infrastructure does not involve emissions to air. Operational traffic movements would be limited to occasional maintenance visits and would be negligible in the context of existing baseline flows. The potential for significant effects during the operational phase is considered negligible and has therefore been scoped out of detailed assessment.

Construction and Decommissioning Road Traffic Emissions

- 12.2.41. The construction of the Site will lead to an increase in traffic on the local roads, which may affect air quality at existing sensitive properties. The main air pollutants of concern relating to traffic emissions are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}). Decommissioning road traffic flows have not been provided but are assumed to be similar to construction.
- 12.2.42. Traffic data has been provided by the Project Transport Consultant, Pegasus Group, for the transport study area as defined in **Chapter 11: Transport and Access**, which has been defined by identifying routes to be used by traffic travelling to the scheme. The data represent peak construction activity and are therefore considered to provide a reasonable worst-case scenario for the assessment. In accordance with the approach set out in guidance published by EPUK and the IAQM¹⁸, the anticipated change in vehicle flows on local roads as a result of the Site have been compared to specified screening criteria.
- 12.2.43. The relevant screening criteria are:

²⁹ Defra (2025) Emissions Factor Toolkit V13.1 – <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/>

- the development will lead to a change in Light Duty Vehicle (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 Heavy Duty Vehicle (HDV)³⁰ flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;

12.2.44. The higher thresholds (i.e. outside the AQMA) apply for all links. These screening criteria are specifically intended to function as a trigger for a detailed assessment of impacts on human health. Therefore, where the change in traffic on a given road link is less than the relevant screening threshold, it is unlikely that a significant effect on air quality would occur and these links can be disregarded unless there are additional development-related emissions affecting receptors along the link.

12.2.45. Traffic volumes are well below the screening criteria, and as such a qualitative assessment has been undertaken.

Construction and Decommissioning NRMM Emissions

12.2.46. NRMM is defined as any mobile machine, transportable equipment or vehicle that is not intended for carrying passengers or goods on the road. In this context it refers to machinery used for demolition and construction activities. Examples include, but are not limited to, excavators, telehandlers, cranes, piling rigs and power generators³¹. In the absence of any specific guidance on the assessment of construction and decommissioning emissions related to NRMM, the approach discussed in section 4.3 of the IAQM guidance²⁰ has been adopted.

Construction and Decommissioning Dust and Particulate Emissions

12.2.47. The potential impacts from dust generated during the construction and decommissioning phases of the Site have been assessed in line with the methodology outlined in the IAQM guidance on the Assessment of Dust from Demolition and Construction²⁰.

12.2.48. The details of the decommissioning phase are not known at this stage, and best practice guidance on the consideration of the risks may well have changed by the time of decommissioning. It has been assumed that the impacts of decommissioning will be similar, and no worse than, the impacts of construction. The rest of the chapter therefore refers only to construction but applies to decommissioning as well.

³⁰ The term Heavy Duty Vehicles (HDVs) has been used for consistency with IAQM guidance but it is noted that other chapters within the ES may refer to Heavy Goods Vehicles (HGVs), which can be assumed in this instance to be equivalent.

³¹ Vehicle Certification Agency (2024) What is Vehicle Type Approval? – <https://www.vehicle-certification-agency.gov.uk/vehicle-type-approval/what-is-vehicle-type-approval/non-road-mobile-machinery-nrmm/#topic-title>

12.2.49. The construction dust assessment considers the potential for impacts within 250m of the Site boundary, and/or within 50m of roads used by construction vehicles. The assessment methodology follows a sequence of steps:

- Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required.
- Step 2a determines the potential for dust to be raised from onsite works and by vehicles leaving the Site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation.
- Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts.

12.2.50. The methodology is detailed in **Appendix 12.2** and considers dust nuisance and human health impacts on residential receptors.

Receptors

12.2.51. For the assessment of the construction and decommissioning road traffic emissions and construction and decommissioning NRMM emissions, sensitive receptors are defined as locations where the air quality objectives (as set out in **Table 12.1**) apply, this includes residential properties, schools, hospitals and other locations where members of the public may be regularly exposed over the relevant averaging period. These receptors are considered to be of high sensitivity in the context of this assessment. Locations where the air quality objectives do not apply (such as places of work) are not considered sensitive receptors. As such, there are no medium or low sensitivity receptors defined within this assessment.

12.2.52. The assessment of construction and decommissioning dust and particulate emissions using the construction dust risk assessment approach does not require specific receptors to be identified; instead, the numbers of different types of receptors within given distance bands are counted to determine the overall study area sensitivity. These receptor counts are provided in **Section 12.4** and include residential receptors within 20 m of the site boundary and 50 m of the trackout route from the Site main access.

