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Morlais Project
Environmental Statement

Chapter 22: Air Quality

Volume I

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Chapter 22: Air Quality

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GLOSSARY OF ABBREVIATIONS

AADT	Annual Average Daily Traffic
APIS	Air Pollution Information System
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
CEH	Centre for Ecology and Hydrology
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
Defra	Department of Environment Food and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
DMP	Dust Management Plan
DMRB	Design Manual for Roads and Bridges
DPF	Diesel Particulate Filters
EC	European Commission
EIA	Environmental Impact Assessment
EPUK	Environmental Protection United Kingdom
ES	Environmental Statement
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
IoACC	Isle of Anglesey County Council
JLDP	Joint Local Development Plan
km	Kilometres
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
LNR	Local Nature Reserve
$\mu g.m^{-3}$	Micrograms (of pollutant) per cubic meter (of air)
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NPS	National Policy Statement
NRMM	Non-Road Mobile Machinery
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
NWCA	North Wales Combined Authority
PM_{10}	Particulate Matter with an aerodynamic diameter of less than 10 µm
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter of less than 2.5 µm
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest

TG	Technical Guidance
UK	United Kingdom

GLOSSARY OF TERMINOLOGY

Air pollutants	Amounts of foreign and/or natural substances occurring in the atmosphere that may result in adverse effects on humans, animals, vegetation and/or materials.
Air quality objectives	A series of objectives set by the UK Government's Expert Panel on Air Quality to be achieved either without exception or with a permitted number of exceedances within a specific timescale. For nitrogen dioxide the annual mean limit value and the annual mean objective value are set at the same concentration.
Ambient air quality	The concentrations of gases and particles in the atmosphere (tropospheric boundary layer) to which the general population would be exposed, as opposed to the concentration of pollutants emitted by a specific source.
Annual average daily traffic	A daily traffic flow (24hrs), expressed as a mean daily flow across all 365 days of the year (AADT) in units of vehicles per hour.
Annual mean concentration	The average (mean) of the hourly pollutant concentrations measured or predicted for a one-year period.
Dust	A generic term that BS6069 (Part 2) used to describe particulate matter in the size range 1 – 75 µm (micrometres) in diameter.
Ecological receptors	Area where the ecology is considered valuable and has one or more designations such as SSSI, SPA, SAC, RAMSAR, LNR or Ancient Woodlands.
Heavy Duty Vehicle	A vehicle type classification, including rigid and articulated heavy goods vehicles, plus buses and coaches, that is used by air quality dispersion models.
Human receptors	Areas where the occupants are more susceptible to the adverse effects of pollutants.
Light Duty Vehicle	A vehicle type classification, including motorcycles, cars and light goods vehicles, that is used by air quality dispersion models.
Particulate matter	Solid particles or liquid droplets suspended or carried in the air.
Road links	Individual sections of the road network, usually divided by junctions, used in the modelling of scenarios.
Trackout	The transport of mud and other dusty materials from a works area onto the public highway. Usually on the wheels and body work of vehicles.

22. AIR QUALITY

22.1. INTRODUCTION

1. This chapter of the ES considers the potential impacts of the Morlais Project (the Project) on air quality. This chapter was produced by Royal HaskoningDHV, on behalf of Menter Môn.

2. This chapter provides an overview of the existing baseline environment in respect to air quality, the findings of which have been used to inform an assessment of the potential impacts of the onshore development area and associated infrastructure for the Project.

3. The potential air quality impacts arising from the construction, operation and decommissioning of the offshore elements of the proposed Project have been scoped out of this assessment. As a result, they are not considered further within this chapter.

4. The proposed Project also has the potential to impact other receptors with a link to air quality, which are discussed in other chapters within this ES. Therefore, this chapter refers to other onshore chapters where appropriate. The relevant chapters are:

    - **Chapter 19, Onshore Ecology**; and
    - **Chapter 23, Traffic and Transport**.

22.2. POLICY, LEGISLATION AND GUIDANCE

5. The assessment within this section has been guided and informed by the following key relevant legislation, guidance and policy. Further detail on legislation and policy in relation to the wider Project is provided in **Chapter 2, Policy and Legislation**.

22.2.1. Legislation

6. The European Union (EU) Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management entered into force in 1996 (European Parliament, 1996). Directive 96/62/EC and the first three Daughter Directives were combined to form the Directive 2008/50/EC (European Parliament, 2008) on Ambient Air Quality and Cleaner Air for Europe.

7. The 1995 Environment Act required the preparation of a national Air Quality Strategy which sets air quality standards for specified pollutants. The Act also outlined measures to be taken by local planning authorities in relation to meeting these standards and Objectives, which became the Local Air Quality Management (LAQM) system.

8. The UK Air Quality Strategy was originally adopted in 1997 (Department of Environment, 1997) in response to the Environment Act and has been reviewed and updated to take account of the evolving EU legislation, technical and policy developments and the latest information on health effects of air pollution. The strategy was revised and reissued in 2000 as the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Department of the Environment, Transport and the Regions (DETR), 2000). This was subsequently amended in 2003 (DETR, 2003) and was last updated in 2007 (Defra, 2007).

9. The standards and Objectives relevant to the LAQM framework have been prescribed through the Air Quality (Wales) Regulations (2000) (HMSO, 2000), and the Air Quality (Wales) (Amendment) Regulations (2002) (HMSO, 2002). The EU Limit Values have been implemented via the Air Quality Standards Regulations (2010), which set out the combined Daughter Directive limit values and interim targets for Member State compliance (HMSO, 2010).

10. The current air quality standards and Objectives of relevance to this assessment are presented in **Table 22-1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant Objectives, however, incorporate target dates and averaging periods which take into account economic considerations, practicability and technical feasibility.

11. Where an air quality Objective is unlikely to be met by the relevant deadline, local planning authorities must designate those areas as Air Quality Management Areas (AQMAs) and take action to work towards meeting the Objectives. Following the designation of an AQMA, local planning authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the Objectives and to improve air quality locally.

12. Possible exceedances of air quality Objectives are usually assessed in relation to those locations where members of the public have the potential to be regularly present and over the same period of time as the averaging period of the Objective.

Table 22-1 Air Quality Strategy Objectives (Wales) for the Purpose of Local Air Quality Management

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as*	
Nitrogen dioxide (NO_2)	200 µg.m^{-3}	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg.m^{-3}	Annual mean	31/12/2005
Particles (PM_{10})	50 µg.m^{-3}	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg.m^{-3}	Annual mean	31/12/2004
Particles ($PM_{2.5}$)	25 µg.m^{-3}	Annual mean (target)	2020
	15% cut in annual mean (urban background exposure)		2010 – 2020

*Note: *how the Objectives are to be measured is set out in the UK Air Quality (Wales) Regulations (2000)*

22.2.2. National Planning Policy

22.2.2.1. National Policy Statements

13. Although this Project is not seeking a Development Consent Order (DCO), its size (up to 240 MW) means it is of equivalent scale and magnitude as a Nationally Significant Infrastructure Project (NSIP). Guidance that is relevant to assessing impacts on air quality for NSIPs are set out within National Policy Statements (NPS) which are the principal decision-making documents for NSIPs.

