Foel Fach Wind Farm Limited.

Foel Fach Wind Farm - Environmental Statement Volume III

Appendix 4.5: Air Quality Assessment

Project Reference: 664094

DECEMBER 2025

Energy for generations

Coriolis Energy

RSK

RSK GENERAL NOTES

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ABBREVIATIONS

AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Standard
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMP	Dust Management Plan
DNS	Development of National Significance
EC	European Community
EPUK	Environmental Protection UK
EU	European Union
GC	Gwynedd Council
HDV	Heavy Duty Vehicles
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LAQM TG	Local Air Quality Management Technical Guidance
LDP	Local Development Plan
LDV	Light Duty vehicles
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
$PM_{2.5}$	Particulate matter of size fraction approximating to <2.5µm diameter
PM_{10}	Particulate matter of size fraction approximating to <10µm diameter
PPW	Planning Policy Wales
RSK	RSK Environment Limited
SAC	Special Areas of Conservation
SPA	Special Protection Area
SSSI	Site of Specific Scientific Interest

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1 INTRODUCTION

1.1.1 RSK Environment Ltd (RSK) was commissioned to prepare an air quality assessment to support the Development of National Significance (DNS) application for the proposed Foel Fach Wind Farm.

1.1.2 The Proposed Development comprises the construction and operation of ten wind turbines and associated facilities, including one substation, one batching compound and one temporary construction compound. The Site is located within the administrative area of Gwynedd Council (GC). **Figure 1.1** shows the Proposed Development's location.

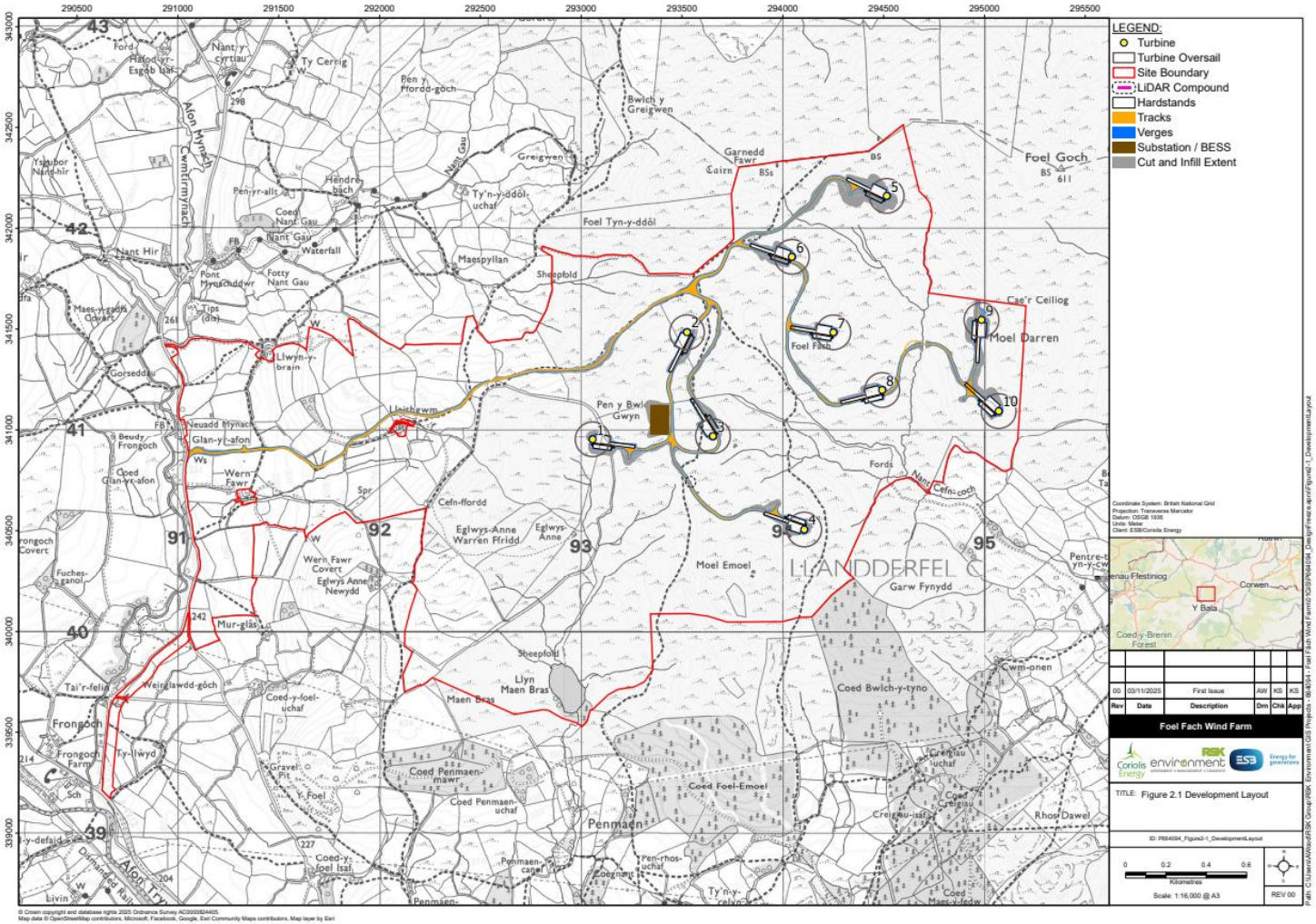
1.1.3 The Proposed Development is not located within an Air Quality Management Area (AQMA); however, increases in construction vehicle numbers are anticipated and therefore, an assessment is required. Furthermore, dust and PM10 emissions from trackout[1] activities have the potential to affect nearby receptors and have been included within this assessment.

