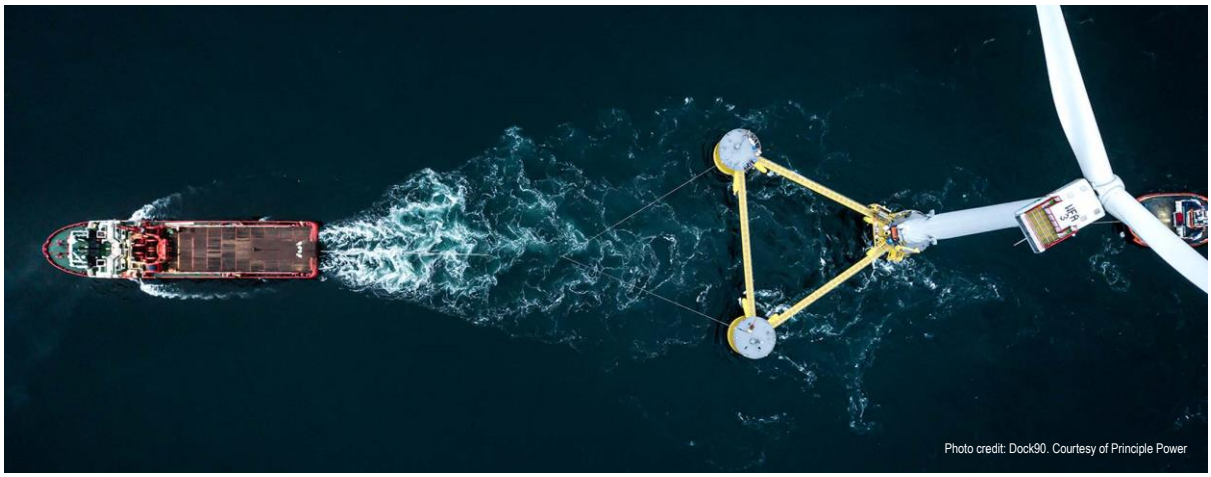

Project Erebus Environmental Statement
Chapter 26: Air Quality

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Acronyms

Term	Definition
AQS	Air Quality Standards
DEFRA	Department for Environment, Food & Rural Affairs
DMP	Dust Management Plan
DMP	Dust Management Plan
EIA	Environmental Impact Assessment
EU	European Union
EPUK	Environmental Protection UK
HDD	Horizontal Directional Drilling
IAQM	Institute of Air Quality Management
km	Kilometres
LAQM	Local Air Quality Management
LDP	Local Development Plan
m	Metres
NO_x	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
NRMM	Non-Road Mobile Machinery
O&M	Operation and Maintenance
PCC	Pembrokeshire County Council
PDE	Project Design Envelope
PM_{10}	Particulate matter with diameter <10µm
$PM_{2.5}$	Particulate matter with diameter <2.5µm
PPW	Planning Policy Wales
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
SPA	Special Protection Area
µm	Micrograms
$\mu m/m^3$	Micrograms per cubic metre

Chapter 26 Air Quality

26.1 Introduction

26.1.1.1 This chapter assesses potential impacts and the resulting significance of effects associated with the Project as defined in Chapter 4: Proposed Development Description, upon air quality.

26.1.1.2 Air quality is not generally considered to be an issue for the construction and operation of the offshore components of offshore wind developments; therefore, this chapter focusses on the potential impacts associated with the onshore component of the Project and is hereafter referred to as the Proposed Development.

26.1.1.3 This chapter considers potential air quality impacts upon human and ecological receptors within the defined Study Area (Volume 2 Figure 26.2) for the construction, operational and decommissioning phases of the Proposed Development.

26.1.1.4 The pollutants considered in this chapter are Oxides of Nitrogen (NO_x), Nitrogen Dioxide (NO_2) and particulates (PM_{10} and $PM_{2.5}$).

26.1.1.5 This chapter also provides an overview of the baseline air quality in the local area.

26.1.1.6 This chapter must be read in conjunction with Volume 3 Technical Appendix 26.1 – Construction Phase Dust Impact Assessment.

26.1.1.7 The summary of predicted effects on ecological and human receptors is presented in Table 26.4 and Table 26.5 respectively. The summary of predicted cumulative effects with other construction programmes in presented in Table 26.6.

26.1.1.8 This assessment has been undertaken by ITPE (Energised Environments Limited trading as ITPEnergised). The chapter has been authored by Annie Danskin (B.Eng (hons) CEnv), who has 22 years' experience in the field of air quality.