14. The assessment of potential impacts within this chapter was therefore undertaken with specific reference to the relevant NPS. The specific assessment requirements for air quality in the NPS

are detailed the overarching NPS for Energy (EN-1) (Department of Energy and Climate Change (DECC) 2011a).

15. The requirements of NPS EN-1 with regard to air quality are as follows:

16. *"The ES should describe:*

Any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;

The predicted absolute emission levels of the proposed project, after mitigation methods have been applied;

Existing air quality levels and the relative change in air quality from existing levels; and

Any potential eutrophication impacts."

17. The requirements of the NPS were considered in the assessment.

18. The NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b) and the NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c) are also applicable to the Project, but they do not include specific reference to air quality.

19. The Wellbeing of Future Generations (Wales) Act 2015

20. The Wellbeing of Future Generations (Wales) Act 2015 aims to deliver a number of well-being goals which are designed to provide better decision-making for public bodies and ensure long-term improvements.

21. There is no specific well-being goal relating to air quality, though good air quality contributes to the goal of 'a healthier Wales'. An assessment of how the Project meets this goal is detailed in **Chapter 25, Socioeconomics, Tourism and Recreation**.

22.2.2.2. Planning Policy Wales

22. Planning Policy Wales (Welsh Government, 2018) states that:

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.

22.2.2.3. Local Planning Policy

23. The Isle of Anglesey County Council (IoACC) and Gwynedd Council have adopted a Joint Local Development Plan (JLDP) for the area (IoACC & Gwynedd Council, 2017). The JLDP is a land use development strategy which concentrates on sustainable development in Anglesey (and Gwynedd) up to 2026.

24. The JLDP was reviewed for policies of relevance to air quality and odour. The following relevant policies were identified:

"Strategic Policy PS 5: Sustainable Development

Development will be supported where it is demonstrated that they are consistent with the principles of sustainable development. All proposals should:
[…]

7. Reduce the effect on local resources, avoiding pollution and incorporating sustainable building principles in order to contribute to energy conservation and efficiency; using renewable energy; reducing / recycling waste; using materials from sustainable sources; and protecting soil quality;"

"Policy PCYFF 2: Development Criteria
[…]

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, disturbances, vibration, noise, dust, fumes, litter, drainage, light pollution, or other forms of pollution or nuisance;"

25. The requirements of these policies are considered in the air quality assessment.

26. **Table 22-2** sets out the national and regional policies that are relevant to air quality and the Project.

Table 22-2 National and Regional Policy Requirements Relevant to Air Quality

Policy Description	Reference	ES Reference
MPS		
Activities and developments in the marine and coastal area can have adverse effects on air quality at various stages. The construction, operation and decommissioning phases of projects can involve emissions to air which could lead to adverse impacts on human health, biodiversity, or on the wider environment. Other key sources that impact air quality include emissions from shipping, oil and gas platforms at sea, oil and gas importing facilities, vehicle emissions as a result of increased coastal activity, and dust from construction. The generation of energy from	2.6.2.1	Offshore air quality impacts were scoped out and are therefore not considered further in this ES. Potential onshore air quality impacts are assessed within **Section 22.6**.

Policy Description	Reference	ES Reference
renewable sources has an overall beneficial effect on air quality, as compared with fossil fuels.		
Planning Policy Wales		
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.	6.7.6	Mitigation measures to reduce any adverse impacts are presented in **Section 22.6** and are summarised in **Table 22-18**.
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.	6.7.7	Impact assessment has been undertaken in line with industry guidance (IAQM and EPUK) (**Section 22.4**)
Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process. Other mitigation measures must be capable of being effectively implemented for their intended purpose,	6.7.8	Standard mitigation measures and best practice, as recommended by the IAQM are considered within the impact assessment (**Section 22.6**).
Relevant considerations in making planning decisions for potentially polluting development are likely to include: • the risk and impact of potential pollution from the development, insofar as this might lead to the creation of, or worsen the situation in, an air quality management area, a noise action planning priority area or an area where there are sensitive receptors.	6.7.16	There are no AQMAs within the onshore study area (**Section 22.4**)
Planning authorities must consider the potential for temporary environmental risks, including airborne pollution and surface and subsurface risks, arising during the construction phases of development. Where appropriate planning authorities should require a construction management plan, covering pollution prevention, noisy plant, hours of operation, dust mitigation and details for keeping residents informed about temporary risks.	6.7.26	The production of a construction phase management plan is suggested as a mitigation measure for the Project (**Section 22.6.3.6**)
Anglesey and Gwynedd Joint Local Development Plan (JLDP)		
Planning permission will be refused where the proposed development would have an unacceptable adverse impact on: 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	Policy PCFF 2: Development Criteria	The impact assessment (**Section 22.6** and summarised in **Table 22-18**) does not predict any significant effects to air quality.

Policy Description	Reference	ES Reference
Proposals for renewable and low carbon energy technologies, other than wind or solar, which contribute a low carbon future will be permitted, provided that the proposal conforms to the following criteria: 1. All impacts on landscape character, heritage assets and natural resources have been adequately mitigated, ensuring that the special qualities of all locally, nationally and internationally important landscape, biodiversity and heritage designations, including, where appropriate, their settings are conserved or enhanced; 3. That the proposal is mitigated to ensure that there aren't any significant unacceptable effects on sensitive uses located nearby;	Policy ADN 3: Other Renewable Energy and Low Carbon Technologies	Potential onshore air quality impacts are assessed within **Section 22.6**. Mitigation measures to reduce any adverse impacts are presented in **Section 22.6** and are summarised in **Table 22-18**.

22.3. CONSULTATION

27. Consultation undertaken during the pre-application phase has informed the approach to the air quality assessment.

28. A scoping opinion was sought from Natural Resources Wales (NRW) in 2015 and from IoACC in 2017 for previous versions of the Project, which are now considered to be superseded by the latest scoping opinion received in 2018. Note that no comments regarding air quality were received from IoACC in 2017 and the comments made by NRW in 2015 were reiterated in the 2018 scoping opinion.

29. Details of the scoping opinion responses of relevance to air quality are detailed in **Table 22-3**, in addition to subsequent consultation with IoACC regarding the assessment methodology.

Table 22-3 Consultation Responses

Consultee	Date/Document	Comment	Response
Planning Inspectorate	2018 Scoping Report	Offshore air quality: The Scoping Report identifies exhaust emissions from vessels as the main source of atmospheric emissions. However, it states that the number of vessels on site would be negligible and there are no receptors nearby that would be impacted by the increase. Section 9.8.1.2 of the Scoping Report requests to scope this matter out (although it is identified as a potential impact in Table 9-9). Although numbers of vessel movements have not been provided within the Scoping Report, it is agreed that this is unlikely to result in significant effects to air quality and that this matter can be scoped out.	Offshore air quality impacts were scoped out and therefore not considered in this assessment.
Planning Inspectorate	2018 Scoping Report	Site-specific survey and sensitive receptors: It is recommended that the baseline survey and assessment methodology and choice of sensitive receptors	The receptor distances for consideration were agreed with IoACC during consultation (described below). It was agreed with