1.1.4 The primary emissions associated with the construction phase are dust and particulate matter, with NO2, PM10 and PM2.5 emissions most associated with construction vehicles.

1.1.5 This report presents the findings of the assessment of vehicle emissions and dust effects upon local air quality arising from the Proposed Development during the construction phase. There are no power generation sources associated with the scheme (backup generators, onsite combined heat and power (CHP) plant, etc.), and no assessment of such emissions is required.

[1] Trackout is defined as the transport of dust and dirt from the construction / demolition sites onto the public road network, where it may be deposited and then re-suspended by vehicles using the network.

Figure 1.1 Proposed Development Site Location Plan



2 LEGISLATION, PLANNING POLICY & GUIDANCE

2.1 Key Legislation

Air Quality Strategy

2.1.1 UK air quality policy is published under the umbrella of the Environment Act 1995, Part IV and specifically Section 80, the National Air Quality Strategy. The latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Clean Air, published in July 2007 sets air quality standards and objectives for ten key air pollutants to be achieved between 2003 and 2020. It furthermore describes the role of local authorities in carrying out their duties under the Environment Act 1995 (i.e. the Local Air Quality Management (LAQM) regime).

The Clean Air Strategy 2019

2.1.2 The Clean Air Strategy 2019 sets out ways that the UK Government will seek to tackle major sources of pollution. This latest strategy aims to have a more joined-up approach, outlining actions the Government plans to take to reduce emissions from transport, homes, agriculture and industry.

Air Quality Standards

2.1.3 The air quality standards (AQSs) in the United Kingdom are derived from European Community (EC) directives and are adopted into Welsh law via the Air Quality Standards Regulations (Wales) (2010). Directive 2008/50/EC set limit values, and was translated into Welsh law in 2010 via the Air Quality Standards Regulations (Wales) 2010. The European Union (Withdrawal) Act retains existing EU environmental provisions in the UK. The relevant2 AQSs for Wales to protect human health are summarised in **Table 2.1**.

Table 2.1 Air Quality Standards (AQSs) Relevant to the Proposed Development

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit (mg/m^3)
Nitrogen dioxide (NO_2)	1 calendar year	-	40
	1 hour	18	200
Fine particles (PM_{10})	1 calendar year	-	40
	24 hours	35	50
Fine particles ($PM_{2.5}$)	1 calendar year	-	20

[2] Relevance, in this case, is defined by the scope of the assessment.

The Environment Act, 2021

2.1.4 The Environment Act provides a mechanism to set long-term, legally binding environmental targets, including those for air pollution. The Act requires the UK government to have an Environmental Improvement Plan (EIP) covering at least 15 years and setting out steps it intends to take to improve the environment.

Environment (Air Quality and Soundscape Act), 2024

2.1.5 The 2024 Environment (Air Quality and Soundscape Act) (Wales) "seeks to improve the quality of our air environment and reduce the impacts of airborne pollution on human health, nature, the environment and our economy." It creates a legal framework to set targets in relation to air quality and "places the Welsh Ministers and local authorities under a duty to promote active travel as a way of reducing or limiting air pollution". As part of this act, Welsh Ministers must set a target in respect of the annual mean level of PM2.5.

Well-being of Future Generations (Wales) Act 2015

2.1.6 The Well-being of Future Generations (Wales) Act sets out to improve lives now and for future generations by setting and publishing objectives focusing on seven well-being goals. In order to measure the performance of the actions for each goal, a series of indicators have been set. Air quality is a performance indicator for four of the seven well-being goals.

Clean Air Plan for Wales 2020

2.1.7 The Clean Air Plan for Wales sets out to implement actions across the Welsh government and sector to reduce air pollution concentrations. The plans look at reducing emission from road traffic, agriculture and industry, through promoting active travel, clean air zones and actions on Best Available Techniques (BAT).

2.2 Planning Policy

2.2.1 The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality concern that relates to land use and its development can, depending on the details of the Proposed Development, be a material consideration in the determination of planning applications.

Planning Policy Wales

2.2.2 Planning Policy Wales (PPW) sets out the planning policy for the Welsh Government and was created to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well being of Wales. The latest release of the PPW is from February 2024.

2.2.3 Section 6.7 of the PPW, Air Quality and Soundscapes, states: *"In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of*

proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes ……

….in proposing new development, planning authorities and developers must, therefore:

- *address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors*
- *not create areas of poor air quality or inappropriate soundscape; and*
- *seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes….*

…..To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer."

2.2.4 Future Wales: The National Plan 2040, the Welsh plan to promote development that enhances Welsh well-being and Welsh quality of life, states: *"When proposing new transport infrastructure or new development, average population exposure to air and noise pollution should be reduced and soundscapes improved where it is practical and feasible to do so. At the very least, exposure to pollution should be minimised. This will include taking into account the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment arising as a result of proposals for transport infrastructure or development."*

2.2.5 Furthermore Policy 18 of the Future Wales: The National Plan 2040 - Renewable and Low Carbon Energy Developments of National Significance, states: *"Proposals for renewable and low carbon energy projects (including repowering) qualifying as Developments of National Significance will be permitted subject to policy 17 and the following criteria:*

… there are no unacceptable adverse impacts on national statutory designated sites for nature conservation (and the features for which they have been designated), protected habitats and species;……

…. there are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance;"

2.3 Local Planning Policy

Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026 (Adopted July 2017)

2.3.1 Gwynedd and Isle of Anglesey County Council adopted a Joint Local Development Plan (LDP) on 31 July 2017. This LDP is used by the councils to guide and manage development. Relevant policies in respect of air quality / pollution, namely:

- Policy PS 7: Renewable Energy Technology; and
- Policy PCYFF 2: Development Criteria.