26.2 Legislation, Policy and Guidelines

26.2.1.1 The following legislation, planning policy and guidance documents have been considered in the preparation of this chapter:

26.2.2 Legislation

26.2.2.1 The UK's legislation and regulatory regime, along with national, regional and local planning policy play a key role in the prevention, control and minimisation of atmospheric emissions that are potentially harmful to human health and the environment. Air Quality Standards (AQS) are used as assessment criteria for determining the significance of any potential changes in local air quality resulting from development proposals.

26.2.3 European Legislation Transposed into Domestic Law

26.2.3.1 The EU Directive (96/62/EC) on Ambient Air Quality Assessment and Management came into force in September 1996 (Council of the European Union, 1996). This Directive was intended as a strategic framework for tackling air quality consistently, through setting European wide air quality limit values in a series of four daughter directives, superseding and extending existing European legislation. The first daughter directive (1999/30/EC) set limit values for NO_2 and particulate matter (amongst other pollutants) in ambient air (Council of the European Union, 1999). The EU Directive (2008/50/EC) of the European Parliament and of the Council of 21 May 2008 on ambient air and cleaner air for Europe (European Parliament and the Council of the European Union, 2008) came into force in June 2008. It merged the four daughter directives and one Council decision into a single directive on air quality. The new Directive also introduced a target limit value for fine particulate matter ($PM_{2.5}$) and was transposed into domestic law by The Air Quality Standards (Wales) Regulations 2010 (National Assembly for Wales 2010).

26.2.3.2 The UK air quality standards (AQS) applicable to human and ecological receptors in this assessment are either the same as or more stringent than the EU limit values and are summarised in Table 26.1.

Table 26.1 – Air Quality Standards applicable to the Assessment

Pollutant	AQS	Criteria	Date to be achieved by (and maintained thereafter)
Human health			
Nitrogen Dioxide NO_2	200 µg/m^3	1 hour mean not to be exceeded more than 18 times per year (99.79th percentile)	31st December 2005
Particulate Matter PM_{10}	40 µg/m^3	Annual mean	31st December 2004
	50 µg/m^3	Daily mean not to be exceeded more than 35 times per calendar year	31st December 2004
Particulate $PM_{2.5}$	25 µg/m^3	Annual mean	2020
Vegetation and Ecosystems			
NO_x	30 µg/m^3	Annual mean	31 December 2000

26.2.4 Planning Policy Wales

26.2.4.1 The Planning Policy Wales (PPW) was last published in December 2018 (Welsh Government, 2018). Section 5: Production and Enterprising Places of the PPW states the following:

"Development should prevent problems from occurring or getting worse such as the generation of carbon emissions, poor air quality and waste and the depletion of our natural resources which will need to be managed for many years to come".

26.2.4.2 More specifically related to air quality (and noise), Section 6.7 of the PPW, states that:

"Clean air and an appropriate soundscape, contribute to a positive experience of place as well as being necessary for public health, amenity and well-being. They are indicators of local environmental quality and integral qualities of place which should be protected through preventative or proactive action through the planning system. Conversely, air, noise and light pollution can have negative effects on people, biodiversity and the resilience of ecosystems and should be reduced as far as possible.

National air quality objectives are not 'safe' levels of air pollution. Rather they represent a pragmatic threshold above which government considers the health risks associated with air pollution are unacceptable. Air just barely compliant with these objectives is not 'clean' and still carries long-term population health risks. Nitrogen dioxide and particulate matter, which are the pollutants of primary national concern from a public health perspective, currently have no safe threshold defined and therefore the lower the concentration of those pollutants the lower the risks of adverse health effects. It is desirable to keep levels of pollution as low as possible.

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".

26.2.4.3 The Well-being of Future Generations (Wales) Act 2015 (Welsh Government, 2015) does not have a specific policy related to air quality but includes it as an indicator that can be measured quantitatively or qualitatively measured against a particular outcome to contribute to the achievement of the following well-being goals:

- A Prosperous Wales;
- A Resilient Wales;
- A Healthier Wales; and
- A Globally Responsible Wales.

26.2.5 Local Planning Policy

26.2.5.1 The Pembrokeshire County Council (PCC) Local Development Plan (LDP) (Pembrokeshire County Council, 2013) has a number of policies related to air quality:

26.2.5.2 Policy GN.1 General Development policy states that:

"Development will be permitted where the following criteria are met:

2. It would not result in a significant detrimental impact on local amenity in terms of visual impact, loss of light or privacy, odours, smoke, fumes, dust, air quality or an increase in noise and vibration levels".

