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White Cross Offshore Windfarm Environmental Statement

Chapter 13: Air Quality

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Glossary of Acronyms

Acronym	Definition
AADT	Annual Average Daily Traffic
APIS	Air Pollution Information System
AQIA	Air Quality Impact Assessment
AQMA	Air Quality Management Areas
AQS	Air Quality Strategy
AQSPD	Air Quality Supplementary Planning Document
ASR	Annual Status Report
AW	Ancient Woodland
BEIS	Department for Business, Energy and Industrial Strategy
CAS	Clean Air Strategy
CBS	Cement-Bound Sand
CCS	Construction Consolidation Site
CEA	Cumulative Effects Assessment
CEH	Centre for Ecology and Hydrology
CEMP	Construction Environmental Management Plan
CLRTAP	Convention on Long-range Transboundary Air Pollution
CO_2	Carbon Dioxide
DECC	Department for Energy and Climate Change
Defra	Department for the Environment and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
DMP	Dust Management Plan
DMT	Decision-Making Threshold
DPF	Diesel Particulate Filters
EEA	European Economic Area
EIA	Environmental Impact Assessment
EN-1	National Policy Statement for Energy
EN-3	National Policy Statement for Renewable Energy Infrastructure
EN-5	National Policy Statement for Electricity Networks Infrastructure
EPUK	Environmental Protection United Kingdom
ES	Environmental Statement
ETS	Emissions Trading System
EU	European Union
HDD	Horizontal Directional Drilling
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicles
HMSO	His Majesty's Stationery Office
IAQM	Institute of Air Quality Management

Acronym	Definition
IEMA	Institute of Environmental Management and Assessment
IPC	Infrastructure Planning Commission (now Planning Inspectorate)
IRZ	Impact Risk Zone
JNCC	Joint Nature Conservation Committee
km	Kilometre
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles
LNR	Local Nature Reserve
LPA	Local Planning Authority
MCerts	Monitoring Certification Scheme
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MW	Megawatts
N-dep	Nitrogen deposition
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRMM	Non-Road Mobile Machinery
NSIP	Nationally Significant Infrastructure Project
PDE	Project Design Envelope
PM	Particulate Matter
SAC	Special Area of Conservation
SNAPs	Shared Nitrogen Action Plans
SPA	Special Protection Area
SPD	Supplementary Planning Document
SSSI	Site of Special Scientific Interest
TEMPro	Trip End Model Presentation Program
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe

Glossary of Terminology

Defined Term	Description
Applicant	White Cross Offshore Windfarm Limited.
Cumulative effects	The effect of the Onshore Project taken together with similar effects from a number of different projects, on the same single receptor/resource. Cumulative Effects are those that result from changes caused by other past, present or reasonably foreseeable actions together with the Onshore Project.
Department for Business, Energy and Industrial Strategy (BEIS)	Government department that is responsible for business, industrial strategy, science and innovation and energy and climate change policy and consent under Section 36 of the Electricity Act.
Engineer, Procure, Construct and Install	A common form of contracting for offshore construction. The contractor takes responsibility for a wide scope and delivers via own and subcontract resources.
Environmental Impact Assessment (EIA)	Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation and decommissioning.
Export Cable Corridor	The area in which the export cables will be laid, either from the Offshore Substation or the inter-array cable junction box (if no offshore substation), to the NG Onshore Substation comprising both the Offshore Export Cable Corridor and Onshore Export Cable Corridor.
Front end engineering and design	Front-end engineering and design (FEED) studies address areas of windfarm system design and develop the concept of the windfarm in advance of procurement, contracting and construction.
Generation Assets	The infrastructure of the Project related to the generation of electricity within the windfarm site, including wind turbine generators, substructures, mooring lines, seabed anchors and inter-array cables.
High Voltage Alternating Current	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
In-combination effects	In-combination effects are those effects that may arise from the development proposed in combination with other plans and projects proposed/consented but not yet built and operational.
Jointing bay	Underground structures constructed at regular intervals along the Onshore Export Cable Corridor to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	Where the offshore export cables come ashore.
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing electrical earthing links.

Defined Term	Description
Mitigation	Mitigation measures have been proposed where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts, and discussed with the relevant authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels. For the purposes of the EIA, two types of mitigation are defined: • Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the evolution of the project design, and form part of the project design that is assessed in the EIA • Additional mitigation: consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts. Additional mitigation is therefore subsequently adopted by OWL as the EIA process progresses.
National Grid Onshore Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of the electrical transformers.
National Grid Connection Point	The point at which the White Cross Offshore Windfarm connects into the distribution network at East Yelland substation and the distributed electricity network. From East Yelland substation electricity is transmitted to Alverdiscott where it enters the national transmission network.
Offshore Development Area	The Windfarm Site (including wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and Offshore Export Cable Corridor to MHWS at the Landfall. This encompasses the part of the project that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009.
Offshore Export Cables	The cables which bring electricity from the Offshore Substation Platform or the inter-array cables junction box to the Landfall.
Offshore Export Cable Corridor	The proposed offshore area in which the export cables will be laid, from Offshore Substation Platform or the inter-array cable junction box to the Landfall.
Offshore Infrastructure	All of the offshore infrastructure including wind turbine generators, substructures, mooring lines, seabed anchors, Offshore Substation Platform and all cable types (export and inter-array). This encompasses the infrastructure that is the focus of this application and Environmental Statement and the parts of the project consented under Section 36 of the Electricity Act and the Marine and Coastal Access Act 2009.

Defined Term	Description
the Offshore Project	The Offshore Project for the offshore Section 36 and Marine Licence application includes all elements offshore of MHWS. This includes the infrastructure within the windfarm site (e.g. wind turbine generators, substructures, mooring lines, seabed anchors, inter-array cables and Offshore Substation Platform (as applicable)) and all infrastructure associated with the export cable route and landfall (up to MHWS) including the cables and associated cable protection (if required).
Offshore Substation Platform	A fixed structure located within the Windfarm Site, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore.
Offshore Transmission Assets	The aspects of the project related to the transmission of electricity from the generation assets including the Offshore Substation Platform (as applicable)) or offshore junction box, Offshore Cable Corridor to MHWS at the landfall.
Offshore Transmission Owner	An OFTO, appointed in UK by Ofgem (Office of Gas and Electricity Markets), has ownership and responsibility for the transmission assets of an offshore windfarm.
Onshore Development Area	The onshore area above MLWS including the underground onshore export cables connecting to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland. The onshore development area will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990.
Onshore Export Cables	The cables which bring electricity from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland.
Onshore Export Cable Corridor	The proposed onshore area in which the export cables will be laid, from MLWS at the Landfall to the White Cross Onshore Substation and onward to the NG grid connection point at East Yelland.
Onshore Infrastructure	The combined name for all infrastructure associated with the Project from MLWS at the Landfall to the NG grid connection point at East Yelland. The onshore infrastructure will form part of a separate Planning application to the Local Planning Authority (LPA) under the Town and Country Planning Act 1990.
Onshore Transmission Assets	The aspects of the project related to the transmission of electricity from MLWS at the Landfall to the NG grid connection point at East Yelland including the Onshore Export Cable, the White Cross Onshore Substation and onward connection to the NG grid connection point at East Yelland.
the Onshore Project	The Onshore Project for the onshore TCPA application includes all elements onshore of MLWS. This includes the infrastructure associated with the offshore export cable (from MLWS), landfall, onshore export cable and associated infrastructure and new Onshore Substation (if required).
White Cross Offshore Windfarm Ltd	White Cross Offshore Windfarm Ltd (WCOWL) is a joint venture between Cobra Instalaciones Servicios, S.A., and Flotation Energy Ltd.

Defined Term	Description
the Project	the Project is a proposed floating offshore windfarm called White Cross located in the Celtic Sea with a capacity of up to 100MW. It encompasses the project as a whole, i.e. all onshore and offshore infrastructure and activities associated with the Project.
Project Design Envelope	A description of the range of possible elements that make up the Project design options under consideration. The Project Design Envelope, or 'Rochdale Envelope' is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact parameters are not yet known but a bounded range of parameters are known for each key project aspect.
Transition joint bay	Underground structures at the Landfall that house the joints between the offshore export cables and the onshore export cables.
Transition piece	The transition piece includes various functionalities such as access for maintenance, cable connection for the energy of the turbine and the corrosion protection of the entire foundation.
White Cross Offshore Windfarm	Up to 100MW capacity offshore windfarm including associated onshore and offshore infrastructure.
White Cross Onshore Substation	A new substation built specifically for the White Cross project. It is required to ensure electrical power produced by the offshore windfarm is compliant with NG electrical requirements at the grid connection point at East Yelland.
Wind Turbine Generators (WTG)	The wind turbine generators convert wind energy into electrical power. Key components include the rotor blades, nacelle (housing for electrical generator and other electrical and control equipment) and tower. The final selection of project wind turbine model will be made post-consent application.
Windfarm Site	The area within which the wind turbines, Offshore Substation Platform and inter-array cables will be present.
Works completion date	Date at which construction works are deemed to be complete and the windfarm is handed to the operations team. In reality, this may take place over a period of time.

13. Air Quality

13.1 Introduction

1. This chapter of the Environmental Statement (ES) presents the potential impacts on air quality of the White Cross Offshore Windfarm Project (the Onshore Project). Specifically, it considers impacts landward of Mean Low Water Springs (MLWS) during its construction, operation and maintenance, and decommissioning phases.

2. The ES has been finalised with due consideration of pre-application consultation to date (see **Chapter 7: Consultation**) and the ES will accompany the application to North Devon District Council for planning permission under the Town and Country Planning Act 1990.

3. The elements of the White Cross Offshore Windfarm Project seaward of Mean High Water Springs (MHWS) ('the Offshore Project') are subject to a separate application for consent under Section 36 of the Electricity Act 1989, and for Marine Licences under the Marine and Coastal Access Act 2009. These applications are supported by a separate ES covering all potential impacts seaward of MHWS.

4. This assessment has been undertaken with specific reference to the relevant policy, legislation and guidance, which are summarised in **Section 13.2** of this chapter. Further information on the international, national and local planning policy and legislation relevant to the Onshore Project is provided in **Chapter 3: Policy and Legislative Context**.

5. Details of the methodology used for the Environmental Impact Assessment (EIA) and Cumulative Effect Assessment (CEA), are presented in **Section 13.3** of this chapter and **Chapter 6: EIA Methodology**.

6. This assessment has been informed by impacts assessed in air quality and impacts assessed in this chapter inform the following linked ES chapters:

   - **Chapter 16: Onshore Ecology and Ornithology**
   - **Chapter 19: Traffic and Transport**
   - **Chapter 22: Human Health**
   - **Chapter 23: Climate Change**.

7. Inter-relationships with these chapters are further described in **Section 13.10**.

8. Additional information to support the onshore air quality assessment includes:

   - **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**
   - **Appendix 13.B: Air Quality Assessment Traffic Data**.

9. This ES chapter:

   - Presents the existing environmental baseline established from desk studies and consultation
   - Presents the potential environmental effects on air quality arising from the Onshore Project, based on the information gathered and the analysis and assessments undertaken
   - Identifies any assumptions and limitations encountered in compiling the environmental information
   - Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

13.2 Policy, Legislation and Guidance

10. **Chapter 3: Policy and Legislative Context** describes the wider policy and legislative context for the Onshore Project. The principal policy and legislation used to inform the assessment of potential impacts on air quality for the Onshore Project are outlined in this section.

13.2.1 National Planning Policy Framework

11. The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, updated July 2021) is the primary source of national planning guidance in England. Sections relevant to this aspect of the ES are summarised in **Table 13.1**.

Table 13.1 Summary of NPPF Policy relevant to air quality

Summary	How and where this is considered in the ES
"Planning policies and decisions should contribute to and enhance the natural and local environment by: *(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account*	The impact of the Onshore Project on receptors susceptible to air pollutants have been considered in **Section 13.5**.

Summary	How and where this is considered in the ES
relevant information such as river basin management plans" – NPPF, paragraph no.174	
"*Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.*" – NPPF, paragraph no.186	The impact of the Onshore Project on receptors susceptible to air pollutants, including those located within Air Quality Management Areas, have been considered in **Section 13.5**.

13.2.2 Local Policies

12. This section considers local policies and their relevance to the air quality assessment. A summary of the local policies is provided in **Table 13.2**.

Table 13.2 Summary of Local Policies relevant to air quality

Policy Name	Summary	How and where this is considered in the ES
North Devon and Torridge Local Plan 2011-2031 Policy ST03: Adapting to Climate Change and Strengthening Resilience	"*Development should be designed and constructed to take account of the impacts of climate change and minimise the risk to and vulnerability of people, land, infrastructure and property by:* *(h) ensuring risks from potential climate change hazards, including pollutants (of air and land) are minimised to protect and promote healthy and safe environments.*"	The impact of the Onshore Project on receptors susceptible to air pollutants have been considered in **Section 13.5**.
North Devon and Torridge Local Plan 2011-2031 Policy DM02: Environmental Protection	"*(2) Development will be supported where it does not result in unacceptable impacts to:* *(a) atmospheric pollution by gas or particulates, including smell, fumes, dust, grit, smoke and soot.*	The impact of the Onshore Project on atmospheric pollution has been considered in **Section 13.5**.

Policy Name	Summary	How and where this is considered in the ES
	(3) Development and traffic proposals that help to deliver measures identified within a Local Air Quality Action Plan or improved overall air quality will be supported."	
North Devon and Torridge Local Plan 2011-2031 Air Quality Supplementary Planning Document (SPD)	North Devon District Council has produced an SPD on Air Quality (North Devon and Torridge, 2020). This document details North Devon District Council's requirements with regard to assessing the impact of a project on air quality.	The requirements of the North Devon and Torridge Air Quality SPD (North Devon and Torridge, 2020) is considered within this assessment and discussed in **Section 13.5**.
Braunton Parish Neighbourhood Plan Policy BE13 - Protection and Improvement of Air Quality	"1. *Development proposals should contribute to the provision of cleaner air and reduce pollution by:* *iv) incorporating plants, trees and shrubs in any landscaping scheme, and as far as possible,* *v) replacing any trees or hedgerows which have to be removed* *vi) controlling dust and emissions from industrial, farming, construction and demolition operations* *2. Development proposals are encouraged where possible and practical that use renewable fuels/cleaner technologies.* *3. Proposals submitted for any development must be in accordance with the requirements of North Devon and Torridge Council's "Air Quality Supplementary Planning Document". Proposal should be accompanied by an Air Quality Impact Assessment providing appropriate evidence that demonstrates that the proposed development would not lead to:* *i) further deterioration of the air quality in Braunton's Air Quality Management Areas (AQMA) where the air quality already does not meet the legal requirements for air quality measures such as particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen*	The impact of the Onshore Project on dust and emissions from construction and demolition operations has been considered in **Section 13.5.1.** The impact of Project-generated traffic emissions on Braunton's AQMA has been considered in **Section 13.5.3.1.**

Policy Name	Summary	How and where this is considered in the ES
	dioxide (NO_2) *ii) deterioration of the air quality in any part of Braunton Parish such that the air quality measures such as particulate matter (PM_{10} and $PM_{2.5}$) and NO_2 ceases to meet the legal requirements for air quality.* *iii) it must be satisfactorily demonstrated that any development which would have consequences for the Air Quality Management Area, is consistent with the current Air Quality Action Plan."*	

13.2.3 National Policy Statement

13. The assessment of potential impacts upon air quality has been made with specific reference to the relevant National Policy Statement (NPS). NPSs are statutory documents which set out the government's policy on specific types of Nationally Significant Infrastructure Projects (NSIPs) and are published in accordance with the Planning Act 2008.

14. Although the Offshore Project is not an NSIP, it is recognised that due to its size of up to 100MW and its location in English waters, certain NPS are considered relevant to the Offshore Project. Therefore, to align with the approach to the assessment of the Offshore Project, certain NPS are also considered as part of the Onshore Project.

15. Those relevant to air quality are set out within the overarching NPS for Energy (EN-1), NPS for Renewable Energy Infrastructure (EN-3) and NPS for Electricity Networks Infrastructure (EN-5), which are summarised in **Table 13.3**.

16. It is noted that the NPS for Energy (EN-1), the NPS for Renewable Energy Infrastructure (EN-3) and the NPS for Electricity Networks Infrastructure (EN-5) are in the process of being revised. Draft versions were published for consultation in September 2021 (Department for Business Energy and Industrial Strategy (BEIS), (2021a), BEIS, (2021b) and BEIS (2021c) respectively). A review of these draft versions has been undertaken in the context of this ES chapter.

17. **Table 13.3** includes a section for the draft version of NPS (EN-1, EN-3 and EN-5) in which relevant additional NPS requirements not presented within the current NPS (EN-1, EN-3 and EN-5) have been included. A reference to the requirement's

location within the draft NPS and to where within this ES chapter or wider ES it has been addressed has also been provided.

18. Minor wording changes within the draft version which do not materially influence the NPS (EN-1, EN-3, EN-5) requirements have not been reflected in **Table 13.3**.

Table 13.3 Summary of NPS EN-1, EN-3 and EN-5 provisions relevant to air quality

Summary	How and where this is considered in the ES
” Any ES on air emissions will include an assessment of Carbon Dioxide (CO_2) emissions, but the policies set out in Section 2 [of EN-1], including the EU Emissions Trading System (ETS), apply to these emissions. The Infrastructure Planning Commission (IPC) (now Planning Inspectorate) does not, therefore need to assess individual applications in terms of carbon emissions against carbon budgets.” - **EN-1, paragraph 5.2.2**	Not applicable to this assessment. The greenhouse gas assessment is included in **Chapter: 23 Climate Change**.
“The ES should describe: Any significant air emissions, their mitigation and any residual effects distinguishing between the Onshore Project stages and taking account of any significant emissions from any road traffic generated by the Onshore Project The predicted absolute emission levels of the Onshore Project, after mitigation methods have been applied Existing air quality levels and the relative change in air quality from existing levels Any potential eutrophication impacts.” - **EN-1, paragraph 5.2.7**, Draft **EN-1, paragraph 5.2.6**	These matters have been assessed and are presented in **Section 13.4** and **Section 13.5**.
Other matters that the IPC [updated to Secretary of State in Draft EN-1] may consider important and relevant to its decision-making may include Development Plan Documents or other documents in the Local Development Framework. In the event of a conflict between these or any other documents and an NPS, the NPS prevails for the purposes of IPC decision making given the national significance of the infrastructure. - **EN-1, paragraph 4.1.5**, Draft **EN-1, paragraph 4.1.5**	Please refer to **Section 13.4**.

13.2.4 Other Policy, Legislation and Guidance Specific to Air Quality

19. In addition to those detailed above, there are a number of pieces of policy, legislation and guidance applicable to the assessment of air quality.

13.2.4.1 National Legislation

20. EU legislation forms the basis for UK air quality policy. The EU (Withdrawal Agreement) Act 2020 sets out arrangements for implementing the air quality limit values that are included in the EU Directive on Ambient Air Quality (1996) and Cleaner Air for Europe Directive 2008/50/EC and in the Air Quality Regulations 2010, and as amended. The relevant air quality limit values for this assessment for the protection of human health are detailed further in the following sections and are presented in **Table 13.4.**

13.2.4.2 Air Quality Strategy

21. The EU Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management entered into force in November 1996. This was a framework for tackling air quality through setting European wide air quality limit values in a series of Daughter Directives, prescribing how air quality should be assessed and managed by the Member States. Directive 96/62/EC and the first three Daughter Directives were combined to form the new EU Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe, which came into force June 2008.

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

23. The UK AQS was originally adopted in 1997 and has been reviewed and updated in order 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 AQS for England, Scotland, Wales and Northern Ireland. This was subsequently amended in 2003 and was last updated in July 2007.

24. The UK Government published its Clean Air Strategy (CAS) in January 2019, which reset the focus for the first time since the 2007 Air Quality Strategy revision. The CAS identifies a series of 'new' air quality issues, including biomass combustion, shipping emissions, and releases from agricultural activities. There is a recognition that the effects of pollutant deposition on sensitive ecosystems and habitats needs

greater focus. The concept of an overall exposure reduction approach is raised, in recognition that numerical standards are not safe dividing lines between a risk and a safe exposure, within a population with a varying age and health profile. Within the CAS, the government proposes an ambitious target to reduce the population exposed to concentrations of $PM_{2.5}$ above 10µg.m^{-3} by 50% by 2025. The CAS is supplemented by an Industrial Strategy, policy guidance for the ports sector, a developing approach for aviation, and by plans for road transport fuels shift to zero emissions by 2040.

25. The Environment Act 2021 gained royal assent in November 2021. The Act requires the government to set targets on air quality, including for fine particulate matter, in order to deliver cleaner air for all. The Act introduced a legally binding duty on the government to bring forward at least two air quality targets by October 2022: one to reduce annual average $PM_{2.5}$ concentrations in ambient air and the second must be a long-term target (set a minimum of 15 years in the future) in order to encourage long-term investment and to provide certainty for businesses and other stakeholders. A public consultation on the proposed targets closed in June 2022.

26. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 sets two $PM_{2.5}$ targets into law and contains provisions on how they will be monitored and assessed. The targets are as follows:

    - An Annual Mean Concentration Target – limiting $PM_{2.5}$ to 10µg m^{-3}, to be met across England by the end of 2040
    - A Population Exposure Reduction Target – a 35% reduction in population exposure to $PM_{2.5}$ by the end of 2040.

27. The new Environmental Improvement Plan was published in January 2023 and includes non-statutory interim $PM_{2.5}$ targets of five years in duration as milestones to meet the full long-term targets.

13.2.4.3 Local Air Quality Management (LAQM)

28. The standards and Objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations 2000; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.

29. The current air quality standards and Objectives (for the purpose of LAQM) of relevance to this assessment are outlined in **Section 13.3.2**.

13.2.4.4 Summary

30. This chapter has been compiled in accordance with the following relevant legislation:

- Council Directive 96/62/EC on Ambient Air Quality Assessment and Management (European Parliament, 1996)
- Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe. (European Parliament, 2008)
- The Environment Act 1995 (c.25) London: TSO (His Majesty's Stationary Office (HMSO), 1995)
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. (HMSO, 2023a)
- Environmental Improvement Plan 2023 (HMSO, 2023b)
- Statutory Instrument 2000 No. 928 The Air Quality (England) Regulations 2000 London: HMSO (HMSO, 2000)
- 'Statutory Instrument 2010 No. 1001, Air Quality Standards (England) Regulations, 2010'. London: HMSO (HMSO, 2010a)
- Statutory Instrument 2002 No. 3043 The Air Quality (England) (Amendment) Regulations 2002 London: HMSO (HMSO, 2002)
- The Air Quality Standards Regulations 2010 (HMSO, 2010b)
- The Air Quality Standards (Amendment) Regulations 2016 (HMSO, 2016).

31. This chapter has been compiled in accordance with the following relevant policy:

- Clean Air Strategy 2019 (Department for the Environment Food and Rural Affairs (Defra), 2019).

32. In demonstrating adherence to industry good practice, this chapter has been compiled in accordance with the following relevant standards and guidance:

- North Devon and Torridge Local Plan 2011-2031 Air Quality SPD (North Devon and Torridge, 2020)
- Guidance on Decision-making Thresholds for Air Pollution: Main Report and Technical Report (Chapman & Kite, 2021a and 2021b)
- Guidance on the assessment of air quality impacts on designated nature conservation areas (IAQM, 2020)
- Guidance on the assessment of impacts from construction dust and fine particulate matter (IAQM, 2016)
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (Natural England, 2018)

- Land-Use Planning & Development Control: Planning For Air Quality (IAQM & Environmental Protection United Kingdom (EPUK), 2017).