2.3.2 Policy PS 7: Renewable Energy Technology states the following: *"The Councils will seek to ensure that the Plan area wherever feasible and viable realises its potential*

as a leading area for initiatives based on renewable or low carbon energy technologies by promoting:

1. Renewable energy technologies within development proposals which support energy generation from a variety of sources which include biomass, marine, waste, water, ground, solar and wind, including micro generation;

2. Free-standing renewable energy technology development.

This will be achieved by:

3. Ensuring that installations in areas covered by international or national landscape designations and visible beyond their boundaries, or areas of local landscape value, in accordance with Strategic Policy PS 19 do not individually or cumulatively compromise the objectives of the designations especially with regard to landscape character, and visual impact;

4. Ensuring that installations in accordance with PS 19 do not individually or cumulatively compromise the objectives of international, national and local nature conservation designations;

5. Supporting installations outside designated areas provided that the installation would not cause significant demonstrable harm to landscape character, biodiversity, or amenity of residential or holiday accommodation, either individually or cumulatively.

To lessen the visual impact of new overhead lines associated with such installations, especially in sensitive locations, the lines should be placed underground unless this causes significant harm to other acknowledged interests or the viability of the scheme, which cannot be negated or mitigated."

2.3.3 Furthermore, Policy PCYFF 2: Development Criteria states the following: "A proposal should demonstrate its compliance with:

1. Relevant policies in the Plan;

2. National planning policy and guidance.

……

Additionally, planning permission will be refused where the proposed development would have an unacceptable adverse impact on:

7. The health, safety or amenity of occupiers of local residences, other land and property uses or characteristics of the locality due to increased activity, disturbance, vibration, noise, dust, fumes, litter, drainage, light pollution, or other forms of pollution or nuisance;"

2.4 Good Practice Guidance

Guidance on the Assessment of Dust from Demolition and Construction

2.4.1 The Institute of Air Quality Management (IAQM) published a guidance document on the assessment of construction phase impacts (herein the 'IAQM construction dust guidance'). The guidance was produced to provide advice to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts and to identify mitigation measure appropriate to the

level of risk identified. The latest version of this document (Version 2.2) was published in 2024.

Local Air Quality Management Review and Assessment Technical Guidance

2.4.2 The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their air quality review and assessment work. This guidance referred to in this document as LAQM.TG (22), has been used to identify locations where exposure can be considered 'relevant'.

Land-Use Planning & Development Control: Planning for Air Quality

2.4.3 Environmental Protection UK (EPUK) and the IAQM jointly published a revised version of the guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' in 2017 (herein the 'EPUK-IAQM guidance') to facilitate consideration of air quality within local development control processes. It provides a framework for air quality considerations, promoting a consistent approach to the treatment of air quality issues within development control decisions.

2.4.4 The guidance includes methods for undertaking an air quality assessment and an approach for assessing the significance of effects. The guidance note is widely accepted as an appropriate reference method for this purpose.

2.4.5 In addition, this guidance provides indicative screening criteria that can be used alongside professional judgment as to whether a detailed or modelling assessment is required. These screening criteria are as follows:

- For areas outside of an Air Quality Management Area (AQMA), where flows of Light Duty Vehicles (LDVs) are less than 500 Annual Average Daily Traffic (AADT) trips and Heavy Duty Vehicles (HDVs) are less than 100 AADT trips, a detailed assessment is not always required.
- For areas inside of an AQMA, where flows of LDVs are less than 100 AADT trips and HDVs are less than 25 AADT trips, a detailed assessment is not always required.

A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites

2.4.6 The IAQM has published guidance on the assessment of air quality impacts of developments on designated nature conservation sites. This document focuses on air quality assessments in support of Habitat Regulations Assessments (HRA) but can also be applied to national or local designated nature conservation sites. This document provides methods for screening criteria and detailed air quality assessment on designated habitats.

3 METHODOLOGY

3.1 Overall Approach

3.1.1 The approach taken for assessing the potential air quality impacts of the Proposed Development can be summarised as follows:

- Baseline characterisation of local air quality;
- Qualitative assessment of construction dust impacts from trackout activities using the IAQM's 2024 Guidance on the Assessment of Dust from Demolition and Construction;
- Qualitative assessment of construction road traffic impacts using the EPUK-IAQM's 2017 Land-Use Planning & Development Control: Planning for Air Quality;
- Assessment of likely impacts using relevant planning guidance; and
- Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised.

3.1.2 Internationally and nationally designated sites of ecological conservation importance for the protection of species, habitats and other species identified as being of principal importance for the conservation of biodiversity (known as designated habitats) within 200 m of the affected road network have been included in the air quality assessment, as recommended by IAQM and Natural England guidance.