Cumulative Effects Assessment Methodology

12.2.53. The approach to the assessment of the following effects has been adopted a qualitative approach for those schemes within a close enough proximity (a zone of up to 250m from the Site boundary, in accordance with IAQM guidance²⁰) to have the potential to result in significant cumulative effects with the Site:

- Effects of dust and particulate matter emissions on dust soiling, human health and ecological receptors; and
- Effects of exhaust emissions from onsite NRMM on human health.

- 12.2.54. The effects of exhaust emissions from construction and decommissioning traffic on human health and ecological receptors have been informed by the Project Transport Consultant (Pegasus Group). The traffic data does not explicitly account for cumulative construction traffic associated with other nearby schemes; however, the following schemes have been reviewed: 22/P/0446/OUT (Grange Hospital), DNS/3239190 (Pentre Bach Solar Farm), and DNS/3276725 (Mynydd Maen Wind Farm).

Assessment of Significance

Health Criteria

- 12.2.55. The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups. The 'objectives' set out the extent to which the Government expects the standards to be achieved taking account of practical considerations. The objectives for use by local authorities are prescribed within the Air Quality (Wales)⁵ Regulations 2010.
- 12.2.56. 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 60µg/m²¹. Therefore, 1-hour mean NO₂ concentrations only need to be considered if the annual mean concentration is above this level. Measurements have also shown that the 24-hour mean PM₁₀ objective is only likely to be exceeded at roadside locations where the annual mean concentration is above 32µg/m^{3 21}, so 24-hour mean PM₁₀ concentrations only need to be considered if the annual mean concentration is above this level.
- 12.2.57. 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 Local Air Quality Management Technical Guidance²¹. 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.
- 12.2.58. 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, originally set at 25µg/m³ and currently set at 20µg/m³.
- 12.2.59. The relevant air quality criteria for this assessment are provided in **Table 12.1**.

Table 12.1: Air Quality Criteria for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Value
NO ₂	1-Hour Mean	200µg/m ³ not to be exceeded more than 18 times a year

Pollutant	Time Period	Value
	Annual Mean	40µg/m ³
PM ₁₀	24-Hour Mean	50µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40µg/m ³
PM _{2.5}	Annual Mean	20µg/m ³ ^a

^a There is no numerical PM_{2.5} objective for local authorities. Convention is to assess against the UK limit value which is currently 20µg/m³. However, (Draft) The Air Quality Targets (Fine Particulate Matter) (Wales) Regulations⁸ introduce a more stringent target of 10 µg/m³ (annual mean) to be achieved by 31 December 2035.

Significance Criteria

Sensitivity of Receptor

- 12.2.60. For the assessment of construction and decommissioning dust emissions, the IAQM guidance²⁰ explains that for dust soiling residential properties, schools and care homes are 'high' sensitivity receptors, while public parks and places of work are 'medium' sensitivity receptors, with farmland being 'low' sensitivity. For impacts of dust on human health, residential properties, schools and care homes are classified as being of 'high' sensitivity, while places of work and shops are classified as being of 'medium' sensitivity and public parks are of 'low' sensitivity. For impacts on ecological receptors, locations with an international or national designation are 'high' sensitivity (e.g., Special Areas of Conservation (SAC)), locations with a national designation are 'medium' sensitivity (e.g., SSSIs), and locations with a local designation (e.g., Local Nature Reserves) are 'low' sensitivity.
- 12.2.61. The IAQM construction dust risk assessment approach does not require specific sensitive receptors to be identified; instead, the numbers of different types of receptors within given distance bands up to the study area extent (250m from site boundary) are counted.
- 12.2.62. For road traffic emissions, all of the air quality strategy objectives for human health, as set by the Government (see **Table 12.1**), apply at locations where members of the public are likely to be regularly present on a long-term basis such as at residential properties. Only the 1-hour NO₂ objective applies at retail, education, community properties and public realm spaces, as it is unlikely people will spend an extended period (i.e. 24 hours) in these locations. Offices and places of work are not covered by the national air quality objectives so are not considered to be sensitive to road traffic emissions.

Significance Criteria

- 12.2.63. It is important to differentiate between the terms 'impact' and 'effect' with respect to the assessment of air quality. The term 'impact' is used to describe a change in pollutant concentration at a specific location. The term 'effect' is used to describe an environmental response resulting from an impact, or series of impacts. Within this chapter, the air quality assessment has used published guidance and criteria described in the following sections to determine the likely air quality impacts at a number of sensitive locations. The potential significance of effects has then been determined by professional judgement, based on the frequency, duration and magnitude of predicted impacts and their relationship to appropriate air quality objectives.