13.3 Assessment Methodology

13.3.1 Study Area

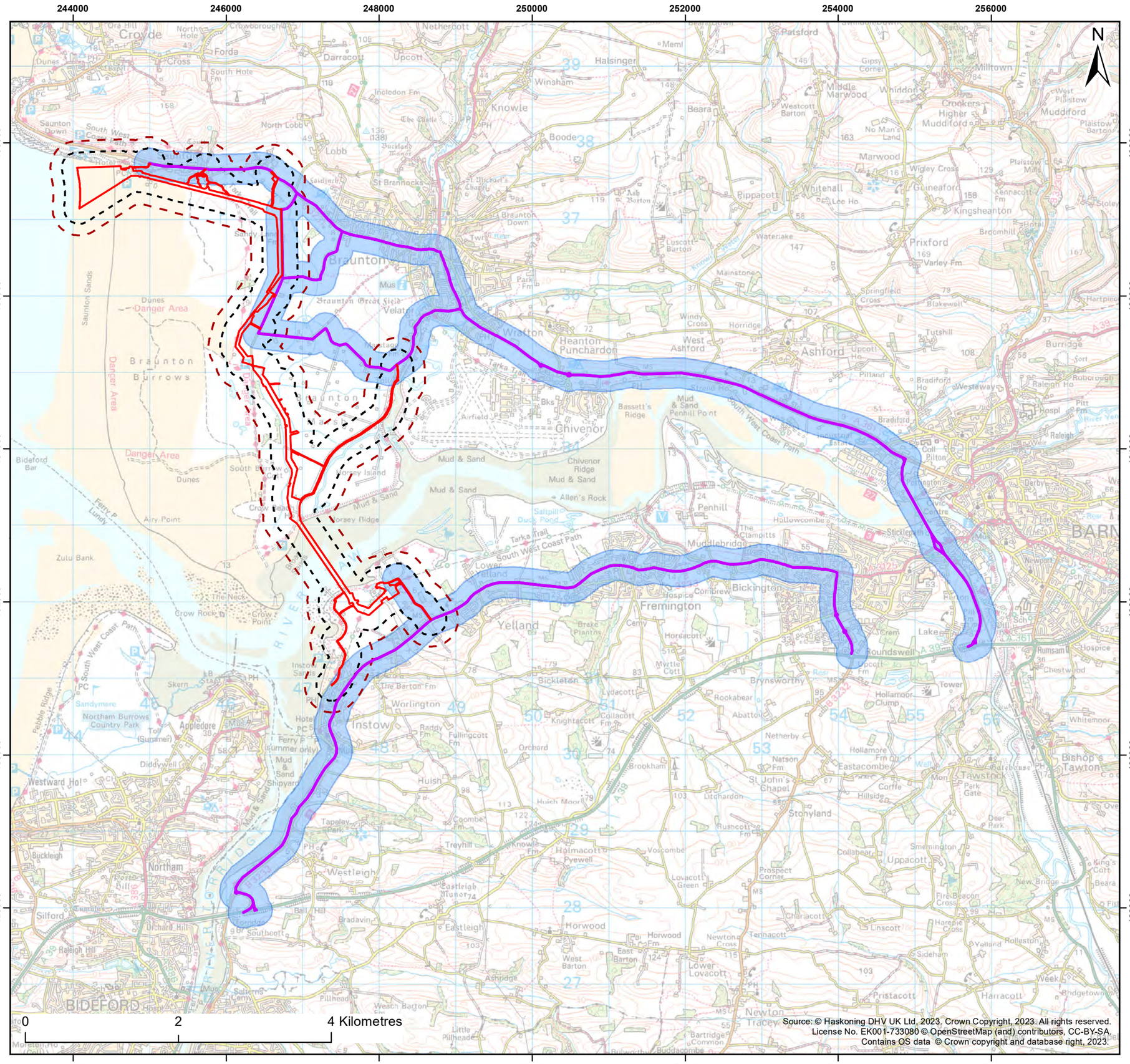
33. Details of the location of the Onshore Project and the onshore elements are set out within **Chapter 5: Project Description**.

34. The air quality study area is defined by the distance over which impacts on air quality from all the onshore project elements (i.e. Landfall, Onshore Export Cable Corridor, compounds, access routes and Onshore Substation) may occur and by the location of any receptors that may be affected by those potential impacts.

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

- Construction phase dust and fine particulate matter emissions:
    - Human receptors within 350m of the Onshore Development Area and within 50m of routes used by construction vehicles (for routes used by construction-generated traffic up to 500m from the Onshore Development Area)
    - Ecological receptors within 200m of the Onshore Development Area and within 50m of routes used by construction vehicles (for routes used by construction-generated traffic up to 500m from the Onshore Development Area).
- Construction phase Non-Road Mobile Machinery (NRMM) emissions:
    - Human and ecological receptors within 200m of the Onshore Development Area where NRMM will be located.
- Construction phase road traffic emissions:
    - Human and ecological receptors within 200m of routes which will experience traffic flows in exceedance of the relevant air quality screening criteria. Further information on construction traffic routes is provided in **Chapter 19: Traffic and Transport**.

36. The air quality study area is shown in **Figure 13.1**.



Legend:

- Onshore Development Area
- Onshore Development Area (200m Buffer)
- Onshore Development Area (350m Buffer)
- Links Forming the Traffic and Transport Study Area
- Links Forming the Traffic and Transport Study Area (200m Buffer)

Client: Offshore Wind Ltd.	Project: White Cross Offshore Windfarm

Title: Air Quality Study Area

Figure: 13.1 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0618

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	12/06/2023	AB	EW	A3	1:50,000

Co-ordinate system: British National Grid

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13.3.2 Air Quality Standards and Objectives

37. The current air quality standards and Objectives (for the purpose of LAQM) of relevance to this assessment are outlined in **Table 13.4**. Pollutant standards relate to ambient pollutant concentrations in air, set based on medical and scientific evidence of how each pollutant affects human health. Pollutant Objectives however incorporate future dates by which each standard is to be achieved, taking into account economic considerations, practicability, and technical feasibility.

38. The pollutants of concern in the context of the air quality assessment are NO_2 and PM_{10} and $PM_{2.5}$, as these pollutants are most likely to be present in ambient air at concentrations close to or above the air quality criteria at sensitive receptors near to roads, and are hence the focus of the assessment of vehicle emissions associated with the Onshore Projects. Air quality thresholds relevant to the air quality assessment are summarised in **Table 13.4.**

Table 13.4 Air Quality Strategy Objectives (England) for the Purpose of LAQM

Pollutant	Air Quality Objective		Date to be achieved (by and maintained thereafter)
	Concentration (µg m^{-3})	Measured as*	
Nitrogen dioxide (NO_2)	200	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40	Annual mean	31/12/2005
Particles (PM_{10})	50	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40	Annual mean	31/12/2004
Particles ($PM_{2.5}$)	10**	Annual mean (target)	2040**
	15% cut in annual mean (urban background exposure)	Annual mean	2010-2020
	35%** cut in annual mean (urban background exposure)	Annual mean	2040

*The way the Objectives are to be measured is set out in the UK Air Quality (England) Regulations 2000

** New environmental targets required by section 1 of the Environment Act adopted in January 2023

39. It should be noted that the air quality Objectives only apply in locations likely to have 'relevant exposure', i.e., where members of the public are exposed for periods equal to or exceeding the averaging periods set for the standards. For this assessment, locations of relevant exposure include building facades of residential properties, and where relevant schools and medical facilities. Places of work are not included. The Environment Act 2021 is expected to deliver key aspects of the CAS with the aim of maximising health benefits for all and will sit alongside the wider action on air quality.

13.3.2.1 Critical Levels for the Protection of Vegetation and Ecosystems

40. National air quality objectives also apply for the protection of vegetation and ecosystems, which are termed Critical Levels. Critical Levels apply irrespective of habitat type and are based on the concentration of the relevant pollutants in air.

41. The Critical Levels of relevance to this assessment relate to concentrations of NO_x and ammonia (NH_3) and are detailed in **Table 13.5**. The Critical Level for ammonia is not included within the Air Quality Standards Regulations; however, a Critical Level for this pollutant is set out within the United Nations Economic Commission for Europe (UNECE) Convention on Long-range Transboundary Air Pollution (CLRTAP) and is adopted within air quality assessments.

42. NOx Critical Levels are provided as both long and short-term averaging periods. IAQM guidance (IAQM, 2020) recommends that only the annual mean NOx Critical Level is used in assessments due to the comparative importance of annual effects upon vegetation, except where specifically required by the regulator where high short-term emissions may occur, such as from an industrial stack emission source. As such, given the consistent traffic exhaust emission source along road links, only the annual mean Critical Level was considered in this assessment.

Table 13.5 Critical Levels for the Protection of Vegetation and Ecosystems

Pollutant	**Air Quality Objective**	
	Concentration ($\mu g.m^{-3}$)	**Measured as***
Oxides of nitrogen (NOx)	30	Annual mean
Ammonia (NH_3)	3*	Annual mean
*Critical Level is 1$\mu g.m^{-3}$ if certain lichen/bryophyte species are present		

43. Critical Loads for habitat sites in the UK are published on the Air Pollution Information System (APIS) website (Centre for Ecology and Hydrology (CEH), 2023) and are habitat specific. These are the maximum levels of nutrient nitrogen and acid deposition that can be tolerated without harm to the most sensitive features of these habitat sites. An increase in Critical Load of less than 1% is typically considered to be insignificant, as a change in this level is within the magnitude of natural fluctuation and is unlikely to be measurable. The 1% threshold of insignificance is referenced in guidance provided by Natural England (2018), IAQM (2020) and Chapman and Kite (2021a, 2021b).

13.3.3 Approach to Assessment

44. **Chapter 6: EIA Methodology** provides a summary of the general impact assessment methodology applied to the Onshore Project. The following sections outline the methodology used to assess the potential effects on air quality. The terminology and method used for each assessment differs from the generic impact assessment terminology presented within **Chapter 6: EIA Methodology** as the assessments have been undertaken in accordance with the relevant guidance.

13.3.3.1 Construction Phase Dust and Fine Particulate Matter

45. Assessment of potential impacts associated with construction phase dust and fine particulate matter emissions has been undertaken in accordance with the latest IAQM guidance (IAQM, 2016). The terminology and method differs from the generic impact assessment terminology presented within **Chapter 6: EIA Methodology**.

13.3.3.1.1 Assessment Steps

46. The assessment steps are as follows:

    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
        c) Establish the risk of dust impacts.

    3) Determine site specific mitigation
    4) Examine the residual effects to determine if additional mitigation is required.

47. It is anticipated that there will be no dust-generating demolition required as part of the construction phase of the Onshore Project; therefore, this has not been considered as part of the assessment.

48. In addition, it should be noted that trackout is defined as the transport of dust and dirt from the construction site onto the public road network.

49. Full details of the assessment methodology are provided in **Appendix 13.A**: **Construction Dust and Particulate Matter Assessment Methodology.**

13.3.3.1.2 Sensitivity

50. Definitions of the different sensitivity levels for human and ecological receptors to dust (IAQM, 2016) are given in **Table 13.6**.

Table 13.6 Definitions of the different sensitivity levels for receptors to construction dust

Sensitivity	Sensitivity of people and property 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.	Internationally or nationally designated sites 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 nationally designated sites 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.	Locally designated sites where features may be affected by dust deposition.

13.3.3.1.3 Magnitude

51. The magnitude of construction phase dust emissions should be defined 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.

52. The IAQM guidance provides broad ranges of the area of a site, the total building volume and the number of outward vehicle trips which are used to determine the dust emission magnitude.

53. The dust emission magnitudes for each activity are detailed in **Table 13.7**.

Table 13.7 Definitions of the different magnitudes of construction phase dust emissions

Activity	Criteria used to determine dust emission magnitude		
	Small	**Medium**	**Large**
Earthworks	Total site area <2,500m^2. Potentially dusty soil type (e.g. clay).	Total site area 2,500-10,000m^2. Moderately dusty soil type (e.g. silt).	Total site area >10,000m^2. Soil type with large grain size (e.g. sand)
Construction	Total building volume <25,000m^3.	Total building volume 25,000-100,000m^3.	Total building volume >100,000m^3.
Trackout	<10 outward Heavy Duty Vehicle (HDV) trips in any one day. Unpaved road length <50m.	10-50 outward HDV trips in any one day. Unpaved road length 50-100m.	>50 outward HDV trips in any one day. Unpaved road length >100m.

13.3.3.1.4 Significance of effect

54. In assessing the significance of construction dust effects using the IAQM guidance (2016), the dust emission magnitude is combined with the sensitivity of the area to determine the risk of effects prior to mitigation. This is shown in more detail in **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**. This assessment deviates slightly from the methodology set out in **Chapter 6: EIA Methodology**, as the IAQM guidance does not assign a significance before applying mitigation measures. Once appropriate mitigation measures have been identified, as required, the significance of construction phase impacts can be determined. The IAQM considers it to be most appropriate to only assign significance post mitigation as it assumes mitigation is inherent in the design/construction approach. A matrix is therefore not provided in the guidance to determine significance. The guidance notes that, with the implementation of effective mitigation measures, the effects of dust generated during construction would be **not significant**.

13.3.3.2 Construction Phase NRMM Emissions

55. Defra technical guidance (Defra, 2022) states that emissions from NRMM used on construction sites are unlikely to have a significant impact on local air quality where relevant control and management measures are employed. However, intensive construction activities, for example Horizontal Directional Drilling (HDD) works, may temporarily increase pollutant concentrations in the vicinity of receptors.

56. A qualitative assessment has been undertaken taking into account:

- The number and type of plant to be used
- The working hours to be employed and the duration of works
- Distances from NRMM to the nearest human and ecological receptors
- Existing air quality conditions in the area (based on either local monitoring (where available) and/or Defra background pollutant concentration maps (Defra, 2020a))
- Prevailing meteorological conditions.

57. The significance of effects has been determined using professional judgement, taking into account the factors above.

13.3.3.3 Construction Road Vehicle Exhaust Emissions

13.3.3.3.1 Traffic Data

58. Traffic data for the assessment is detailed in **Chapter 19: Traffic and Transport**.

59. Twenty-four hour annual Average Daily Traffic (AADT) flows and Heavy Goods Vehicles (HGV) percentages were derived for the worst-case construction year. The traffic data for the assessment is detailed in **Appendix 13.B: Air Quality Assessment Traffic Data**.

60. Traffic data has been factored to account for traffic growth between the base year (2022) and the earliest year of construction (2025). This has been undertaken by applying background growth factors that account for regional traffic growth from the Trip End Model Presentation Program (TEMPro), which takes into account traffic growth from committed developments (e.g., residential developments and employment developments).

13.3.3.3.2 Screening Criteria and Assessed Road Links / Haulage Routes

61. The requirement for a detailed assessment of construction vehicle exhaust emissions at human receptors has been considered using screening criteria provided by IAQM and EPUK (2017). Guidance from recently released reports by the Joint Nature Conservation Committee (JNCC) (Chapman & Kite, 2021a and 2021b) has been used for the screening of ecological receptors, within 200m from affected road links. The assessment criteria are detailed in **Table 13.8**.

Table 13.8 Road traffic assessment screening criteria

Guidance Document	Receptor	Screening Criteria	
IAQM and EPUK (2017)	Human receptors	Light duty vehicles (LDVs)	A change in 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.
JNCC (Chapman & Kite, 2021a and 2021b)	Ecological receptors	AADT	An increase 0.15% or more of existing AADT (over 5 years) (i.e. the 'Decision-making Threshold' (DMT))

62. Ecological receptors are screened inclusive of in-combination traffic growth from the base year (2022) to the earliest year of construction (2025). Reasoning for this is provided in further detail in **Section 13.3.3.3.3**.

63. The increases in traffic flows on the road network associated with the construction phase of the Onshore Project were screened using the criteria detailed in **Table 13.8**. All road links were anticipated to experience increases in traffic flows greater than the JNCC DMT screening criteria (i.e. 0.15% of existing 2022 baseflow AADT). As such, sensitive ecological receptor locations were identified on all affected road links.

64. Only one road link was predicted to experience increases in vehicle numbers and HGVs in exceedance of the human receptor screening criteria, as detailed in **Table 13.9** and discussed in **Section 13.5.3.1**. Increases in traffic flows below the criteria are unlikely to result in significant air quality impacts as a result of the Onshore Project and detailed assessment of air quality is not necessary. If the criteria are exceeded, either a simple or detailed assessment should be undertaken. Where it can be concluded that a significant impact on local air quality is unlikely to occur, a simple assessment can be carried out. If significant impacts are possible, then detailed dispersion modelling may be required.

65. Traffic flows on the temporary haul roads within the Onshore Development Area to be used for the Onshore Project during construction have also been screened against the criteria detailed in **Table 13.8** and discussed in **Section 13.3.3.3.4.5**.

66. More information on the derivation of the traffic flows is provided in **Chapter 19: Traffic and Transport** and the traffic data used in the assessment is provided in **Appendix 13.B: Air Quality Assessment Traffic Data**.

Table 13.9 Human Receptor Screening – Project Generated Traffic During Construction. Boxes shaded in blue show traffic flows (LDV and/or HGVs) that exceed the IAQM & EPUK (2017) criteria

Link ID	Road	Construction Flows as AADT	
		LDVs	HGVs
1	B3231 west of the Site Access	10	6
2	B3231 east of the Site Access	33	28
3	Blind Acres Lane to Moor Lane	23	0
4	Moor Lane	23	0
5	Sandy Lane south of Moor Lane	23	0
6	A361 south of B3231 to Vellator Way	33	28
7	Unnamed road to Yelland Substation	29	34
8	B3233 east of Unnamed road to Yelland Substation	29	0
9	B3233 west of Unnamed road to Yelland Substation	29	34
10	A3125 south of B3233	29	0
11	Vellator Way to Sandy Lane	23	0
12	A361 south of Vellator Way	29	28

67. As shown in **Table 13.9**, traffic flows on all road links are below the relevant criteria with the exception of Link 2. HGV flows on Link 2 exceed the screening criteria as this link is within the Braunton AQMA, where more stringent screening criteria apply.

13.3.3.3.3 Human Receptor Assessment Methodology

13.3.3.3.3.1 Sensitivity

68. The sensitivity of a human receptor is not considered in the assessment of air quality impacts. The air quality Objectives in **Table 13.4**, which are health-based, only apply at locations where there is relevant public exposure as detailed in **Table 13.10**.

Table 13.10 Examples of where the air quality objectives should and should not apply

Averaging Period	Objectives should apply to:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building facades of	Building facades of offices or other places of work where members of

Averaging Period	Objectives should apply to:	Objectives should generally not apply at:
	residential properties, schools, hospitals, care homes, etc.	the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean	All locations where the annual mean Objective would apply, together with hotels and gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual and 24-hour mean Objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

13.3.3.3.3.2 Magnitude and Significance

69. Guidance is provided by the IAQM and EPUK (IAQM and EPUK, 2017) on determining the magnitude and significance of a project's effects on local air quality. The guidance was developed specifically for use in planning and assessing air quality effects associated with mixed-use and residential developments. However, due to the nature of the Project, the guidance was utilised in the assessment to provide consideration of the effects associated with the Onshore Project.

70. As detailed in **Section 13.3.3.3.2**, increases in traffic flows below the screening criteria are unlikely to result in significant air quality impacts as a result of the Onshore Project and detailed assessment of air quality is not necessary. If the

criteria are exceeded, either a simple or detailed assessment should be undertaken. Where it can be concluded that a significant impact on local air quality is unlikely to occur, a simple assessment can be carried out. If significant impacts are possible, then detailed dispersion modelling may be required.

71. The guidance recommends that assessment is made of the overall significance of the effects from a development on local air quality, which should be a binary judgement (i.e. significant or not significant). The overall significance will need to take into account the following factors:

- The existing and future air quality in the absence of the Onshore Project
- The extent of current and future population exposure to the effects
- The influence and validity of any assumptions adopted when undertaking the prediction of effects.

72. The guidance also states that a judgement of the significance should be made by a competent professional who is suitably qualified. This air quality assessment and determination of the significance of the Onshore Project on local air quality has been undertaken by members of the IAQM.

13.3.3.3.4 Ecological Receptor Assessment Methodology

73. The JNCC published a suite of documents (Chapman & Kite, 2021a and 2021b) which provide guidance on cumulative and in-combination effects assessment for projects and plans which generate increases in atmospheric nitrogen emissions. The reports deal with identifying thresholds for road traffic flow increases, above which detailed assessment of the effects upon Critical Level and/or Critical Loads for nitrogen at nearby designated sites would be required. The reports are solely concerned with the effects arising as a result of permanent and lasting changes (increases) in operational phase road traffic flows, associated exhaust emissions of NH_3 and NOx and consequent permanent effects on designated sites.

74. While any potential effects of the Onshore Project traffic emissions on ecological sites during construction will be short-term, transient and temporary, the guidance, screening criteria and methodology provided in JNCC reports has been used for this assessment of ecological receptors. The JNCC reports provide data on the magnitude of increases in pollutant concentrations and deposition (Nox, NH_3, N-dep and acid) with different levels of traffic generation experienced, at varying distances from the road, based on detailed modelling and monitoring measurements. The JNCC Technical Report (Chapman and Kite, 2021b) states that the road-relevant approach provided in the report is expected to provide robust and representative,

albeit indicative, information which will often be better than a detailed model if that model has not been verified against measurements. As such, the consideration of effects on designated ecological sites has been undertaken using a semi-quantitative approach, using the data provided within the JNCC reports, without project-specific detailed dispersion modelling.

75. Use of the JNCC guidance has allowed for a more conservative assessment of any potential road traffic emission impacts on ecological receptors, as the 0.15% increase in AADT screening criterion (or DMT) is more stringent than the screening criteria of a 1,000 AADT or 200 HGV increase provided in Natural England (2018), IAQM (2020) and National Highways (2019). As such, a greater number of links, and therefore a greater number of ecological receptors, have been screened into the assessment.

76. As discussed in **Section 13.3.3.3.2** and provided in **Table 13.8**, the first step of the ecological assessment was to screen the road links for increases in AADT (inclusive of (a) project-generated traffic, (b) 2022 to 2025 baseline traffic growth and (c) cumulative traffic– see the following section) greater than a DMT of 0.15% of existing 2022 AADT flows. This resulted in the screening in of all road links considered in the assessment. Following this, a search of ecological receptors within 200m of these road links with habitats/features sensitive to air pollutants was then undertaken. The ecological receptors present within 200m of road links are presented in **Table 13.25**, as well as reasoning for their inclusion/exclusion in the assessment.

13.3.3.3.4.1 In-combination Assessment

77. A project or plan in isolation may not lead to significant effects, however the 2017 EIA Regulations require the consideration of effects associated with a project or plan both in isolation, and in addition to other plans or projects which may affect the same designated site (an 'in-combination' assessment). The outcome of a recent court judgement[1] has led to the requirement for the 1% criterion to be applied to the in-combination effect to determine whether effects remain insignificant, or whether further ecological investigation is required. As such, effects on ecological sites are therefore inherently considered cumulatively.

[1] Wealden Judgement, (2017), Wealden District Council v Secretary of State for Communities and Local Government, Lewes District Council and South Downs National Park Authority EWHC 351 (Accessed January 2023)

78. The road links which pass alongside the designated sites considered in the assessment will experience background traffic growth between the base year (2022) and the year of earliest construction (2025), which may increase nutrient nitrogen/acid deposition or Nox at the designated sites. These in-combination effects have been considered in the impact assessment (see **Section 13.5.3.2**).

79. In addition, any consented agricultural or industrial projects in the vicinity of designated sites which may be affected by traffic generated by the Onshore Project may also contribute to in-combination nutrient nitrogen/acid deposition and Nox concentrations. Natural England developed Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZs) which specify the types of projects which may impact on SSSIs based on the distance from the site, as shown in **Table 13.11**. These IRZ criteria were applied to relevant Special Area of Conservation (SACs), Special Protection Areas (SPAs), ancient woodlands and Local Nature Reserves (LNRs), in addition to SSSIs, to provide a conservative assessment.