3.1.3 The Proposed Development site is located east of B4501 and south of the A5. Nine international and national designated ecological sites have been identified within 200 m of roads predicted to see an increase in road traffic associated with the Proposed Development (see **Figure 5.1**). These are:

- Berwyn a Mynyddoedd De Clwyd/ Berwyn and South Clwyd Special Areas of Conservation (SAC);
- Berwyn Special Protection Area (SPA)/ Site of Specific Scientific Interest (SSSI);
- Y Glyn-diffwys SSSI;
- Caeau Pen-y-coed SSSI;
- River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid (Wales) SAC;
- Afon Dyfrdwy (River Dee) SSSI;
- Corsydd Nug a Merddwr SSSI;
- Cors y Sarnau SSSI; and
- Caerau Uchaf SSSI.

3.2 Construction Dust Assessment

Construction Dust and Particulate Matter

3.2.1 Trackout activities for the Proposed Development have the potential to lead to the release of dust and particulate matter. Therefore, an assessment of the likely significant effects of construction phase dust and particulate matter at sensitive receptors has been undertaken following the latest 2024 IAQM construction dust guidance.

3.2.2 The risk of dust and particulate matter arising to cause disamenity and/or impacts has been based on an assessment of likely emissions magnitude and the sensitivity of the surrounding environment.

3.2.3 **Annex 1** sets out the construction dust assessment methodology in detail as per the 2024 IAQM construction dust guidance. Once the level of risk has been determined, then site-specific mitigation proportionate to the level of risk can be identified.

3.2.4 As the main construction locations within the Proposed Development (turbine and compound areas etc.) for demolition, earthworks and construction are at distances from receptors (both ecological and human) that are greater than the screening criteria (250 m) contained within the 2024 IAQM construction dust guidance. As such, the dust impacts of these construction stages have not been considered further.

3.3 Construction Traffic Assessment

Traffic Emissions

3.3.1 The Proposed Development's construction will generate additional traffic emissions in the local area. NO2, PM10 and PM2.5 are generally regarded as the most significant air pollutants released by vehicular combustion processes (as they tend to be more likely to be close to exceeding statutory limits in an urban environment), or subsequently generated by vehicle emissions in the atmosphere through chemical reactions.

3.3.2 The EPUK-IAQM guidance provides screening criteria (presented in **Section 2.4.5**) for when an air quality assessment is likely to be required. If none of the criteria are exceeded, it is considered unlikely that there will be any significant impacts on air quality during the construction phase. A screening level assessment against these criteria has been undertaken in **Section 5** of this report.

3.3.3 In addition, IAQM guidance suggests the assessment of in-combination impacts with other plans or projects to be considered alongside the effects of the scheme itself for ecological receptors. The assessment of the in-combination impacts has been undertaken qualitatively.

4 BASELINE AIR QUALITY CHARACTERISATION

4.1 Present of AQMAs

4.1.1 GC currently does not have any declared AQMA. The Proposed Development is not located within or close to an AQMA.

4.2 Baseline Monitoring Data

4.2.1 According to North Wales Authorities Collaborative Project 2023 Air Quality Progress Report, GC undertook NO2 diffusion tube monitoring at 17 sites in 2023.

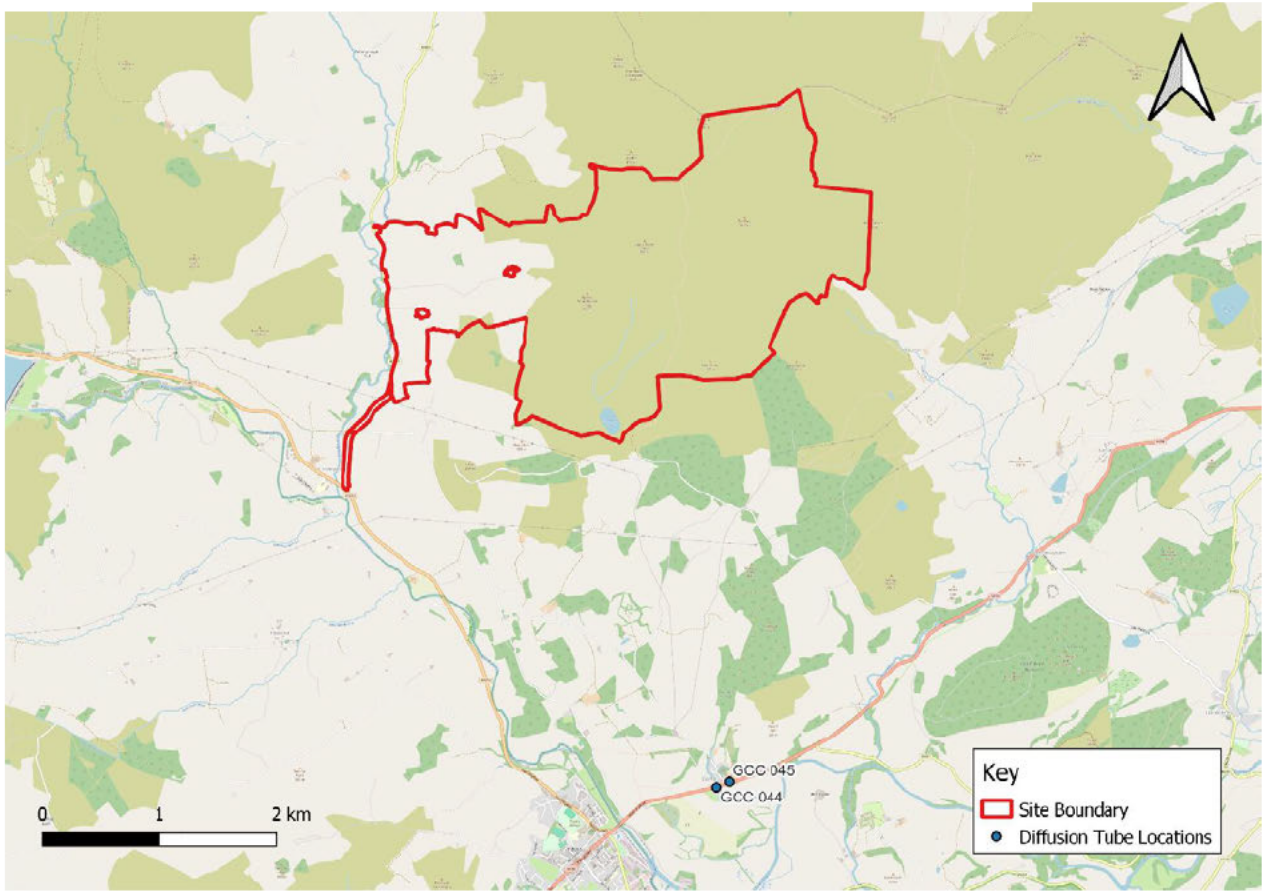
4.2.2 The closest monitoring locations to the Site are two diffusion tubes (GC ref: GCC 044 and GCC 045) positioned on A494, approximately 4.5 km from the Site. The measured annual average NO2 concentrations at these diffusion tube sites for the years 2021-2023 are presented in **Table 4.1**. There was no exceedance of the annual NO2 AQS during 2021-2023. **Figure 4.1** demonstrates the location of diffusion tubes GCC 044 and GCC 045 in relation to the Proposed Development.