26.2.5.3 Under Policy GN.3 Infrastructure and New Development it is stated that:

"It is also important that provision is made for the mitigation of potential adverse impacts of new development upon biodiversity and cultural heritage. Adverse impacts might include……air quality and traffic congestion".

26.2.5.4 The Pembrokeshire Coast National Park Authority (PCNPA) has a LDP (Pembrokeshire Coast National Park, 2020) which includes Policy 8:

- *"To minimise the creation of new sources of pollution or contamination…."*, and

- *"To safeguard and enhance soil, water and air quality of the National Park".*

Both statements are cross-referenced to PPW as discussed in Section 26.2.4.

26.2.6 Guidance

26.2.6.1 Cognisance has been taken of the following best practice guidance:

- IAQM Assessment of Dust from Demolition and Construction Guidance (Holman, et al, 2014);
- IAQM/EPUK Guidance on Land-use Planning and Development Control: Planning for Air Quality (Moorcroft and Barrowcliffe, et al, 2017);
- Design Manual for Roads and Bridges HA07/07, Air Quality. Environmental Assessment, Vol 11, Section 3 (Highways Agency, 2007); and
- DEFRA LAQM Technical Guidance, LAQM TG(16) (DEFRA, 2021).

26.3 Consultation and Scoping

26.3.1.1 As part of the EIA process, consultation with key stakeholders has been undertaken at all stages of the Project, to date, and will continue in the future.

26.3.1.2 An EIA Scoping Report (MarineSpace, 2019) was produced and submitted to the regulators, who consulted with the statutory bodies and key stakeholders upon the contents. A formal Scoping Opinion was issued by NRW in January 2020 (NRW, 2020b). Copies of the Scoping Opinion Request (the Scoping Report) and NRW's Scoping Opinion are provided in Volume 3, Technical Appendices 2.1 and 2.2, respectively.

26.3.1.3 Ongoing consultation has taken place with NRW and the Joint Nature Conservation Committee (JNCC) to discuss and agree the suitability of available evidence, assessment methodologies, and forthcoming guidance where appropriate.

26.3.1.4 A summary of the consultation response received as part of the EIA Scoping Opinion is provided in Table 26.2.

Table 26.2 – Summary of Scoping Responses

Consultee	Response	Applicant Action
NRW (Scoping Opinion) January 2020	*"No comments were received from consultees in relation to Air Quality and we have no comment to make on this section of the report (section 7.11). The ES should, however, include an assessment of impacts on Air Quality, as set out in the scoping report."*	The Environmental Statement (ES) includes an Air Quality Chapter.

26.3.1.5 No further consultations with specific regard to air quality have been undertaken as part of this assessment.

26.4 Assessment Methodology and Significance Criteria

26.4.1 Study Area

Construction Phase - Dust

26.4.1.1 The Study Area for the assessment of construction phase dust impacts associated with the Proposed Development has been defined in accordance with the IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2014) which stipulates that:

"*An assessment will normally be required where there is:*

A 'human receptor' within:

- *350 m of the boundary of the site; or*
- *50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).*

An internationally, nationally or locally designated 'ecological receptor' within:

- *50 m of the boundary of the site;*
- *50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s)."*

26.4.1.2 The Study Area defined for the construction phase assessment has applied the recommended IAQM buffers with an additional allowance for a 30 m contingency corridor surrounding proposed construction areas as per the Project Design Envelope (PDE) approach described in Chapter 4: Proposed Development and Description. This reflects a worse-case scenario and considers the maximum number of sensitive receptors potentially affected by the construction phase of the Proposed Development. The construction phase study area is shown in Volume 2 Figure 26.1.

26.4.1.3 The receptors considered as part of the assessment of construction phase impacts are as follows:

- Human Receptors (Dust soiling & Human Health impacts); and
- Ecological Receptors (smothering due to Dust Soiling).

26.4.2 Construction Phase - Traffic

26.4.2.1 The Study Area for the assessment of the change in pollutant concentrations resulting from the Proposed Development traffic generation has been defined in accordance with the IAQM & EPUK guidance on land-use planning and development control: planning for air quality (Moorecroft and Barrowcliffe, *et al,* 2017) which provides the following "*indicative criteria for requiring an air quality assessment*":

"The development will:

- *Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors.*
- *Cause a significant change in Heavy Duty Vehicle (HDV) traffic flows on local roads with relevant receptors."*

26.4.2.2 A "*significant change*" is defined in the guidance as follows a change of LDV/HDV flows of:

- More than 100/25 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA); or
- More than 500/100 AADT elsewhere.