Table 13.11 Natural England's SSSI IRZ

Distance from Designated Site	Proposals, Permissions and Permits	
	Air Pollution	Combustion
0 to 0.05km	All planning applications, except householder applications	
0.05 to 0.2km	Any development that could cause air pollution or dust either in its construction or operation (including industrial/commercial processes, livestock and poultry units, slurry lagoons and digestate stores, manure stores). All general combustion processes including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.	All general combustion processes. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
0.2 to 0.5km	Any development that could cause air pollution (including industrial/commercial processes, livestock and poultry units, slurry lagoons and digestate stores, manure stores). All general combustion processes including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.	

Distance from Designated Site	Proposals, Permissions and Permits	
	Air Pollution	Combustion
0.5 to 2km	Any industrial/agricultural development that could cause air pollution (including industrial processes, livestock and poultry units with floorspace > 500m², slurry lagoons and digestate stores > 200m², manure stores > 250t). General combustion processes >20MW energy input including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.	General combustion processes >20MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
2 to 5km	Any industrial/agricultural development that could cause air pollution (including industrial processes, livestock and poultry units with floorspace > 500m², slurry lagoons and digestate stores > 750m², manure stores > 3500t). General combustion processes >50MW energy input including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.	General combustion processes >50MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.

80. A search was carried out using Natural England's SSSI IRZs to determine relevant projects for inclusion within the relevant distances of each ecological receptor screened into the assessment which meet the above criteria. Projects that fit the criteria are listed in **Table 13.37**. As discussed above, cumulative traffic flows were explicitly accounted for within the assessment as part of the screening process.

81. Additional contributions of nutrient nitrogen from these sources (from both NO_2 and NH_3) and airborne NO_x were included in the 'in-combination' assessment, where there was sufficient information included within the application to quantify these emissions (see **Section 13.5.3.2**).

82. This approach to the assessment is also in accordance with the requirements of IAQM Guidance on the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (IAQM, 2020).

13.3.3.3.4.2 Sensitivity

83. Designated ecological sites have been considered only where they are sensitive to the effects of air pollution. Whilst Critical Levels (see **Table 13.5**) apply regardless of habitat type, Critical Loads for habitat sites in the UK are published on the APIS website (CEH, 2023). These are the maximum levels of nutrient nitrogen and acid deposition that can be tolerated without harm to the most sensitive features of these habitat sites (see **Table 13.26**).

13.3.3.3.4.3 Magnitude and Significance

84. An increase in Critical Load or Level of less than 1% is typically considered to be insignificant, as a change of this magnitude is likely to be within the natural range of fluctuations in deposition and is unlikely to be perceptible. The 1% threshold of insignificance is referenced in Natural England (2018), IAQM (2020) and Chapman and Kite (2021a, 2021b). The exceedance of a threshold is not decisive in and of itself, nor does it suggest that damage is likely to occur (in the case of SSSIs) or that it will not be possible to avoid adverse effects to site integrity (in the case of European sites) (Chapman and Kite, 2021a).

85. Using the JNCC reports (Chapman and Kite, 2021a and 2021b), it is possible to apply a road-relevant approach based on the distance between the affected road and the nearest boundary of a designated site. The thresholds proposed in the JNCC reports focus on SSSI and European designated sites; however, they have also been applied to ancient woodlands and LNRs in this assessment in order to provide a conservative and robust assessment.

86. **Table 13.12** provides the AADT change which is required to trigger an exceedance of 1% of the Critical Level for NO_x and NH_3 at different distances from a road's edge. **Table 13.13** contains values for nutrient nitrogen deposition (N-dep) Critical Loads at different distances from a road edge. As discussed above, the 1% threshold is taken from the Natural England (2018) guidance document on the assessment of traffic emissions as the threshold of insignificance to be applied as part of an in-combination assessment. It should be noted that these tables are based on an average vehicle fleet mix in 2019 for NO_x and 2015 for NH_3; as such, changes in emissions of these pollutants into the future is not accounted for.

Table 13.12 AADT Changes (for a typical fleet composition) Required to Cause a Change of 1% of Critical Levels as a Function of Distance from the Edge of a Road (Chapman and Kite, 2021b) [Amended]

Distance from Road Edge (m)	AADT		
	1% CL for Nox (30µg.m^{-3})	1% CL for lower NH_3 (1µg.m^{-3})	1% CL for higher NH_3 (3µg.m^{-3})
1	120	91	274
5	171	259	776
5-10	225	332	995
10	278	405	1,214
10-25	413	568	1,704
25	547	731	2,194
25-50	732	938	2,814
50	917	1,145	3,434
50-100	1,269	1,468	4,403
100	1,620	1,791	5,372
100-150	2,015	2,059	6,176
150	2,410	2,327	6,980
150-200	2,917	2,565	7,693
200	3,424	2,802	8,406
Colour Coding:			
	AADT provided in the JNCC report (Chapman and Kite, 2021b)		
	Approximate AADT calculated from averaging AADT flows provided in the JNCC report for each distance band (Chapman and Kite, 2021b) (i.e. 100-150m band = average of 1,620 AADT (100m 1% CL for NO_x) and 2,410 AADT (150m 1% CL for NO_x))		

Table 13.13 AADT Changes (for a typical fleet composition) Required to Cause a Change of 1% of Critical Loads as a Function of Distance from the Edge of a Road (Chapman and Kite, 2021b) [Amended]

Distance from Road Edge (m)	AADT			
	1% CL for N-Dep (5 kg-N.ha^{-1}.yr^{-1})	1% CL for N-Dep (10 kg-N.ha^{-1}.yr^{-1})	1% CL for N-Dep (15 kg-N.ha^{-1}.yr^{-1})	1% CL for N-Dep (20 kg-N.ha^{-1}.yr^{-1})
Deposition to Woodland				
1	35	71	106	142
5	86	171	257	343
5-10	106	211	317	423

Distance from Road Edge (m)	AADT			
	1% CL for N-Dep (5 kg-N.ha^{-1}.yr^{-1})	1% CL for N-Dep (10 kg-N.ha^{-1}.yr^{-1})	1% CL for N-Dep (15 kg-N.ha^{-1}.yr^{-1})	1% CL for N-Dep (20 kg-N.ha^{-1}.yr^{-1})
10	125	251	376	502
10-25	166	333	499	666
25	207	415	622	829
25-50	255	511	766	1,021
50	303	606	909	1,212
50-100	373	747	1,120	1,493
100	443	887	1,330	1,773
100-150	499	998	1,496	1,994
150	554	1,108	1,661	2,215
150-200	601	1,203	1,803	2,405
200	648	1,297	1,945	2,594
Deposition to Short Vegetation				
1	59	118	177	236
5	145	291	436	582
5-10	180	360	540	720
10	215	429	644	858
10-25	287	573	860	1,146
25	359	717	1,076	1,434
25-50	444	888	1,332	1,775
50	529	1,058	1,587	2,116
50-100	655	1,310	1,964	2,619
100	780	1,561	2,341	3,121
100-150	880	1,760	2,640	3,520
150	980	1,959	2,939	3,918
Colour Coding:				
	AADT provided in the JNCC report (Chapman and Kite, 2021b)			
	Approximate AADT calculated from averaging AADT flows provided in the JNCC report for each distance band (Chapman and Kite, 2021b) (i.e. 100-150m band = average of 1,620 AADT (100m 1% CL for Nox) and 2,410 AADT (150m 1% CL for Nox))			

87. As an example, whereby an affected road with an existing AADT of 5,000 is located 100m from the boundary of an ecological site (for which a Critical Load to a woodland feature of 10 kg-N.ha^{-1}.yr^{-1} applies), a DMT of 7.5 vehicles applies (i.e. 0.15% of 5,000). However, the DMT is derived on a precautionary basis which assumes that a designated site is adjacent to the road concerned. It can be seen from **Table 13.13** that a change in AADT of 887 vehicles would be required to trigger the 1% exceedance of the N-dep Critical Load at the site boundary, for this particular example. In this example, if the predicted change in traffic along the road from the Onshore Project is 150 AADT, it may be reasonable to assert that there is no credible evidence that the effects of other plans and projects would ever be such to lead to an overall change of 887 AADT over the lifetime of the Onshore Project, despite the fact that the DMT (7.5 vehicles) is exceeded.

88. The distances from ecological receptor boundaries to affected road edges has therefore been taken into consideration in the next stage of ecological receptor screening. AADT flows (inclusive of (a) project-generated traffic, (b) 2022 to 2025 baseline traffic growth, and (c) cumulative traffic) have been compared to those in **Table 13.12** and **Table 13.13**, and ecological receptors have been brought forward into the next stage of the ecological assessment if they exceeded thresholds corresponding to a 1% increase in the Critical Level or Load for the relevant habitat present in the designated site.

89. **Table 13.14** details the road distance screening for the Onshore Project, and also identifies which sites have been brought forward for further consideration in the ecological assessment.

90. Only links with ecological receptors within 200m of the roads edge are presented in **Table 13.14**. Site-specific Critical Levels and Critical Loads are presented in **Table 13.26**, and these have been taken into consideration in the comparison to AADT flows shown in **Table 13.12** and **Table 13.13**.

Table 13.14 Critical Level and Critical Load 1% Screening of Ecological Receptors. Red filled cells indicate an exceedance of the AADT flows presented in Table 13.12 and Table 13.13, and required further assessment of feature / site

Link	Designated Ecological		Distance from affected road link (m)	Feature Name or Critical Load Class	Woodland Present	Total AADT Change[1]	AADT Required for 1% Critical Level or Load Increase (See Table 13.12 and Table 13.13)							Further Assessment Required?
							NO_x	NH_3		N-dep				
	Site Type	Name					30 $\mu g.m^{-3}$	1 $\mu g.m^{-3}$	3 $\mu g.m^{-3}$	5 $kgN.ha^{-1}.yr^{-1}$	10 $kgN.ha^{-1}.yr^{-1}$	15 $kgN.ha^{-1}.yr^{-1}$	20 $kgN.ha^{-1}.yr^{-1}$	
1	SAC	Braunton Burrows	55	Dunes with Salix repens ssp argentea (Salicion arenariae); Fixed coastal dunes with herbaceous vegetation ("grey dunes");Humid dune slacks; Mudflats and sandflats not covered by seawater at low tide; Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") and Petalophyllum ralfsii.	No	297	917	1,145	3,434	529	1,058	1,587	2,116	No
1	SSSI	Braunton Burrows	55	Ammophila arenaria – Arrhenatherum elatius Dune Grassland; Ammophila arenaria – Festuca rubra Semi-Fixed Dune Community; Ammophila arenaria Mobile Dune Community; Carex Arenaria – Cornicularia Aculeata Dune Community; Carex Arenaria – Festuca Ovina – Agrostis Capillaris Dune Grassland; Carex Arenaria Dune Community; Elymus Farctus Ssp. Boreali-Atlanticus Foredune Community; Festuca Rubra – Galium Verum Fixed Dune Grassland; Honkenya Peploides – Cakile Maritima Strandline Community; Leymus Arenarius Mobile Dune Community; Phleum Arenarium – Arenaria Serpyllifolia Dune Annual Community; Potentilla Anserina – Carex Nigra Dune-Slack Community; Rumex Crispus – Glaucium Flavum Shingle Community; Salix Repens – Bryum Pseudotriquetrum Dune-Slack Community; Salix Repens – Calliergon Cuspidatum Dune-Slack Community; Salix Repens – Campylium Stellatum Dune-Slack Community; Salix Repens – Holcus Lanatus Dune Slack Community; Combinations of species – lichens; Liparis loeselii; Teucrium scordium; Vascular plant assemblage and Catinella arenaria	No	297	917	1,145	3,434	529	1,058	1,587	2,116	No
1	SSSI	Braunton Burrows	55	Alnus glutinosa – Urtica dioica Woodland and Salix Cinerea – Galium Palustre Woodland	Yes	297	917	1,145	3,434	-	606	909	-	No
1	SSSI	Saunton to Baggy Point Coast	2.85	Combinations of species – lichens; Didymodon cordatus; Vascular plant assemblage	No	297	120	91	274	-	-	-	-	Yes
2	SSSI	Braunton Swanpool	77.5	Carex Riparia Swamp; Juncus Effusus / Acutiflorus – Galium Palustre Rush Pasture	No	343	1,269	1,468	4,403	-	-	1,964	2,619	No
4	SSSI		13.7			37	278	405	1,214	-	-	644	858	No

Link	Designated Ecological		Distance from affected road link (m)	Feature Name or Critical Load Class	Woodland Present	Total AADT Change[1]	AADT Required for 1% Critical Level or Load Increase (See Table 13.12 and Table 13.13)							Further Assessment Required?
							NO_x	NH_3		N-dep				
	Site Type	Name					30 $\mu g.m^{-3}$	1 $\mu g.m^{-3}$	3 $\mu g.m^{-3}$	5 $kgN.ha^{-1}.yr^{-1}$	10 $kgN.ha^{-1}.yr^{-1}$	15 $kgN.ha^{-1}.yr^{-1}$	20 $kgN.ha^{-1}.yr^{-1}$	
5	SAC	Braunton Burrows	0	Dunes with Salix repens ssp argentea (Salicion arenariae); Fixed coastal dunes with herbaceous vegetation ("grey dunes");Humid dune slacks; Mudflats and sandflats not covered by seawater at low tide; Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") and Petalophyllum ralfsii.	No	42	120	91	274	59	118	177	236	No
	SSSI			Ammophila arenaria – Arrhenatherum elatius Dune Grassland; Ammophila arenaria – Festuca rubra Semi-Fixed Dune Community; Ammophila arenaria Mobile Dune Community; Carex Arenaria – Cornicularia Aculeata Dune Community; Carex Arenaria – Festuca Ovina – Agrostis Capillaris Dune Grassland; Carex Arenaria Dune Community; Elymus Farctus Ssp. Boreali-Atlanticus Foredune Community; Festuca Rubra – Galium Verum Fixed Dune Grassland; Honkenya Peploides – Cakile Maritima Strandline Community; Leymus Arenarius Mobile Dune Community; Phleum Arenarium – Arenaria Serpyllifolia Dune Annual Community; Potentilla Anserina – Carex Nigra Dune-Slack Community; Rumex Crispus – Glaucium Flavum Shingle Community; Salix Repens – Bryum Pseudotriquetrum Dune-Slack Community; Salix Repens – Calliergon Cuspidatum Dune-Slack Community; Salix Repens – Campylium Stellatum Dune-Slack Community; Salix Repens – Holcus Lanatus Dune Slack Community; Combinations of species – lichens; Liparis loeselii; Teucrium scordium; Vascular plant assemblage and Catinella arenaria	No	42	120	91	274	59	118	177	236	No
				Alnus glutinosa – Urtica dioica Woodland and Salix Cinerea – Galium Palustre Woodland	Yes	42	120	91	274	-	71	106	-	No
		Greenaways and Freshmarsh, Braunton	2.0	Festuca Rubra – Agrostis Stolonifera – Potentilla Anserina Grassland; Filipendula Ulmaria – Angelica Sylvestris Mire; Iris Pseudacorus – Filipendula Ulmaria Mire	No	42	120	-	274	-	118	177	236	No
8	LNR	Fremington	3.2	-[2]	-[2]	1,768	120	-	274	-	-	-	-	Yes
9	SSSI	Taw-Torridge Estuary	24.5	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	No	1,149	413	568	1,704	-	573	860	1,146	Yes

Link	Designated Ecological		Distance from affected road link (m)	Feature Name or Critical Load Class	Woodland Present	Total AADT Change[1]	AADT Required for 1% Critical Level or Load Increase (See Table 13.12 and Table 13.13)							Further Assessment Required?
							NO_x	NH_3		N-dep				
	Site Type	Name					30 $\mu g.m^{-3}$	1 $\mu g.m^{-3}$	3 $\mu g.m^{-3}$	5 $kgN.ha^{-1}.yr^{-1}$	10 $kgN.ha^{-1}.yr^{-1}$	15 $kgN.ha^{-1}.yr^{-1}$	20 $kgN.ha^{-1}.yr^{-1}$	
9	Ancient Woodland (AW)	Ancient & Semi-Natural Woodland	0	Deciduous woodland	Yes	1,149	120	91	274	-	71	106	-	Yes
11	SSSI	Taw-Torridge Estuary	32.5	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	No	55	732	938	2,814	-	888	1,332	1,775	No
11	SSSI	Greenaways and Freshmarsh, Braunton	2.0	Festuca Rubra – Agrostis Stolonifera – Potentilla Anserina Grassland; Filipendula Ulmaria – Angelica Sylvestris Mire; Iris Pseudacorus – Filipendula Ulmaria Mire	No	55	120	-	274	-	118	177	236	No
12	SSSI	Taw-Torridge Estuary	33.0	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	No	1,284	732	938	2,814		888	1,332	1,775	Yes

Link	Designated Ecological		Distance from affected road link (m)	Feature Name or Critical Load Class	Woodland Present	Total AADT Change[1]	AADT Required for 1% Critical Level or Load Increase (See Table 13.12 and Table 13.13)							Further Assessment Required?
							NO_x	NH_3		N-dep				
	Site Type	Name					30 µg.m^{-3}	1 µg.m^{-3}	3 µg.m^{-3}	5 kgN.ha^{-1}.yr^{-1}	10 kgN.ha^{-1}.yr^{-1}	15 kgN.ha^{-1}.yr^{-1}	20 kgN.ha^{-1}.yr^{-1}	
Haul Road	SAC	Braunton Burrows Braunton	5	Dunes with Salix repens ssp argentea (Salicion arenariae); Fixed coastal dunes with herbaceous vegetation ("grey dunes");Humid dune slacks; Mudflats and sandflats not covered by seawater at low tide; Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") and Petalophyllum ralfsii.	No	72	171	259	776	145	291	436	582	No
	SSSI			Ammophila arenaria – Arrhenatherum elatius Dune Grassland; Ammophila arenaria – Festuca rubra Semi-Fixed Dune Community; Ammophila arenaria Mobile Dune Community; Carex Arenaria – Cornicularia Aculeata Dune Community; Carex Arenaria – Festuca Ovina – Agrostis Capillaris Dune Grassland; Carex Arenaria Dune Community; Elymus Farctus Ssp. Boreali-Atlanticus Foredune Community; Festuca Rubra – Galium Verum Fixed Dune Grassland; Honkenya Peploides – Cakile Maritima Strandline Community; Leymus Arenarius Mobile Dune Community; Phleum Arenarium – Arenaria Serpyllifolia Dune Annual Community; Potentilla Anserina – Carex Nigra Dune-Slack Community; Rumex Crispus – Glaucium Flavum Shingle Community; Salix Repens – Bryum Pseudotriquetrum Dune-Slack Community; Salix Repens – Calliergon Cuspidatum Dune-Slack Community; Salix Repens – Campylium Stellatum Dune-Slack Community; Salix Repens – Holcus Lanatus Dune Slack Community; Combinations of species – lichens; Liparis loeselii; Teucrium scordium; Vascular plant assemblage and Catinella arenaria	No	72	171	259	776	145	291	436	582	No
				Alnus glutinosa – Urtica dioica Woodland and Salix Cinerea – Galium Palustre Woodland	Yes	72	171	259	776	-	171	257	-	No
		Greenaways and Freshmarsh, Braunton		Festuca Rubra – Agrostis Stolonifera – Potentilla Anserina Grassland; Filipendula Ulmaria – Angelica Sylvestris Mire; Iris Pseudacorus – Filipendula Ulmaria Mire	No	72	171	259	776					No
		Braunton Swanpool	198	Carex Riparia Swamp; Juncus Effusus / Acutiflorus – Galium Palustre Rush Pasture	No	72	3,424	2,802	8,406	-	2,302	3,453	4,604	No

[1]AADT change shown are inclusive of project-generated traffic and in-combination traffic growth (from 2022 to 2025)
[2]As the specific details of habitats within LNRs are not known, the habitat-specific Critical Loads were not assessed. Impacts on Critical Levels were considered.

91. Of the eight ecological sites initially identified, four ecological sites have been brought forward for further assessment. This is because the AADT at the relevant distance from the road edge to the ecological site boundary exceeded those representative of greater than 1% increase in Critical Level and/or Load (see **Table 13.12** and **Table 13.13**). Not all of the four ecological sites exceed the representative 1% AADT flows for all Critical Level and Critical Load values (for example, there may be an impact of greater than 1% of the nitrogen Critical Load but not the Nox Critical Level); therefore, ecological sites have only been assessed further for Critical Levels and/or Loads shown to be in exceedance of 1%. In addition, for some ecological sites not all of the designated features and Critical Load classes are exceeded, so only those in exceedance have been considered further in this assessment.

92. Following this detailed initial screening of ecological sites, those sites screened in for further assessment have been assessed for effects from traffic emissions using the guidance and methodology provided in the JNCC reports (Chapman and Kite, 2021a and 2021b). Table 11 of the JNCC Technical Report (Chapman and Kite, 2021b) provides changes in concentrations (2019) and fluxes (2015) that could reasonably be expected from an increase of 1,000 AADT on a typical road. The guidance also states that these can be scaled to represent alternative increases in traffic flows, for example an increase in 250 AADT results in 25% of the impact of the values shown in **Table 13.15**, which is a slightly amended version of Table 11 in the JNCC Technical Report.

93. This approach has been adopted to quantify increases in annual mean Nox and NH_3, and nitrogen deposition (N-dep) in this assessment. The relationship between N-dep and its acidifying potential is linear, so a 1kg $N.ha^{-1}.yr^{-1}$ reduction will always deliver a 0.07$keq.ha^{-1}.yr^{-1}$ reduction in acidity. Therefore, increases in nitrogen-driven acidity, i.e., those from road traffic vehicle emissions, is directly proportional to increases in N-dep (Chapman and Kite, 2021b). Acid deposition has therefore been quantified in the assessment by multiplying the N-dep concentration by 0.07.

Table 13.15 Change in Concentration (in 2019) and Flux (in 2015) for an Example Flow of 1,000 AADT in a Typical Vehicle Fleet (Chapman and Kite, 2021b) [Amended]

Distance from Road Edge (m)	Annual Mean Nox ($\mu g.m^{-3}$)	Annual Mean NH_3 ($\mu g.m^{-3}$)	N-Dep to Forest ($kgN.ha^{-1}.yr^{-1}$)	N-Dep to Short Vegetation ($kgN.ha^{-1}.yr^{-1}$)
1	2.5	0.109	1.41	0.85
5	1.8	0.039	0.58	0.34
5-10	1.45	0.032	0.49	0.285

Distance from Road Edge (m)	Annual Mean Nox ($\mu g.m^{-3}$)	Annual Mean NH_3 ($\mu g.m^{-3}$)	N-Dep to Forest ($kgN.ha^{-1}.yr^{-1}$)	N-Dep to Short Vegetation ($kgN.ha^{-1}.yr^{-1}$)
10	1.1	0.025	0.4	0.23
10-25	0.825	0.0195	0.32	0.185
25	0.55	0.014	0.24	0.14
25-50	0.44	0.01135	0.2	0.1175
50	0.33	0.0087	0.16	0.095
50-100	0.26	0.00715	0.135	0.0795
100	0.19	0.0056	0.11	0.064
100-150	0.155	0.00495	0.1	0.0575
150	0.12	0.0043	0.09	0.051
150-200	0.1065	0.00395	0.0835	0.047
200	0.093	0.0036	0.077	0.043
Colour Coding:				
	AADT provided in the JNCC report (Chapman and Kite, 2021b)			
	Approximate AADT calculated from averaging AADT flows provided in the JNCC report for each distance band (Chapman and Kite, 2021b) (i.e. 100-150m band = average of 1,620 AADT (100m 1% CL for Nox) and 2,410 AADT (150m 1% CL for Nox))			

13.3.3.3.4.4 Onshore Project alone compared to in-combination traffic flows

94. As detailed at the beginning of this section, an in-combination assessment has been undertaken. To provide context around the proportion of AADT generated as a result of the Onshore Project, and that from other in-combination sources (background growth and cumulative projects), **Table 13.16** provides project-generated construction traffic flows, background traffic growth between 2022 (base year) and 2025 (earliest year of construction), and in combination traffic flows, on all road links where a designated ecological site is present within 200m.