- 12.2.64. Guidance from the IAQM²⁰ is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. This chapter thus focuses on determining the appropriate level of mitigation so as to ensure that the effects will normally be 'not significant'.

Consultation

- 12.2.65. A summary of consultation responses received from the **EIA Scoping Direction (Appendix 2.2)** is provided in **Table 12.2**.

Table 12.2: Summary of Correspondence with Statutory Consultees

Consultee	Summary of Comments	Applicants Response
NCC, Candwr Solar Objection Group (CSOG) and TCBC [ID.7, Ref 5.15]	NCC raise concerns regarding the potential impact on air quality from HGV deliveries, particularly if deliveries pass through the Caerleon AQMA. CSOG also raise concerns, noting that the Caerleon AQMA is a sensitive route serving an infant school, primary and secondary schools, and other community facilities, and consider it to be a prohibited route. TCBC note that the Scoping Report does not provide sufficient justification for the conclusion that there will be little impact on the Caerleon AQMA. On this basis, air quality effects associated with construction traffic cannot be scoped out. Air quality should therefore be scoped into the ES for the construction and decommissioning phases, with appropriate consideration of delivery routes, HGV numbers, and nearby sensitive receptors.	Air Quality has been scoped into the ES for the construction and decommissioning phases, specifically to assess the impacts of HGV deliveries on nearby sensitive receptors and along the proposed construction traffic routes. Since submission of the Scoping Report, the construction traffic route has been amended and no longer passes through the Caerleon AQMA. The revised route passes through the St Julian's AQMA; however, NCC have indicated intentions to revoke this AQMA. This chapter assesses construction phase traffic flows against IAQM guidance and considers the sensitivity of receptors along the revised route.

Limitations to the Assessment

- 12.2.66. The following assumptions have informed this assessment:
- The traffic data provided by the Project Transport Consultant represents peak construction traffic flows and therefore presents a conservative scenario for the assessment of air quality effects.
 - The potential air quality effects of the Site in the decommissioning phase will be similar to those in the construction phase, due to the similarities in the works being undertaken (although there will be demolition but no construction); thus, the impacts are assumed to be the same. The potential air quality effects identified for construction will be worst-case, as baseline air quality conditions,

and pollutant emissions associated with the decommissioning activities, are expected to improve over the 40-year lifespan of the Site, due in large part to technological improvements.

- Air quality monitoring data is not available in the immediate vicinity of the Site; however, it is considered that the nearest data is generally representative of the conditions at the Site.

12.3. Baseline Conditions

Existing Baseline

- 12.3.1. Local authorities must regularly review air quality within their administrative boundaries and declare an AQMA in areas where the air quality objectives have not been achieved, as well as produce an action plan to improve air quality in these areas.
- 12.3.2. The nearest AQMA to the Site is Caerleon High Street AQMA, located in Newport City Council (approximately 1.6 km south of the most southern point of the Site), and was declared in 2005 for exceedances of the annual mean NO₂ objective.

Local Air Quality Management

- 12.3.3. MCC monitored NO₂ concentrations using diffusion tubes at 44 locations in 2024 (the most recent year of available monitoring data), none of which are located within 3km of the Site. MCC also have one continuous monitoring unit (CMU) monitoring NO₂, although this is located in Chepstow, approximately 18km east of the Site.
- 12.3.4. NCC also monitors NO₂ concentrations at 64 diffusion tubes, and two CMUs within their area. There are 17 diffusion tubes and one CMU within 3km of the Site.
- 12.3.5. TCBC operates 25 diffusion tubes and one CMU in its area, with seven diffusion tubes within 3km of the Site (as shown in **Figure 12.2–12.4 Monitoring Locations**).
- 12.3.6. The measured annual mean NO₂ results for 2020 to 2024 are shown in **Table 12.3**. Data has been taken from the most recent Air Quality Annual Progress Report's (APR) for NCC²⁶ and TCBC²⁷. While 2020 and 2021 results have been presented for completeness, they are not relied upon in any way as they are not representative of 'typical' air quality conditions due to the impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.
- 12.3.7. Monitoring results indicate an overall reduction in NO₂ concentrations over time, despite some fluctuations between individual years at certain sites. Concentrations have generally remained below the annual mean air quality objective of 40µg/m³, with the exception of monitoring site NCC21D, NCC23E which recorded 46.7µg/m³ in 2020, but concentrations have decreased in subsequent years (**Table 12.3**).