Consultee	Date/Document	Comment	Response
		should be agreed with the relevant Environmental Health Officers.	IoACC that a baseline survey was not required, as described in **Section 22.4.3**.
Planning Inspectorate	2018 Scoping Report	Increased emissions onshore: Where effects are likely to be significant, increased emissions onshore should be assessed for the decommissioning phase.	An assessment of potential impacts during decommissioning is provided in **Section 22.6.7**.
Planning Inspectorate	2018 Scoping Report	Study area: The study area for road traffic emissions should be informed by the affected road network which should be determined to inform the Traffic and Transport chapter.	The road links considered in the assessment were based on the study area considered in **Chapter 23, Traffic and Transport**, as described in **Section 22.4.1**.
Natural Resources Wales	2018 Scoping Report	The ES should take into account roads and transport links that are likely to be used to transport construction materials and whether the potential change in traffic pollution will be significant. When further information on the roads that are likely to be used is available NRW will be able to provide more detailed scoping advice on the potential air quality impacts.	The road links considered in the assessment are detailed on **Figure 22-1 (Volume II)**. The assessment of potential impacts from construction phase road traffic is detailed in **Section 22.6.5**.
Natural Resources Wales	2018 Scoping Report	Protected sites within 200m of the selected roads will need to be identified. The amount of NO_X , SO_2, dusts, nitrogen deposition that is likely to occur at the sites within 200m of the roads and whether this pollution is greater than 1% of the relevant nutrient nitrogen critical loads. NO_X and SO_2 critical level and dusts deposition for these sites should also be assessed.	The identification of protected sites was undertaken and is presented in **Section 22.5.4**.
Natural Resources Wales	2018 Scoping Report	The ES should take into account roads and transport links that are likely to be used to transport construction materials and whether the potential change in traffic pollution will be significant.	The assessment of impacts associated with road traffic generated during the construction phase is detailed in **Section 22.6.5**.
IoACC	Consultation on assessment methodology via email April 2019	The 2018 scoping report stated that there is potential for additional vessels used for the offshore cable installation to lead to increases in pollutant emissions at the chosen base port. However, no announcement has yet been made regarding a preferred base port for the offshore construction and operation of the Morlais project. Such facilities would be provided or brought into operation by means of one or more planning applications or as port operations enjoying permitted	The assessment methodology as agreed with IoACC is detailed in **Section 22.4.4**.

Consultee	Date/Document	Comment	Response
		development rights. This element was therefore scoped out of the assessment as any impacts would be considered as part of a separate application. This approach was agreed by IoACC during consultation. IoACC also confirmed that a site-specific baseline monitoring survey was not required. In addition to the above, IoACC provided agreement on the approach to the assessments undertaken as presented in this chapter.	

22.4. METHODOLOGY

30. The terminology and impact assessment methodologies used in this chapter differ from the generic impact assessment terminology presented within **Chapter 5, EIA Methodology**, as air quality guidance documents include specific assessment criteria.

31. As previously discussed, offshore impacts have been scoped out.

32. The methodology presented in this section was agreed with IoACC during consultation.

22.4.1. Study Area

33. The study area for the air quality assessment is defined as follows:

- Construction phase dust and particulate matter emissions:
  - Human receptors within 350 m of the onshore development area and within 50 m of routes used by construction vehicles, up to 500 m from the boundary of the onshore development area; and
  - Ecological receptors within 50 m of the onshore development area and within 50 m of routes used by construction vehicles, up to 500 m from the boundary of the onshore development area.
- Construction and operational phase road traffic emissions:
  - Human and ecological receptors within 200 m of roads expected to experience an increase in vehicle movements as a result of the Project.

22.4.2. Data Sources – Desk Study

34. The data sources used to inform the air quality assessment are detailed in **Table 22-4**.

Table 22-4 Data Sources

Organisation	Data/Document	Notes
North Wales Combined Authority	2018 Air Quality Progress Report	Local monitoring data and baseline information

Organisation	Data/Document	Notes
Natural England/Defra	MAGIC ecological mapping	Locations of designated ecological sites and habitats
Centre for Ecology and Hydrology (CEH)	Air Pollution Information System (APIS)	Details of critical loads for ecological habitats
Defra	Local Air Quality Management Technical Guidance LAQM.TG(16)	Assessment methodology
Defra	2015-based 1 x 1 km grid background pollutant mapping (issued 2017)	Background pollutant concentrations
Institute of Air Quality Management (IAQM)	Guidance on the Assessment of Dust from Demolition and Construction 2014	Construction phase dust assessment methodology
IAQM and Environmental Protection UK (EPUK)	Land-Use Planning and Development Control: Planning for Air Quality 2017	Assessment screening criteria
Highways Agency (now Highways England)	Design Manual for Roads and Bridges (DMRB) HA207/07 Air Quality	Assessment screening criteria

22.4.3. Data Sources – Site-Specific Surveys and Reports

35. Site-specific baseline air quality monitoring surveys were not considered to be required for the Project, given its size, the rural nature of the surrounding area and the number of sensitive receptors in the vicinity of the works. Baseline dust deposition monitoring data collected by IoACC from the Isle of Anglesey were provided for use in the baseline assessment.

36. Baseline air quality conditions were therefore derived as part of the desk-based study as described above.

22.4.4. Impact Assessment Methodology

22.4.4.1. Construction Phase Dust and Particulate Matter Assessment

37. The assessment of potential impacts associated with construction phase dust and particulate matter emissions was undertaken in accordance with the latest IAQM guidance (IAQM, 2016). A summary of the assessment process is provided below:

    1. Screen the need for a more detailed assessment;
    2. Separately for demolition, earthworks, construction and trackout:
        A. Determine potential dust emission magnitude;
        B. Determine sensitivity of the area; and
        C. Establish the risk of dust impacts.
    3. Determine site specific mitigation; and
    4. Examine the residual effects to determine whether additional mitigation is required.

38. It should be noted that ‘trackout’ is defined as the transport of dust and dirt from the construction site onto the public road network. Full details of the assessment methodology are provided in **Appendix 22.1** (**Volume III**).

39. Defra technical guidance (Defra, 2016) states that emissions from Non-Road Mobile Machinery (NRMM)[1] used on construction sites are unlikely to have a significant impact on local air quality where relevant control and management measures are employed. As such, emissions from NRMM were not considered quantitively in this assessment, and the relevant control measures to be employed are detailed in **Section 22.6.4.6**.

40. Definitions of the different sensitivity levels for human and ecological receptors to dust are provided in the IAQM guidance (IAQM, 2016) and are shown in **Table 22-5**.

Table 22-5 Definitions of Sensitivity Levels of Receptors to Construction Dust

Sensitivity	Sensitivity of people to dust soiling	Sensitivity of people to the health effects of PM_{10}	Sensitivity of ecological receptors
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.	Residential properties, hospitals, schools and residential care homes.	International or national designation and features affected by dust soiling or locations with dust-sensitive species.
Medium	Parks, places of work.	Office and shop workers not occupationally exposed to PM_{10}.	Locations with important plant species or national designation with features affected by dust soiling.
Low	Playing fields, farmland, footpaths, short-term car parks and roads.	Public footpaths, playing fields, parks and shopping streets.	Local designation where features may be affected by dust deposition.