Table 13.16 White Cross Project AADT Flows Compared to In-combination Project Flows Considered in the Assessment (2025)

Link	Project AADT	In combination AADT	Project as % of Total
1	16	297	5%
2	62	343	18%
4	23	37	62%
5	23	42	55%

Link	Project AADT	In combination AADT	Project as % of Total
8	29	1,768	2%
9	62	1,149	5%
11	23	55	43%
12	57	1,284	4%

95. As can be seen from **Table 13.16** the Onshore Project construction traffic contributes to approximately 2 – 62 % of the total increase in flows on the assessed road links. Road Links 4, 5 and 11 are minor roads with a low total AADT and therefore Project traffic contributes to a higher proportion of AADT increase, but no greater than 23 AADT.

96. Any development-generated or in-combination values above 1% of the Critical Load or Level requires additional assessment by an ecologist to determine whether any significant effects may be experienced at the affected habitats. The determination of the significance of effects associated with nutrient nitrogen/acid deposition and airborne Nox concentrations have been included in the Benthic Habitats and Terrestrial Ecology and Ornithology assessments.

13.3.3.3.4.5 Haul Road Traffic

97. The potential impacts on designated ecological sites as a result of LDVs and HGVs travelling along the haul road have been considered.

98. The average daily number of vehicles travelling along the haul road was calculated where the Onshore Development Area is within 200m of a designated ecological site, as described in **Section 13.3.3.3.2** and is detailed in **Table 13.17**.

Table 13.17 Traffic Flows on the Haul Road Within 200m of Designated Ecological Sites

Haul Road Traffic	Designated Ecological	Distance from Onshore Development Area*(m)	Accesses	AADT Generated During Construction
Cable Route	Braunton Burrows SAC/SSSI	5	Unnamed road near Construction Consolidation Site (CCS)	72
	Greenaways and Freshmarsh, Braunton SSSI	5		

Haul Road Traffic	Designated Ecological	Distance from Onshore Development Area*(m)	Accesses	AADT Generated During Construction
	Braunton Swanpool SSSI	198		
***Worst case distance from haul road (as the haul road is unlikely to be adjacent to the closest boundary)**				

99. As shown above, the number of vehicles travelling along the haul road do not exceed the screening criteria detailed in **Table 13.12** and **Table 13.13** that correspond to a 1% change in Critical Level or Load, at the respective distances from the (assumed worst case) haul road edge. As such, further consideration of the impact of haul road traffic emissions on ecological sites is not required.

13.3.3.3.5 Background Pollutant Concentrations

100. Background NO_2, PM_{10} and $PM_{2.5}$ concentrations have been obtained from Defra mapping (Defra, 2020a) for the 1km x 1km grid squares covering the study area.

101. Background NH_3, nutrient nitrogen and acid deposition concentrations have been obtained from the APIS website (CEH, 2023) and are provided for 5km x 5km grid squares. The data are provided as three-year averages (2019-2021) and are not factored forward to future years.

13.3.4 Cumulative Effect Assessment Methodology

102. The CEA considers other plans, projects and activities that may occur in cumulation with the Onshore Project. **Chapter 6: EIA Methodology** provides further details of the general framework and approach to the CEA.

103. For air quality, these activities include other projects which have the potential for a temporal and geographical overlap with similar effects arising from:

- Construction dust and fine particulate matter
- NRMM emissions
- Construction phase road traffic emissions.

104. The CEA utilised the same methodology as detailed above in **Section 13.3.2.** Further information is presented in **Section 13.8**.

13.3.5 Worst-Case Scenario

105. In accordance with the assessment approach to the 'Rochdale Envelope' set out in **Chapter 6: EIA Methodology**, the impact assessment for air quality has been undertaken based on a realistic worst-case scenario of predicted impacts. The Project Design Envelope (PDE) for the Onshore Project is detailed in **Chapter 5: Project Description**.

106. The realistic worst-case scenario (having the most impact) for each individual impact is derived from the PDE to ensure that all other design scenarios will have less or the same impact.

107. **Table 13.18** presents the realistic worst-case scenario elements considered for the assessment of air quality.

Table 13.18 Definition of realistic worst-case scenario details relevant to the assessment of impacts in relation to air quality

Impact	Realistic worst-case scenario	Rationale
Construction		
Impact 1: Construction Dust and Fine Particulate Matter	**Landfall** • HDD: Horizontal length- 680m, Maximum number of HDD- 1, Number of trenches- 1, HDD compound works area – 4,500m2, Duration – 99 days • Transition bays: Number- 1, Dimensions- 20 x 8 x 2m (L x W x H) **Onshore Cable Corridor** • HDD: Horizontal length- 1,300m, Maximum number of HDD- 1, Number of trenches- 1, HDD compound works area – 2,500m^2, Duration – 165 days • Jointing Bays: Number – 30, Dimensions 12 x 4 x 1.5 m (L x W x H) • Link boxes: Number – 30, Dimensions 3 x 3 x 2 m (L x W x H) • Haul Road: Number – 1, Length 6.5km, Width – 5m • Main construction compound: Number – 3, Area – 2,500m^2 • Secondary construction compound: Number – 3, Area – 1,200m^2, • Cable route length: 6km • Cable trench approximate depth: 1.9m • Cable trench width: 3m • Construction corridor widths: maximum – 30m, at pinch points- 12m, at trenchless crossings- 15m • Total duration: 432 days **Onshore Substation** • Maximum operational area: 4,880m^2 • Onshore Substation construction compound: 5,000m^2 • Permanent access road: 250m x 7.5m (L x W) (1,875m^2), Excavated material – 2,000m^3 • Permanent access road construction compound: Area – 2,500m^2	The HDD construction compound for intertidal and the golfclub drilling are considered as one compound installed for the duration of construction. The HDD works should not require any prolonged periods of restrictions or closures to the beach for public access, although it is possible that some work activities will be required to be performed on the beach that may require short periods of restricted access.

Impact	Realistic worst-case scenario	Rationale
Impact 2: Non-Road Mobile Machinery (NRMM) Emissions	**Landfall** • HDD equipment: 1 x drilling rig (EU Stage V), power pack (EU Stage V), 70kva generator (EU Stage IIIA), fluid separation unit (EU Stage V), site vehicle parking **Onshore Export Cable** • HDD equipment: 1 x drilling rig (EU Stage V), 1 x power pack (EU Stage V), 1 x 70kva generator (EU Stage IIIA), 1 x fluid separation unit (EU Stage V) • General site equipment: 1 x 40t Tracked telescopic crawler crane (EU Stage V) • Right of Way Construction: • Land drainage: 1 x 25t excavator (EU Stage V) • Fencing: 2 x 25t excavator (EU Stage V) • Compound construction: 2 x 25t excavator (EU Stage V) • Haul road: 2 x 25t excavator (EU Stage V) • Trench excavation: 3 x 25t excavator (EU Stage V) • Topsoil strip: 2 x D6 Bulldozer, 1 x 25t excavator (EU Stage V) • Land drainage: 1 x 20t excavator (EU Stage V), 1 x 5t excavator (EU Stage V) • Minor Crossings: 1 x small HDD rig (EPA tier 4i), 1 x 25t excavator (EU Stage V), concrete lorry (as required), 1 x mobile concrete pump, 2 x roller (EU Stage V/Tier4f), 3 x dumper (EU Stage V) • Cable laying/install: 1 x 40T crawler crane, 1 x cable winch • Backfill including import: 3 x 25t excavator (EU Stage V), 2 x roller (EU Stage V/Tier4f) • Topsoil re-instate: 2 x D6 Bulldozer, 1 x 25t excavator (EU Stage V) • Trench Excavations: 3 x 20t Excavator (EU Stage v) • Civil works: 2 x 20t excavator (EU Stage V), 2 x 14m telehandler (EU Stage V), 2 x 12t dumper (EU stage V), Concrete Lorry as required (EU Stage V), 1 x mobile concrete pump (EU Stage 5), 2 x roller (EU Stage V/Tier4f), 3 x 10t dumper	Numbers in operation are based on anticipated plant per activity or location at any one time.

Impact	Realistic worst-case scenario	Rationale
	Onshore Substation • General site equipment: 1 x 40T Tracked telescopic crawler crane (EU Stage V) • Welfare / Offices: 70kva generator (EU Stage IIIA) • Enabling works: 1 x bulldozer (EU Stage V), 25t excavator (EU Stage V), 2 x 20t excavator (EU Stage V), 1 x 5t excavator • Civil works: 2 x 20t excavator (EU Stage V), 2 x 14m telehandler (EU Stage V), 2 x 12t dumper (EU stage V), Concrete Lorry as required (EU Stage V), 1 x mobile concrete pump (EU Stage 5), 2 x roller (EU Stage V/Tier4f), 3 x 10t dumper	
Impact 3: Road Vehicle Exhaust Emissions	White Cross construction traffic was assessed as detailed in **Chapter 19: Traffic and Transport** and presented in **Appendix 13.B: Air Quality Assessment Traffic Data**.	
Operation		
Operational phase air quality impacts have been scoped out of the assessment as detailed in the Marine Management Organisation (MMO) Scoping Opinion (MMO reference: EIA/2022/00002) (MMO, 2022).		
Decommissioning		
No final decision regarding the final decommissioning policy for the onshore project infrastructure including landfall, onshore cable route and Onshore Substation has yet been made. It is also recognised that legislation and industry best practice change over time. However, it is likely that the onshore project equipment, including the cable, will be removed, reused or recycled wherever possible and the transition bays and cable ducts being left in place. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the worst case scenario, the impacts will be no greater than those identified for the construction phase.		

13.3.6 Summary of Mitigation

108. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.3.6.1 Embedded Mitigation

109. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

110. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

Table 13.19 Embedded mitigation measures relevant to the air quality assessment

Component/ Activity/ Impact	Mitigation embedded into the design of the Onshore Project
Site Selection	The Onshore Project has undergone an extensive site selection process which has involved incorporating environmental considerations in collaboration with the engineering design requirements. Considerations include (but are not limited to) adhering to the Horlock Rules (for explanation see **Chapter 4 Site Selection and Assessment of Alternatives**) for the onshore substation and associated infrastructure, a preference for the shortest route length (where practical) and developing construction methodologies to minimise potential impacts. Key principles that have informed the location of the onshore cable corridors include: • Preference for the shortest onshore cable corridors to minimise the overall footprint and the number of receptors that will be affected • Avoid key constraints, where possible • Avoid populated areas, where possible • Avoid designated nature conservation sites (SAC and SSSIs) wherever possible, and where this is not possible, trenchless installation methods will be used for the export cables. This approach has been to devised to avoid direct impacts to

Component/ Activity/ Impact	Mitigation embedded into the design of the Onshore Project
	habitat features within the designated sites within Onshore Development Area.
Best practice dust management mitigation measures	The Project will commit to the implementation of best practice dust mitigation measures. However, a project-specific dust assessment has been undertaken, taking into consideration the specific activities which will be carried out and the sensitivity of nearby receptors. This has resulted in the identification of site-specific mitigation measures, as set out in full in **Section 13.5.1.5**, and summarised below. Mitigation measures include minimising the production and transmission of dust from construction activities, and the requirement to carry out regular visual on-site and off-site inspections of dust deposition levels, so that appropriate action can be taken in the event of any issues being identified.
NRMM	The following mitigation measures specific to NRMM will be outlined within the Project's Outline Construction Environmental Management Plan (CEMP) which will be available as part of the statutory consultation and will be secured within the final CEMP submitted post-consent. NRMM and plant should 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 should apply to NRMM: • All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004) where practicable • All NRMM should comply with the appropriate NRMM regulations • All NRMM would 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 • Fuel conservation measures should be implemented, including instructions to (i) throttle down or switch off idle construction equipment; (ii) switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded and (iii) ensure equipment is properly maintained to ensure efficient fuel consumption. Consideration should also be given to the siting of NRMM within the working area. Where practicable, locating generators and plant at the greatest distance from receptors will reduce the potential for air quality effects.

13.3.6.2 Additional Mitigation

111. No further mitigation measures are considered in addition to the embedded mitigation measures as outlined above, for the Applicant to commit to.

13.3.7 Baseline Data Sources

13.3.7.1 Desktop Study

112. A desk study was undertaken to obtain information on baseline air quality within the air quality study area. Data was acquired within the study area through a detailed desktop review of existing studies and datasets. This was agreed with the Environmental Health Consultant for North Devon District Council (pers. comm., 22 May 2023).

113. The sources of information presented in **Table 13.20** were utilised to inform the air quality assessment.

Table 13.20 Data sources used to inform the air quality assessment

Source	Summary
North Devon Council Air Quality Annual Status Report 2022	Local monitoring locations and baseline information
Defra's LAQM Support Portal	2018 1 x 1km grid background pollution maps
JNCC (Chapman and Kite, 2021a and 2021b)	Guidance on Decision- making Thresholds for Air Pollution: Main Report and Technical Report
Centre for Ecology and Hydrology (CEH). Air Pollution Information System (APIS).	Details of critical loads for ecological habitats
Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK)	Assessment methodology
IAQM, 2016	Guidance on the assessment of impacts from construction dust and fine particulate matter
IAQM, 2020	Guidance on the assessment of air quality impacts on designated nature conservation areas
Natural England	Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations

13.3.7.2 Site Specific Survey

114. No primary data was required to inform the EIA therefore no site-specific surveys were undertaken, as agreed with the Environmental Health Consultant for North Devon District Council (pers. comm., 22 May 2023).

13.3.8 Data Limitations

115. Traffic data has been utilised in the prediction of impacts at sensitive human and ecological receptor locations. Any assumptions made in the derivation of the traffic data are therefore applicable to the air quality assessment. For further details please refer to **Chapter 19: Traffic and Transport**.

116. North Devon District Council monitor concentrations of NO_2 within their administrative boundary using diffusion tubes. Diffusion tubes do not provide the same level of precision and accuracy as automatic monitoring methods; however, good quality assurance and quality control processes will minimise uncertainties insofar as possible. Furthermore, annual mean diffusion tube monitoring results are adjusted for bias using a factor derived using Monitoring Certification Scheme (MCerts) reference method monitoring equipment. The uncertainties and limitations to monitored air pollution data are therefore unlikely to significantly affect the certainty of the EIA.

117. Background pollutant concentrations within the air quality study area for PM_{10} and $PM_{2.5}$ have been derived using the pollution maps provided by Defra for 1km x 1km grid squares across the UK. This data is derived using an empirical model, calibrated using monitoring data from the UK Automatic Urban and Rural Network and, as such, there are inherent uncertainties associated with modelled data. However, the use of these maps is an industry-standard approach and has been agreed with stakeholders during consultation (see **Table 13.23**). Uncertainties in these mapped background values are unlikely to significantly affect the certainty of the EIA and the conclusions of the assessment.

118. The latest version of Defra's air quality assessment tools, including the background pollutant maps, are based on assumptions prior to the Covid-19 pandemic. As such, the tools do not reflect any short or long-term changes to emissions which may have occurred as a result of behavioural change during the pandemic.

13.3.9 Scope

119. Upon consideration of the baseline environment, the project description outlined in **Chapter 5: Project Description**, and Scoping Opinion, potential impacts upon air quality have been scoped in or out. These impacts are outlined, together with a justification for why they are or are not considered further, in **Table 13.21** and **Table 13.22** respectively. In scoping potential impacts in or out reference is made to the embedded mitigation measures outlined above in **Summary of** Mitigation

120. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.3.9.1 Embedded Mitigation

121. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

122. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

123. Table 13.19.

Table 13.21 Summary of impacts scoped in relating to air quality

Potential Impact	Justification
Construction phase dust and fine particulate matter	There is potential for dust and fine particulate matter generated through construction of the Onshore Project to impact on human and ecological receptors.
Construction phase NRMM emissions	There is potential for emissions from NRMM used during the construction of the Onshore Project to impact on human and ecological receptors.
Construction road vehicle exhaust emissions	There is potential for emissions from road vehicles used during the construction of the Onshore Project to impact on human and ecological receptors.

Table 13.22 Summary of impacts scoped out relating to air quality

Potential Impact	Justification
Operational Phase Impacts	Operational air quality impacts are scoped out of the assessment, as they are unlikely to be significant.
Decommissioning	No final decision regarding the final decommissioning policy for the onshore project infrastructure including landfall, onshore cable route and Onshore Substation has yet been made. It is also recognised that legislation and industry best practice change over time. However, it is likely that the onshore project equipment, including the cable, will be removed, reused or recycled wherever possible and the transition bays and cable ducts being left in place. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the worst case scenario, the impacts will be no greater than those identified for the construction phase.

13.3.10 Consultation

124. Consultation has been a key part of the development of the Onshore Project. Consultation regarding air quality has been conducted with the relevant stakeholders and an overview of the consultation process is presented within **Chapter 7: Consultation**.

125. A summary of the key issues raised during consultation specific to air quality is outlined below in **Table 13.23**, together with how these issues have been considered in the production of this ES.

Table 13.23 Consultation responses

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
Scoping Opinion Response			
MMO	MMO Scoping Opinion (2022)	Onshore air quality: Air quality in the UK has improved over recent decades but air pollution remains a significant issue. For example, approximately 85% of protected nature conservation sites are currently in exceedance of nitrogen levels where harm is expected (critical load) and approximately 87% of sites exceed the level of ammonia where harm is expected for lower plants (critical level of 1µg).A priority action in Report:	The impact of the Onshore Project on ecological receptors is considered in **Section 13.5.3.2.**

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		Trends Report 202056: Trends in critical load and critical level exceedances in the UK - Defra, UK the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The Government's Clean Air Strategy also has a number of targets to reduce emissions including to reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030, to reduce emissions of ammonia against the 2005 baseline by 16% by 2030 and to reduce emissions of NOx and SO2 against a 2005 baseline of 73% and 88% respectively by 2030. Shared Nitrogen Action Plans (SNAPs) have also been identified as a tool to reduce environmental damage from air pollution.	
		The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly, or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The ES should take account of the risks of air pollution and how these can be managed or reduced. This should include taking account of any strategic solutions or SNAPs, which may be being developed or implemented to mitigate the impacts on air quality. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk).	It has not been possible to consult with Natural England directly to date. The Case Officer for White Cross advised neither themselves nor the Environmental Health Consultant for North Devon District Council were not aware of any strategic solutions or SNAPs implemented

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
			within their area of jurisdiction (pers. comm., 12 June 2023).
		Emissions to Air – all: The Applicant states "Overall, with limited population available to be affected and very short-term and temporary disturbance at worse, and on the basis of previous consented projects, no significant health effect is likely, and this is therefore scoped out from further assessment noting that the Air Quality topic will be considering any relevant mitigation measures to prevent air quality impacts arising.'	Emissions to air have been considered within this chapter.
Written Correspondence			
Environmental Health Consultant for North Devon District Council	Detailed Proposed Methodology Sent via Email 22 May 2022	I have reviewed your proposals for preparing an air quality assessment for the above project in relation to potential impacts on human health and amenity on behalf of North Devon Council's Environmental Protection service. I have not considered potential ecological impacts. I note your assessment approach includes having regard to appropriate standards and guidance. I recommend the assessment report also makes reference to the Council's Air Quality Supplementary Planning Document (AQSPD October 2020) and the Braunton Parish Neighbourhood Plan (November 2022). The AQSPD includes certain trigger thresholds for carrying out an Air Quality Impact Assessment (AQIA), including in relation to large scale earth moving and major construction sites. The Braunton Parish Neighbourhood Plan includes Policy BE13 - Protection and Improvement of Air Quality.	Noted. The assessment presented in this chapter has been undertaken in accordance with the North Devon and Torridge Air Quality SPD (North Devon and Torridge, 2022) and Braunton Parish Neighbourhood Plan (Braunton Parish Neighbourhood Plan, 2022).

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		I note your conclusion that a detailed AQIA is not needed in relation to an anticipated modest and temporary exceedance of the IAQM & EPUK 2017 guideline HDV screening criteria. I accept your argument and agree that significant impacts appear unlikely to arise in relation to this issue. However, I recommend your AQA report include provision for responding to circumstances in which there are reasonable grounds to suspect that this judgement may be incorrect. This might be the case if, for example, NDC notifies the developer that monthly NO_2 monitoring results within the AQMA are showing a concerning rise in levels that appears potentially to be connected to the project's HDV movements. Bearing in mind the role Local Authorities now have in relation to reducing emissions and concentrations of $PM_{2.5}$ in their areas, the assessment report should address the potential for the development to generate any significant increases of PM2.5 concentrations (and other relevant pollutants). Where such a potential exists, the report should include mitigation recommendations. Notwithstanding the above, your proposed assessment approach is acceptable.	

13.4 Existing Environment

126. This section describes the existing environment in relation to air quality associated with the White Cross study area. It has been informed by a review of the sources listed in **Table 13.20**.

13.4.1 Current Baseline

127. A desk-based review has been undertaken to determine the air quality baseline within the study area. Monitoring data were obtained from North Devon Council's website.

128. The characterisation of the existing environment has been undertaken using data sources listed in **Table 13.20**. The baseline data sources are sufficient to provide an assessment of potential air quality impacts arising from the Onshore Project and were agreed with North Devon Council during technical engagement (pers comm., 22 May 2023).

13.4.1.1 LAQM

129. A statutory Air Quality Management Area was declared in 2011 within the village of Braunton, approximately 2 km east of the Onshore Project area, for exceedances of the annual mean nitrogen dioxide (NO_2) objective relating to road traffic emissions. However, recent air quality Annual Status Reports published by North Devon Council state that the annual mean NO_2 Objective has not been exceeded anywhere in the district since 2015.

13.4.1.2 Air Quality Monitoring Data

130. North Devon Council undertakes ambient air quality monitoring within the air quality study area using NO_2 diffusion tubes. The results were obtained from the latest available 2022 Annual Status Report (ASR) (North Devon Council, 2022) and are presented in **Table 13.24**.

Table 13.24 Annual mean NO_2 monitoring undertaken by North Devon District Council

Site ID	Location	Site Type	Located within AQMA?	Monitored Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)				
				2017	2018	2019	2020	2021
Site B3	Exeter Road 3, Braunton - Parklyn	Kerbside	No	19.9	22.0	20.2**	15.9**	17.9**
Site B5	Exeter Road 5, Braunton - Paint a Pot	Kerbside	No	36.7	36.4*	35.2	26.4**	29.2*
Site B8	Chaloners Road, Braunton - Parish Hall	Kerbside	No	18.9**	26.6**	22.3	18.7**	19.8

Site ID	Location	Site Type	Located within AQMA?	Monitored Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)				
				2017	2018	2019	2020	2021
Site B9	Caen Gardens, Braunton - J Benning	Kerbside	No	14.0	14.6	12.4**	10.9**	11.1
Site B10	Saunton Road 1, Braunton - Field Lane	Kerbside	No	22.5	25.8	23.5	18.9**	20.0
Site B11	Saunton Road 2, Braunton - Sharlands	Kerbside	No	18.2	21.1	18.0**	14.9**	15.9**
Site B12	Caen Street - Salt	Kerbside	No [A]	-	-	36.1	29.3**	31.4
Site 12	The Square, Braunton - Café Bistro	Kerbside	No [A]	39.4	39.9	30.0	18.8**	20.0
Site 13	The London Inn, Braunton	Kerbside	Yes	30.0	36.5	31.1	26.4**	27.2

* Data capture is below 90%.
** Data capture is below 75%.
[A] The Air Quality ASR states the site is not located within the AQMA however the grid refence coordinates situate the monitoring site adjacent to the AQMA.

131. The results in **Table 13.24** show that the annual mean NO_2 Objective of $40\mu g.m^{-3}$ has not been exceeded at any diffusion tube location across the five-year period, including the diffusion tube sites located within/near the AQMA.