26.4.2.3 This assessment has therefore considered any relevant roads within the local road network including the Pembroke AQMA which is located approximately 4.5 km to the east of the Proposed Development.

26.4.2.4 The construction phase traffic Study Area includes any sensitive receptors identified within 200 m of affected roads in accordance with Highways Agency guidance (Highways Agency, 2007) and is shown in Volume 2 Figure 26.2.

26.4.3 Operational Phase

26.4.3.1 There are no emissions arising from the assets of the Proposed Development during the operational phase.

26.4.3.2 Traffic generation associated with the operational phase is limited to infrequent visits for maintenance and is therefore below the criteria requiring assessment outlined in paragraph 26.4.2.2.

26.4.3.3 The effects of the Proposed Development on air quality during the operational phase are scoped out of further assessment.

26.4.4 Decommissioning Phase

26.4.4.1 The Study Area for the decommissioning phase is the same as for the construction phase dust risk assessment as shown in Volume 2 Figure 26.1.

26.4.5 Desk Study

26.4.5.1 This assessment has been informed by the following desk studies and assessments:

- A review of the local air quality based on publicly available information from:
  - The 2020 Air Quality Progress Report for Pembrokeshire County Council (Pembrokeshire County Council, 2020); and
  - Department for Environment Food & Rural Affairs (DEFRA) 2018-based Background Concentration Mapping data for Local Authorities – (DEFRA, 2021);
- Screening assessment of the Proposed Development construction and operational phase traffic generation in accordance with the IAQM & EPUK guidance on land-use planning and development control: planning for air quality (Moorecroft and Barrowcliffe, et al, 2017); and
- Construction phase dust impact assessment undertaken in accordance with the IAQM guidance on the assessment of dust from demolition and construction (Holman, et al, 2017).
- Residential and commercial address data within defined study areas from Ordnance Survey “AddressBase Plus” data, purchased April 2021.
- Aerial imagery to estimate the number of caravans/mobile homes occupied on a temporary basis.

26.4.6 Site Visit / Surveys

26.4.6.1 The desk-based study is sufficient for the completion of this assessment and no site visits or surveys have been undertaken for the purposes of assessing the Proposed Development effect on local air quality.

26.4.7 Assessment of Potential Effect Significance

Construction Phase - Dust

26.4.7.1 The IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2014) was used in this assessment to determine the risk category due to dust arising from the construction phase of the Proposed Development upon human and ecological receptors.

26.4.7.2 Full details of the construction phase dust impact assessment are provided in Volume 3 Technical Appendix 26.1.

26.4.7.3 A risk category (negligible, low, medium, or high) was allocated for each of four separate activities of the construction phase of the proposed Development, i.e. demolition, earthworks, construction, and trackout based on the following two factors:

- The scale and nature of the works, which determines the potential dust emission magnitude as small, medium, or large; and
- The sensitivity of the area to dust impacts, which is defined as low, medium, or high sensitivity.

26.4.7.4 These two factors were then combined to determine the risk category with no mitigation applied for each of the four activities.

26.4.7.5 The derived risk categories were then translated as detailed in Table 26.3 to determine the significance of effect using EIA terminology.

Table 26.3 – Descriptors Used for the Assessment of Significance

Dust Risk	Description	EIA Terminology
High	A significant effect that is likely to be a material consideration in its own right.	Major Adverse/Beneficial
Medium	A significant effect that may be a material consideration in combination with other significant effects but is unlikely to be a material consideration in its own right.	Moderate Adverse/Beneficial
Low	An effect that is not significant but that may be of local concern.	Minor Adverse/Beneficial
Negligible	An effect that is not significant.	Negligible

Construction Phase - Traffic

26.4.7.6 Traffic generation during the construction phase of the Proposed Development has been compared to the IAQM screening criteria (refer to paragraph 26.4.2.2). The maximum daily increase in HGV vehicles is 23 per day. The number of movements as an AADT figure is therefore below the criteria to require detailed assessment of exhaust emissions from construction traffic.

Operational Phase

26.4.7.7 The effects of the Proposed Development on air quality during the operational phase have been scoped out of further assessment.