Table 12.3: Summary of Annual Mean NO₂ Monitoring (2020–2024) (µg/m³)

Site ID	Site Type	Location	2020	2021	2022	2023	2024
NCC							
AN1	Urban Background	St Julian's (AURN)	15.0	15.1	15	13.3	11.9
AN2	Roadside	M4 Old Barn	28.3	32.4	29.2	30.0	34.1
NCC8	Roadside	14 High Street Caerleon	27.9	28.9	27.1	23.9	21.3
NCC16A	Roadside	40 Denbigh Road	22.6	21.8	22.1	19.6	17.4
NCC21D, NCC23E	Roadside	M4 Groundhog 2 (Old Barn)	46.7	34.7	33.8	24.9	28.4
NCC25C	Façade	19 High Street (Caerleon)	26.9	29.2	28.0	28.4	25.9
NCC26B	Façade	15 High Street, Caerleon	35.0	35.4	33.4	30.1	25.7
NCC27B	Roadside	18 High Street, Caerleon	28.5	30.4	30.2	26.7	25.6
NCC37, NCC38, NCC39	Background	St. Julians School 3	14.4	13.5	13.3	12.3	11.0
NCC47A	Roadside	9 Castle Street (Caerleon)	25.1	25.9	26.4	26.2	20.2
NCC78	Roadside	Gwent Cottage	19.6	20.3	30.1	27.4	25.5
NCC83	Roadside	Charles Williams Primary School (was NCC76)	11.0	12.2	12.9	11.7	10.9
IS1	Façade	40 Denbigh Road RWP	–	20.6	17.1	16.3	15.3
IS2	Roadside	Denbigh Road Lampost	–	18.9	17.3	15.0	11.6
IS3	Roadside	Denbigh Road Rail	–	20.6	19.4	19.1	16.7
IS4	Façade	41 Denbigh Road RWP	–	17.1	16.3	14.2	12.7
NCC85	Façade	23 High Street, Caerleon	–	–	–	24.1	20.6
NCC86	Façade	26 High Street, Caerleon	–	–	–	22.6	20.6
TBDC							
Cwmbran Crownbridge	Urban Background	Cwmbran Crownbridge	9.0	10.0	10.0	8.4	7.0
TCBC8	Roadside	Caerleon Road, Ponthir	13.0	13.0	13.0	11.2	10.3
TCBC9	Roadside	Llanyrafon Way	13.0	12.0	13.0	10.9	11.2
TCBC10	Roadside	Edlogan Way	17.0	18.0	19.0	16.0	14.2
TCBC17	Roadside	Turnpike Road Croesyceiliog	13.0	14.0	14.0	12.5	10.4
TCBC20	Roadside	Cwmbran Drive (Sainsbury)	24.0	26.0	27.0	22.8	23.3

Site ID	Site Type	Location	2020	2021	2022	2023	2024
NCC							
TCBC26	Roadside	A4042 Croyseyceiliog By-pass	23.0	26.0	27.0	21.5	20.4

- 12.3.8. MCC, TCBC and NCC all undertake continuous monitoring of PM₁₀ within their respective areas, with MCC and NCC also monitoring PM_{2.5} concentrations at their CMUs. All recorded PM₁₀ concentrations were below the annual mean air quality objective of 40µg/m³ throughout the reporting period.
- 12.3.9. At the Cwmbran Crownbridge monitoring site (TBDC), the highest annual mean PM₁₀ concentration recorded between 2020 and 2024 was 20.2µg/m³ in 2022; this site does not monitor PM_{2.5}.
- 12.3.10. At the AN1 CMU monitoring site (NCC), the highest annual mean PM₁₀ concentration recorded between 2020 and 2024 was 13µg/m³, observed in 2020, 2022 and 2023, which is well below the air quality objective of 40µg/m³. The AN1 site also monitors PM_{2.5}, with a maximum annual mean concentration of 8µg/m³ recorded in 2020, remaining well below the air quality objective of 20µg/m³.
- 12.3.11. MCC CMUs monitoring PM_{2.5} recorded concentrations below 10µg/m³.
- 12.3.12. Whilst many of the monitoring sites are not located in the immediate vicinity of the Site, the available measurements indicate that air quality in the wider area is generally very good. The urban background monitoring site, Cwmbran Crownbridge is located approximately 1.9km to the north-west of the Site boundary and can be considered representative of local background conditions. The remaining monitoring sites are generally more urban or roadside in nature and are therefore likely to be subject to higher pollutant concentrations.
- 12.3.13. Analysis of Defra background source apportionment across the area indicates that, on average, "Industry" (which includes agriculture) contributes a lower proportion of total particulate matter concentrations than from road traffic emissions. It is therefore expected that pollutant concentrations within the study area will be similar to or lower than those recorded at the monitoring locations. Although agricultural environments can have additional particulate sources (primarily related to farming activities), these contributions are generally lower than those from road traffic, even within rural areas. In addition, particulate matter, especially PM_{2.5} concentrations are more affected by regional pollution and therefore vary less between environments than NO₂ concentrations. As such the monitoring data available is considered to be representative of the study area.