132. Monitoring data from 2020 and 2021 should be treated with caution as the Covid-19 pandemic had an impact on traffic levels. Despite this, monitoring still indicates a declining trend in annual mean concentrations of NO_2 since at least 2017.

133. North Devon Council does not undertake any monitoring of PM_{10} or $PM_{2.5}$ within the air quality study area.

13.4.2 Identification of Receptors

13.4.2.1 Construction Phase Dust and Fine Particulate Matter

134. IAQM guidance (IAQM, 2016) states that a detailed assessment is required where there are human receptors within 350m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). Internal guidance from Natural England recommends that ecological receptors within 200m of a site should be considered in a construction

dust and fine particulate matter assessment, as opposed to only those ecological sites within 50m of the site (as stated in IAQM guidance).

135. The onshore cable corridors connect the landfall HDD compound at Saunton Sands to the Onshore Substation to the west of Yelland.

136. The construction dust and fine particulate matter assessment has been undertaken using a worst-case scenario whereby the maximum amount of works (e.g. cable trenching, a construction compound, jointing bay and link box construction) are undertaken in proximity to the greatest number of human and ecological receptors, as set out below. Recommended mitigation measures for these worst-case locations would then be applied to all onshore construction works, to provide a conservative assessment.

137. Receptor locations were identified in the areas closest to the potential maximum impacts due to construction within the onshore project area (as defined in **Table 13.18**). The identified receptors are set out in the following sections.

13.4.2.1.1 Human Receptors

138. There are human receptors within 350m of the Onshore Development Area located in Saunton, with additional isolated properties located along the cable route.

139. There are no existing human receptors located within 350m of the Onshore Substation, therefore impacts of construction dust on human receptors at the Onshore Substation has not been considered further.

140. As detailed in **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**, the number of receptors potentially exposed to dust impacts is a factor that determines the receptor sensitivity. The area with the most human receptors within 350m of the Onshore Development Area is in Saunton.

141. The construction compounds are located as follows:

- Landfall
- East of Saunton Golf Course
- North and east of Sandy Lane car park
- North and south of the River Taw crossing
- Onshore substation.

142. The proximity of construction compounds to receptors has been taken into consideration within the design of the Onshore Project and, therefore, the number of human receptors within 100m of the proposed construction compounds are

limited. The following construction compounds have residential properties within 100m:

- Landfall
- North of the River Taw Crossing (one residential property).

143. The construction compound located nearest the highest concentration of human receptors is at landfall with between 10 to 100 residential receptors up to 100m from the construction compound boundary.

144. There are only two residential receptors located adjacent to the onshore export cable corridor, one of which is known to have been unoccupied for several years. Therefore, the location of maximum impact along the onshore export cable corridor, i.e. dustiest activities and greatest number of receptors within close proximity of the construction works, has been determined to be at the landfall construction compound. Therefore, this area has been the focus of the construction dust assessment for human receptors along the onshore export cable corridor, to provide a conservative assessment, as the combined sources of dust from both the construction compounds and cable trenching activities is considered to represent the worst case in terms of dust impact magnitude.

145. It should be noted that the mitigation measures identified to suppress dust emissions (see **Section 13.5.1.5**) would be applied across the onshore works and are not only applicable as mitigation for those receptors included within the assessment. As such, the assessment is considered to be robust.

13.4.2.1.2 Ecological Receptors

146. Designated ecological receptors that may be sensitive to dust impacts within 200m of the onshore construction works (or within 50m of access routes) are identified in **Table 13.25**; as well as the distance each ecological site is from the Onshore Development Area. **Figure 13.2** shows the location of the ecological receptors listed in **Table 13.25**.

Table 13.25 Designated Sites within 200m of the Onshore Development Area

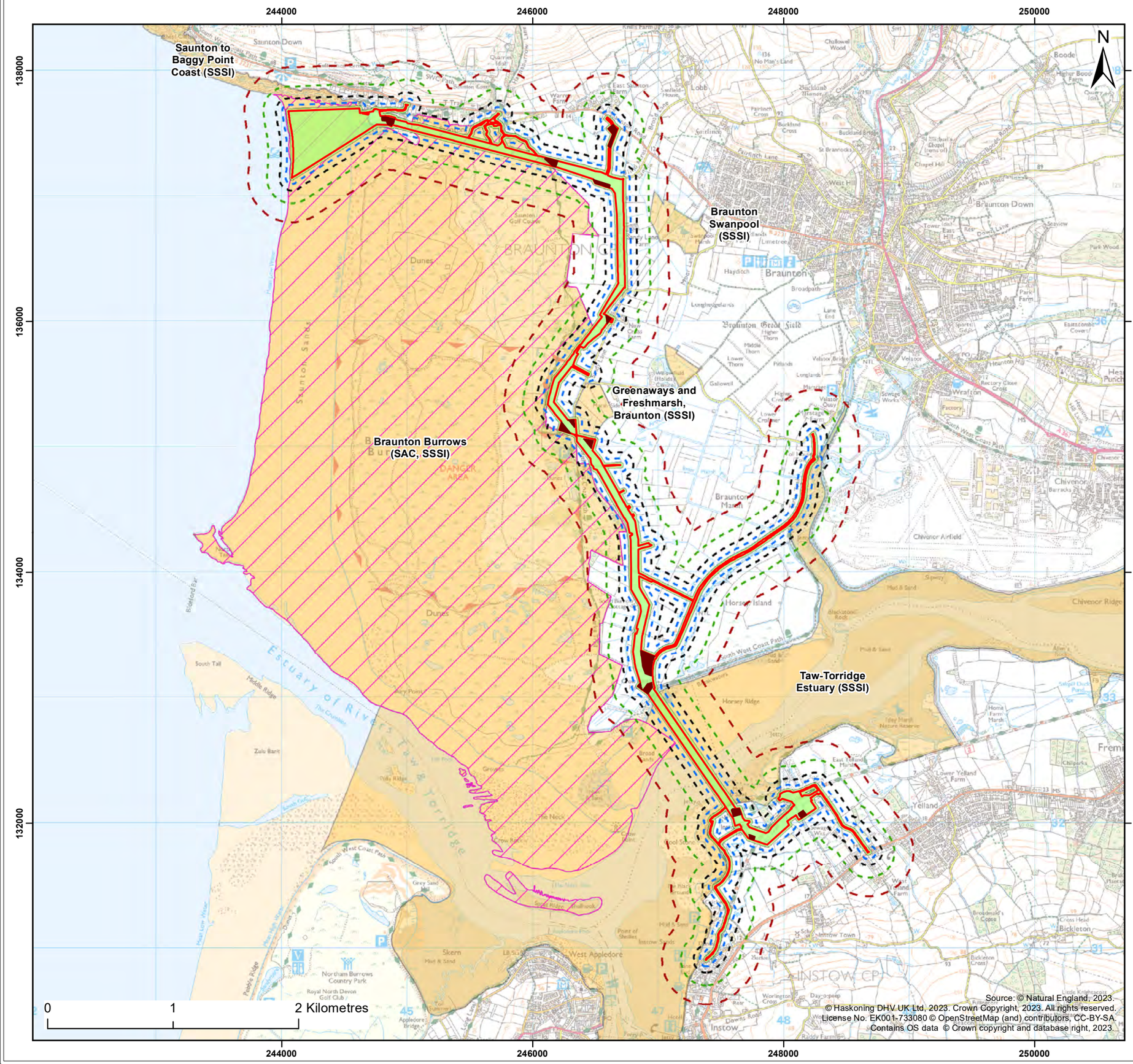
Designated Ecological Site	Distance from Onshore Development Area
Braunton Burrows SAC and SSSI	Within the landfall Project boundary and 0m from the cable corridor*
Saunton to Baggy Point Coast SSSI	10m from the landfall Project boundary
Taw-Torridge Estuary SSSI	Within the cable corridor Project boundary and 0m from the Onshore Substation Project boundary (however 195m from the substation building)**
Greenaways and Freshmarsh, Braunton SSSI	0m from the cable corridor Project boundary
Braunton Swanpool SSSI	195 m from the cable corridor Project boundary
*While the Braunton Burrows SAC and SSSI are within the Onshore Project boundary at landfall, the offshore export cables would be installed at the landfall using HDD techniques, which is not considered a dusty construction activity. A temporary landfall compound would be required to accommodate the drilling rigs, ducting and welfare facilities and this would be set back 30m from the SAC and SSSI boundary in the existing Saunton Sands Car Park. **While the Taw-Torridge Estuary SSSI is within the onshore export cable Project boundary, the export cables would be installed across the river using HDD techniques, which is not considered a dusty construction activity. A temporary HDD compound would be required to accommodate the drilling rigs, ducting and welfare facilities and this would be set back 40m from the SSSI boundary to the south of the river. Another construction compound would be located 65m to the north of the river; however, it is understood this compound would be used for laying the export cables which will be pulled from the southern compound. Therefore, limited dust generating activities would take place in northern compound.	

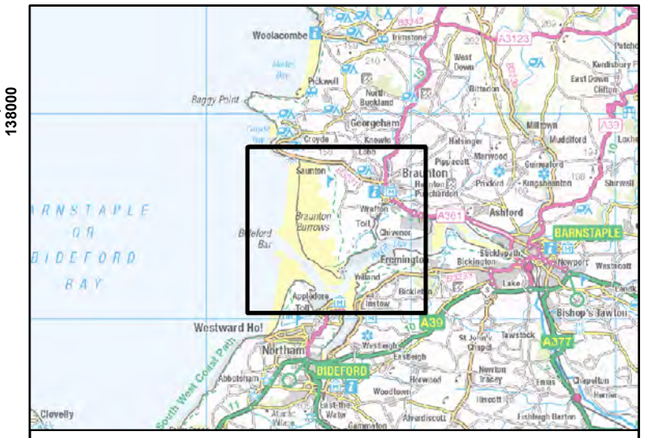
147. As detailed in **Section 13.3.3.1.1**, three different construction activities are considered in a dust assessment: earthworks, construction and trackout. Braunton Burrows SAC and SSSI have been chosen as the worst case ecological receptor location for dust from earthworks, construction and trackout activities, as it is located in close proximity to several construction compounds as well as the onshore export cable corridor and haul road, and may be sensitive to dust.

13.4.2.2 Construction Phase NRMM Emissions Assessment

13.4.2.2.1 Landfall

148. The closest human receptors to the landfall HDD compound are the holiday cottages known as Saunton Beach Villas, approximately 10m to the north. The closest ecological receptor to the construction works at landfall is the Braunton Burrows SAC and SSSI.





Legend:

- Onshore Development Area
- Onshore Development Area (20m Buffer)
- Onshore Development Area (50m Buffer)
- Onshore Development Area (100m Buffer)
- Onshore Development Area (200m Buffer)
- Onshore Development Area (350m Buffer)
- Construction Compounds
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

Client:	Project:
Offshore Wind Ltd.	White Cross Offshore Windfarm

Title: Air Quality Construction Dust and Fine Particulate Matter Buffers

Figure: 13.2 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0619

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	21/07/2023	AB	EW	A3	1:30,000
P01	12/06/2023	AB	EW	A3	1:30,000

Co-ordinate system: British National Grid

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13.4.2.2.2 Onshore Cable Export Corridors

149. The HDD compound for the golf course HDD is located in the same location as the landfall HDD compound in Saunton Sands Car Park. The highest density of human receptors to the works along the onshore cable corridor is Saunton Beach Villas located approximately 10m to the north. The closest ecological receptors to the onshore export cable corridor works which may require NRMM (i.e., anywhere within the onshore export cable corridor) is the Braunton Burrows SAC and SSSI, and the Taw-Torridge Estuary SSSI located within the Onshore Development Area.

13.4.2.2.3 Onshore Substation

150. The nearest existing human receptors to the Onshore Substation are the residential properties in Yelland located 350m to the southeast. The nearest ecological receptor is the Taw-Torridge Estuary SSSI located immediately adjacent to the Onshore Development Area boundary.

13.4.2.3 Construction Phase Road Traffic Emissions Assessment

13.4.2.3.1 Human Receptors

151. Existing sensitive receptors are located within 200m of the air quality study area. Specified receptors were not required as part of this assessment as detailed modelling of road traffic emissions were scoped out, as discussed in **Section 13.5.3**. This was agreed with the Environmental Health Consultant for North Devon District Council (pers. comm., 22 May 2023).

13.4.2.3.2 Ecological Receptors

152. A number of designated ecological sites are located within 200m of roads which are anticipated to experience increases in construction-related traffic flows above the criteria detailed in **Table 13.8**. The designated ecological sites that have been screened into the assessment (i.e. within 200m of air quality study area) are detailed in **Table 13.14**, as well as reasoning for the exclusion of certain sites. The **Table 13.12** also details whether or not sites have been considered further in the assessment for exceeding the AADT flows (at the distance from the site boundary to the road edge) required to result in a 1% increase in the site-relevant Critical Level and/or Load.

153. Further details on this are provided in **Section 13.3.3.3.3**. The designated ecological sites are listed in **Table 13.14**, and also shown in **Figure 13.3**.

154. The APIS website (CEH, 2023) has been consulted to identify any habitats or features of these designated sites that are sensitive to nutrient nitrogen and acid deposition. Where sensitive habitats or features have been found, the Critical Loads for nutrient nitrogen and acid deposition have been obtained. A full list of the designated ecological sites and associated Critical Level and Load values that have been considered is presented in **Table 13.26**. The most sensitive habitat types have been included to provide a conservative assessment. LNRs have been assessed against Critical Levels only as Critical Loads are not provided for LNRs on the APIS website (CEH, 2023).

13.4.3 Background Pollutant Concentrations

155. The approach to deriving appropriate background pollutant concentrations for the assessment is set out in **Section 13.3.3.3.5**.

13.4.3.1 Human Receptors

156. The range of background concentrations across the Onshore Development Area are provided in **Table 13.27**.

157. As detailed in **Table 13.27**, background pollutant concentrations are 'well below' (e.g., less than 75% of) the relevant air quality Objectives. This is to be expected as Onshore Development Area is largely rural in nature.

13.4.3.2 Ecological Receptors

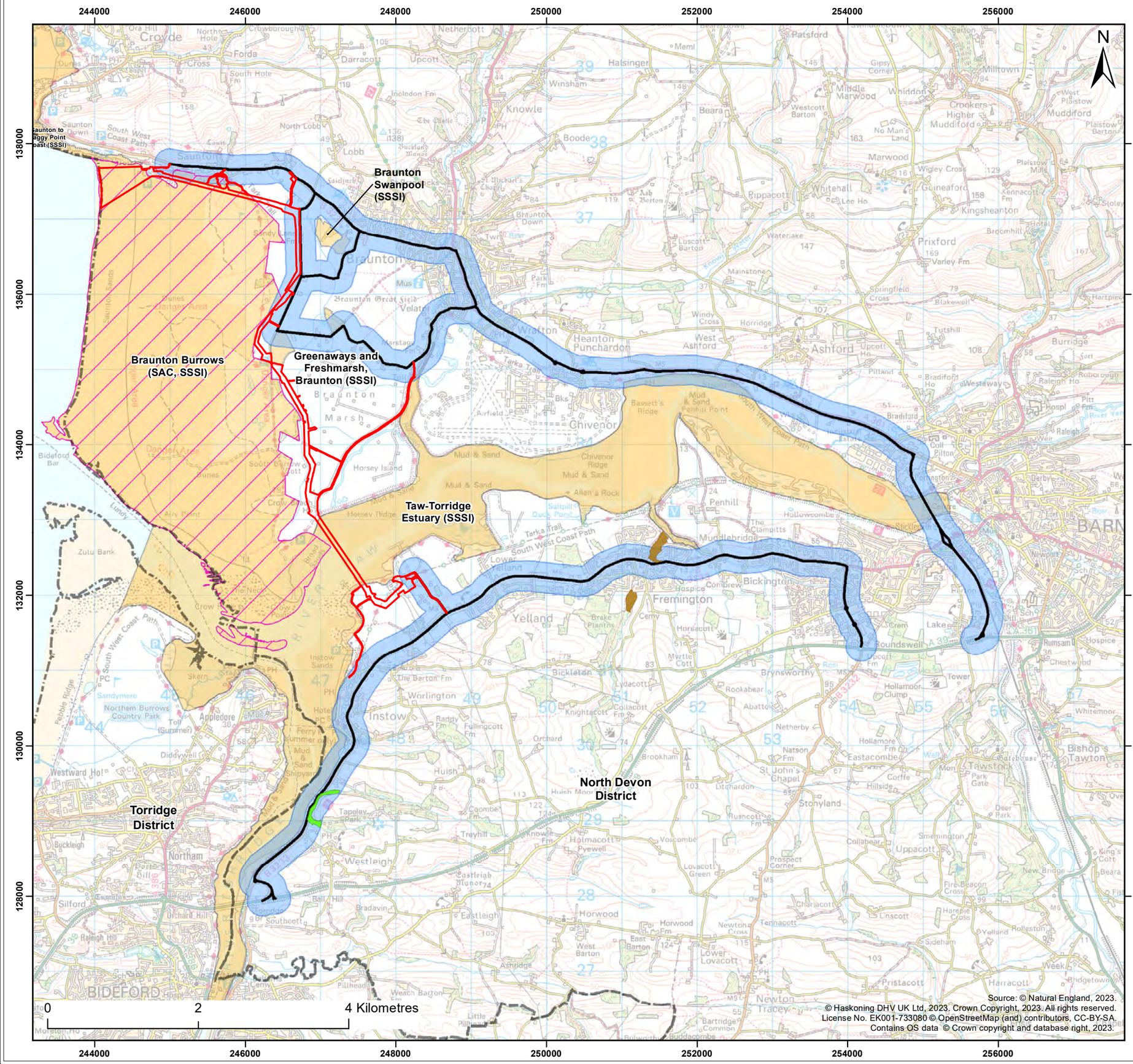
158. Background concentrations considered in the ecological assessment are provided in **Table 13.28**.

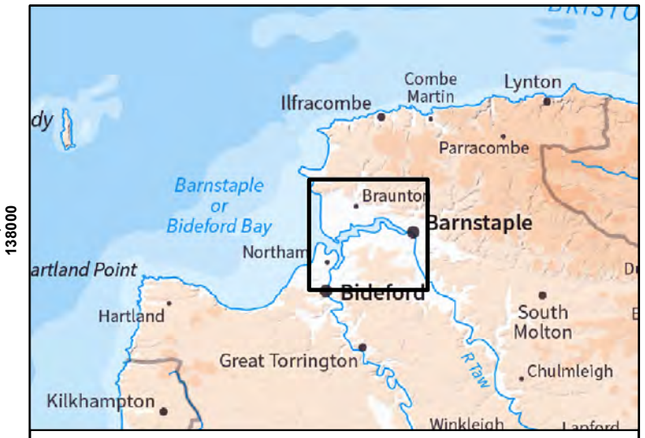
159. As can be shown in **Table 13.28**, the background concentration of NH_3 and Nitrogen deposition are exceeding the Critical Level and Critical Load respectively. For acid deposition the background concentration exceeds the minimum Critical Load value for nitrogen but not the maximum. The background NO_x concentration at all sites is well below the critical level of 30 $\mu g.m^{-3}$.

13.4.4 Do Nothing Scenario

160. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 require that "an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge" is included within the ES (EIA Regulations, Schedule 4, Paragraph 3). From the point of assessment, over the course of the development and operational lifetime of the Onshore Project (operational lifetime

anticipated to be 50 years), long-term trends mean that the condition of the baseline environment is expected to evolve. This section provides a qualitative description of the evolution of the baseline environment, on the assumption that the Onshore Project is not constructed, using available information and scientific knowledge of air quality.





Legend:

- Onshore Development Area
- Local Authority Boundary
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)
- Ancient Woodland
- Links Forming the Traffic and Transport Study Area (200m Buffer)
- Roads Screened in for Ecological Receptors

Client: Offshore Wind Ltd.	Project: White Cross Offshore Windfarm

Title: Air Quality Construction Phase Road Traffic Emissions – Ecological Receptor Locations

Figure: 13.3 | Drawing No: PC2978-RHD-ZZ-XX-DR-Z-0620

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	12/06/2023	AB	EW	A3	1:50,000

Co-ordinate system: British National Grid

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Table 13.26 Designated Ecological Sites and Critical Load Values

Link (s)	Designated Ecological Site			Critical Level		Critical Load						
	Site Type	Name	Feature Name or Critical Load Class	NO_x	NH_3	N-dep	Acid Deposition					
							MinCL MinN	MinCL MaxN	MinCL MaxS	MaxCL MinN	MaxCL MaxN	MaxCL MaxS
				$\mu g.m^{-3}$		$kgN.ha^{-1}.yr^{-1}$	$kgN.ha^{-1}.yr^{-1}$					
1	SSSI	Saunton to Baggy Point Coast	Combinations of species – lichens; Didymodon cordatus; Vascular plant assemblage	30	1 or 3	No critical load has not assigned for these features						
8	LNR	Fremington	Pioneer, low-mid, mid-upper saltmarshes (MAGIC)	30	3	-**						
9	AW	Ancient & Semi-Natural Woodland	Deciduous woodland (MAGIC)	30	3	10-15	0.36	3.12	2.76	0.36	3.12	2.76
9 and 12	SSSI	Taw-Torridge Estuary	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	30	1-3	10-20	1.07	5.07	4.00	0.86	4.86	4.00

*Designated ecological site may be repeated in the table as a feature may have more than one Critical Level or Critical Load within them
**Critical Loads were not assessed for LNRs as information regarding the specific habitats present within them was not available

Table 13.27 Defra (2020a) Background Pollutant Concentrations

Pollutant	Annual Mean Concentration for the Onshore Development Area (µg m^{-3})	
	2022	2025
NO_2	3.0 - 3.4	2.7 – 3.2
PM_{10}	8.6 – 9.7	8.3 – 9.4
$PM_{2.5}$	5.3 – 5.5	5.0 – 5.3

Table 13.28 Ecological Receptors – Background Pollutant Concentrations and Deposition Rates

Link	Designated Ecological Site		2025 Defra Mapped Concentration (Defra, 2020a)	2019-2021 data from APIS (CEH, 2023)		
	Site Type	Name	NOx	NH_3	N-Dep	Acid Dep
			µg m^{-3}	µg m^{-3}	kgN.ha^{-1}.yr^{-1}	kgN.ha^{-1}.yr^{-1}
1	SSSI	Saunton to Baggy Point Coast	2.70	1.1	-	-
8	LNR	Fremington	3.69	1.5	-	-
9	SSSI	Taw-Torridge Estuary	4.48	1.8	14.9	1.1
	AW	Deciduous woodland	3.92	2.05	26.0	1.92
12	SSSI	Taw-Torridge Estuary	3.63	1.6	14.4	1.1
Critical Level/Critial Load value			30	1-3	5 to 25*	1.22 to 4.00*

--No available data
Notes: The N-dep and acid-deposition critical load is site specific therefore the maximum range has been provided for comparison purpose

161. The baseline review of air quality in **Sections 13.4.1.2** and **13.4.3**, provides a clear indication that air quality in the study area is generally good, which is to be expected in an area which is largely rural in nature, with areas of air quality concern and monitoring confined to built-up areas. This includes Braunton AQMA however concentrations of NO_2 have been below the air quality Objective since at least 2017. Air quality is managed, and improvement driven, by EU, UK and local legislation and policies. The UK's national air quality strategy and standards are enacted locally through management actions at a local authority level including a LAQM framework,

as detailed in **Section 13.2**. There is a policy trend towards the achievement and maintenance of good air quality across the UK, which is reflected in the local planning policies also detailed in **Section 13.2.2**.