Decommissioning Phase

26.4.7.8 The assessment of the potential effect significance for the decommissioning phase uses the same method as described for the Construction Phase – Dust in paragraphs 26.4.7.1 to 26.4.7.5.

26.4.8 Standard Mitigation

26.4.8.1 A range of standard mitigation measures has already been applied to the Project as part of the over-arching site selection and iterative design process (see below and Chapter 3: Site Selection and Alternatives). These have been introduced in order to minimise potential impacts of the Project on any affected receptors.

26.4.8.2 Experience in the UK is that good site practice is capable of mitigating the impact of fugitive emissions of particulate matter associated with construction activities effectively. In all but the most exceptional circumstances, impacts at receptors can be controlled to ensure residual risk categories are negligible to low at worse and therefore effects are negligible to minor adverse and not significant.

26.4.8.3 Standard mitigation measures which the Project has already implemented, or is committed to in the future, in order to minimise potential impacts on air quality are listed below and in Volume 3 Technical Appendix 26.1. These will be further defined in the Construction Environmental Management Plan (CEMP) and implemented during the construction phase by the successful Contractor.

Proposed mitigation for 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
- Display the head or regional office contact information.

Proposed mitigation for dust management:

- Develop and implement a Dust Management Plan (DMP). This may include measures to control other emissions, approved by the Local Authority.

Proposed mitigation for site management:

- 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 the local authority upon request; and
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.

Proposed mitigation for monitoring:

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked;
- Increase 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; and
- Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences.

Proposed mitigation for preparing and maintaining the site:

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Prevent site runoff of water or mud to protect drains and watercourses;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site; and
- Cover, seed or fence stockpiles to prevent wind whipping.

Proposed mitigation for site operations:

- 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;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event, using wet cleaning methods.

Proposed mitigation for waste management:

- Prohibit bonfires and burning of waste materials.

Operating vehicle/machinery and sustainable travel:

- Ensure all vehicles switch off engines when stationary;

- Avoid 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 15mph on surfaced and 10mph on unsurfaced haul roads and work areas; and
- Issue all suppliers and contractors with delivery routes and access times/restrictions, avoiding the Pembroke AQMA.

Proposed mitigation specific to earthworks:

- Re-vegetate earthworks and exposed areas/soils stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- Only remove the cover in small areas during active work and not all at once.

Proposed mitigation specific to construction:

- Avoid scabbling (roughening of concrete surfaces), if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Proposed mitigation specific to trackout:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site (water source to be determined). This may require a sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; and
- 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;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- All non-road mobile machinery (NRMM) will be compliant with the engine emission regulations in place at time of use on-site;
- A Construction Traffic Management Plan will be developed and implemented and the hours of operation of necessary closures will be managed to mitigate the impact on sensitive receptors.

26.4.9 Assessment for Residual Effect Significance

26.4.9.1 The impact assessments and conclusions on significance of effect presented in Sections 26.6 and 26.7 assume that these standard mitigation measures listed above have been successfully implemented. Where significant environmental impacts remain even after these standard measures have been factored in, then project-specific mitigation measures are detailed, and the residual significance of effect presented.

26.4.10 Limitations to Assessment

26.4.10.1 The residential and commercial properties identified as being within the construction phase Study Area are limited to those listed in purchased OS AddressBase data. These are all assumed to be permanently occupied/patronised. Aerial imagery has been used to estimate the number of mobile homes/caravans within the Study Area which are assumed to be permanently occupied/patronised; however, it is more likely that mobile homes/caravans are occupied on a temporary basis during the main tourist season.

26.5 Baseline Conditions

26.5.1.1 A background level of dust exists in all urban and rural locations in the UK. Dust can be generated on a local scale from vehicle movements and from the action of wind on exposed soils and surfaces. Dust levels can be affected by long-range transport of dust from distant sources into the local area.

26.5.1.2 Residents currently experience dust deposition at a rate that is determined by the contributions of local and distant sources. This baseline rate of soiling is considered normal and varies dependent on prevailing climatic conditions. The tolerance of individuals to deposited dust is therefore shaped by their experience of baseline conditions.

26.5.1.3 Typical existing local sources of particulate matter includes wind-blown dust from agricultural land, salt-spray from the ocean, exhaust emissions from energy plant, industry and road vehicles, brake and tyre wear from road vehicles, and the long-range transport of material from outside the Study Area.