4.2.3 GC did not undertake automatic monitoring within Gwynedd, and therefore, particulate matter monitoring data is not available.

Table 4.1 Annual Mean NO_2 Concentrations Measured at Diffusion Tubes near the Proposed Development

Site ID	Location	Site type	Approximate Distance from Site (km)	Annual Mean NO_2 Concentrations (mg/m^3)				
				2019	2020	2021	2022	2023
GCC 044	A494	Kerbside	4.5	-	-	13.3	11.5	12.0
GCC 045	A494	Roadside	4.5	-	-	10.5	8.4	8.8
AQS				**40**				

Figure 4.1 Location of Diffusion Tubes GCC 044 and GCC 045



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4.3 Local Air Quality Management (LAQM) Background Data

4.3.1 In addition to the local monitoring data, estimated background air quality data available from the Local Air Quality Management (LAQM) website operated by Defra, may also be used to establish likely background air quality conditions at the Site.

4.3.2 This website provides estimated annual average background concentrations of NO2, PM10 and PM2.5 on a 1km2 grid basis. **Table 4.2** identifies estimated annual average background concentrations for the grid square containing the Site for years from 2025 to 2027. No exceedances of the NO2, PM10 or PM2.5 AQSs are predicted. As background concentrations are predicted to fall with time, background concentrations in future years would not be expected to exceed their respective AQSs.

Table 4.2 Estimated Background Annual Average NO_2, PM_{10} and $PM_{2.5}$ Concentrations at Proposed Development Site (from 2021 Base Map)

Assessment Year	Estimated Annual Average Concentrations Derived from the LAQM Website (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
2025	1.7	7.1	4.2
2026	1.6	7.0	4.1
2027	1.6	6.9	4.1
AQS	**40**	**40**	**20**

5 ASSESSMENT OF IMPACTS

5.1 Construction Dust Emissions from Trackout Activities

5.1.1 The main construction activities within the Proposed Development (turbine and compound areas etc.) for demolition, earthworks and construction stages are at distances greater than the screening criteria (250 m) contained within the 2024 IAQM construction dust guidance for ecological and human. As such, the dust impacts of these stages have not been considered further, with only trackout dust emissions considered below.

5.1.2 With reference to the IAQM guidance criteria outlined in **Annex 1**, the dust emission magnitude for trackout activities is large (a maximum of greater than 50 outward HGV movements). In addition, there are fewer than 10 high sensitive human receptors and one low sensitive ecological receptor (an unnamed ancient woodland) identified within 20 m of the first 500 m of the trackout route. Therefore, the sensitivity of the area is considered to be medium with respect to dust soiling and low with respect to PM10 human health effects and effects on ecology.

5.1.3 The dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts of trackout activities before mitigation; these are evaluated based on risk categories in **Annex 1**. The risk of dust impacts from trackout activities is identified as having a medium risk for dust soiling, low for effects on ecology and low with respect to PM10 human health effects (when considering the background PM10 concentrations in Table 4.2.

5.1.4 Based on the risk level determined above, mitigation measures suggested in **Section 6.1** should be implemented within the Construction Environmental Management Plan (CEMP) to minimise the dust impacts from trackout activities, as per the IAQM's 2024 construction dust guidance.

5.1.5 With the implementation of the proposed mitigation measures, the residual dust impact is considered to be **not significant**.

5.2 Construction Phase Traffic Emissions

5.2.1 **Table 5.1** presents the EPUK-IAQM guidance's screening criteria for when an air quality assessment might be required. Should the criteria within **Table 5.1** be exceeded, then a detailed assessment of impacts may be required. The guidance makes it clear that exceeding a screening criterion does not automatically lead to the requirement for a Detailed Assessment. The guidance highlights 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.