Background Concentrations

- 12.3.14. Estimated 2024 background concentrations of NO₂, PM₁₀, PM_{2.5} in the study area obtained from Defra's 2021-based background maps, are presented in **Table 12.4** and are well below the objectives for all pollutants. The 2024 estimates have been used to

align with the most recent year of available monitoring data. A range of values is presented as the Site boundary covers multiple 1 x 1 km grid squares.

Table 12.4: Estimated Annual Mean Background Concentrations in 2024 ($\mu\text{g}/\text{m}^3$)

Year	NO ₂	PM ₁₀	PM _{2.5}
2024	5.5 – 6.5	10.3 – 10.8	6.1 – 6.4
Objective	40	40	20

Future Baseline

- 12.3.15. Background concentrations of NO₂, PM₁₀ and PM_{2.5} in the study area, in the absence of the Site, derived from Defra's 2021-based background maps, are presented in **Table 12.5** for the anticipated earliest year of the operational phase of the Site (2030). As is currently the case, all pollutants are well below the respective objectives and the recent downward trend in concentrations is expected to continue.

Table 12.5: Estimated Annual Mean Background Concentrations in 2030 ($\mu\text{g}/\text{m}^3$)

Year	NO ₂	PM ₁₀	PM _{2.5}
2031	4.4 – 5.1	9.4 – 10.4	5.6 – 6.0
Objective	40	40	20

12.4. Assessment of Likely Significant Effects

Effects during Construction

Construction Traffic

- 12.4.1. Construction traffic has the potential to affect air quality at nearby high sensitivity receptors, primarily residential properties located on the road network to be used by construction traffic (primarily the B4236 and A4042). These receptors are considered to be of high sensitivity, as defined in Paragraph 12.2.51.
- 12.4.2. It is anticipated that the construction works will generate two additional HDV trips per day on average, during the year of peak construction. This is well below the 100 AADT screening criterion recommended by EPUK/IAQM guidance¹⁸.
- 12.4.3. Construction traffic will be routed via the strategic road network, primarily the M4, with access to the Site via the A4042, thereby avoiding routing through the Caerleon AQMA.
- 12.4.4. During peak construction, up to 150 construction workers are expected to travel to the primary compound per day. It is anticipated at this stage that non-local workforce will stay at local accommodation, and general operatives will be transported to the site by minibuses where possible to minimise the impact on the local highway network. Although lift sharing initiatives will be implemented to reduce the number of car trips by workers, a worst-case approach has been adopted assuming that all workers travel individually and are present every day throughout the year. This is considered a robust assessment as in reality the number of movements will be much lower. Once on Site, workers will be transported internally by minivan (assumed six workers per vehicle).

Worker trips have been assumed to follow the same routes as construction traffic, although in reality these trips would disperse across the wider road network.

- 12.4.5. The sensitivity of receptors is high and the magnitude of change for road traffic emissions from construction vehicles is considered to be negligible and therefore the significance of effect is **negligible (not significant)**.

NRMM Emissions

- 12.4.6. Section 4.3 of the IAQM Guidance²⁰ states:

“Experience of assessing the exhaust emissions from onsite plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and onsite traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur”.

- 12.4.7. At this stage, detail on the duration of the works in specific locations across the Site is unknown. However, in the context of air quality, the Site is large, located in a rural area with a relatively small number of sensitive receptors close to the Site boundary. Furthermore, construction plant will be managed to minimise air quality impacts at sensitive receptors through mitigation measures outlined in the **Outline CEMP** such as:

- The use of NRMM onsite will take account of receptor proximity, with distances between NRMM and sensitive properties maximised wherever practicable; and
- All vehicles and plant will be switched off when not in use.

- 12.4.8. The sensitivity of receptors is high and the magnitude of change from onside machinery emissions is considered to be negligible and therefore the significance of effect is **negligible (not significant)**.