162. Air pollution in the study area is generally dominated by emissions from road vehicles. The quantity and composition of vehicle emissions is dependent on the type of fuel used, engine type, size and efficiency, vehicle speeds and the type of exhaust emissions abatement equipment employed. As such, it is anticipated that future pollutant concentrations will be reduced from baseline levels, as reflected in the predicted background concentrations provided by Defra, shown in **Table 13.27.**

13.5 Potential Impacts During Construction

163. The potential impacts during construction of the Onshore Project have been assessed for air quality. A description of the potential effect on air quality caused by each identified impact is given in this section.

13.5.1 Impact 1: Construction Dust and Fine Particulate Matter

164. A qualitative assessment of construction phase dust and PM_{10} emissions has been carried out in accordance with the latest IAQM guidance (IAQM, 2016). Full details of the methodology and dust assessment undertaken are provided in **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**.

165. The onshore construction works associated with the Onshore Project have the potential to impact on local air quality conditions as described below:

- Dust emissions generated by excavation, construction and earthworks activities have the potential to cause nuisance to, and soiling of, sensitive receptors (see **Section 13.4.2.1** for further details on the identification of sensitive receptors)
- Emissions of exhaust pollutants, especially NO_X and PM_{10} from construction traffic on the local road network, have the potential to impact upon local air quality at sensitive receptors situated adjacent to the routes utilised by construction vehicles
- Emissions of NO_X and PM_{10} from on-site plant, termed NRMM, operating within the area Onshore Development Area have the potential to impact local air quality at sensitive receptors in close proximity to the works.

166. The assessment consisted of four steps (Step 1, Step 2A, Step 2B and Step 2C) as outlined below.

167. Further details are provided in **Section 13.4.2.1** on the focus areas for the assessment in relation to the locations of the expected worst-case construction

works (i.e. landfall for human receptors and Braunton Burrows SAC and SSSI for ecological receptors).

13.5.1.1 Step 1: Screen the need for a detailed assessment

168. The IAQM guidance states that a detailed assessment is required if there are human receptors located within 350m and ecological receptors within 200m (internal Natural England guidance) of the onshore project area. Human and ecological receptors are present within 350m and 200m respectively of the onshore project area, therefore a detailed assessment was required.

13.5.1.2 Step 2A: Define the potential dust emission magnitude

169. The IAQM guidance recommends that the dust emission magnitude is determined for demolition, earthworks, construction and trackout. It is anticipated that no buildings/structures would be demolished as part of construction of the Onshore Project, therefore demolition has not been considered in the assessment.

170. The landfall and onshore cable corridor were assessed together as the worst-case scenarios for human and ecological receptors were located in the same location around Saunton Sands Car Park. However, the substation was assessed separately due to the spatial scale of the Onshore Project (see **Figure 13.1**). The worst-case scenarios for human and ecological receptors were identified based on the number of receptors within 350m and 200m respectively of the onshore project area and construction works. For trackout activities, receptors within 50m from the construction vehicle routes up to 500m from the Onshore Development Area were considered, as this distance "takes account of the exponential decline in both airborne concentrations and the rate of deposition with distance" in accordance with IAQM (2016) guidance.

171. The potential dust emission magnitude for the Onshore Development Area have been determined using the criteria detailed in **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**. The dust emission magnitudes were determined from the worst-case assumptions identified in **Table 13.18** and are detailed in **Table 13.29**.

Table 13.29 Defined dust emission magnitudes associated for each construction activity for the onshore project area

Construction activity	Dust emission magnitude	Rationale
Human Receptors (Worst-Case)		
	Medium (2,500 to 10,000m^2)	**Landfall and Onshore Export Cable**

Construction activity	Dust emission magnitude	Rationale
Earthworks (site area and earth works)		The proposed construction compound at the landfall location is anticipated to be 4,500m^2 however it is to be located on an existing car park therefore the associated earthworks will be limited. 75m of open trenching will be undertaken between landfall and Saunton Golf Course. Earthworks associated with this will comprise removal and the storage of topsoil and subsoil separately at the side of the trench, followed by excavation of a trench approximately 1.9m deep.
	Medium (2,500 to 10,000m^2)	**Onshore Substation** The maximum operational area at the Onshore Substation will have a footprint of approximately 6,400m^2. Soil will be stripped and material imported to raise the platform level.
Construction (construction materials)	Medium	**All locations:** There are not anticipated to be any buildings constructed within the construction compounds (offices, etc. at the Onshore Substation would be prefabricated); however, it has been assumed that cement bound sand (CBS) would be used to line the cable trench and pack around the ducts, and this is a potentially dusty construction material.
Trackout (no. HGV outward movements per day)	Medium	**All locations:** There would be between 10 to 50 outward daily HGV movements*
Ecological Receptors (Worst-Case)		
Earthworks (site area and earthworks)	Large (>10,000m^2)	The total area of all construction compounds surrounding Braunton Burrows SAC and SSSI is over 10,000m^2 and topsoil will be stripped. Excavations for trenching will occur within 200m of Braunton Burrows SAC and SSSI.
Construction (construction materials)	Medium	CBS will be used to line the cable trench and pack around the ducts, which is a potentially dusty construction material.
Trackout (no. HGV outward movements per day)	Medium	It is assumed as a worst case that there would be between 10 and 50 outward daily HGV movements*
*HGV outward movements per day have been estimated from the HGV traffic flows presented in **Table 13.17** and **Appendix 13.B: Air Quality Assessment Traffic Data**, where the number of outward HGV movements per day is half the HGV (per day) flow.		

13.5.1.3 Step 2B: Define the sensitivity of the area

172. The sensitivity of receptors to dust soiling, impacts on human health and ecological effects have been determined using the criteria in **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**. **Figure 13.2** details the distance bands from the onshore project area used in determining the sensitivity of the area.

173. The sensitivity of the area is defined as:

- Sensitivity of receptors to dust soiling on people and property:
  - Earthworks and construction: There are between 10 to 100 high sensitivity residential receptors within 20m of the construction compound area at Saunton Sands Car Park. The sensitivity is therefore **high**. As mentioned in **Section 13.4.2.1.1**, there are no human receptors within 350m of the Onshore Substation
  - Trackout: There are between 10 and 100 high sensitivity residential receptors within 20m of roads used by construction vehicles up to 500m from the site at landfall. The sensitivity is therefore **high**.
- Sensitivity of receptors to human health effects of PM_{10}:
  - The highest annual mean background PM_{10} concentration across the study area is less than 24µg.m^{-3}
  - Earthworks and construction: There are between 10 to 100 high sensitivity residential receptors within 20m of the construction compound at landfall. The sensitivity is therefore **low**
  - Trackout: There are between 10 and 100 high sensitivity residential receptors within 20m of roads used by construction vehicles up to 500m from the construction compound at landfall. The sensitivity is therefore **low** at all locations.
- Sensitivity of receptors to ecological effects:
  - Earthworks and construction: Braunton Burrows SAC and SSSI is of high sensitivity and is within 20m of several construction compounds. The sensitivity is therefore **high**
  - Trackout: Braunton Burrows SAC and SSSI is within 20m of the haul road. The sensitivity is therefore **high**.

174. The sensitivity of receptors to dust soiling, human health impacts and ecological impacts (as an assessment of the worst-case scenario location) for each activity is summarised in **Table 13.30**.

Table 13.30 Sensitivity of the area to each activity

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust soiling	High	High	High
Human health	Low	Low	Low
Ecological	High	High	High

13.5.1.4 Step 2C: Define the risk of impacts

175. The dust and PM_{10} emission magnitude and sensitivity of the area(s) are combined, and the risk of effects determined using **Appendix 13.A: Construction Dust and Particulate Matter Assessment Methodology**. The risks for dust soiling, human health and ecological effects are shown in **Table 13.31**.

Table 13.31 Risk of dust impacts

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust soiling	Medium	Medium	Medium
Human health	Low	Low	Low
Ecological	High	Medium	Medium

176. It is anticipated that the risk of dust effects would be **medium** for dust soiling at landfall and the onshore cable corridor during all activities.

177. The risk to human health is considered to be **low** during all activities.

178. The risk to ecological receptors is considered to be **high** during earthworks and **medium** during construction and from trackout.

13.5.1.5 Further Mitigation – Step 3: Site specific mitigation

179. Step 3 of the IAQM guidance (2016) 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 effects was 'high risk' under the worst-case scenario, without the implementation of mitigation measures. The aim of these mitigation measures is to achieve a residual effect that is **not significant**.

180. Recommended mitigation measures are listed in the IAQM guidance document according to the 'risk' of effects associated with the release of dust and PM_{10} from construction activities. Recommended mitigation measures include minimising the production and transmission of dust from construction activities, and the requirement to carry out regular visual on-site and off-site inspections of dust

deposition levels, so that appropriate action can be taken in the event of any issues being identified.

181. A list of mitigation measures that are recommended for a high risk site, as determined by Step 2 of the dust assessment, by the IAQM are provided below. These measures will be outlined within the Onshore Project's OCEMP submitted as part of the Onshore Project's planning application and will be secured within the final CEMP submitted post-consent.

- 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. This may be the environment manager/engineer or the site manager
  - Display the head or regional office contact information.
- Dust Management:
  - Develop and implement a Dust Management Plan (DMP) (this will form part of the CEMP), which may include measures to control other emissions, approved by the local authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site
  - 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 when asked
  - 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
  - Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, 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 monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary

  - 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 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 site layout so that machinery and dust causing activities are located away from receptors, as far as is 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
  - Avoid site runoff of water or mud
  - 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. If they are being re-used on-site cover as described below.

- Manage stockpiles to prevent wind whipping
- Ensure all vehicles switch off engines when stationary - no idling vehicles
- 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 (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
- Produce a Construction Traffic Management Plan to manage the sustainable delivery of goods and materials. Further details provided in **Appendix 19.B: Outline Construction Traffic Management Plan**
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). Further details provided in **Chapter 19: Traffic and Transport**
- 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 handling equipment and use fine water sprays on such equipment wherever appropriate
- 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
- Avoid bonfires and burning of waste materials.
- Construction:

    - Ensure sand and other aggregates are stored in appropriate manner to minimise dust generation for example the use of bunded areas
    - Avoid scabbling (roughening of concrete surfaces) if possible
    - 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
    - For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

- Earthworks:

    - Manage earthworks and exposed areas/soil stockpiles to stabilise surfaces
    - Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.

- Trackout:

    - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site
    - Avoid dry sweeping of large areas
    - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport
    - Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable
    - Record all inspections of haul routes and any subsequent action in a site logbook
    - Install hard surfaced haul routes where practicable, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned
    - 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
    - Locate access gates at least 10m from receptors where possible.

13.5.1.6 Residual Effect

182. With the implementation of the above mitigation measures, which will be secured in the final CEMP, the residual effects are considered to be **not significant**, in accordance with IAQM guidance (2016).

13.5.2 Impact 2: NRMM Emissions

183. As discussed in **Section 13.1.1**, NRMM control measures will be implemented as embedded mitigation and therefore a qualitative assessment of the Onshore Project-generated NRMM used during construction at landfall, the Onshore Substation and along the onshore export cable corridor has been undertaken where effects on receptors may occur (see **Table 13.18**).This qualitative assessment takes into account:

- The number and type of plant to be used
- The working hours to be employed and the duration of works
- Existing air quality conditions in the area (based on Defra background pollutant concentration maps)
- Prevailing meteorological conditions (see Plate 13.1)
- Distances from NRMM to the nearest receptors.

184. The anticipated working hours for construction of the Onshore Projects 7am-7pm Monday to Friday and 7am-1pm Saturday (i.e., 66 hours per week), plus 24hour working required from the commencement of each HDD to completion of duct installation.

185. The Onshore Development Area is largely rural in nature and, as shown in **Table 13.27,** the future 2025 background concentrations of NO_2, PM_{10} and $PM_{2.5}$ at landfall, along the onshore export cable corridor and at the Onshore Substation are 'well below' (i.e. less than 75% of) and no greater than 50% of their respective annual mean Objectives and are expected to continue to decrease into the future.

186. **Plate 13.1** shows the wind rose of meteorological conditions recorded in 2022 at the Chivenor station which is located approximately 2.6km to the east of the Onshore Development Area.

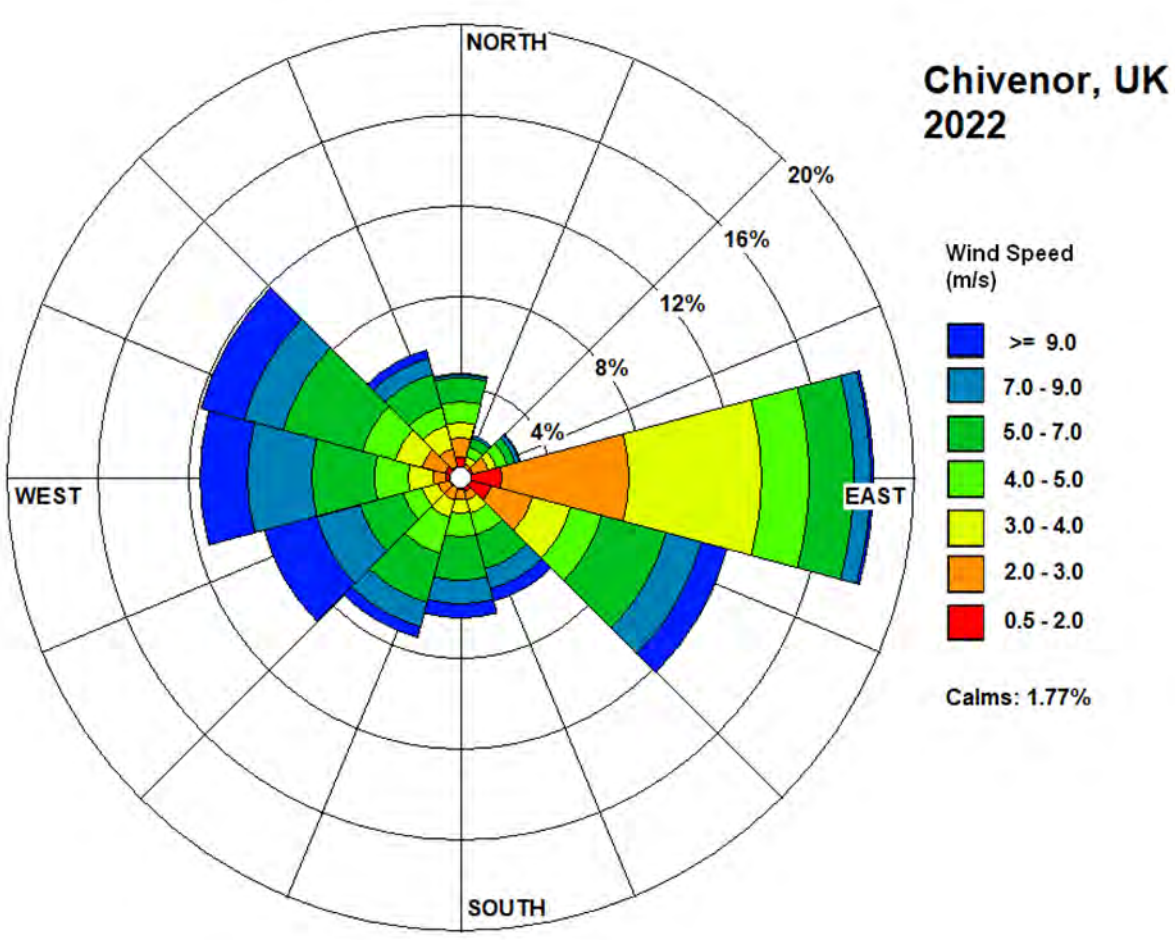

Plate 13.1 Meteorological Station Wind Rose (2022)

187. The potential impacts associated with NRMM used at the indicative landfall HDD compound, the onshore export cable corridor and the Onshore Substation are set out below.

13.5.2.1 NRMM at Landfall

188. Project's working hours (7am-7pm Monday to Friday, and 7am-1pm on Saturday) however HDD works may, by necessity, be required to operate 24/7. There will be a maximum of 7 to 14 days of 24-hour works for each HDD crossing therefore, including the Saunton Golf Club HDD crossing, there would be a maximum of 28 days of 24-hour working in Saunton Sands Car Park.

189. The total duration of construction associated with the HDD works at landfall is expected to be approximately 99 days, this includes mobilisation, HDD drive, pull back, de-mobilisation and reinstatement. The plant associated with each stage of works will not be operational for the full duration (99 days). The HDD rigs are only

anticipated to be operational for two 28-day periods (56 days in total). Therefore, emissions would occur for significantly less than a full year.

190. As shown in **Table 13.18**, only a small number of each type of plant would be active at landfall, and all plant would meet Euro Stage IV emission standards.

191. NRMM emissions associated with the construction compound and transition joint bays would be more intermittent in nature and would only occur during working hours. Once construction of the landfall elements has been completed (including demobilisation) no pollution sources would be present (i.e. there are no operational phase impacts on local air quality) as a result of the Onshore Project.

192. The closest human receptors are the Saunton Beach Villas to the north, approximately 10m north of the indicative HDD compound. As shown in the wind rose in **Plate 13.1**, the prevailing winds at Chivenor are from the east with strong winds from the west and south-west. Therefore, emissions from the HDD works would be dispersed away from the residential receptors to the north for the majority of meteorological conditions. As such, in consideration of annual mean pollutant concentrations, the impact would be reduced.

193. Given the intermittent and short-term nature of the plant usage, and the low background pollutant concentrations in the area, it is therefore considered highly unlikely that the health-based air quality Objectives would be exceeded with the employment of control and management measures (as detailed in **Summary of** Mitigation

194. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.5.2.2 Embedded Mitigation

195. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

196. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

197. Table 13.19).

198. Braunton Burrows SAC and SSSI surrounds the landfall HDD construction compound to the east, south and west, and is located 25m to the south at its closest point (shown in **Figure 13.1**).

199. As mentioned previously, the prevailing winds at Chivenor are from the east however there are frequent strong winds from the west and south-west. This will cause emissions to disperse into the north-east and north-west of the SAC and SSSI. However, given the variable wind conditions, emissions will not blow consistently into one part of the SAC and SSSI for a prolonged period of time. In addition, the intermittent and temporary nature of the NRMM and plant usage during the construction at landfall, along with the low emission plant used, would reduce the potential for significant impacts at this designated site. It is therefore expected that with the employment of management and control measures, particularly siting plant and other emission sources as far from Braunton Burrows SAC and SSSI as is practicable (as detailed in **Summary of** Mitigation

200. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.5.2.3 Embedded Mitigation

201. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

202. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

203. Table 13.19), will mean that effects would be **not significant**.

204. The effect of emissions from NRMM used at the landfall is therefore considered to be **not significant**.

13.5.2.4 NRMM along the Onshore Export Cable Corridor

205. The primary activities that would occur along the onshore export cable corridor are temporary haul road construction, cable laying and removal/excavation/backfilling works associated with the trench. As construction works on the onshore export cable would be undertaken in sections in a linear nature, NRMM would only be operational

in the vicinity of a receptor for only a relatively short duration, and not for the full duration of the onshore export cable corridor construction programme (432 days).

206. Two sections of HDD are proposed along the onshore export cable corridor including Saunton Golf Club and Taw River Crossing. As mentioned in **Section 13.5.2.1**, HDD works may, by necessity, be required to operate 24/7 rather than only during the Onshore Project's working hours (7am-7pm Monday to Friday, and 7am-1pm on Saturday). There will be a maximum of 7 to 14 days of 24-hour works for each HDD crossing the construction compound, and therefore there would be a maximum of 28 days of 24-hour working in Saunton Sands Car Park.

207. The total duration of construction works associated with each HDD works along the onshore export cable corridor is 165 days; however, this includes mobilisation, HDD drive, pull back, de-mobilisation and reinstatement. Therefore, plant associated with each stage of works will not be operational for the full duration (165 days). The HDD drive in each location is anticipated to be undertaken in two rounds with a total duration of 127 days. Therefore, emissions would occur for less than a full year in each location.

208. The HDD main drill gang will complete one crossing at a time, therefore the construction works associated with the Saunton Gold Club HDD will commence once the landfall HDD works are complete. The total duration of construction works in Saunton Sands Car Park is therefore 264 days which means emissions would still occur for less than a full year.

209. The closest human receptors to the onshore export cable are the Saunton Beach Villas to the north, approximately 10m north of the indicative HDD compound associated with the Saunton Sands Golf Club HDD works. As shown in the wind rose in **Plate 13.1** the prevailing winds at Chivenor are from the east with strong winds from the west and south-west. Therefore, emissions from the HDD would be dispersed away from the residential receptors to the north for the majority of meteorological conditions. As such, in consideration of annual mean pollutant concentrations, the impact would be reduced.

210. Given the intermittent and short-term nature of the plant usage, and the low background pollutant concentrations in the area, it is therefore considered highly unlikely that the health-based air quality objectives would be exceeded with the employment of control and management measures (as detailed in **Summary of** Mitigation

211. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.5.2.5 Embedded Mitigation

212. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

213. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

214. Table 13.19).

215. With regard to ecological receptors, Braunton Burrows SAC and SSSI, and Taw-Torridge Estuary SSSI are located adjacent to the boundary of the onshore export cable corridor. As mentioned previously, the prevailing winds at Chivenor are from the east with frequent strong winds from the west and south-west. This will cause emissions to disperse into both designated sites. However, given the variable wind conditions, emissions will not blow consistently into one part of the SAC and SSSIs for a prolonged period of time. In addition, the intermittent and temporary nature of the NRMM and plant usage during the onshore export cable, along with the low emission plant used, would also reduce the potential for significant impacts at the designated sites.

216. It is therefore expected that with the employment of management and control measures, particularly siting plant and other emission sources as far from Braunton Burrows SAC and SSSI, and Taw-Torridge Estuary SSSSI as is practicable (as detailed in **Table 13.16**), will mean that effects would not be significant.

13.5.2.6 NRMM at the Onshore Substation

217. The Onshore Substation for the Onshore Project is located in arable land west of Yelland. Construction activities in the Onshore Substation include site preparation and earthworks, and construction of the Onshore Substation and permanent access routes.

218. The duration of construction works at the Onshore Substation during build of the Onshore Project would occur for up to 313 days. However, emissions would only

occur during working hours, and plant usage would be intermittent and variable throughout the working day rather than used continually.

219. The nearest human receptors to the Onshore Substation are residential receptors located in Yelland located over 350m to the south-east. It is anticipated that the distance between the residential receptors and the potential closest works at the Onshore Substation would allow for sufficient dilution and dispersion of pollutant emissions from NRMM. Also, given the low background pollutant concentrations in the area, the fact that the source of NRMM emissions would be temporary during construction only, and relevant control and management measures are embedded into the design of White Cross (see **Table 13.17**), it is unlikely NRMM in the Onshore Substation would have a significant impact on local air quality.

220. The nearest ecological receptor is Taw-Torridge Estuary SSSI located immediately adjacent north-west of the boundary of the Onshore Substation; however, over 150m from the location of the substation. It is considered the highest intensity of NRMM and plant usage will be surrounding the Onshore Substation, and therefore at the furthest point from the SSSI within the Onshore Substation area. Given the prevailing wind direction is from the east (see **Plate 13.1**), NRMM emissions generated in the north of the Onshore Substation area would be dispersed into the SSSI. However, the SSSI is located over 600m downwind of the main construction work associated with the construction of the substation. Therefore, it is considered there would be sufficient dilution and dispersion of pollutant emissions from NRMM associated with construction on the substation. In addition, the frequent strong west and south-westerly winds would cause emissions to disperse away from the SSSI.

221. In addition, the intermittent and temporary nature of the NRMM and plant usage during the construction at the substation, along with the small number of low emission plant used, would also reduce the potential for significant impacts at this designated site. It is therefore expected that with the employment of management and control measures, particularly siting plant and other emission sources as far from Taw-Torridge Estuary SSSI as is practicable (as detailed in **Table 13.17**), will mean that effects would be **not significant**.