Table 5.1 Air Quality Screening Criteria from EPUK-IAQM Guidance

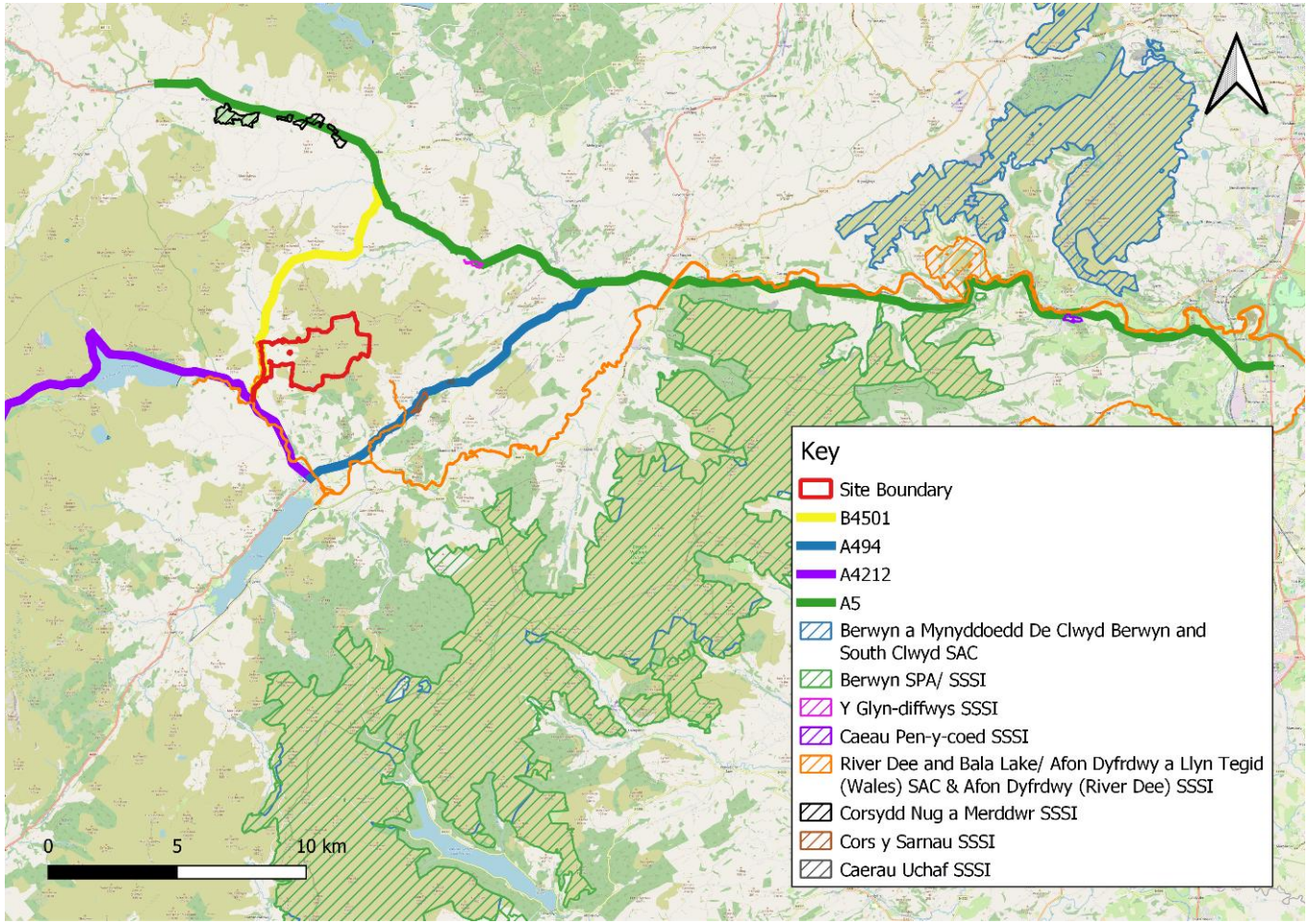
Criteria	Indicative criteria to proceed to an air quality assessment
Cause a significant change in Light Duty Vehicle traffic flows on local roads with relevant receptors	A change of Light Duty Vehicle (LDV) flows of: - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area - more than 500 AADT elsewhere.
Cause a significant change in Heavy Duty Vehicle flows on local roads with relevant receptors	A change of Heavy Duty Vehicle (HDV) flows of: - more than 25 AADT within or adjacent to an Air Quality Management Area - more than 100 AADT anywhere else.

5.2.2 Construction (and decommissioning) traffic will comprise haulage/construction vehicles and vehicles used for workers' trips to and from the Site. Construction phase traffic data has been obtained from **ES Volume III, Appendix 11.1: Transport Assessment** and is provided in **Table 5.2** below. **Figure 5.1** shows the road links included in the transport assessment.

Table 5.2 Construction Phase Traffic Data

Road Links	Road Name	LDVs in AADT	HDVs in AADT
1	B4501 at Glan-yr-afon (Site Access) North	52	62
2	A5 between Pentrefoelas and B4501	-	-
3	A4212 between Capel Cerwyn and B4391	-	-
4	A4212 between B4392 and Trawsfynydd	-	-
5	A5 east of Ty-nant	26	62
6	A494 north-west of Glan-yr-afon	26	0
7	A494 north-west of Bethel	26	0
8	A5 west of Tyn-y-cefn	52	62
9	A5 at Llidiart-y-Parc	52	11
10	A5 west of Berwyn	52	10
11	A5 east of Llangollen	52	10
12	A5 east of Canal Side	52	10

Figure 5.1 Construction Traffic Road Links Included in the Transport Assessment



Traffic Emissions Impacts on Human Receptors

5.2.3 Based on the traffic data obtained from **Appendix 11.1**, the Proposed Development is not predicted to generate LDV movements that exceed the EPUK-IAQM's screening criteria outside an AQMA (i.e. a change of LDV flows of more than 500 AADT) during the construction phase. In addition, the predicted construction phase HDV traffic is below the EPUK-IAQM's screening criteria for outside an AQMA (i.e. a change of HDV flows of more than 100 AADT).