26.5.1.4 A review of the local baseline air quality has been undertaken based on publicly available information from:

- The 2020 Air Quality Progress Report for Pembrokeshire County Council (PCC) (Pembrokeshire County Council, 2020); and
- Department for Environment Food & Rural Affairs (DEFRA) 2018-based Background Concentration Mapping data for Local Authorities from 2019 – (DEFRA, 2021).

26.5.1.5 As part of their Local Air Quality Management (LAQM) obligations, PCC undertake monitoring of air quality at a number of locations across the Local Authority area. The closest monitoring sites to the Proposed Development are nine passive diffusion tube (PDT) sites measuring annual mean NO_2 concentrations within the Pembroke AQMA, approximately 4.2 km to the west of the Study Area. The measured concentrations in 2019 ranged between 21 µg/m^3 and 39.3 µg/m^3.

26.5.1.6 The Pembroke AQMA boundary includes a small section of narrow congested streets where canyons limit the dispersion of pollutants generated by road traffic. Air quality measured within the AQMA is not considered to be representative of air quality at the Proposed Development site.

26.5.1.7 The baseline concentration for the Proposed Development has therefore been taken from the DEFRA 2018-based background concentration maps for the 1km x 1km grid squares that cover the Study Area. The annual mean concentrations for 2019 were as follows:

- NO_2 – 4.2-7.8 µg/m^3
- PM_{10} - 10-12.5 µg/m^3
- $PM_{2.5}$ – 6.2-6.9 µg/m^3

26.5.1.8 These are shown for individual squares in Volume 2 Figure 26.3.

26.5.1.9 The baseline NO_x concentration is relevant for sensitive designated ecological receptors and was less than 24 µg/m^3 across the entire Council region. All background concentrations within the Study Area are predicted to be significantly below the annual mean AQSs of 30 µg/m^3 for NO_x, 40 µg/m^3 for NO_2, 40 µg/m^3 for PM_{10} and the target of 25 µg/m^3, for $PM_{2.5}$.

26.6 Potential Environmental (Ecological) Effects

26.6.1.1 The potential effects at sensitive designated ecological receptors associated with the Proposed Development are:

- adverse (smothering) impacts on dust sensitive plants and habitats; and
- adverse impacts such as chemical changes to soils or watercourses due to potential airborne concentrations and deposition of NO_x from exhaust emissions from traffic and NRMM.

26.6.1.2 The potential effects are considered to be temporary and reversible once the construction phase works within 50 m of each ecological receptor ceases.

26.6.2 Construction Phase

26.6.2.1 The construction dust risk assessment is detailed in Volume 3 Appendix 26.1. It is concluded that without site mitigation in place there are:

- Two medium sensitive ecological receptors subject to a low risk of dust impacts during earthworks (Angle Peninsula Coast Site SSSI and the Pembrokeshire Marine SAC);
- Two medium sensitive ecological receptors subject to a low risk of dust impacts during track-out (Limestone Coast of South West Wales SAC and Castlemartin Coast SPA; and
- Four low sensitivity receptors (Ancient Woodland) subject to a low risk of dust impacts during track-out.

26.6.2.2 The good-practice mitigation measures and site-specific mitigation measures outlined in Section 26.4.8 will be adopted to minimise these identified risks such that the impact of dust is **minor adverse** at worst, which is not significant in EIA terms. These will be included in a CEMP submitted by the contractor to the local authority for approval prior to the commencement of any works.

26.6.2.3 Additional site-specific mitigation such as measures described in Section 26.9 may be required in these areas to reduce potential effects to negligible once the cable corridor within the PDE and the construction methods at landfall are finalised.

26.6.3 Operational Phase

26.6.3.1 The effects of the operational phase have been scoped out of the assessment.

26.6.4 Decommissioning Phase

26.6.4.1 It is recognised that industry best practice and legislation change over time and it is therefore not possible to confirm a decommissioning strategy at this time. It is likely that the substation equipment would be reused or recycled, with any hardstanding remaining undisturbed. The small building within the substation compound could be demolished, however the volume of the building is small (<20,000 m^3) and in accordance with the IAQM guidance, the dust emission magnitude associated with this would be small. It is likely that onshore cables would be removed from ducts and trenches and recycled with ducts left in place undisturbed.