Construction Dust and Particulate Matter Emissions

- 12.4.9. The construction works will give rise to a risk of dust and particulate impacts during earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are high sensitivity residential receptors within the distances set out in the guidance (**See Appendix 12.2**), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Earthworks

- 12.4.10. The characteristics of the soil at the Site have been defined using the British Geological Survey's UK Soil Observatory website³², as set out in **Table 12.6**. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 12.6: Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Intermediate to Shallow
Soil Parent Material Grain Size	Argillic – Arenaceous ^a
European Soil Bureau Description	Mudstone and Sandstone
Soil Group	Clayey Loam to Sandy Loam ^b
Soil Texture	Medium (Silty) to Light (Silty) to Heavy

^a grain size < 0.06 mm.

^b a loam is composed mostly of sand and silt

- 12.4.11. The Site covers approximately 131.62 ha and most of this will be subject to at least some form of earthworks in association with the installation of infrastructure, including panel support piles and localised ground preparation works. However, no large excavation or levelling work is proposed. Dust will arise mainly from vehicles travelling over unpaved / unmade ground and from the handling of dusty materials. Based on the example definitions set out in **Table 12.2-1, Appendix 12.2**, the dust emission magnitude for earthworks is considered to be medium.

Construction

- 12.4.12. The Site involves the construction of an onsite 132kv substation compound and the installation of PV Panels and other associated infrastructure. The onsite 132kv substation is expected to have a total volume of approximately 28,000m³. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dust materials (e.g., soil, sand cement), and from cutting of concrete. The construction will take place over a period of 12-18 months. Based on the example definitions set out in **Table 12.2-1, Appendix 12.2**, the dust emission magnitude for construction is considered to be medium.

Trackout

- 12.4.13. The number of heavy vehicles accessing the Site, which may track out dust and dirt, will be two per day, in the peak construction year. Based on the example definitions set out in **Table 12.2-1, Appendix 12.2**, the dust emission magnitude for trackout is considered to be small.
- 12.4.14. **Table 12.7** summarises the dust emission magnitude for the Site.

Table 12.7: Summary of Dust Emission Magnitude

Source	Dust Emission Magnitude
Earthworks	Medium

³² British Geological Survey (2026) UK Soil Observatory Map Viewer

Source	Dust Emission Magnitude
Construction	Medium
Trackout	Small

Sensitivity of the Area

- 12.4.15. This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the Site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM₁₀ concentrations.
- 12.4.16. The IAQM guidance²⁰ explains that residential properties are 'high' sensitivity to dust soiling, while workplaces are 'medium' sensitivity and farmland is 'low' sensitivity (**Table 12.2-2, Appendix 12.2**). Residential properties are also classified as being of 'high' sensitivity to human health effects. There are farmland and more than 25 residential properties within 20m of the Site see **Figure 12.5 250m Buffer around Site**.
- 12.4.17. The IAQM guidance also explains that at construction sites there is a risk of material being tracked up to 250m from the Site exit. Construction vehicles will access the Site at one location (Site Access 1), which is located on the B4236 Caerleon Road. There are 11 residential properties within 50m of the roads along which material could be tracked, see **Figure 12.6 50m Buffer around Roads Used by Construction Traffic within 250m of the Site Exit**.

Sensitivity of the Area to Effects from Dust Soiling

- 12.4.18. Using the information set out above and, in the matrix set out in **Appendix 12.2, Table 12.1-3** the area surrounding the Site is of 'high' sensitivity to dust soiling from earthworks and construction. The area is also of 'high' sensitivity to dust soiling due to trackout.

Sensitivity of the Area to any Human Health Effects

- 12.4.19. The matrix in **Appendix 12.2, Table 12.1-4** requires information on the baseline annual mean PM₁₀ concentration in the area. The annual mean PM₁₀ background concentration in the area containing the Site boundary ranges from 10.3 – 10.8µg/m³, as presented in is stated in **Table 12.4**. Using the information set out above and the matrix in **Appendix 12.2, Table 12.1-4**, the area surrounding the onsite works is of 'low' sensitivity to human health effects from earthworks and construction. The area is also of 'low' sensitivity to dust soiling due to trackout.

Summary of the Area Sensitivity

- 12.4.20. **Table 12.8** summarises the sensitivity of the area around the proposed construction works

Table 12.8: Summary of the Area Sensitivity

Effects Associated With:	Sensitivity of the Surrounding Area	
	Earthworks and Construction	Trackout
Dust Soiling	High Sensitivity	High Sensitivity
Human Health	Low Sensitivity	Low Sensitivity

Risk and Significance

- 12.4.21. The dust emission magnitudes in **Table 12.7** have been combined with the sensitivities of the area in **Table 12.8** using the matrix in **Appendix 12.2, Table 12.1–6** in order to assign a risk category to each activity. The resulting risk categories for the three construction activities, without mitigation, are set out in **Table 12.9**. These risk categories have been used to determine the appropriate level of mitigation as set out in **Appendix 12.3** (Step 3 of the assessment procedure).

Table 12.9: Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health
Earthworks	Medium Risk	Low Risk
Construction	Medium Risk	Low Risk
Trackout	Low Risk	Negligible

The IAQM guidance²⁰ does not provide a method for assessing the significance of effects before mitigation and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'.

Effects during Decommissioning

- 12.4.22. The changes in air quality concentrations as a result of the Site in the decommissioning phase are assumed to be the same as those in the construction phase, due to similarities in the works being undertaken (although there will be demolition instead of construction). This assumption is worst-case, as baseline air quality conditions and pollutant emissions associated with the decommissioning activities are expected to have improved, due in large part to technological improvements, during the 40-year operational life of the Site.

Summary of Significance of Effects (Before Mitigation)

- 12.4.23. The assessment of construction dust has assumed that appropriate mitigation will be implemented. This is considered as embedded mitigation and not additional mitigation.
- 12.4.24. The Site has been identified as a *Medium-Risk* site during earthworks and construction, and a *Low-Risk* site during trackout. Comprehensive guidance has been published by the IAQM²⁰ that describes measures to be employed, as appropriate, to reduce the impacts, along with guidance on monitoring during demolition and construction. This reflects best practice experience and has been used, together with professional experience of the consultant who has undertaken the dust impact assessment and the findings of the assessment, to define a set of measures that should be incorporated

into the specification for the works. These measures are described in **Appendix 12.3** and will be secured through the CEMP, within which a Dust Management Plan (DMP) will be prepared and agreed with the Local Authority prior to construction.

- 12.4.25.** In addition, an **Outline CEMP** will be adopted to minimise the impacts of the construction works. The mitigation measures will be secured through the **Outline CEMP**. A DMP will be prepared as part of the CEMP and agreed with the Local Authority prior to construction, setting out the site-specific measures and monitoring requirements to be implemented. The specific measures implemented will be proportionate to the level of risk identified in the assessment and the nature of the works being undertaken at any given time.
- 12.4.26.** Further, the distance between any areas of NRMM operation and sensitive receptors will be maximised as far as possible, and all vehicles and plant will be switched off when not in use; this is specified as part of the **Outline CEMP**
- 12.4.27.** Where mitigation measures rely on water, only sufficient water will be applied to damp down the material and unnecessary usage will be avoided. There should not be any excess to potentially contaminate local watercourses.

Table 12.10: Significance of Effects (before Mitigation)

Environmental Effect	Sensitivity of Receptor	Impact Magnitude	Nature of Impact (Permanent/Temporary)	Effect and Significance
CONSTRUCTION				
Construction dust soiling and human health effects	Residential receptors (high)	Negligible	Temporary	Not Applicable – the guidance does not enable significance to be determined before mitigation
Onsite NRMM emission human health effects	Residential receptors (high)	Negligible	Temporary	Negligible (Not Significant)
DECOMMISSIONING				
Construction dust soiling and human health effects	Residential receptors (high)	Negligible	Temporary	Not Applicable – the guidance does not enable significance to be determined before mitigation
Onsite NRMM emission human health effects	Residential receptors (high)	Negligible	Temporary	Negligible (Not Significant)

12.5. Mitigation, Enhancement and Residual Effects

- 12.5.1.** No additional mitigation is required for air quality.

Enhancements

- 12.5.2. In terms of air quality, it is unlikely that the Site will generate any enhancements during the construction phase. During operation, the Site will enhance air quality beyond the Site since it will reduce the need for combustion to generate electricity.

Residual Effects

- 12.5.3. The IAQM guidance²⁰ is clear that with appropriate mitigation in place, the residual effects will normally be 'not significant'. The mitigation measures set out in **Appendix 12.3** are based on the IAQM guidance. With these measures in place and effectively implemented, the residual effects are judged to be '**not significant**'. **Table 12.11** summarises the residual significance of effects for construction and decommissioning.

Table 12.11: Residual Significance of Effects (with Mitigation)

Environmental Effect	Sensitivity of Receptor	Impact Magnitude	Nature of Impact (Permanent/Temporary)	Residual Effect and Significance
CONSTRUCTION				
Construction dust soiling and human health effects	Residential receptors (high)	Negligible	Temporary	Negligible (not significant)
Onsite NRM emission human health effects	Residential receptors (high)	Negligible	Temporary	Negligible (not significant)
DECOMMISSIONING				
Construction dust soiling and human health effects	Residential receptors (high)	Negligible	Temporary	Negligible (not significant)
Onsite NRM emission human health effects	Residential receptors (high)	Negligible	Temporary	Negligible (not significant)

12.6. Cumulative Effects

Construction and Decommissioning Road Traffic Emissions

- 12.6.1. The EPUK and IAQM guidance¹⁸ states that where "developments have been granted planning consent and are therefore 'committed' developments, their impacts should be assessed cumulatively with those of the application site."
- 12.6.2. There is potential for overlap in the construction programmes of the schemes outlined in Paragraph 12.2.54; however, there is currently limited information regarding confirmed construction traffic routing and trip generation. For the Grange Hospital scheme (22/P/O446/OUT), no construction traffic details are available at this stage. While some

construction traffic information is provided for the Pentre Back Solar Farm (DNS/3239190), this indicates routing via the A4042 before diverging onto the A4051 and Pentre Lane. For the Mynydd Maen Wind Farm (DNS/3276725), limited information is available, with only shared route anticipated to be the M4 motorway, which lies outside the scope of this assessment.

- 12.6.3. Given the uncertainty in construction traffic for nearby schemes and taking into account the construction traffic associated with the Site is very low (i.e., two AADT for HDV trips, which is well below the IAQM/EPUK screening criteria), any additional contribution from overlapping construction activities is not anticipated to influence traffic flows in this assessment. On this basis, cumulative effects from construction traffic are considered unlikely and **not significant**.

Construction and Decommissioning Dust and NRMM

- 12.6.4. The IAQM guidance²⁰ is clear that, with appropriate mitigation measures in place, any residual construction dust effects from an individual site will be 'not significant'. The guidance also suggests that cumulative construction dust impacts are only likely where receptors are within 250m of multiple sites. Work would also have to be taking place in areas of both sites that are close to a receptor in order for cumulative effects to occur.
- 12.6.5. There are no cumulative developments within 250m of the Site and therefore the magnitude and scale of effects are **negligible** and **not significant**.

In-Combination Effects

- 12.6.6. In-combination effects related to air quality effects and the effects of other environmental disciplines for the Site are not expected to be greater than that provided for each individual environmental discipline considered in isolation. Where the highest and most direct effects from other topics are predicted, the overall magnitude of in-combination effects would not be expected to increase as a result of concurrent air quality effects.

12.7. Summary

Baseline Conditions

- 12.7.1. Baseline conditions within and surrounding the Site are good, with pollutant concentrations well below the air quality objectives.

Likely Significant Effects

Construction Phase

- 12.7.2. The construction works have the potential to create dust. A set of mitigation measures has been defined and is assumed to be implemented as part of the construction phase. With these measures in place, residual effects are expected to be 'not significant'.

Decommissioning Phase

- 12.7.3. The potential air quality effects of the Site in the decommissioning phase are expected to be similar to those in the construction phase, due to comparable activities being undertaken (although there will be demolition but no construction). The same mitigation measures will be implemented during the decommissioning phase as defined for the construction phase. With these measures in place, residual effects are expected to be 'not significant'.

Mitigation, Enhancement, Residual Effects

- 12.7.4. No significant effects have been identified. Therefore, no additional mitigation is required.

Cumulative Effects

- 12.7.5. Cumulative construction dust impacts are only likely within 250m of simultaneous activity on multiple sites. The Site is not located within 250m of any cumulative developments, thus there will be no cumulative impacts.
- 12.7.6. Traffic generated by any committed and cumulative development has not been considered in the future baseline. However, traffic data provided by the Project's Traffic Consultant indicates that flows associated with the Site remain below the relevant IAQM screening criteria and as such, the inclusion of additional traffic from other schemes is not expected to materially alter the conclusions of the assessment.

Conclusion

- 12.7.7. Taking into account the good baseline conditions and the implementation of appropriate mitigation measures, no significant air quality effects are anticipated during the construction or decommissioning phases. Furthermore, cumulative impacts are not expected to be significant. Overall, the Site is considered not significant in terms of air quality.
- 12.7.8. **Table 12.12** provides a summary of effects, mitigation and residual effects.

Table 12.12: Summary of Effects, Mitigation and Residual Effects

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Construction								
Residential receptors (high)	Construction dust soiling and human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)
Residential receptors (high)	Onsite NRM emission human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)
Decommissioning								
Residential receptors (high)	Construction dust soiling and human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)
Residential receptors (high)	Onsite NRM emission human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)
Cumulative Effects								

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Residential receptors (high)	Construction dust soiling and human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)
Residential receptors (high)	Onsite NRMM emission human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)
Residential receptors (high)	Traffic emission human health effects	Temporary	High	Negligible	Local	Negligible (not significant)	None	Negligible (Not Significant)