13.5.2.7 Significance of Effect

222. Defra technical guidance (Defra, 2022b) states that emissions from NRMM used on construction sites are unlikely to have a significant impact on local air quality where relevant control and management measures are employed, and a qualitative assessment of effects is sufficient for consideration of effects. The results of the qualitative assessment above demonstrates that intensive construction activities are

unlikely to have a significant impact on local air quality with the implementation of the embedded mitigation measures detailed in **Summary of** Mitigation

223. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.5.2.8 Embedded Mitigation

224. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

225. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

226. Table 13.19.

13.5.2.9 Further Mitigation

227. Effects were found to not be significant, taking into account the employment of embedded mitigation measures detailed in **Summary of** Mitigation

228. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.5.2.10 Embedded Mitigation

229. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

230. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

231. Table 13.19. As such, no further mitigation measures are required.

13.5.3 Impact 3: Construction Road Vehicle Exhaust Emissions

13.5.3.1 Human Receptors

13.5.3.1.1 Magnitude of impact

232. Traffic data for the assessment is detailed in **Chapter 19: Traffic and Transport.**

233. The calculated number of average two-way LDV and HDV vehicle movements distributed across the local road network are detailed in **Table 13.9**.

234. With reference to **Table 13.9**, only Link 2 passes through the Braunton AQMA. The number of Project-generated HDVs (as AADT) along this road link slightly exceed the IAQM and EPUK screening criteria detailed in **Table 13.8**. Project-generated traffic flows are below the screening criteria on all other road links.

235. As stated in **Section 13.3.3.3.2**, exceeding the screening criteria does not automatically lead to the requirement for a detailed assessment requiring dispersion modelling. The use of a simple assessment may be appropriate where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality.

236. As detailed in **Section 13.4.1.2**, concentrations of NO_2 within the AQMA were more than 10% below air quality objective of 40 $\mu g.m^{-3}$ since 2019, and consistently below the air quality objective since at least 2017. It was therefore not considered the slight exceedance of the HDV screening criteria through the AQMA would result in significant impacts on air quality. In addition, the duration of onshore construction works are anticipated to take less than two years (2025 to 2026). Therefore, the impact of the Onshore Project would be temporary as it would only be experienced during construction. A detailed air quality assessment is not therefore considered to be required and the impact of Project-generated traffic emissions at human receptors is considered to be **negligible** and **not significant**.

13.5.3.1.2 Significance of effect

237. The effect of project-generated traffic emissions at human receptors is **not significant** in accordance with the IAQM and EPUK technical guidance (IAQM and EPUK, 2017).

13.5.3.1.3 Further Mitigation

238. Effects were found to not be significant, as such, no mitigation measures are required.

239. At the request of the Environmental Health Consultant at North Devon District Council (as detailed in **Table 13.23),** the Onshore Project will make provisions for responding to circumstances in which there are reasonable grounds to suspect that the Onshore Project is significantly impacting on air quality levels within the Braunton AQMA. These measures should be agreed with the council before commencement of construction works.

13.5.3.1.4 Residual Effect

240. The effect of Project-generated traffic emissions at human receptors is considered to be **not significant** in the absence of mitigation measures.

13.5.3.2 Ecological Receptors

241. **Table 13.32** and **Table 13.33** present the contribution of the Onshore Project in isolation and in-combination respectively (i.e. Project traffic, 2022 to 2025 traffic growth, and cumulative traffic) (see **Section 13.8**). Values in exceedance of 1% of the Critical Load or Level, i.e., those which cannot be considered to be insignificant, are shown in bold text.

242. Predicted total pollutant concentrations (including the relevant background pollutant concentrations) at the ecological receptor locations alone and in-combination are detailed in **Table 13.34** and **Table 13.35**.

Table 13.32 Maximum Contribution of Project-generated NOx, NH_3, N-dep and Acid Deposition from Traffic on Feature(s) Under Designated Ecological Sites – Project Alone

Link (s)	Designated Ecological Site			Proposed Development alone - Road Traffic Contribution									
				Concentration of Flux				% of Critical Level or Critical Load					
	Site Type	Name	Feature Name or Critical Load Class	NO_x	NH_3	N-dep	Acid-Dep	NO_x	NH_3		N-Dep		Acid-dep	
				µg.m^{-3}	µg.m^{-3}	kgN.ha^{-1}.yr^{-1}	kgN.ha^{-1}.yr^{-1}	-	% of lower CL	% of upper CL	% of lower CL	% of upper CL	% of lower CL	% of upper CL
1	SSSI	Saunton to Baggy Point Coast	Combinations of species – lichens; Didymodon cordatus; Vascular plant assemblage	0.04	0.002	-*	-*	0.1%	0.2%	0.1%	**-***	-*	-*	-*
8	LNR	Fremington	-**	0.07	0.003	-**	-**	0.2%	0.1%	0.1%	-**	-**	-**	-**
9	AW	Ancient & Semi-Natural Woodland	Deciduous woodland (MAGIC)	0.16	0.007	0.09	0.0062	0.5%	0.7%	0.2%	0.9%	0.6%	0.2%	0.2%
9	SSSI	Taw-Torridge Estuary	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	0.05	0.001	0.012	0.0008	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%
12	SSSI			0.03	0.001	0.007	0.0005	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%

AW = Ancient Woodland.
Notes:
* Not Sensitive.
**Critical Loads were not assessed at LNRs as details of the specific habitats were not available.

Table 13.33 Maximum Contribution of In-Combination NOx, NH3, N-dep and Acid Deposition from Traffic on Feature(s) Under Designated Ecological Sites-In Combination

Link (s)	Designated Ecological Site			Proposed Development in-Combination - Road Traffic Contribution									
				Concentration or Flux				% of Critical Level or Critical Load					
	Site Type	Name	Feature Name or Critical Load Class	NO_x	NH_3	N-dep	Acid-Dep	NO_x	NH_3		N-Dep		Acid-dep	
				$\mu g.m^{-3}$	$\mu g.m^{-3}$	$kgN.ha^{-1}.yr^{-1}$	$keq.ha^{-1}.yr^{-1}$	-	% of lower CL	% of upper CL	% of lower CL	% of upper CL	% of lower CL	% of upper CL
1	SSSI	Saunton to Baggy Point Coast	Combinations of species – lichens; Didymodon cordatus; Vascular plant assemblage	0.74	0.03	-*	-*	**2.5%**	**3.2%**	**1.1%**	-*	-*	-*	-*
8	LNR	Fremington	-**	4.42	0.19	-**	-**	**14.7%**	**6.4%**	**6.4%**	-**	-**	-**	-**
9	AW	Ancient & Semi-Natural Woodland	Deciduous woodland (MAGIC)	2.87	0.13	1.62	0.113	**9.6%**	**12.5%**	**4.2%**	**16.2%**	**10.8%**	**3.6%**	**3.6%**
9	SSSI	Taw-Torridge Estuary	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	0.95	0.02	0.21	0.015	**3.2%**	**2.2%**	0.7%	**2.1%**	**1.1%**	**2.3%**	**2.2%**
12	SSSI			0.56	0.01	0.15	0.011	**1.9%**	**1.5%**	0.5%	**1.5%**	0.8%	0.2%	0.2%

AW = Ancient Woodland.
Notes: **Cells shaded in red** represents exceedance of the Critical Level or Load.
* Not Sensitive.
**Critical Loads were not assessed at LNRs as details of the specific habitats were not available.

Table 13.34 Proposed Development alone– Total concentration of NOx, NH_3, N-dep and acid deposition from traffic on each designated ecological site (including background concentrations)

Link (s)	Designated Ecological Site			Proposed Development alone – Total pollutant concentration/deposition											
				NO_x		NH_3			N-dep			Acid-Dep			
	Site Type	Name	Feature Name or Critical Load Class	Total concentration µg.m^{-3}	% of CL	Total concentration µg.m^{-3}	% of Lower CL	% of Upper CL	Total kgN.ha^{-1}.yr^{-1}	% of Lower CL	% of Upper CL	Total keq ha^{-1}.yr^{-1}	% of Lower CL	% of Upper CL
1	SSSI	Saunton to Baggy Point Coast	Combinations of species – lichens; Didymodon cordatus; Vascular plant assemblage	2.74	9%	1.10	**110%**	37%	-*	-*	-*	-*	-*	-*
8	LNR	Fremington	-**	3.76	13%	1.50	50%	50%	-**	-**	-**	-**	-**	-**
9	AW	Ancient & Semi-Natural Woodland	Deciduous woodland (MAGIC)	4.08	14%	2.06	**206%**	69%	26.08	**261%**	**174%**	1.93	62%	62%
9	SSSI	Taw-Torridge Estuary	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	4.53	15%	1.80	**180%**	60%	14.91	**149%**	75%	1.10	23%	22%
12	SSSI			3.66	12%	1.60	53%	53%	14.41	**144%**	72%	1.10	23%	22%

AW = Ancient Woodland
Notes: **Cells shaded in red** represents exceedance of the Critical Level or Load
* Not Sensitive
**Critical Loads were not assessed at LNRs as details of the specific habitats were not available

Table 13.35 Proposed Development in-combination (background growth and committed developments) – Total concentration of NOx, NH_3, N-dep and acid deposition from traffic on each designated ecological site (including background concentrations)

Link (s)	Designated Ecological Site			Proposed Development in-combination – Total pollutant concentration/deposition											
				NO_x		NH_3			N-dep			Acid-Dep			
	Site Type	Name	Feature Name or Critical Load Class	Total concentration $\mu g.m^{-3}$	% of CL	Total concentration $\mu g.m^{-3}$	% of Lower CL	% of Upper CL	Total $kgN.ha^{-1}.yr^{-}$	% of Lower CL	% of Upper CL	Total keq $ha^{-1}.yr^{-1}$	% of Lower CL	% of Upper CL
1	SSSI	Saunton to Baggy Point Coast	Combinations of species – lichens; Didymodon cordatus; Vascular plant assemblage	3.44	11%	**1.13**	**113%**	38%	-*	-*	-*	-*	-*	-*
8	LNR	Fremington	-**	8.11	27%	**1.69**	56%	56%	-**	-**	-**	-**	-**	-**
9	AW	Ancient & Semi-Natural Woodland	Deciduous woodland (MAGIC)	6.79	23%	**2.18**	**218%**	73%	27.61	**276%**	**184%**	2.03	65%	65%
9	SSSI	Taw-Torridge Estuary	Annual Salicornia Saltmarsh; Puccinellia Maritima Saltmarsh, Puccinellia Maritima Dominant Sub-Community; Suaeda Maritima Saltmarsh; Transitional Low Marsh Vegetation With Puccinellia maritima, Annual Salicornia Species And Suaeda maritima.; >20,000 Non-breeding waterbirds; Numenius arquata; Pluvialis apricaria and Vanellus vanellus	5.43	18%	**1.82**	61%	61%	15.11	**151%**	**76%**	1.11	23%	22%
12	SSSI			4.20	14%	**1.61**	54%	54%	14.55	**146%**	**73%**	1.11	23%	22%

AW = Ancient Woodland
Notes: **Cells shaded in red** represents exceedance of the Critical Level or Load.
* Not Sensitive.
**Critical Loads were not assessed at LNRs as details of the specific habitats were not available.

243. As shown in **Table 13.33**, there are several sites which are predicted to experience in-combination impacts in excess of 1% of the Critical Load or Level. However, comparison with **Table 13.32**, shows that there are no impacts at any of the sites due to the contribution from the Onshore Project alone. Nevertheless, at all sites where the in-combination NO_x, NH_3, N-dep and/or Acid deposition is predicted to be above 1% of the relevant Critical Level or Load, cannot be considered to be insignificant based on the use of the 1% screening criteria alone. As shown in **Table 13.34** and **Table 13.35**, due to elevated background concentrations in exceedance of the Critical Levels and Loads (as discussed in **Section 13.4.3.2**), total pollutant concentrations of NH_3 and N-dep exceed the Critical Level and Load, (as discussed in **Section 13.4.3.2**). Total NO_x concentrations do not exceed the Critical Level of 30 $\mu g.m^{-3}$ and Acid-dep does not exceed the lower Critical Load value. Therefore, despite an in-combination impact on all sites to be greater than 1% of the relevant Critical Level or Load, the impact of NOx and Acid-dep are considered to be insignificant. The significance of impacts are discussed in **Chapter 16: Onshore Ecology and Ornithology.** These chapter concludes the following:

- Effects upon the qualifying / interest features of designated sites for nature conservation arising from changes to NOx, NH_3, N-Dep and Acid deposition from road traffic emissions considered within **Chapter 16: Onshore Ecology and Ornithology** are at worst minor adverse (short term and temporary effect), i.e. not significant in EIA terms.

13.6 Potential Impacts During Operation and Maintenance

244. Operational phase impacts were scoped out of the assessment, as agreed by the Planning Inspectorate (Scoping Opinion, 2022; also see **Table 13.23**) and therefore have not been considered within this assessment.

13.7 Potential Impacts During Decommissioning

245. No decision has been made regarding the final decommissioning policy for the Onshore Project as it is recognised that industry best practice, rules and legislation change over time.

246. The anticipated decommissioning activities are outlined in **Section 13.3.5**. The potential impacts of the decommissioning of the Onshore Project have been assessed for air quality on the assumption that decommissioning methods will be similar or of a lesser scale than those deployed for construction. The types of impact would be comparable to those identified for the construction phase:

- Impact 1: Construction Dust and Fine Particulate Matter

- Impact 2: NRMM Emissions
- Impact 3: Construction Road Vehicle Exhaust Emissions.

247. The magnitude of impacts would be comparable to or less than those identified for the construction phase. Accordingly, it is anticipated that the effects determined in **Section 13.5** would be valid for the decommissioning phase regardless of the final decommissioning methodologies.

13.8 Potential Cumulative Effects

248. The approach to cumulative effect assessment (CEA) is set out in **Chapter 6: EIA Methodology**. Only projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment have been included in the CEA. Projects which are sufficiently implemented during the site characterisation for the Onshore Project have been considered as part of the baseline for the EIA. Where possible the Applicant has sought to agree with stakeholders the use of as-built project parameter information (if available) as opposed to consented parameters to reduce over-precaution in the cumulative assessment. The scope of the CEA was therefore be established on a topic-by-topic basis with the relevant consultees.

249. The cumulative effect assessment for air quality was undertaken in two stages. The first stage was to consider the potential for the effects assessed as part of the Onshore Project to lead to cumulative effects in conjunction with other projects. The first stage of the assessment is detailed in **Table 13.36**.

250. Only potential impacts assessed in **Section 13.5, Section 13.6** and **Section 13.7** as **negligible** or above are included in the CEA (i.e. those assessed as 'no impact' are not taken forward as there is no potential for them to contribute to a cumulative impact).

Table 13.36 Potential cumulative impacts considered for air quality

Impact	Potential for cumulative effect	Rationale
Construction		
Impact 1: Construction dust and fine particulate matter	Yes	There is potential for cumulative construction dust impacts where projects occur within 700m of each other, as dust impacts are considered within a 350m buffer from each project, as detailed in **Section 13.3.3.1**. Therefore, two projects would need to be within 700m of each other for cumulative dust impacts to occur.

Impact	Potential for cumulative effect	Rationale
Impact 2: NRMM Emissions	Yes	There is potential for cumulative NRMM emission impacts where projects overlap.
Impact 3: Construction phase road traffic emissions	Yes	Where the construction phase of the Onshore Project overlaps with other projects, there is the potential for cumulative impacts associated with the Onshore Project-generated traffic emissions on the local road network.
Operation		
Operation impacts were scoped out of the assessment, as detailed in **Section 13.6**, therefore there would be no cumulative operational impacts.		
Decommissioning		
The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan would be provided. As such, cumulative impacts during the decommissioning stage are assumed to be the same as those identified during the construction stage.		

251. The second stage of the CEA is to evaluate the projects considered for the CEA to determine whether a cumulative effect is likely to arise. The list of considered projects (identified in **Chapter 6: EIA Methodology**) and their anticipated potential for cumulative effects are summarised in **Table 13.37**.

13.8.1 Cumulative Impact 1: Construction Phase Dust and Particulate Matter

252. There is the potential for cumulative dust impacts associated with the Yelland Quay Development (Transfer Station Yelland Barnstaple) and the Onshore Project as they are located within 700m of the Onshore Project boundary.

13.8.1.1 Significance of effect

253. A construction dust assessment has been undertaken as part of the air quality assessment to accompany the Yelland Quay Development application (report reference A2670/AQ/001). The assessment has been undertaken in accordance with the 2014 revision of IAQM guidance on the assessment of dust from demolition and construction (IAQM, 2014). The assessment concludes that with the implementation best practice mitigation methods the risk impact from the construction phase would be **negligible** to **low**.

254. The assessment does not include reference to specific mitigation measures to be implemented; however, IAQM guidance (IAQM, 2016) states that, with the implementation of the recommended mitigation, impacts would be **not significant**. It is therefore not anticipated that there would be **significant** cumulative impacts

associated with construction phase dust emissions from the Yelland Quay Development combined with White Cross.

Table 13.37 Projects considered in the cumulative effect assessment on air quality

Project	Description	Status	Distance from Onshore Development Area (km)	Construction period	Included in the CEA?	Rationale
White Cross Offshore Project		Consent application submitted	0	n/a	No	The impact of White Cross Offshore Project on air quality has been scoped out.
Land Off North Lane, Bickington, Barnstaple, Devon, EX312JN	Residential units and highway works	Approved	4.58	2023-2026	Yes	The study area in the TAs overlap with the Traffic and Transport Study Area for the Onshore Project. It is therefore reasoned that there is the potential for cumulative effects to occur. This project has therefore been considered in the air quality CEA. The projects are greater than 700m from White Cross, therefore there would be no potential for cumulative dust impacts. The projects are also sufficiently distance to preclude cumulative NRMM emission impacts. Hence, these projects have been scoped out of the CEA with regard to these impacts.
Land at Chivenor Cross Chivenor Devon	Residential development of up to 94 dwellings	Approved	1.7	2023-2026	Yes	
Larkbear, Tawstock, Barnstaple, Devon	Erection of 252 dwellings	Pending	6.4	Unknown	Yes	
Land at Chivenor Cross Chivenor Braunton EX31 4BN	Application for up to 59 residential units	Appeal allowed	2.4	2023-2026	Yes	

Project	Description	Status	Distance from Onshore Development Area (km)	Construction period	Included in the CEA?	Rationale
Yelland Quay development (Transfer Station Yelland Barnstaple)	250 dwellings, up to 3000sqm employment space, retail space of up to 250sqm, up to 2000sqm food and drink sale space, service, and community space of up to 500sqm, flood defence works, and associated works	Appeal allowed	0.2	2023	Yes	There is potential for the construction phases of the proposed project and White Cross to overlap and traffic movements for both projects could use the same road links. Furthermore, this project meets the Natural England's SSSI IRZs criteria for inclusion within the relevant distances of each ecological receptor screened into the assessment. Therefore, this project has therefore been considered in the air quality CEA.
Lower Yelland Farm Yelland Barnstaple	Change of land and erection of reception/facilities building	Approved	0.76	2022/23	No	The projects are greater than 700m from White Cross, therefore there would be no potential for cumulative dust impacts. The projects are also sufficiently distance to preclude cumulative NRMM emission impacts.
St Johns Garden Centre Roundswell Barnstaple Devon EX31 3FA	Development of garden centre up to 6000sqm, car park and other associated infrastructure	Approved	5.7	2023-2026	No	

Project	Description	Status	Distance from Onshore Development Area (km)	Construction period	Included in the CEA?	Rationale
						Therefore, these projects have been scoped out of the CEA.
Sandy Lane Farm Lane Over Swanpool Bridge	Erection of shed building	Approved	Within White Cross onshore project area	2021	No	These projects have either already concluded construction or will have by the time construction of White Cross commences, and due to their nature, could not be expected to have any operational phase emissions. As such, they will therefore not contribute to cumulative effects during White Cross construction, operation, or decommissioning periods.
The Stables South Hole Farm	Erection of bat shed	Approved	Within White Cross onshore project area	2021	No	
Land at Braunton Burrows Braunton Devon	Various works to the dunes at Braunton Burrows	Approved	1.3	2023	No	
Long Overdune Lane to Saunton Sands Saunton	Installation of ground mounted solar photovoltaic array	n/a	Within White Cross onshore project area	2023	No	
Winsham Cross Farm Winsham Braunton Devon EX33 2LX	Installation of new septic tank and drainage	n/a	3.3	2022	No	
North Hole Farm Georgeham Braunton Devon EX33 1JQ	Erection of earth bank slurry store	n/a	1.9	2023/2024	No	
Land to the south of Frog Street Hil	Erection of monopitch agricultural shed	n/a	1.9	2022	No	

Project	Description	Status	Distance from Onshore Development Area (km)	Construction period	Included in the CEA?	Rationale
Georgeham Braunton Devon EX33 1JQ						
Land at Woolmers Farm North Lane Bickington Barnstaple Devon EX31 2JN	Residential units of up to 50	Approved	4.58	2023-2026	No	The project is not in close proximity to the Onshore Development Area and the study areas do not overlap. As such, there are not anticipated to be cumulative effects on onshore air quality.
Chilpark Fremington Devon	Residential development of 101 homes	Pending	2	2024	No	These projects have either already concluded construction or will have, and due to the size, could not be expected to have any significant operational phase emissions. As such, they will therefore not contribute to cumulative effects during White Cross construction, operation, or decommissioning periods.
Land at Barton Cross Instow Bideford Devon EX39 4JQ	Erection of 5 dwellings including access	Pending decision	0.24	2023	No	
Sandy Lane Dwelling	Erection of 1 dwelling	Approved	Within White Cross Onshore Development Area	10/09/2021	No	
Land At Pitt Hill Appledore	Residential development of 27 dwellings	Pending	1.7	Unknown	No	The project is greater than 700m from White Cross, therefore there would be no potential for cumulative dust impacts. The projects are also sufficiently distance to

Project	Description	Status	Distance from Onshore Development Area (km)	Construction period	Included in the CEA?	Rationale
						preclude cumulative NRMM emission impacts. Therefore, this project has been scoped out of the CEA.
Yelland Sewage Works, Yelland, Barnstaple, EX31 3HB	Sewage treatment works	Approved	0.13	In operation	No	As these projects have been operational prior to 2021 their emissions have been taken into account in the background concentrations. Therefore, these projects have been scoped out of the CEA.
Sewage Pumping Station, Roundswell, Barnstaple, EX31 3QS	Sewage pumping station	Approved	5.3	In operation	No	
Sewage Treatment Works, Knowle, Braunton, EX33 2LY	Sewage treatment works	Approved	2.6	In operation	No	
Sewage Treatment Works Moor Lane, Croyde	Sewage treatment works	Approved	2.3	In operation	No	
Slurry Compound And Tank North Hole Farm, Georgeham	Slurry compound and tank	Approved	1.8	In operation	No	

13.8.1.2 Further Mitigation

255. With the implementation of the mitigation measures detailed in **Section 13.5.1.5**, which will be secured in the final CEMP, the residual effects are considered to be **not significant**, in accordance with IAQM guidance (2016).

13.8.2 Cumulative Impact 2: NRMM Emissions

13.8.2.1 Significance of effect

256. Due to the potential for overlapping construction programmes and the proximity of the Yelland Quay Development, there is the potential for NRMM associated with White Cross to be located and operating at the same time, and in the same area as NRMM associated with the aforementioned project.

257. However, pollutant concentrations at all human receptors considered in this assessment were well below the relevant Objectives. It is anticipated that each project will employ mitigation measures to control and manage NRMM emissions and it is highly unlikely NRMM would be present in the same area at the same time for any extended period of time due to the sequential nature of White Cross. Therefore, it is unlikely that there would be a significant cumulative impact associated with construction phase NRMM. Inter-project engagement will seek to avoid temporal overlap.

13.8.2.2 Further Mitigation

258. With the implementation of the embedded mitigation measures detailed in **Summary of** Mitigation

259. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.

13.8.2.3 Embedded Mitigation

260. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**.

261. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise.