5.2.4 When further considering the review of the baseline conditions in **Section 4**, significant air quality effects at human receptors due to construction trips are judged to be not significant.

Traffic Emissions Impacts on Designated Habitats

5.2.5 The Proposed Development construction traffic is predicted to pass within 200 m of the designated habitats listed in Section 3.1.3. As such, based on *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations guidance and IAQM's 2020 A guide to the assessment of air quality impacts on designated nature conservation sites* guidance, an assessment of the impacts from the construction traffic is required.

5.2.6 Natural England's guidance3 suggests the use of the 1,000 and 200 AADT screening/significance thresholds for LDVs and HDVs, respectively. However, these screening criteria for effects on designated habitats are only considered suitable if the vehicle trips from in-combination developments are included with the Proposed Development's trips4.

5.2.7 While six developments have been identified within 10 km of the Proposed Development, including four wind-farm & energy-related developments, a slurry lagoon and a wetland development, only three of these are consented and have been considered in the transport cumulative development assessment. However, none of them has been identified to have a significant operational traffic impact, and while some of them may have temporary construction impacts, the Proposed Developments construction trips are mainly confined to trunk roads (A5), and in-combination impacts will, therefore, be a consequence of predicted growth across the UK generally.

5.2.8 When considering construction trip emissions will be temporary (lasting approximately 2 years), the Proposed Development is not predicted to generate LDV and HDV movements that exceed the Natural England screening criteria (i.e. a change of LDV flows of more than 1,000 AADT and a change of HDV flows of more than 200 AADT) and the limited number of cumulative development trips in the area, significant effects from construction trips on ecological sites are not judged to be likely and a qualitative assessment of in-combination effects is considered suitable at this stage.

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[3] https://publications.naturalengland.org.uk/publication/4720542048845824

[4] While both guidance's apply in-combination effects to European designated sites, it has been considered with respect to SSSIs.

5.3 Operational (including maintenance) Phase Traffic Emissions

5.3.1 Given the nature of the Proposed Development, once operational, there will be limited movement of vehicles to the site. Regular visits would be made to the site for maintenance checks. As set out in **Appendix 11.1**, it is envisaged that there will be on average four vehicle trips per week.

5.3.2 Therefore, the Proposed Development is not expected to generate traffic exceeding the EPUK-IAQM 2017 screening criteria once operational. Therefore, the effects of road traffic emissions during the operational phase without mitigation measures are considered to be not significant, and further assessment of the operational phase traffic emissions is not considered to be required.

5.4 Decommissioning Phase Traffic Emissions

5.4.1 Traffic generation during the decommissioning phase would be less than the construction phase. Therefore, with roadside pollutant concentration expected to reduce in the future, with the increased uptake of low-emissions technologies, it is considered that the decommissioning phase traffic emissions will not lead to effects greater than described in **Section 5.2** and, therefore, are considered not significant.

6 MITIGATION MEASURES & RESIDUAL IMPACTS

6.1 Construction and Decommissioning Phase Mitigation

6.1.1 The dust-emitting activities outlined in **Section 5.1** can be effectively controlled by appropriate dust control measures, and any adverse effects can be greatly reduced or eliminated.

6.1.2 A dust management plan (DMP), which may be part of a CEMP for the construction phase, should be prepared and agreed with the Local Authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The DMP should include measures for controlling dust and general pollution from site construction operations and include details of any monitoring scheme, if appropriate. Controls should be applied throughout the construction period to ensure that emissions are mitigated.

6.1.3 The identified dust risk categories have been used to define appropriate site-specific mitigation measures. These site-specific mitigation measures have been presented below:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use.
- Avoid any dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

6.1.4 A Construction Traffic Management Plan (CTMP), an Abnormal Load Transport Management Plan (Annex 2 of **Appendix 11.1**) and an Outline Access Management Plan (Annex 3 of **Appendix 11.1)** have been prepared for the Proposed Development. The traffic effects of the Proposed Development during the construction and decommissioning phases will be temporary (i.e. during the construction/decommissioning period only) and can be suitably controlled by the

employment of mitigation measures documented within the management plans. Consequently, any reduction in construction (and decommissioning) vehicle trips would also reduce the likely air quality effects.

6.1.5 With the implementation of the proposed construction phase mitigation measures, the residual impacts are considered to be **not significant**.

6.2 Operational Phase Mitigation

6.2.1 The assessment predicts that the operational phase road traffic emissions will not have a significant effect on local air quality. Therefore, no specific operational phase mitigation measures are required.

7 CONCLUSIONS

7.1.1 An air quality assessment has been undertaken to support the proposed Foel Fach Wind Farm to assess the construction phase traffic and dust on nearby human and ecological receptors. All other air quality matters have been screened out.

7.1.2 A qualitative construction dust impact assessment on trackout activities has been undertaken and site-specific mitigation measures have been proposed to minimise dust impacts. With the implementation of the proposed mitigation measures in **Section 6.1**, the residual impacts are considered to be not significant.