41. The IAQM guidance (IAQM, 2016) requires the definition of the magnitude of construction phase dust emissions for each type of activity. These are broken down into four categories: demolition, earthworks, construction and trackout. The dust emission magnitudes can either be small, medium or large and are dependent on the methods of work undertaken and the scale of the activity. It was anticipated that there would be no demolition required as part of the Project; therefore, this was not considered as part of the assessment.

42. The dust emission magnitudes for each activity are detailed in **Table 22-6**.

Table 22-6 Definitions of the Different Magnitudes of Dust Emission

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	**Medium**	**Large**
Earthworks	Total site area <2,500 m^2	Total site area 2,500 – 10,000 m^2	Total site area >10,000 m^2
Construction	Total building volume <25,000 m^3	Total building volume 25,000 – 100,000 m^3	Total building volume >100,000 m^3

[1] Non-Road Mobile Machinery is defined as any mobile machinery, transportable industrial equipment or vehicle fitted with an internal combustion engine not intended for passenger or goods transport by road. Explanatory Memorandum to the UK Non Road Mobile Machinery (Emissions of Gaseous & Particulate Pollutants) (Amendment) Regulations (2006).

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	**Medium**	**Large**
Trackout	<10 outward Heavy Duty Vehicle (HDV) trips in any one day Unpaved road length <50 m	10-50 outward HDV trips in any one day Unpaved road length 50-100 m	>50 outward HDV trips in any one day Unpaved road length >100 m

43. The dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts prior to mitigation. This is shown in more detail in **Appendix 22.1** (**Volume III**). Once appropriate mitigation measures have been identified, the significance of construction phase impacts can be determined. The aim is to prevent significant effects at receptors due to the implementation of effective mitigation.

44. A matrix is not provided in the guidance to determine significance as it is considered that, with the implementation of effective mitigation measures, the residual impacts can be considered to be 'not significant' in accordance with guidance provided by the IAQM (IAQM, 2016).

22.4.4.2. Construction and Operational Phase Road Traffic Emissions Assessment

45. The requirement for a detailed assessment of construction phase vehicle exhaust emissions at human and ecological receptors was considered using screening criteria provided by the IAQM and Environmental Protection UK (EPUK) (IAQM and EPUK, 2017), and the Design Manual for Roads and Bridges (DMRB) (Highways Agency, 2007). Only the DMRB guidance contains criteria relating to assessment of designated ecological sites.

46. The criteria are detailed in **Table 22-7**. Receptors within 200 m of roads which exceed these criteria are required to be assessed.

Table 22-7 IAQM and EPUK and DMRB Road Traffic Assessment Criteria

Guidance document	Criteria	
IAQM and EPUK	Light Duty Vehicles (LDVs)	A change in annual average daily traffic (AADT) of more than 100 within or adjacent to an AQMA, or more than 500 elsewhere
	HDVs	An increase in HDV movements of more than 25 per day within or adjacent to an AQMA, or more than 100 elsewhere
DMRB	Light Duty Vehicles (LDVs)	Increase of 1,000 AADT or more
	HDVs	An increase in HDV movements of more than 200 per day

47. Where road links do not experience increases in traffic flows above the criteria, impacts on local air quality can be considered to be insignificant and do not require further assessment, in accordance with IAQM and EPUK guidance (IAQM and EPUK, 2017).

22.4.4.3. Cumulative Impact Assessment

48. The potential for cumulative impacts to occur as a result of the interaction between the Project and other committed developments within the study area was carried out as detailed in **Chapter 5, EIA Methodology**.

22.5. EXISTING ENVIRONMENT

22.5.1. Air Quality Monitoring Data

49. As part of the North Wales Combined Authority (NWCA), IoACC has published its latest 2017 air quality monitoring data in the 2018 Air Quality Progress Report (NWCA, 2018). This report was reviewed to determine any monitoring of relevance carried out within the study area.

50. IoACC does not carry out air quality monitoring on Holy Island. The closest monitoring locations are two nitrogen dioxide (NO_2) diffusion tubes located on Anglesey. Sites A1 and DT7, situated adjacent to the A5 and A5025 respectively, are located approximately 2.3 km south-east of the onshore development area. Due to the distance between these tubes and the study area and given that the location of the tubes relative to a busy road is likely to be unrepresentative of air quality conditions in the predominantly rural onshore development area, air pollution concentrations monitored at these locations were not considered in the baseline assessment.

22.5.2. Dust Deposition Monitoring Data

51. IoACC has collected dust deposition data on Anglesey since October 2017, as shown in **Plate 22-1**. The results of the baseline dust deposition surveys show that the typical baseline dust deposition rates on the Isle of Anglesey correlate well to the 50th percentile of 5-year mean dust deposition rates of 38 mg.m^{-2}.day^{-1} at 'open country' reported by Vallack and Shillito in the paper 'Suggested Guidelines for Deposited Ambient Dust' (Vallack and Shillito, 1998).

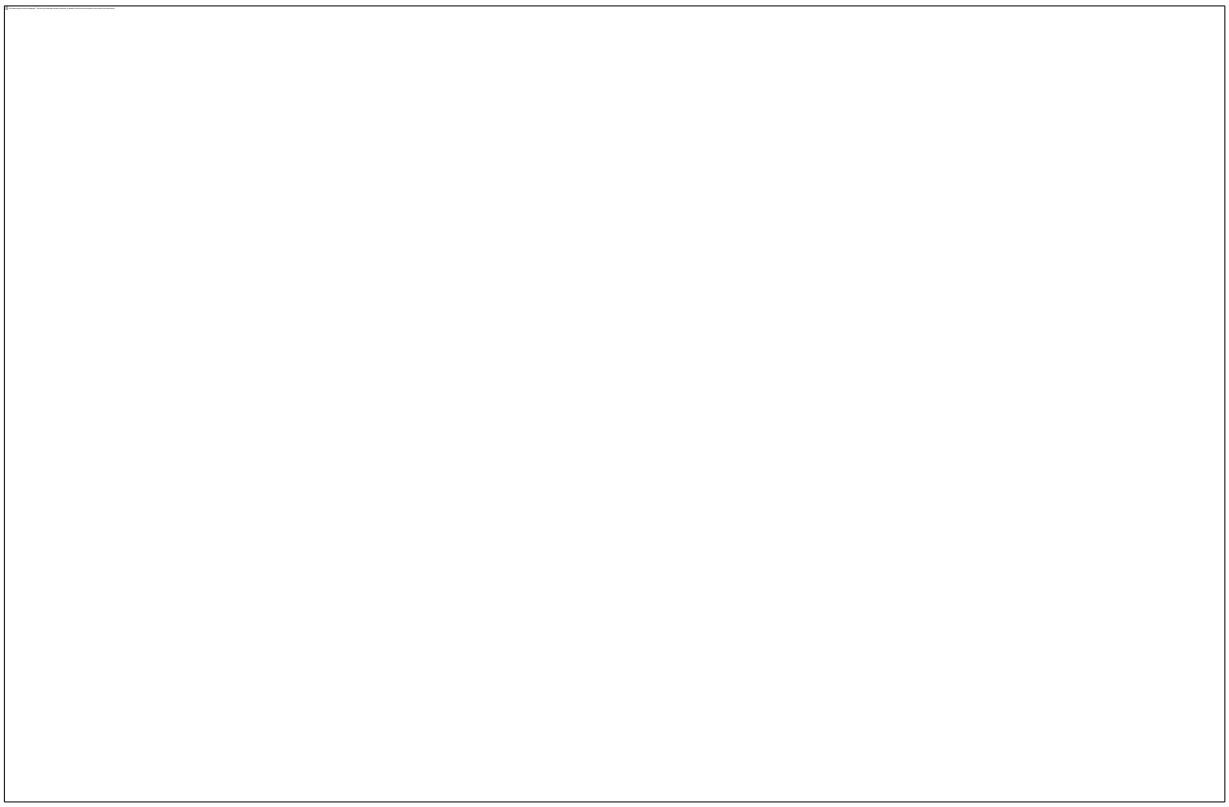

Plate 22-1 Baseline Dust Deposition Results on the Isle of Anglesey (provided by IoACC)