262. Table 13.19, the residual effects are considered to be **not significant**.

13.8.3 Cumulative Impact 3: Construction Road Vehicle Exhaust Emissions

13.8.3.1 Human Receptors

263. There is the potential for cumulative traffic emissions impacts at human receptors associated with the following projects and the Onshore Project as their traffic study area overlaps with the Traffic and Transport Study Area for the Onshore Project:

- Land Off North Lane, Bickington, Barnstaple, Devon, EX312JN (residential units)
- Land At Chivenor Cross, Chivenor, Devon (residential units)
- Larkbear, Tawstock, Barnstaple, Devon (residential dwellings)
- Land at Chivenor Cross, Chivenor Braunton, EX31 4BN (residential units)
- Yelland Quay Development (Transfer Station Yelland Barnstaple) (residential dwellings, highway infrastructure, employment space, retail space, space for sale of food and drink, service and community space, flood defence works, landscaping and appearance works and associated infrastructure).

13.8.3.1.1 Significance of effect

264. The Transport Consultant for the Onshore Project provided traffic flows and distribution associated with the Plans and Projects screened into the CEA, as shown in **Appendix 13.B: Air Quality Assessment Traffic Data**.

265. Traffic associated with the other Plans and Projects do not travel through Braunton AQMA, and therefore there is no cumulative effect with White Cross within Braunton AQMA.

266. The in-combination increase in traffic flows associated with White Cross and the other Plans and Projects detailed above cumulatively exceed the IAQM and EPUK screening criteria (IAQM and EPUK, 2017) on road links 7, 8, 9, 10 and 12. However, traffic associated with White Cross accounts for only a small proportion of the total traffic generated (2 to 9%). Therefore, White Cross is responsible for a small proportion of the potential change in air pollutants and therefore the ability for White Cross to mitigate any potential cumulative effects is limited. In addition, the effects of White Cross would be experienced only on a temporary basis, during construction. As such, there is considered to be no potential for a long-term cumulative air quality effect.

267. Further to the above, baseline air quality conditions in proximity to the affected road network are good and therefore there are no areas of significant air quality concern (i.e. AQMAs or other locations where the ambient concentrations exceed or

approach the relevant Objectives), as detailed in **Section 13.4.1**. As such, the risk of exceedance of the air quality Objectives, even with potential change in cumulative traffic, is **low**.

268. Therefore, it is unlikely that there would be a significant cumulative effect associated with traffic emissions at human receptors and the cumulative impact is considered to be **not significant**.

13.8.3.1.2 Further Mitigation

269. Effects of road traffic emissions at human receptors were found to not be significant, as such, no mitigation measures are required.

13.8.3.2 Ecological Receptors

270. As detailed in **Section13.5.3.2** and also discussed **Section 13.8.3.1** as part of the road traffic emissions ecological assessment, in-combination impacts have been considered in the impact assessment, and therefore the assessment is inherently cumulative. This includes background traffic growth (from 2022 to 2025, which represents regional growth due to residential and employment developments), and cumulative developments. Using Natural England's SSSI IRZs to determine relevant projects for inclusion, Yelland Quay Development (Transfer Station Yelland Barnstaple) was identified as fitting the criteria. However, this Project did not have sufficient information submitted in the application to be included in the in-combination assessment.

13.8.3.2.1 Significance of effect

271. Details of the significance of air quality impacts on ecological receptors as a result of traffic emissions is provided in **Chapter 16: Onshore Ecology and Ornithology**. As concluded in this chapter and in referenced in **Section 13.5.3.2**, the effects upon the qualifying / interest features of designated sites for nature conservation arising from changes to NOx, NH_3, N-Dep and acid deposition from road traffic emissions considered in this assessment are not significant.

13.8.3.2.2 Further Mitigation

272. No further mitigation measures are identified in **Chapter 16: Onshore Ecology and Ornithology**.

13.9 Potential Transboundary Impacts

273. The Scoping Report identified that there was no potential for significant transboundary effects regarding air quality from the Onshore Project upon the interests of other European Economic Area (EEA) States and this is not discussed further.

13.10 Inter-relationships

274. Inter-relationship impacts are covered as part of the assessment and consider impacts from the construction, operation or decommissioning of the Onshore Project on the same receptor (or group). A description of the process to identify and assess these effects is presented in **Chapter 6: EIA Methodology**. The potential inter-relationship effects that could arise in relation to air quality include both:

- **Project lifetime effects:** Effects arising throughout more than one phase of the Onshore Project (construction, operation, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation
- **Receptor led effects:** Assessment of the scope for all relevant effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group). Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

275. **Table 13.38** serves as a sign-posting for inter-relationships.

Table 13.38 air quality Inter-relationships

Topic and description	Related chapter	Where addressed in this Chapter	Rationale
Impact 1: Construction dust and fine particulate matter	**Chapter 22: Human Health**	**Section 13.5.1**	There could be the potential for human health impacts associated with increases in pollutant concentrations at sensitive receptors.
	Chapter 16: Onshore Ecology and Ornithology	**Section 13.5.1**	Ecological receptors may be impacted by changes to air quality.
Impact 2: NRMM emissions	**Chapter 22: Human Health**	**Section 13.5.2**	There could be the potential for human health impacts associated with NRMM emissions.
	Chapter 16: Onshore Ecology and Ornithology	**Section 13.5.2**	There could be the potential for ecological impacts

Topic and description	Related chapter	Where addressed in this Chapter	Rationale
			associated with NRMM emissions.
Impact 3: Construction road vehicle exhaust emissions	**Chapter 19: Traffic and Transport**	**Section 13.5.3**	Pollutant emissions from traffic movements associated with White Cross have the potential to impact on air quality.
	Chapter 16: Onshore Ecology and Ornithology	**Section 13.5.3.2**	Potential ecological receptors may be impacted by changes to air quality resulting from construction road vehicle exhaust emissions. Impacts discussed in **Chapter 16: Onshore Ecology and Ornithology**.
	Chapter 22: Human Health	**Section 13.5.3.1**	There could be the potential for human health impacts associated with increases in pollutant concentrations at sensitive receptors.

13.11 Interactions

276. 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 areas of interaction between construction impacts are presented in **Table 13.39**, along with an indication as to whether the interaction may give rise to synergistic impacts. This provides a screening tool for which impacts have the potential to interact. Operation and maintenance on air quality have been scoped out. It is anticipated that the decommissioning impacts would be similar in nature to those of construction.

277. **Table 13.40** then provides an assessment for each receptor (or receptor group) related to these impacts in two ways. Firstly, the impacts are considered within a development phase (i.e. construction, operation, maintenance or decommissioning) to see if, for example, multiple construction impacts could combine. Secondly, a lifetime assessment is undertaken which considers the potential for impacts to affect receptors across development phases. The significance of each individual impact is determined by the sensitivity of the receptor and the magnitude of effect; the

sensitivity is constant whereas the magnitude may differ. Therefore, when considering the potential for impacts to be additive it is the magnitude of effect which is important – the magnitudes of the different effects are combined upon the same sensitivity receptor. If minor impact and minor impact were added this would effectively double count the sensitivity.

13.12 Summary

278. This chapter has investigated the potential effects on human and ecological receptors arising from onshore air quality impacts due to the construction and decommission phases of the Onshore Project. Onshore operation and maintenance and offshore air quality impacts have been scoped out. The range of potential impacts and associated effects considered have been informed by the Scoping Opinion, and agreed through consultation, as well as reference to existing policy and guidance. The impacts considered include those brought about directly as well as indirectly.

279. **Table 13.41** presents a summary of the impacts assessed within this ES chapter, any commitments made, any mitigation required and the residual effects.

Table 13.39 Interaction between impacts during construction

Potential impact Construction	**Impact 1: Construction dust and fine particulate matter**	**Impact 2: NRMM emissions**	**Impact 3: Construction road vehicle exhaust emissions**
Impact 1: Construction dust and fine particulate matter		Yes	Yes
Impact 2: NRMM emissions	Yes		Yes
Impact 3: Construction road vehicle exhaust emissions	Yes	Yes	

Table 13.40 Potential interactions between impacts on air quality during construction

Receptor	Highest significance level during construction	Construction phase assessment
Human receptors	Impact 1: **not significant** with the implementation of mitigation measures detailed in **Section 13.5.1.5.** Impact 2: **not significant** with the implementation of good practice mitigation measures detailed in **Summary of** Mitigation 280. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**. 13.12.1.1 Embedded Mitigation 281. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**. 282. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that	**No greater than individually assessed impact** The proposed mitigation will minimise the potential for significant impacts on human receptors (Impact 1 and 2) within the study area and no significant impacts are predicted for Impact 3 during the construction phase of the Onshore Project. Very few human receptors have the potential to be affected by all three construction impacts. Notwithstanding this, background pollutant concentrations in the study area are low (see **Table 13.27**) and therefore it is unlikely that the air quality Objectives would be exceeded even in the unlikely event of the impacts interacting. It is therefore considered that interactions will not exacerbate the potential impacts associated with these activities during construction.

Receptor	Highest significance level during construction	Construction phase assessment
	might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise. Table 13.19. Impact 3: **not significant**.	

Receptor	Highest significance level during construction	Construction phase assessment
Ecological receptors	Impact 1: **not significant** with the implementation of mitigation measures detailed in **Section 13.5.1.5**. Impact 2: **not significant** with the implementation of good practice mitigation measures detailed in **Summary of** Mitigation 283. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**. 13.12.1.2 Embedded Mitigation 284. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**. 285. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms	**No greater than individually assessed impact** The proposed mitigation will minimise the potential for significant impacts on ecological receptors (Impact 1 and 2) within the study area during the construction phase of the Onshore Project. Very few ecological receptors (i.e. Braunton Burrows SAC and SSSI and Taw-Torridge Estuary SSSI) have the potential to be affected by all three construction phase impacts. It is therefore considered that interactions will not exacerbate the potential impacts associated with these activities during construction.

Receptor	Highest significance level during construction	Construction phase assessment
	of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise. Table 13.19. Impact 3: **not significant** with the implementation of best available technique mitigation measures (see **Onshore Ecology and Ornithology**).	

Table 13.41 Summary of potential impacts for air quality during construction, operation, maintenance and decommissioning of the Onshore Project

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
Construction						
Impact 1: Construction dust and fine particulate matter	Human receptors within 350m of the Onshore Development Area (and/or within 50m of HGV routes up to 500m from the Onshore Development Area	Dust Soiling: **high** Human health: **low**	Dust soiling: **medium** Human health: **low**	Assessment methodology does not assign significance before mitigation.	Measures as recommended by the IAQM (see **Section 13.5.1.5**).	**Not significant**
	Ecological receptors within 200m of the Onshore Development Area (and/or within 50m of HGV routes up to 500m from the Onshore Development Area)	Ecological effects: **high**	Ecological effects: **medium to high**			

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
Impact 2: NRMM emissions	Human and ecological receptors within close proximity to NRMM works will occur within the Onshore Project boundary	**High**	N/A	Defra technical guidance (Defra, 2022b) states that emissions from NRMM used on construction sites are unlikely to have a significant impact on local air quality where relevant control and management measures are employed.	Good practice mitigation measures (see **Summary of** Mitigation 286. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore Project. Further information is detailed in **Chapter 5: Project Description**.	**Not significant**

					13.12.1.3 Embedded Mitigation 287. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA) guidance as either primary or tertiary mitigation. Those measures relevant to the air quality	

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
					assessment are summarised in **Table 13.19**. 288. As these measures have been embedded the assessment of effects is undertaken on the basis that these forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms	

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
					of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise. Table 13.19).	
Impact 3: Construction road vehicle exhaust emissions	Residential properties, schools, hospitals and care homes within 200m of roads	High	N/A	**Not significant**	No additional mitigation measures required.	**Not significant**
	Designated ecological sites within 200m of affected roads	High	Low negligible	**Not significant**	No additional mitigation measures required.	**Not significant**
Operation and Maintenance						
Operational impacts on air quality have been scoped out.						
Decommissioning						
As per construction.						

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
Cumulative						
Impact 1: Construction dust and fine particulate matter	Human and ecological receptors located between White Cross and other Plans and Projects located within 700m of each other.	No greater than individually assessed.	No greater than individually assessed.	Assessment methodology does not assign significance before mitigation.	Measures as recommended by the IAQM (see **Section 13.5.1.5**).	**Not significant**.
Impact 2: NRMM emissions	Human and ecological receptors within close proximity to NRMM works which occur within the boundary of White Cross and other Plans and Projects	No greater than individually assessed.	N/A	Defra technical guidance (Defra, 2022b) states that emissions from NRMM used on construction sites are unlikely to have a significant impact on local air quality where relevant control and management measures are employed.	Good practice mitigation measures (see **Summary of** Mitigation 289. This section outlines the mitigation relevant to the air quality assessment, which has been incorporated into the design of the Onshore	**Not significant**.

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
					Project. Further information is detailed in **Chapter 5: Project Description**. 13.12.1.4 Embedded Mitigation 290. The embedded mitigation measures are those defined in the Institute of Environmental Management and Assessment (IEMA)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
					guidance as either primary or tertiary mitigation. Those measures relevant to the air quality assessment are summarised in **Table 13.19**. 291. As these measures have been embedded the assessment of effects is undertaken on the basis that these	

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
					forms of mitigation will definitely be delivered. Therefore, any effects that might have arisen without these forms of mitigation do not need to be identified as 'potential effects', as there should be no potential for them to arise. Table 13.19).	

Potential impact	Receptor	Sensitivity	Magnitude	Significance	Potential mitigation measure	Residual Effect
Impact 3: Construction road vehicle exhaust emissions	Residential properties, schools, hospitals and care homes within 200m of roads affected by White Cross and other Plans and Projects	No greater than individually assessed.	N/A	**Not significant**	No additional mitigation measures required.	**Not significant**
	Designated ecological sites located within 200m of roads affected by White Cross and other Plans and Projects	**High**	Low negligible	**Not significant**	No additional mitigation measures required.	**Not significant**

292. The effect of construction dust and fine particulate matter from the Onshore Project on human and ecological receptors is considered **not significant** with the implementation of site specific mitigation measures.

293. The effect of NRMM emissions on human and ecological receptors is considered **not significant** with the implementation of relevant embedded control and management measures.

294. The effect of Projects-generated road traffic emissions on existing human receptors is considered **not significant**. The impact on designated ecological sites of increases in traffic were also considered and compared to the appropriate Critical Loads and Levels. Whilst some impacts were predicted to be below the threshold of insignificance, the impacts of certain pollutants have been considered further in **Chapter 16: Onshore Ecology and Ornithology**, where it has been concluded impacts are not significant in the context of the EIA regulations.

295. The assessment of cumulative impacts from the Onshore Project and other developments and activities concluded that the in-combination effect of construction dust and fine particulate matter, NRMM emissions and Projects-generated road traffic emissions on existing human receptors is considered **not significant**.

296. The CEA for air quality does not identify any reasonably foreseeable projects or developments where significant cumulative effects could arise. The significance of the cumulative effects on designated ecological sites to be not significant (see **Chapter 16: Onshore Ecology and Ornithology**).

297. There are no transboundary effects with regard to onshore air quality as the onshore development area is not sited in proximity to any international boundaries, and any effects would be localised. Transboundary effects are therefore scoped out of this assessment and not considered further.

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Appendix 13.A: Construction Dust and Fine Particulate Matter Assessment Methodology

1. Introduction

1. The following sections outline criteria developed by the Institute of Air Quality Management (IAQM) (IAQM, 2016) for the assessment of air quality impacts arising from construction activities associated with White Cross offshore wind farm (the Onshore Project). The assessment procedure is divided into four steps and is summarised below.

2. Step 1: Screening the need for a detailed assessment

2. An assessment will normally be required where there are human receptors within 350m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). Internal guidance from Natural England recommends that ecological receptors within 200m of a site should be considered in a construction dust and fine particulate matter assessment, as opposed to only those ecological sites within 50m of a site (as stated in IAQM Guidance (IAQM, 2016)).

3. An 'ecological receptor' refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Special Protection Area (SPA), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites, such as ancient woodlands and local nature reserves (LNRs), have also be considered where appropriate.

4. Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is '**negligible**'.

5. The construction dust and fine particulate matter assessment was undertaken using a worst-case scenario whereby the maximum magnitude of works (e.g. cable trenching, a construction compound, jointing bay and link box construction) are undertaken in proximity to the greatest number of human and ecological receptors (this may not necessarily be in the same location). Recommended mitigation measures for the worst-case location(s) would then be applied to all onshore construction works, to provide a conservative assessment.

6. There are human receptors within 350m and ecological receptors within 200m of the Onshore Development Area. Therefore, a detailed assessment was required to consider the potential for impacts at both human and ecological receptors.

3. Step 2: Assess the Risk of Dust Impacts

7. A risk category is allocated to a site based on the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the four construction activities outlined by the IAQM (demolition, construction, earthworks and trackout).

8. The site can also be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

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

9. The IAQM guidance recommends that the dust emission magnitude is determined for earthworks, construction and trackout. The dust emission magnitude is based on the scale of the anticipated works. **Table 13.42** describes the potential dust emission class criteria for each outlined construction activity. As no demolition would be undertaken during the construction phase, impacts associated with demolition have not been considered within the assessment.

Table 13.42 Criteria used in the determination of dust emission magnitude

Activity	Criteria used to determine dust emission class		
	Small	Medium	Large
Earthworks	Total site area <2,500m2 Potentially dusty soil type (e.g. clay).	Total site area 2,500 – 10,000m2 Moderately dusty soil type (e.g. silt).	Total site area >10,000m2 Soil type with large grain size (e.g. sand).
Construction	Total building volume <25,000m3	Total building volume 25,000 – 100,000m3	Total building volume >100,000m3
Trackout	<10 outward Heavy Duty Vehicle (HDV) trips in any one day.	10-50 outward HDV trips in any one day. Unpaved road length 50-100m	>50 outward HDV trips in any one day. Unpaved road length >100m

10. The potential dust emission magnitude for the Onshore Project was determined using criteria detailed in **Table 13.42**.

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

11. The sensitivity of the area takes into account the following factors and is detailed in **Table 13.43**:

- The specific sensitivities of receptors in the area
- The proximity and number of receptors
- The local background PM_{10} concentration
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of windblown dust.

Table 13.43 Criteria used in the determination of dust emission magnitude

Activity	Criteria used to determine dust emission class		
	Human receptors		Ecological receptors
	Dust soiling effects	Health effects of PM_{10}	Ecological effects
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.	Locations with an international or national designation and the designated features may be affected by dust soiling.
Medium	Parks, places of work.	Office and shop workers not occupationally exposed to PM_{10}.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown
Low	Playing fields, farmland, footpaths, short-term car parks and roads.	Public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition

12. The criteria detailed in **Table 13.44** to **Table 13.46** were used to determine the sensitivity of the area to dust soiling effects, human health impacts and ecological effects. **Figure 13.2** details the distance bands, as detailed in **Table 13.44** to **Table 13.46**, from the Onshore Development Area for use in the construction phase assessment.

Table 13.44 Sensitivity of the area to dust soiling effects on people and property

Sensitivity of Receptors	No. of receptors	Distance from source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>100	High	High	Medium	Low
	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 13.45 Sensitivity of the area to human health impacts

Sensitivity of Receptors	Annual mean PM_{10} conc.	No. of receptors	Distance from source (m)			
			<20	<50	<100	<350
High	>32µg.m^{-3}	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32µg. m^{-3}	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28µg.m^{-3}	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24µg. m^{-3}	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32µg.m^{-3}	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32µg.m^{-3}	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table 13.46 Sensitivity of the area to ecological effects

Sensitivity of Receptors	Distance from source (m)		
	<20	<50	<200
High	High	Medium	Low
Medium	Medium	Low	Low
Low	Low	Low	Low

3.3. Step 2C: Define the Risk of Impacts

13. The dust emission magnitude and sensitivity of the area are combined to determine the risk of impacts from each activity (earthworks, construction and trackout) before mitigation is applied. These criteria are detailed in **Table 13.47** and **Table 13.48**.

Table 13.47 Risk of impacts – earthworks and construction

Sensitivity of Receptors	Distance from source (m)		
	<20	<50	<200
High	High	Medium	Low
Medium	Medium	Low	Low
Low	Low	Low	Low

Table 13.48 Risk of impacts – trackout

Sensitivity of Receptors	Distance from source (m)		
	<20	<50	<200
High	High	Medium	Low
Medium	Medium	Low	Low
Low	Low	Low	Low

4. Step 3: Site Specific Mitigation

14. Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high-risk site. Mitigation for the Onshore Project is detailed in **Section 13.3.6**.

5. Step 4: Determine Significant Effects

15. As shown in Step 2 above, in assessing the significance of construction dust impacts using the IAQM guidance (2016), the dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts prior to mitigation. Step 3 identifies appropriate site-specific mitigation depending on the risk of impact. This assessment deviates slightly from the methodology set out in **Chapter 6 EIA Methodology**, as the IAQM guidance does not assign a significance before applying mitigation measures. Once appropriate mitigation measures have been identified as required, the significance of construction phase impacts can be determined. The IAQM considers it to be most appropriate to only assign significance post mitigation as it assumes mitigation is inherent in the design/construction approach. The guidance (IAQM, 2016) states that with the implementation of mitigation measures, the residual effects from construction would be **not significant**.

Appendix 13.B: Air Quality Assessment Traffic Data

1. Introduction

1. The traffic data used in the air quality assessment were provided by Royal HaskoningDHV, the Transport Consultants for Projects. The derivation of the traffic flows is detailed in **Chapter 19: Traffic and Transport**.

2. As detailed in the table, traffic data has been factored to account for traffic growth between 2022 and 2025, by applying background growth factors that account for regional traffic growth from the Trip End Model Presentation Program (TEMPro), which takes into account traffic growth from committed developments (e.g. residential developments, employment, etc.).

Table 13.49 Air Quality Traffic Data

Link ID	Road Name	2022 Base Year		2025 Base Year		White Cross Construction Flows 2025		Cumulative Project and Plans Flows		2025 with White Cross and Cumulative Flows	
		AADT	% HGV	AADT	% HGV	AADT	% HGV	AADT	% HGV	AADT	% HGV
1	B3231 west of the Site Access	5,817	0.6%	6,098	0.6%	16	36%	0	0	6,155	1.1%
2	B3231 east of the Site Access	5,817	0.6%	6,098	0.6%	62	46%	0	0	6,233	1.8%
3	Blind Acres Lane to Moor Lane	149	0.0%	156	0.0%	23	0%	0	0	209	0.0%
4	Moor Lane	289	0.6%	303	0.6%	23	0%	0	0	357	0.5%
5	Sandy Lane south of Moor Lane	391	1.3%	410	1.3%	23	0%	0	0	464	1.2%
6	A361 south of B3231 to Vellator Way	13,696	1.3%	14,358	1.3%	62	46%	0	0	14,493	1.8%
7	Unnamed road to Yelland Substation	477	10.3%	501	10.3%	62	54%	1,141	0	1,765	7.0%
8	B3233 east of Unnamed road to Yelland Substation	6,532	0.8%	6,848	0.8%	29	0%	1,423	0	8,323	0.7%
9	B3233 west of Unnamed road to Yelland Substation	5,032	0.7%	5,276	0.7%	62	54%	843	0	6,241	1.8%
10	A3125 south of B3233	15,501	0.7%	16,251	0.7%	29	0%	841	0	17,143	0.7%
11	Vellator Way to Sandy Lane	430	1.6%	451	1.6%	23	0%	11	0	515	1.4%

Link ID	Road Name	2022 Base Year		2025 Base Year		White Cross Construction Flows 2025		Cumulative Project and Plans Flows		2025 with White Cross and Cumulative Flows	
		AADT	% HGV	AADT	% HGV	AADT	% HGV	AADT	% HGV	AADT	% HGV
12	A361 south of Vellator Way	13,696	1.3%	14,358	1.3%	57	50%	564	0	15,046	1.8%