26.6.4.2 There are no sensitive ecological receptors within 50 m of any anticipated decommissioning works.

26.6.4.3 There are no predicted effects of the decommissioning phase on ecological receptors.

26.7 Potential Human Effects

26.7.1.1 The potential effects at sensitive human receptors associated with the Proposed Development is:

- adverse impacts on human health due to inhalation of airborne dust and nuisance complaints of soiled surfaces due to dust deposition at residential and commercial properties caused by the generation of dust and particulates (e.g. from earth moving, open cut trenching or trenchless techniques, transport and storage of dry materials); and

26.7.1.2 The potential effects have been considered for 101 permanent residential receptors and 19 commercial receptors within the Study Area.

26.7.2 Construction Phase

26.7.2.1 The construction dust risk assessment is detailed in Volume 3 Appendix 26.1. It is concluded that without site mitigation in place there are:

- Two highly sensitive residential receptors and three medium sensitivity commercial receptors, subject to a medium risk of dust soiling within 20 m of works during earthworks and construction;
- 37 highly sensitive residential receptors and four medium sensitivity commercial receptors subject to a medium risk of dust soiling within 20 m of potential trackout routes;
- Two highly sensitive residential receptors and three medium sensitivity commercial receptors subject to a low risk of human health impacts within 20 m of works during earthworks;
- One highly sensitive residential receptor and two medium sensitivity commercial receptors subject to a low risk of human health impacts within 20 m of works during construction; and
- 37 highly sensitive residential receptors and four medium sensitivity commercial receptors subject to a low risk of human health impacts within 20 m of potential trackout routes.

26.7.2.2 The good-practice mitigation measures and site-specific mitigation measures outlined in paragraph 26.4.8 will be adopted to minimise these identified risks such that the effect of dust is **negligible**, which is not significant in EIA terms. These will be included in a CEMP submitted by the contractor to the local authority for approval prior to the commencement of any works.

26.7.3 Operational Phase

26.7.3.1 The effects of the operational phase have been scoped out of the assessment.

26.7.4 Decommissioning Phase

26.7.4.1 It is recognised that industry best practice and legislation change over time and it is therefore not possible to confirm a decommissioning strategy at this time. It is likely that the substation equipment would be reused or recycled, with any hardstanding remaining undisturbed. The small building within the substation compound could be demolished, however the volume of the building is small (<20,000 m^3) and in accordance with the IAQM guidance, the dust emission magnitude associated with this would be small. It is likely that onshore cables would be removed from ducts and trenches and recycled with ducts left in place undisturbed.

26.7.4.2 A Decommissioning Management Plan will be developed and agreed with the regulator prior to commencement of decommissioning works. It is anticipated that the potential decommissioning impacts would be lesser in scale and nature to those of the construction phase and controlled through the measures identified in paragraph 26.4.8.

26.7.4.3 The effects of the decommissioning phase on human receptors are considered to be **negligible**, which is not significant in EIA terms**.**

26.8 Additional Mitigation

26.8.1.1 If Horizontal Directional Drilling (HDD) is not be possible for the landfall construction shown in Volume 2 Figures 26.1, there will be a requirement to adopt the open cut trench method which is considered to have a higher dust emission magnitude. For either landfall option, the potential dust risk for occupants of the West Angle Bay Caravan Park will be mitigated against by carrying out these procedures outside of the main tourist season. It is noted that there are two permanent residential properties within approximately 80 m of the most northerly West Angle Bay landfall option. Temporary barriers may be required adjacent to cutting activities, if this option is selected, to prevent dust deposition.

26.8.1.2 Additional barriers and covering of temporary spoil piles may be required for the sections of the cabling route adjacent to existing solar farms to prevent deposition of dust onto solar panels.

26.8.1.3 Enhanced wheel-washing or use of rumble strips will be required at site access points closest to the B4320 trackout route where it is bound by the medium sensitivity ecological receptors Limestone Coast of South West Wales SAC and Castlemartin Coast SPA as shown in Volume 2 Figure 26.4**,** to prevent any dust deposition on these areas.

26.8.1.4 Construction phase traffic will be instructed not to travel through the Pembroke AQMA to prevent potential congestion or blockages in the narrow street leading to increased emissions from other vehicles and to avoid the potential for nuisance complaints.

26.9 Residual Effects

26.9.1.1 The residual effects after the additional mitigation measures have been applied are outlined in Sections 26.9.2-26.9.4.

26.9.2 Construction Phase

26.9.2.1 The residual effects of the construction phase of the Proposed Development are concluded to be **negligible**, which is not significant in EIA terms.

26.9.3 Operational Phase

26.9.3.1 The effects of the operational phase have been scoped out of the assessment.

26.9.4 Decommissioning Phase

26.9.4.1 The residual effects of the decommissioning phase of the Proposed Development are concluded to be **negligible**, which is not significant in EIA terms.

26.10 Inter-Related Effects

26.10.1.1 The assessment of impacts arising from construction, operation and decommissioning of the Project indicates that impacts on receptors addressed in different aspects of the Project may potentially further contribute to the impacts assessed on air quality and vice versa. These are receptor-led effects primarily from:

- construction compound activity at the landfall site occurring simultaneously with cable route construction within 350 m of the landfall site; and;
- construction of the substation occurring simultaneously with cable route construction within 350 m of the substation.

26.11 Cumulative Assessment

26.11.1.1 A Cumulative Effects Assessment (CEA) has been made based on existing and proposed developments in the Study Area (Chapter 30: Cumulative Effects Assessment). The approach to the CEA is described in Chapter 30: Cumulative Effects Assessment. Cumulative effects are defined as those effects on a receptor that may arise when the development is considered together with other reasonably foreseeable projects.

26.11.2 Construction

26.11.2.1 There are no concurrent construction projects in the Study Area which could result in cumulative effects for air quality. The Greenlink project construction phase will be completed before the Proposed Development construction phase commence.

26.11.3 Operation

26.11.3.1 There are no operational phase effects on air quality and therefore no potential for cumulative effects with any other project.

26.11.4 Decommissioning

26.11.4.1 It is not known whether there will be any other projects that could have an impact on air quality during the decommissioning phase for the Project. It is considered unlikely that there will be cumulative effects for air quality in the decommissioning phase.

26.12 Trans-boundary

26.12.1.1 There are no trans- boundary impacts predicted to result from the construction, operation and maintenance and decommissioning of the Proposed Project with respect to air quality.

26.13 Summary

26.13.1.1 This chapter considers potential air quality impacts upon human and ecological receptors within defined Study Areas for the construction, operational and decommissioning phases of the Proposed Development.

26.13.1.2 The assessment has included a review of baseline air quality within the Study Area which shows that existing levels of the pollutants of concern are low, and significantly below the relevant AQSs.

26.13.1.3 The assessment has concluded that the effects of the operational and decommissioning phases on ecological and human receptors are temporary **negligible**, which is not significant in EIA terms.

26.13.1.4 The assessment has concluded that with the inclusion of standard mitigation and some location-specific mitigation, the effects of the construction phase are temporary **negligible** at designated ecological receptors, which is not significant in EIA terms.

26.13.1.5 Overall, it is concluded that the residual effect of the Proposed Development on air quality is not significant in EIA terms.

Table 26.4 –Summary of Effects on Ecological receptors.

Description of Effect	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Dust deposition (smothering) impacts at designated ecological receptors at the landfall site	Temporary Minor	Adverse	TBC	Temporary Negligible	-
Dust deposition (smothering) impacts due to trackout on designated ecological sites adjacent to the B4230	Temporary Minor	Adverse	Enhanced wheel washing at access points from the B4230 near the designated sites	Temporary Negligible	-
Operation					
None					
Decommissioning					
None					

Table 26.5 – Summary of Effects on Human and Commercial Receptors

Description of Effect	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Dust deposition (nuisance) on two residential and three commercial properties during earthworks and construction	Temporary Negligible	-	Avoid works at landfall site during tourist season to prevent impacts at West Angle Caravan Park. Additional barriers and covering of temporary spoil piles may be required for the sections of the cabling route closest to the permanent residential properties within West Angle Bay Caravan park and existing solar farms to prevent dust deposition.	Temporary Negligible	-
Dust deposition (nuisance) on 37 residential properties and four commercial properties during trackout	Temporary Negligible	-	None	Temporary Negligible	-
Human Health Impacts at two residential and three commercial properties during earthworks	Temporary Negligible	-	None	Temporary Negligible	-
Human Health Impacts at one residential and two commercial properties during construction	Temporary Negligible	-	None	Temporary Negligible	-

Description of Effect	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Human Health impacts at 37 residential properties and four commercial properties during trackout	Temporary Negligible	-	None	Temporary Negligible	-
Operation					
None					
Decommissioning					
None					

Table 26.6 – Summary of Cumulative Effects. – TBC after checking for simultaneous construction with other schemes

Receptor	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
N/a				

26.14 References

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