22.5.3. Background Pollutant Concentrations

52. Background concentrations of NO_2 and particulate matter (as PM_{10} and $PM_{2.5}$) for 2019 were obtained from the air pollutant concentration maps provided by Defra for the grid squares covering the study area (Defra 2017).

53. There are twenty-one 1 x 1 km grid squares which cover the onshore development area. The minimum (Min), maximum (Max) and average (Avg) background pollutant concentrations across the area are presented in **Table 22-8**.

Table 22-8 Background Pollutant Concentrations

Annual mean background concentration 2019 (µg.m-3)								
NO_2			PM_{10}			$PM_{2.5}$		
Min	**Max**	**Avg**	**Min**	**Max**	**Avg**	**Min**	**Max**	**Avg**
2.6	5.6	3.3	7.2	10.8	8.0	4.4	7.1	5.0

54. As shown in **Table 22-8**, background pollutant concentrations were 'well below' (i.e. less than 75 % of) the annual mean NO_2 and PM_{10} Objectives (both 40 µg.m^{-3}) and the $PM_{2.5}$ target value of 25 µg.m^{-3}. This is to be expected in an area that is predominantly rural with no major roads or industrial processes in the immediate vicinity.

22.5.4. Identification of Receptors

22.5.4.1. Construction Phase Dust Emissions

55. The IAQM guidance (IAQM 2016) states that a detailed assessment is required where there are human receptors within 350 m of the site boundary and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s). Ecological receptors within 50 m of the site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s), are also identified at this stage.

56. Receptor locations were identified in the areas closest to the anticipated maximum construction dust impact within the study area. In these areas, receptors were identified as follows:

- There are human receptors within 350 m of the onshore development area and within 50 m of the planned construction vehicle route up to 500 m from the boundary; and
- The onshore development area is partially within a designated ecological site, and a planned construction vehicle route will run adjacent to the site.

57. A Detailed Assessment was therefore required to assess the impact of dust during the construction phase at human and ecological receptors.

58. The onshore development area at landfall is located within the Glannau Ynys Gybi / Holy Island Coast Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Special Area of Conservation (SAC). The Glannau Ynys Gybi / Holy Island Coast SSSI, SPA and SAC is within 50 m of roads to be used by construction vehicles, up to 500 m from the site access. This is the worst-case area with regards to ecological receptors.

59. The onshore development area from landfall to the grid connection substation at Orthios (hereafter referred to as 'Grid Connection Substation') was assessed and the worst-case scenario was identified based on the number of receptors within 350 m from the site boundaries and 50 m from the routes of construction traffic. Kingsland, approximately 2 km west of the grid connection substation, was identified as the area with the most human receptors within 350 m of the onshore development area.

22.5.4.2. Construction and Operational Phase Road Traffic Emissions

60. The Glannau Ynys Gybi / Holy Island Coast SSSI, SPA and SAC and Tre Wilmot SSSI are located within 200 m of roads to be used by vehicles associated with the construction and operational phases of the Project, as shown in **Figure 22-1** (**Volume II**). Human receptors (residential properties) are also located along these road links.

22.6. IMPACT ASSESSMENT

22.6.1. Overview of Potential Impacts

61. The following potential impacts were considered:

- Construction phase dust and particulate matter emissions;

- Construction phase road traffic emissions; and
- Decommissioning phase dust, particulate matter and road traffic emissions.

22.6.2. Mitigation

22.6.2.1. Embedded Mitigation

62. During the development of the detailed engineering design, a number of embedded mitigation measures have been included to reduce the potential impacts of the project. Full details of these are included in **Chapter 4, Project Description**. There are no embedded mitigation measures specific to Air Quality impacts.

22.6.2.2. Additional Mitigation

63. Where significant adverse impacts have been identified as a result of the Project, additional site specific mitigation measures are proposed to seek to reduce residual impacts to acceptable (non-significant) levels. These are described where required within **Section 22.6.4** and follow IAQM guidance in identifying the appropriate good practice mitigation measures required based on the findings of the initial impact assessment.

22.6.3. Worst Case Scenario

64. The worst-case scenario with regard to potential air quality impacts associated with the Project relate to the construction phase and was determined as follows:

- It was assumed that construction methods with the greatest dust-generation potential would be utilised (i.e. open trenching at landfall rather than Horizontal Directional Drilling (HDD);
- The greatest volume of material to be excavated from the cable trenches was considered (trenches up to 1.5 m wide and 1.7 m deep);
- It was assumed that joint bays (15 m x 3 m x 1.5 m) would be included every 200 m along the route; and
- Worst-case assumptions were used in the derivation of construction and operational phase-generated traffic flows, as described in **Chapter 23, Traffic and Transport**.

22.6.4. Potential Impacts During Construction

22.6.4.1. Construction Phase Dust and Particulate Matter Emissions

65. A qualitative assessment of construction phase dust and PM_{10} emissions was carried out in accordance with IAQM guidance (IAQM, 2016). Full details of the methodology and dust assessment undertaken are provided in **Appendix 22.1** (**Volume III**).

66. The construction works associated with the Project have the potential to impact on local air quality conditions:

- Dust emissions generated by excavation, construction and earthwork activities associated with the construction of the proposed Project have the potential to cause nuisance to, and soiling of, sensitive receptors;

- Combustion emissions (especially NO_2, but also $PM_{2.5}$ and PM_{10}) generated by construction traffic travelling on the local road network have the potential to adversely impact local air quality at sensitive receptors situated adjacent to the routes utilised by construction vehicles; and
- Emissions of NO_2, $PM_{2.5}$ and PM_{10} from non-road mobile machinery (NRMM) operating within the proposed onshore development area have the potential to adversely impact local air quality at sensitive receptors in close proximity to the works.

67. The potential for sensitive receptors to be affected will depend on where the dust-generating activity takes place within the application site, the nature of the activity and mitigation measures in place (controls), the meteorological dispersion conditions and the distance of the receptor from the dust emission source.

68. As described in **Paragraph 39**, emissions from NRMM have not been considered in the assessment, but the relevant control and management measures are included below.

22.6.4.2. Step 1: Screen the Need for a Detailed Assessment

69. The IAQM guidance states that a detailed assessment is required if there are human receptors located within 350 m and ecological sites within 50 m of the site boundary. As human and ecological receptors are present within 350 m of the site boundary, a more detailed assessment was undertaken.

22.6.4.3. Step 2A: Define the Potential Dust Emission Magnitude

70. The IAQM guidance recommends that the dust emission magnitude is determined for earthworks, construction and trackout.

71. The potential dust emission magnitude for the onshore development area was determined using the criteria detailed in **Table A22.1** of **Appendix 22.1** (**Volume III**). The dust emission magnitudes were determined from the worst-case scenarios identified in **Section 22.6.2**.

72. Kingsland, approximately 2 km north-west of the grid connection substation, was identified as the area with the most human receptors within 350 m of the onshore cable route. The works closest to the designated ecological site are at a different location, at landfall. The worst-case assessment was therefore undertaken based on the construction works to be carried out in the vicinity of each type of receptor (**Table 22-9**).

Table 22-9 Dust Emission Magnitudes for Each Activity

Construction Activity	Dust Emission Magnitude Assessment – Human Receptors	Dust Emission Magnitude Assessment – Ecological Receptors
Earthworks	It was assumed that the onshore cable route would be constructed using open trenches 1.4 m wide, and that joint boxes of 12.5 m x 2 m would be required every 200 m, and therefore there would be up to three joint bays within 350m of receptors.	It was assumed that the cables at landfall would be installed by open trenching as a worst-case scenario, using the largest potential trench dimensions (nine trenches 740 m long x 6 m wide) The total area of earthworks in the cliff face would therefore be >10,000 m^2 and the dust emission magnitude would be classified as **large.**

Construction Activity	Dust Emission Magnitude Assessment – Human Receptors	Dust Emission Magnitude Assessment – Ecological Receptors
	Total earthworks area is less than 2,500 m^2. The dust emission magnitude is therefore **small**.	
Construction	No buildings will be constructed as part of the works associated with the onshore cable route. Concrete will be poured into the base of jointing pits, but this will arrive pre-mixed in pumped concrete trucks and therefore there will be no concrete batching on site. Therefore, there are not anticipated to be any relevant construction works relating to the onshore cable route.	At the landfall substation area, there will be three buildings constructed of approximately 62 m by 22.5 m by 7 m, 28 m by 10 m by 7 m, and 8 m by 8 m by 7 m, which is a total volume less than 25,000 m^3. The dust emission magnitude is therefore **small**.
Trackout	There will be 10 - 50 outward daily HGV movements during the construction phase on Lon Towyn Capel. The dust emission magnitude is therefore **medium**.	There will be 10 - 50 outward daily HGV movements on South Stack Road during the construction phase. The dust emission magnitude is therefore **medium**.

73. The dust emission magnitudes for construction, earthworks and trackout are summarised for each worst-case area in **Table 22-10**.

Table 22-10 Summary of Calculated Dust Emission Magnitudes

Activity	Dust Emission Magnitude for Worst Case Scenario	
	Human Receptors	**Ecological Receptors**
Earthworks	Small	Large
Construction	N/A	Small
Trackout	Medium	Medium

22.6.4.4. Step 2B: Define the Sensitivity of the Area

74. The sensitivity of the area to dust soiling and impacts on human health was determined using the criteria in **Table A22.3** and **Table A22.4** of **Appendix 22.1** (**Volume III**). **Figure 22-2** (**Volume II**) details the distance bands from the site boundary used in determining the sensitivity of the area. The sensitivity of the area is defined as:

- Sensitivity of people to dust soiling
  - Earthworks: There are between 1 and 10 high-sensitivity residential receptors within 20 m of the onshore development area. The sensitivity is therefore **Medium**; and
  - Trackout: There are between 10 and 100 receptors within 20 m of roads used by construction vehicles up to 500 m from the onshore development area. The sensitivity is therefore **High**.
- Sensitivity of people to health effects of PM_{10}

- Earthworks: The highest annual mean background PM_{10} concentration across the study area is less than 24 µg.m^{-3} and there 1 - 10 receptors within 20 m of the onshore development area. The sensitivity is therefore **Low**; and
- Trackout: The highest annual mean background PM_{10} concentration across the study area is less than 24 µg.m^{-3} and there are between 10 and 100 receptors within 20 m of roads used by construction vehicles, up to 500 m from the onshore development area. The sensitivity is therefore **Low**.

- Sensitivity of the area to ecological impacts
  - Construction and Earthworks: the Glannau Ynys Gybi / Holy Island Coast SSSI, SPA and SAC is an internationally designated site and is thus a high sensitivity receptor, located within the landfall works area. The sensitivity is therefore **High**.
  - Trackout: South Stack Road will be used to access the landfall area, which is within 20 m of the designated site, therefore the sensitivity is **High**.

75. The sensitivity of the area to dust soiling, human health and ecological impacts for each activity is summarised in **Table 22-11**.

Table 22-11 Sensitivity of the Area to Each Activity

Activity	**Sensitivity of the Area**		
	Earthworks	**Construction**	**Trackout**
Dust Soiling	Medium	N/A	High
Human Health	Low	N/A	Low
Ecological impacts	High	High	High

22.6.4.5. Step 2C: Define the Risk of Impacts

76. The dust emission magnitude and sensitivity of the area are combined, and the risk of impacts determined using **Table A22.1** – **Table A22.7** in **Appendix 22.1** (**Volume III**). The risks for dust soiling, human health and ecological impacts are shown in **Table 22-12** below.

Table 22-12 Risk of Dust Impacts

Potential Impact	**Dust Risk**		
	Earthworks	**Construction**	**Trackout**
Dust Soiling	Low Risk	N/A	Medium Risk
Human Health	Negligible Risk	N/A	Low Risk
Ecological Impacts	High Risk	Low Risk	Medium Risk

22.6.4.6. Step 3: Site-Specific Mitigation

77. Step 3 of the IAQM guidance identifies the appropriate good practice mitigation measures required based on the findings of Step 2 of the assessment methodology. Step 2 of the dust assessment determined that the greatest risk of impacts was 'high risk' resulting from construction activities without the implementation of mitigation measures.

78. The recommendations detailed in IAQM guidance document and are considered to be 'highly recommended' by the IAQM for sites with a high risk of dust impacts and were tailored to the

requirements and nature of the Project. The measures in **Table 22-13** will be considered and where appropriate incorporated into a construction phase management plan, to be agreed with the local planning authority prior to construction commencing.

Table 22-13 Site Specific Air Quality Mitigation

Activity	Mitigation Measures
Communications	▪ Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. ▪ Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary and the head or regional office contact information. This may be the environment manager/engineer or the site manager.
Dust management	▪ Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by IoACC; ▪ Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken; ▪ Make the complaints log available to IoACC when asked; ▪ Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book; ▪ Liaise with any other high-risk construction sites within 500 m of the onshore development area, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes; ▪ Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to note any dust deposition, record inspection results, and make the log available to IoACC when asked; ▪ Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; ▪ Plan the working area so that machinery and dust causing activities are located away from receptors, as far as is practicable; ▪ Erect solid screens or barriers around dusty activities, or the works boundary, that are at least as high as any stockpiles on site; ▪ Take measures to control site runoff of water or mud; ▪ Keep fencing, barriers and scaffolding clean using wet methods; ▪ Remove materials that have a potential to produce dust from site as soon as possible; ▪ Cover, seed or fence stockpiles to prevent wind whipping; ▪ Ensure all vehicles switch off engines when stationary - no idling vehicles; ▪ Minimise the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; ▪ Impose and signpost a maximum-speed-limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas;

Activity	Mitigation Measures
	▪ Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; ▪ Implement the Travel Plan that has been produced for the proposed scheme, which supports and encourages sustainable travel for contractor operatives and staff (public transport, cycling, walking, and car-sharing); ▪ Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; ▪ Use enclosed chutes and conveyors and covered skips; and ▪ Bonfires and burning of waste materials should not be permitted.
Earthworks	▪ Re-vegetate or cover earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable; and ▪ Only remove the cover in small areas during work and not all at once.
Construction	▪ Ensure sand and other aggregates are stored in a controlled and well-managed manner; ▪ Avoid scabbling (roughening of concrete surfaces) if possible; ▪ Ensure bulk cement and other fine powder materials are delivered in enclosed tankers to prevent escape of material; and ▪ For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust release
Trackout	▪ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site; ▪ Ensure vehicles loaded with dusty materials entering and leaving sites are covered to prevent escape of materials during transport; ▪ Record all inspections of haul routes and any subsequent action in a site log book; ▪ Install hard surfaced haul routes, where practicable and appropriate, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; ▪ If required as a result of visual inspection, install a wheel washing system (with rumble grids to dislodge accumulated dust and mud) prior to leaving the site where reasonably practicable; and, ▪ 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.
Non-Road Mobile Machinery	NRMM and plant would be well maintained. If any emissions of dark smoke occur then the relevant machinery should stop immediately and any problem rectified. In addition, the following controls would apply to NRMM: ▪ All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004); ▪ All NRMM will comply with regulation (EU) 2016/1628 of the European Parliament and of the European Council; ▪ All NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting); ▪ The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks; and

Activity	Mitigation Measures
	▪ Implementation of energy conservation measures including instructions to throttle down or switch off idle construction equipment, switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, and ensure equipment is properly maintained to ensure efficient energy consumption.

79. The implementation of the appropriate mitigation measures will reduce the magnitude of dust emissions and the likelihood of their occurrence. The residual impacts from construction are considered to be **not significant**, in accordance with IAQM guidance.

22.6.5. Construction Phase Road Traffic Emissions

80. The number of daily vehicle movements expected to be generated during the construction phase of the Project was calculated by the transport consultants, as described in **Chapter 23, Traffic and Transport**, using a number of worst-case assumptions.

81. The expected number of daily vehicle movements on each road link that will be used during the construction phase is detailed in **Table 22-14**.

Table 22-14 Number of Daily Traffic Movements Generated During Construction

Road Link	24-Hour AADT Flow Total Vehicles	24-Hour AADT Flow HDVs
A5 London Road	98	40
A55 North Wales Expressway	180	40
A55 North Wales Expressway / Victoria Road	108	20
A5154	108	20
Market Street / Thomas Street / S Stack Road	108	20
Unnamed Road from Ty Mawr in South Stack to Penrhos Feilw	32	8
Longford Road / Plas Road	0	0
Unnamed Road from Penrhos Feilw to Porthdafarch Road	32	8
Lon Isalit	0	0
Lon Towyn Capel	58	28
Longford Road / Plas Road	32	8
A5153	130	48
B4545 Kingsland Road / Lon St Ffraid	0	0

82. As detailed in **Table 22-14**, traffic flows generated during the construction phase on each road links are below the IAQM and EPUK (IAQM and EPUK, 2017) and DMRB (Highways Agency, 2007) screening criteria detailed in **Table 22-7**.

83. As such, it is considered that air quality impacts associated with this number of additional movements would be insignificant at both human and ecological receptors. Further detailed assessment was therefore not required, in accordance with the above guidance, and impacts can be considered to be **not significant**.

22.6.6. Potential Impacts During Operation

84. During the operational phase of the Project, there will be vehicle trips associated with maintenance visits to the Project infrastructure. There are expected to be a maximum of 10 two-way traffic movements per day by employees accessing either the landfall substation, switchgear building or the grid connection substation for maintenance.

85. Given the low number of operational phase traffic movements, air quality impacts are not considered to be significant in accordance with IAQM and EPUK (IAQM and EPUK, 2017) and DMRB (Highways Agency, 2007) guidance. Impacts are therefore considered to be **not significant**.

86. The maintenance activities are not expected to involve any potential for dust generation as they will be limited to the electrical infrastructure at the landfall substation, switchgear building and grid connection substations. As such, there is not anticipated to be any potential for dust impacts during the operational phase.

22.6.7. Potential Impacts During Decommissioning

87. Decommissioning of the onshore infrastructure is likely to be limited to the removal of the landfall substation, switchgear building and grid connection substation. At this stage, it is expected that any cables laid on the surface would be terminated and left in situ. As such, the potential for dust generation and vehicle movements is considered to be markedly less than during the construction phase. Construction phase vehicle movements were considered to have an insignificant effect on air quality at human and ecological receptors; therefore, the same conclusion can be drawn for the decommissioning phase.

88. The best-practice mitigation measures identified to minimise dust impacts during the construction phase will be applied during decommissioning and would be incorporated into a Decommissioning Management Plan. Potential impacts are therefore expected to be suitably controlled such that adverse effects would be **not significant**.

22.6.8. Cumulative Impacts

89. The potential for cumulative impacts to occur as a result of the interaction between the Project and other plans, projects and activities was considered. Firstly, the potential for impacts identified in the air quality assessment to act cumulatively with other projects was identified, as summarised in **Table 22-15**.

Table 22-15 Potential for Cumulative Impacts

Impact	Potential for Cumulative Impact	Data Confidence	Rationale
Construction			
Construction phase dust emissions	Yes	High	Multiple projects could lead to increases in dust soiling, human health and ecological impacts at receptors.

Impact	Potential for Cumulative Impact	Data Confidence	Rationale
Construction phase road traffic emissions	Yes	High	Multiple projects could lead to increases in traffic flows which may lead to impacts at human and ecological receptors.
Operation			
Operational phase dust emissions	No	High	There are not anticipated to be any substantial dust emission sources or traffic movements generated during the operational phase that would give rise to significant cumulative impacts at human or ecological receptors.
Operational phase road traffic emissions	No	High	
Decommissioning			
Decommissioning phase dust emissions	No	High	There are not anticipated to be any substantial dust emission sources or traffic movements generated during the decommissioning phase that would give rise to significant cumulative impacts at human or ecological receptors.
Decommissioning phase road traffic emissions	No	High	

90. The next stage of the CIA is to identify other plans or projects which have a spatial or temporal overlap with the potential effects considered in this assessment.

91. All offshore cumulative projects were scoped out of the air quality CIA, as it was assumed that the potential for significant impacts to occur in combination with the onshore aspects considered in this assessment was minimal.

92. The projects considered in the CIA included those on Holy Island only, as due to the geography of the area is it not considered that traffic associated with projects elsewhere in North Wales would impact upon roads on Holy Island. Cumulative road traffic emission impacts may occur where the same road network will be used for multiple projects, plans or activities.

93. Traffic flow data for a base year (2019) and peak construction year of the Project (2021) are detailed in **Table 22-16**. The uplift in traffic flows between the 2019 and 2021 scenarios includes additional traffic associated with smaller-scale committed developments within the Holy Island area.

Table 22-16 Traffic Flow Data

Road Link	2019 AADT Flow (All Vehicles)	2019 AADT HDV Flow	Including Project			
			2021 AADT Flow	2021 AADT HDVs	Cumulative increase in AADT Flows from 2019	Cumulative increase in HDVs from 2019
A5 London Road	6,661	148	6,888	191	227	43
A55 North Wales Expressway	11,905	1,032	12,316	1,092	411	60

Road Link	2019 AADT Flow (All Vehicles)	2019 AADT HDV Flow	Including Project			
			2021 AADT Flow	2021 AADT HDVs	Cumulative increase in AADT Flows from 2019	Cumulative increase in HDVs from 2019
A55 North Wales Expressway / Victoria Road	13,214	1,146	13,579	1,188	364	42
A5154	3,331	74	3,504	96	173	21
Market Street / Thomas Street / South Stack Road	3,167	85	3,336	106	169	22
Unnamed Road from Ty Mawr in South Stack to Penrhos Feilw	443	8	484	16	41	8
Longford Road / Plas Road	470	7	479	7	9	0
Unnamed Road from Penrhos Feilw to Porthdafarch Road	443	8	484	16	41	8
Lon Isalit	1,015	15	1,035	15	20	0
Lon Towyn Capel	1,255	415	1,338	451	82	36
Longford Road / Plas Road	1,665	100	1,730	110	64	10
A5153	8,649	200	8,947	252	298	52
B4545 Kingsland Road / Lon St Ffraid	4,040	118	4,118	120	78	2

94. The cumulative increase in traffic flows as a result of small-scale committed developments and the Project is below the screening criteria for detailed assessment, as per **Table 22-7**. Significant impacts as a result of these small-scale cumulative projects are therefore not anticipated.

95. There are several larger-scale projects on Holy Island which are principally located in the vicinity of Holyhead Port. It is anticipated that increases in road traffic emissions associated with these projects would primarily occur on the A55 and A5, as these are the main routes on to Holy Island.

96. Given that the predicted traffic flows associated with the construction of the Project were well below the relevant screening criteria, and the relatively low baseline (background) air pollution concentrations in the area, it is not anticipated that additional traffic associated with cumulative projects would give rise to a significant air quality impact at receptors. Furthermore, the Project will generate the largest amount of traffic during the construction phase, which is temporary in nature, and therefore the potential for any significant impacts to occur would be limited to a relatively short duration.

97. Given the above, cumulative impacts associated with road traffic emissions are not anticipated to be significant and have therefore not been considered further in this assessment.

98. Dust impacts during construction may occur within 350 m of a project boundary; therefore, cumulative impacts may occur where two or more projects are within 700 m of each other, and

where there is a temporal overlap between construction phases. All projects greater than 700 m from the project were scoped out of the assessment.

99. A summary of the potential for cumulative impacts to occur with relevant projects within 700 m is detailed in **Table 22-17**.

Table 22-17 Potential for Cumulative Impacts to Occur

Project	Status	Distance from the Project (km)	Included in CIA	Rationale
Extensions to dwelling	Consented 13/03/19, construction status unknown	0	No	Due to the small scale of this project it is not anticipated that significant construction dust impacts would occur cumulatively with the Project.
Parc Cybi	Consented, construction status unknown	0	No	If a temporal overlap of the construction phases were to occur, it is anticipated that the cumulative project would employ best-practice methods to minimise dust generated during construction, as recommended for the Project. With the implementation of these measures, significant cumulative dust impacts have limited potential to occur.
Roadking Parc Cybi	Consented, construction status unknown	0	No	If a temporal overlap of the construction phases were to occur, it is anticipated that the cumulative project would employ best-practice methods to minimise dust generated during construction, as recommended for the Project. With the implementation of these measures, significant cumulative dust impacts have limited potential to occur.
Penrhos Coastal Park	Consented, construction status unknown	0.35	No	If a temporal overlap of the construction phases were to occur, it is anticipated that the cumulative project would employ best-practice methods to minimise dust generated during construction, as recommended for the Project. With the implementation of these measures, significant cumulative dust impacts have limited potential to occur.
Conversion of outbuilding	Consented, construction status unknown	0.4	No	Due to the small scale of this project it is not anticipated that significant impacts would occur cumulatively with the Project.
Penrhos Industrial Estate	Application validated: 06/03/2019	0.5	No	If a temporal overlap of the construction phases were to occur, it is anticipated that the cumulative project would employ best-practice methods to minimise dust generated during construction, as recommended for the Project. With the implementation of these measures, significant cumulative dust impacts have limited potential to occur.

22.6.9. Inter-relationships

100. **Table 22-18** lists out the inter-relationships between this chapter and other chapters within the ES.

Table 22-18 Inter-Topic Relationships

Topic and description	Related Chapter	Where addressed in this Chapter	Rationale
Traffic and Transport	Chapter 23, Traffic and Transport	**Section 22.6.4** (construction phase); S**ection 22.6.5** (operational phase); Section 22.6.6 (decommissioning phase) and **Section 22.6.7** (cumulative impacts)	Project-generated traffic flows were used in the assessment of impacts on air quality, as a result of road vehicle exhaust emissions
Onshore Ecology	Chapter 19, Onshore Ecology	**Section 22.6.3.1** (construction phase dust) and **Section 22.6.4**, **22.6.5** and **22.6.6** (construction, operational and decommissioning phase traffic)	The potential for impacts on designated ecological sites as a result of construction phase dust and road traffic emissions was considered in the air quality assessment.

22.6.10. Interactions

101. The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. The worst case impacts assessed within the chapter take these interactions into account and for the impact assessments are considered conservative and robust. For clarity the areas of interaction between impacts are presented in **Table 22-19**, along with an indication as to whether the interaction may give rise to synergistic impacts.

Table 22-19 Potential Interactions Between Impacts

Construction	Construction phase dust emissions	Construction phase road traffic emissions
Construction phase dust emissions	-	Yes
Construction phase road traffic emissions	Yes	-

22.7. SUMMARY

102. This assessment considered the potential air quality impacts at both human and ecological receptor locations during the construction, operation and decommissioning phases of the Project. The approach to the assessment was informed by the Scoping Opinion and through

additional consultation with IoACC. A summary of the impact assessment is detailed in **Table 22-20**.

103. Impacts associated with offshore aspects of the Project were scoped out of the assessment, as it was considered that there was limited potential for effects at receptors onshore.

104. A cumulative impact assessment was carried out to identify the potential for significant impacts through the interaction of the Project with other plans and projects. No significant cumulative effects were identified.

Table 22-20 Summary of Air Quality Impact Assessment

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction phase dust emissions	Human receptors within 350 m	High	Medium	The IAQM guidance does not require consideration of significance prior to mitigation	Best practice dust minimisation and suppression methods as recommended by the IAQM	Not significant
	Ecological receptors within 50 m	High	Large			Not significant
Construction, operational and decommissioning phase road traffic emissions	Human receptors within 200 m of road network	High	Negligible	Not significant	Not required	Not significant
	Ecological receptors within 200 m of road network	High	Negligible	Not significant		Not significant

22.8. REFERENCES

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