7.1.3 A qualitative impact assessment has been undertaken to assess the road traffic impacts from the Proposed Development on air quality during the construction phase. Based on this assessment, it is anticipated that the Proposed Development will not have a significant adverse effect on human receptors or designated habitats in the vicinity of the construction routes.

7.1.4 The operational increased road traffic emissions from the Proposed Development will have a negligible impact on air quality and traffic generation during the decommissioning phase will be less than the construction phase.

7.1.5 A Construction Traffic Management Plan, an Abnormal Load Transport Management Plan and an Outline Access Management Plan have been prepared for the Proposed Development. No specific operational phase mitigation measures are considered required.

7.1.6 As set out in this report, significant effects on local air quality or designated habitats are not anticipated during any phase of the Proposed Development. Furthermore, the implementation of various management plans would reduce the likely effects. As such, it is considered that further assessment of the road traffic emissions is not required, and air quality traffic effects are not significant and can be scoped out of the Environmental Statement.

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ANNEX 1
CONSTRUCTION DUST ASSESSMENT METHODOLOGY

This annex contains the construction dust assessment methodology used in the assessment.

To assess the potential impacts, construction activities are divided into demolition, earthworks, construction and trackout. The descriptors included in this section are based upon the IAQM's 2024 construction dust guidance. The assessment follows the steps recommended in the guidance.

Step 1: Screen the requirement for assessment

The first step is to screen out the requirement for a construction dust assessment, this is usually a somewhat conservative level of screening. An assessment is usually required where there is:

- a 'human receptor' within:
  - 250 m of the boundary of the Site; or
  - 50 m of the route used by construction vehicles on the public highway, up to 250 m from the Site entrance(s).
- an 'ecological receptor':
  - 50 m of the boundary of the Site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance(s).

Step 2A: Defining the Potential Dust Emission Magnitude

Demolition

The dust emission magnitude category for demolition is varied for each site in terms of timing, building type, duration and scale. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000 m^3, potentially dusty construction material, on-site crushing and screening, demolition activities >12 m above ground level;
- **Medium**: Total building volume 12,000 m^3 – 75,000m^3, potentially dusty construction material, demolition activities 6 m – 12 m above ground level; and
- **Small**: Total building volume <12,000 m^3, construction material with low potential for dust release, demolition activities <6 m above ground, demolition during wetter months.

Earthworks

The dust emission magnitude category for earthworks is varied for each site in terms of timing, geology, topography and duration. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total site area >110,000 m2, potentially dusty soil type (e.g. clay), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;
- **Medium**: Total site area 18,000 – 110,000 m2, moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 3 – 6 m in height; and
- **Small**: Total site area < 18,000 m2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.

Construction

The dust emission magnitude category for construction is varied for each site in terms of timing, building type, duration, and scale. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000 m3, onsite concrete batching, sandblasting;
- **Medium**: Total building volume 12,000 – 75,000 m3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small**: Total building volume <12,000 m3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

Factors which determine the dust emission magnitude class of trackout activities are vehicle size, vehicle speed, vehicle number, geology and duration. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: >50 HDV (>3.5 t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m;
- **Medium**: 20 – 50 HDV (>3.5 t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100 m; and
- **Small**: <20 HDV (>3.5 t) trips in any one day, surface material with low potential for dust release, unpaved road length <50 m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health and ecosystems. The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether here are natural shelters such as trees, to reduce the risk of wind-blown dust.

Table 1A has been used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Table 1A Sensitivity of the Area Surrounding the Site

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	• Users can reasonably expect enjoyment of a high level of amenity. • The appearance, aesthetics or value of their property would be diminished by soiling. • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day) • Examples include residential properties, hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	• Locations with an international or national designation *and* the designated features may be affected by dust soiling. • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. • Examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home. • The appearance, aesthetics or value of their property could be diminished by soiling. • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Examples include parks and places of work.	• Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. • Locations with a national designation where the features may be affected by dust deposition. • Example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
Low	• The enjoyment of amenity would not reasonably be expected. • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	• Locations where human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.	• Locations with a local designation where the features may be affected by dust deposition. • Example is a local Nature Reserve with dust sensitive features.

Based on the sensitivities assigned of the different types of receptors surrounding the Site and numbers of receptors within certain distances of the Site, a sensitivity classification for the area can be defined for each. Tables 1B to 1D indicate the method used to determine the sensitivity of the area for dust soiling, human health and ecological impacts, respectively.

For trackout, as per the IAQM construction dust guidance, it is only considered necessary to consider trackout impacts up to 50 m from the edge of the road.

Table 1B Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distances from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 1C Sensitivity of the area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)			
			<20	<50	<100	<250
High	>32 □g/m³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 □g/m³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 □g/m³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 □g/m³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
		>100	High	High	High	Medium
Medium	>32 □g/m³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 □g/m³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 □g/m³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 □g/m³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table 1D Sensitivity of the area to Ecological Impacts

Receptor Sensitivity	Distances from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Step 2C: Defining the Risk of Impacts

The final step is to use both the dust emission magnitude classification with the sensitivity of the area, to determine a potential risk of impacts for each construction activity, before the application of mitigation. Tables 1E to 1H indicate the method used to assign the level of risk for each construction activity.

Table 1E Risk of Dust Impacts from Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 1F Risk of Dust Impacts from Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 1G Risk of Dust Impacts from Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 1H Risk of Dust Impacts from Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible