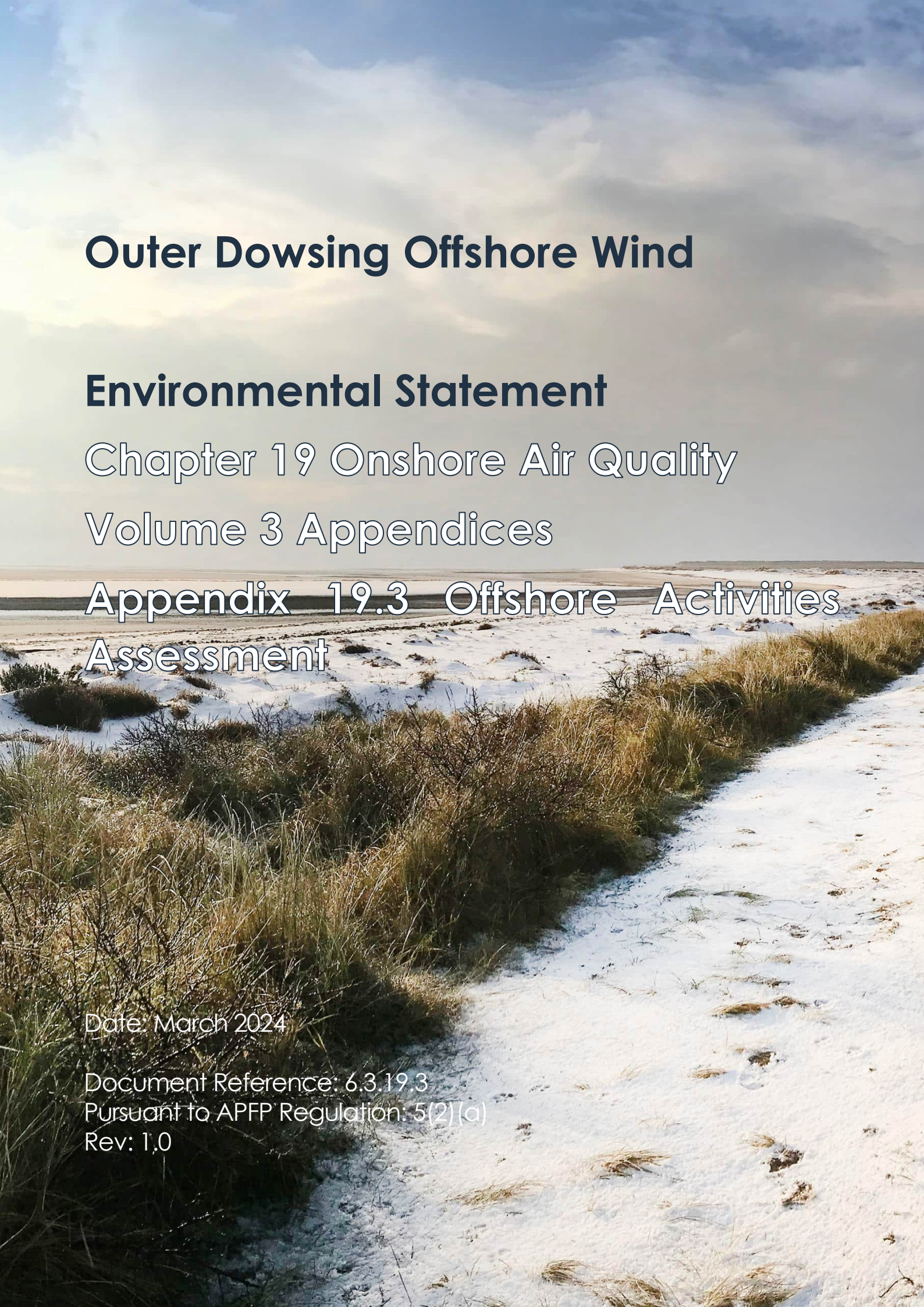

Outer Dowsing Offshore Wind

Environmental Statement

Chapter 19 Onshore Air Quality

Volume 3 Appendices

Appendix 19.3 Offshore Activities Assessment

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Volume 3, Appendix 19.3: Offshore Activities Assessment

Outer Dowsing Offshore Wind Environmental Statement

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Basis of Report

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Acronyms and Abbreviations

Acronyms and Abbreviations	Description
AQAL	Air Quality Assessment Level
CO	Carbon Monoxide
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
ECA	Emission Control Area
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
HDD	Horizontal Directional Drill
LAQM.TG22	Local Air Quality Management Technical Guidance 2022
LWS	Local Wildlife Site
LWT	Lincolnshire Wildlife Trust
MARPOL	The International Convention for the Prevention of Pollution from Ships
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NSIP	Nationally Significant Infrastructure Project
O&M	Operation and Maintenance
ODOW	Outer Dowsing Offshore Wind
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm (micrometres) or less
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
SPA	Special Protection Area
SO_2	Sulphur Dioxide
SO_x	Sulphur Oxides
SSSI	Site of Special Scientific Interest
UK	United Kingdom
$\mu g/m^3$	Micrograms per cubic metre
WTG	Wind Turbine Generator

Terminology

Term	Description
400kV cable corridor	The 400kV cable corridor is the area within which the 400kV cables connecting the onshore substation to the NGSS will be situated.
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation, TotalEnergies and Gulf Energy Development (GULF)), trading as Outer Dowsing Offshore Wind. The Project is being developed by Corio Generation

Term	Description
	(a wholly owned Green Investment Group portfolio company), TotalEnergies and GULF.
Array area	The area offshore within which the generating station (including wind turbine generators (WTG) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling will be positioned.
Baseline	The status of the environment at the time of assessment without the development in place.
Cable ducts	A duct is a length of underground piping which is used to house the Cable Circuits.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
Environmental Statement	The suite of documents that detail the processes and results of the EIA.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Inter-array cables	Cable which connects the wind turbines to each other and to the offshore substation(s), which may include one or more auxiliary cables (normally fibre optic cables).
Interlink cables	Cable which connects the Offshore Substations (OSS) to one another, which may include one or more auxiliary cables (normally fibre optic cables).
Intertidal	The area between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS).
Landfall	The location at the land-sea interface where the offshore export cables and fibre optic cables will come ashore.
Mitigation	Mitigation measures are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Offshore Export Cable Corridor (ECC)	The Offshore Export Cable Corridor (Offshore ECC) is the area within the Order Limits within which the export cables running from the array to landfall will be situated.
Onshore Infrastructure	The combined name for all onshore infrastructure associated with the Project from landfall to grid connection.
Order Limits	The area subject to the application for development consent. The limits shown on the works plans within which the Project may be carried out.
Outer Dowsing Offshore Wind (ODOW)	The Project.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.

Term	Description
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Statutory consultee	Organisations that are required to be consulted by the Applicant, the Local Planning Authorities and/or The Planning Inspectorate during the pre-application and/or examination phases, and who also have a statutory responsibility in some form that may be relevant to the Project and the DCO application. This includes those bodies and interests prescribed under Section 42 of the Planning Act 2008.
Study area	Area(s) within which environmental impact may occur – to be defined on a receptor-by-receptor basis by the relevant technical specialist.
Trenchless technique	Trenchless technology is an underground construction method of installing, repairing and renewing underground pipes, ducts and cables using techniques which minimize or eliminate the need for excavation. Trenchless technologies involve methods of new pipe installation with minimum surface and environmental disruptions. These techniques may include Horizontal Directional Drilling (HDD), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench.
Wind turbine generator (WTG)	A structure comprising a tower, rotor with three blades connected at the hub, nacelle and ancillary electrical and other equipment which may include J-tube(s), transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders and maintenance equipment, helicopter landing facilities and other associated equipment, fixed to a foundation.

19.0 Offshore Activities Assessment

19.1 Introduction

1. The scope of the assessment is to understand potential onshore air quality impacts arising from offshore activities generated by the Project. This is in response to comments from The Planning Inspectorate contained within the Scoping Opinion (The Planning Inspectorate, 2022). In accordance with the comments, the assessment has focused on the construction phase, however, the operation and maintenance (O&M) and decommissioning phases have been considered and discussed.

2. The offshore array area is located approximately 54km off the coast of Lincolnshire. Activities (construction, operational and decommissioning) occurring at the array area, associated with platform installation and inter-array/interlink cable installation, are highly unlikely to cause onshore impacts – given the separation distance and dispersal of emissions. However, offshore activities, such as export cable installation, which do interact with onshore receptors have the potential to cause onshore impacts. These include:

    - Vessel movements; and
    - Helicopter movements.

3. Information used for the purposes of informing the offshore activity assessment is consistent with values provided within Volume 1, Chapter 3: Project Description (document reference 6.1.3). Each assessment is discussed in turn.

19.2 Vessel Emissions

4. Consideration has been given to the extent of vessel movements generated by the Project, and the likelihood for a significant effect to arise. The scope of the assessment comprises the following:

    - Review of the baseline environment, including:
        - Existing vessel movements;
        - Current vessel emissions regulations; and
        - Baseline and future baseline conditions.
    - Vessel emissions screening assessment, including:
        - Review of sensitive onshore receptors; and
        - Comparison of the extent of predicted offshore vessel movements associated with the construction phase of the Project with reference to screening thresholds to determine whether further assessment is required.

19.3 Assessment Methodology

5. The screening of vessel emissions has been undertaken in accordance with the Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management Technical Guidance (TG22) (LAQM.TG22). Within LAQM.TG22, further assessment of vessel emissions is recommended where:

   - There are more than 5,000 large ship movements[1] per year, with relevant exposure within 250m of berths and main areas of manoeuvring; or
   - There are more than 15,000 large ship movements per year, with relevant exposure within 1km of these areas.

6. The screening thresholds indicate that sensitive receptors within 1km of vessel movements could be affected by vessel emissions. The offshore array area is located approximately 54km off the coast of Lincolnshire. Given the separation distance, vessel movements associated with the Project are therefore only likely to interact with onshore sensitive receptors where they are:

   - Used to facilitate the construction and decommissioning of onshore infrastructure near the landfall, such as cable installation. This interaction with onshore sensitive receptors is likely to occur at the location of the onshore and offshore interface (i.e., where the Order Limits interact with the coast e.g., the landfall); and/or
   - Exiting/entering a port.

7. The specific port location(s) to be utilised by vessels are yet to be determined, however is likely to be Teesside during the construction phase, and Grimsby for the O&M phase. Regardless of the port location, all vessel movements will be compliant with the relevant port's operational constraints and management plans. Therefore, further consideration to vessels exiting/entering a port has not been given.

8. The focus of this assessment thus relates to the potential extent of vessels used to facilitate onshore works and their interaction with onshore sensitive receptors (i.e., at the location of the onshore and offshore interface). In relation to this, the majority of vessel movements supporting onshore works would occur in the construction phase (and potentially the decommissioning phase); associated with cable laying and landfall activities. Nearshore activities during O&M are expected to be very limited, relating to cable maintenance for example.

9. Regarding the landfall, all onshore and offshore interfaces have been assessed – i.e., assuming nearshore vessel movements occur at all locations across the landfall. This

[1] Cross-channel ferries, roll on-roll off ships, bulk cargo, container ships, cruise liners, etc – one ship generating two movements (arrival and departure).

ensures that all potential impacts have been assessed.

10. Vessel movements used within this assessment derive from values provided within Chapter 3 (document reference 6.1.3). As described, the Applicant requires flexibility in the location and layout the wind turbine generators (WTGs) within the array area, which impacts the number of WTGs required. Where optionality exists, the maximum vessel movements associated with any scenario have been assessed to ensure worst-case impacts are understood and present a precautionary assessment.

19.4 Baseline Environment

11. The offshore elements of the Project are located within the North Sea, an area already characterised by a high volume of shipping traffic including large ships/tankers.

12. Offshore vessel movements associated with the Project would represent a small number of overall vessel traffic in comparison and therefore accounts for a small proportion of total North Sea emissions. Further information is provided within Volume 1, Chapter 15: Shipping and Navigation (document reference 6.1.15).

19.4.1 Current and Future Regulation

13. Vessel emissions within the North Sea are regulated by legislation. The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention for the regulation of emissions from vessels. In relation to air pollution, MARPOL is implemented in the UK by The Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008 (as amended).

14. Annex VI of MARPOL entered into force in 2005 with the aim of minimising airborne emissions from shipping, notably from air pollutants such as sulphur oxides (SO_x) and nitrogen oxides (NO_x). It introduced a globally progressive reduction of SO_x, NO_x and particulate matter emissions from vessels alongside discrete emission control areas (ECAs); where more stringent limits apply.

15. The North Sea was designated a SO_x ECA under MARPOL Annex VI in 2005 (which entered into force in 2006). In 2016 it also became a NO_x ECA (which entered into force in 2021). The following emission limits currently apply within the North Sea SO_x/NO_x ECAs:

    - 0.1% sulphur fuel content limit (compared to the 0.5% global sulphur limit); and
    - Vessels constructed on or after 1 January 2021 must comply with the most stringent NO_x emission limit (Tier III).

16. Vessel emission restrictions are expected to tighten in future years, following the

availability and introduction of cleaner technologies and fuels, alongside policy such as the Maritime 2050 and Clean Maritime Plan (Department for Transport, 2019). These policies provide a strategy for the transition to zero emission shipping within the UK. Therefore, emission contributions from vessel emissions are expected to reduce even further. These projections are evidenced in Section 19.4.2.

19.4.2 Background Pollutant Concentrations

17. As discussed in Volume 1, Chapter 19: Onshore Air Quality (document reference 6.1.19), Defra maintains a nationwide model of existing and future background annual mean air quality concentrations at a 1km grid square resolution. A review of annual mean background concentrations provided by Defra for the pollutants of principal importance in relation to shipping has been undertaken to provide an indication of the sensitivity of the study area to pollutant concentration changes. A study area with low background concentrations and a large headroom between Air Quality Assessment Levels (AQALs)/Critical Levels would be considered less sensitive to pollutant concentration changes compared to a study area with high background concentrations and a small headroom between AQALs/Critical Levels, for example.

18. Consideration has been given to pollutant concentrations reported for the first year of proposed activities associated with the Project (2027 – the first year of construction) where possible. Use of 2027 datasets to characterise baseline conditions for all stages of the Project is likely to be conservative, in recognition of the forecast improvements to air quality (associated with the introduction of policy and cleaner emission technologies/restrictions). Pollutant concentrations for the year of 2019 have also been provided as a comparison to inform the evolution of the baseline.

19. Defra's dataset includes annual average concentration estimates for NO_x, NO_2, PM_{10} and $PM_{2.5}$ using a reference year of 2018 (the year in which comparisons between modelled and monitored concentrations are made), which are projected up to the year 2030. Annual mean background concentrations of carbon monoxide (CO) and sulphur dioxide (SO_2) are also available, however relate to 2001. These values are therefore likely to be overly conservative in consideration of concentrations anticipated throughout the Project. This is because background CO and SO_2 concentrations are likely to have reduced since 2001 (and will continue to do so in the future), following the introduction of policy and lower emission technologies (discussed in Section 19.4.1).

20. As justified in Section 19.3, consideration has been given to onshore locations within 1km of potential nearshore vessels movements at the offshore and onshore interface i.e., where vessels are used to facilitate the construction and decommissioning of

onshore infrastructure (cable laying and landfall infrastructure). The maximum annual mean background concentrations for each relevant pollutant considered, based on the 1km grid squares which cover the onshore study area are provided in Table 19.1. The corresponding AQALs and Critical Levels are provided as a comparison, where available.

Table 19.1: Maximum Defra Mapped Background Pollutant Concentrations

Pollutant		Year	Annual Mean Concentration (µg/m^3)	
			Maximum Background	AQAL or Critical Level
Nitrogen Oxides	NO_x	2019	10.3	30
		2027	8.1	
Nitrogen Dioxide	NO_2	2019	7.9	40
		2027	6.4	
Particulate Matter	PM_{10}	2019	14.7	40
		2027	13.6	
Particulate Matter	$PM_{2.5}$	2019	8.3	20
		2027	7.5	
Sulphur Dioxide	SO_2	2001	2.1	10/20 (A)
Carbon Monoxide	CO	2001	219	-

Table notes:

(A) 10µg/m^3 where lichens or bryophytes are present, 20µg/m^3 where they are not present.
(B) 2018 reference datasets: NO_x, NO_2, PM_{10} and $PM_{2.5}$
(C) 2001 reference datasets: SO_2, CO

21. The maximum background concentrations reported for the onshore locations likely to be affected by nearshore vessel emissions are below the corresponding AQALs and Critical Levels. Reported maximum 2001 concentrations of SO_2 and CO are likely to be greater in comparison to those anticipated during the Project – as they do not take into account any improvements beyond 2001 (i.e., as a result of the introduction of cleaner emission technologies and restrictions).

22. A large headroom exists between projected annual mean pollutant background concentrations and the corresponding AQALs/Critical Levels at locations where offshore vessel movements are most likely to interact with onshore sensitive receptors. The likelihood of vessel emission pollutant contributions causing an exceedance of the AQALs/Critical Levels is therefore low. The sensitivity of the study area with respect to pollutant concentration changes is considered low.

23. Furthermore, baseline concentrations anticipated during the O&M and decommissioning

phases are expected to be lower in comparison. This is largely driven by legislative and policy interventions which target emissions reductions alongside the introduction of cleaner technologies (discussed in Section 19.4.1). These forecast improvements are reflected within Table 19.1, whereby the maximum background concentrations across the study area decrease in future years (i.e., 2019 compared to 2027).

19.5 Vessel Emissions Screening Assessment

19.5.1 Review of Onshore Sensitive Receptors

24. In accordance with the LAQM.TG22 screening thresholds, a review of onshore coastal sensitive receptors (human and ecological) located within 1km of potential nearshore vessel movements generated by the Project (at the locations of the onshore and offshore interface) has been undertaken. The outcomes of this exercise are used to indicate whether exposure exists, and further assessment is required.

25. Regarding the landfall, sensitive receptors up to 1km from all onshore and offshore interfaces have been assessed (i.e., assuming nearshore vessel movements occur at all locations across the landfall) – as illustrated in Volume 2, Figure 19.5 (document reference 6.2.19.5). This ensures that all potential scenarios and associated impacts have been assessed.

26. For the purposes of defining the onshore study area (the potential area affected by nearshore vessel emissions), a 1km onshore buffer from the onshore and offshore interface has been established. This theoretically assumes that vessel movements at the onshore and offshore interface occur up to the point of the coastline, irrespective of logistical constraints (i.e., shallow water). This is considered conservative as it increases the spatial extent of the onshore study area, whereas realistically vessels movements are likely to occur some distance from the coast, given logistical constraints. Furthermore, the indicative arrangement shows that the cable ducts will be installed by Horizontal Directional Drill (HDD) to a point a minimum of 500m seaward of the intertidal zone and most vessel activity will be seaward of this point, which further supports the conservative nature of the assessment.

19.5.1.1 Human Receptors

27. The coastal village of Anderby Creek is located within 1km of potential nearshore vessel movements generated by the Project. Other transient exposure locations, such as footpaths and the beach are also within 1km. These locations are illustrated in Figure 19.5 of Chapter 19 (document reference 6.2.19.5).

28. As such, further assessment in relation to human receptors is therefore required.

19.5.1.2 Ecological Receptors

29. The following designated ecological sites, considered potentially sensitive to vessel emissions, are located within 1km of potential nearshore vessel movements generated by the Project (locations illustrated in Figure 19.5 of Chapter 19 (document reference 6.2.19.5)):

- Greater Wash Special Protection Area (SPA);
- Sea Bank Clay Pits Site of Special Scientific Interest (SSSI); and
- Several non-statutory Local Wildlife Sites (LWS)/Lincolnshire Wildlife Trust (LWT) Reserves – Chapel Six Marshes LWS/LWT; Wolla Bank Reedbed LWT; Wolla Bank Pit LWT; Chapel Pit LWT; Anderby Marsh LWT; Marsh Yard to Anderby Creek Dunes LWS; Wolla Bank South LWS; Chapel Pit Nature Reserve LWS; Anderby Gravity Outfall LWS; and Anderby Creek Sand Dunes LWS.

30. As such, further assessment in relation to ecological receptors is therefore required.

19.5.2 Construction Phase Assessment

31. The LAQM.TG22 screening criteria relates to the number of large ship movements per year; however, the extent of predicted construction vessel numbers for the Project provided in Chapter 3 (document reference 6.1.3) relates to the total number of return trips for the whole construction phase. In order to derive the number of vessel movements for the construction phase, the total number of vessels movements (return trips) has been multiplied by two.

32. This is believed to be conservative, as the screening thresholds relate to the number of vessel movements in an annual period and the duration of the construction phase is greater than 1-year. However, to present a precautionary screening exercise and minimise the use of assumptions, the total number of construction vessel movements estimated to occur throughout the whole construction phase has been used. Actual annual movements associated with the Project are therefore expected to be lower than those values used for screening.

33. Construction vessel movements detailed within Chapter 3 (document reference 6.1.3) have been categorised based upon their likelihood to occur within 250m or 1km of onshore sensitive receptors within the study area, consistent with the LAQM.TG22 screening thresholds. Outcomes of this exercise are documented within Table 19.2:.

Table 19.2: Extent of Construction Vessels and Likelihood to Interact with Onshore Sensitive Receptors

Activity	Associated Vessels by Type	Vessel Movements Likely to Occur Within 250m of an Onshore Sensitive Receptor?	Vessel Movements Likely to Occur Within 1km of an Onshore Sensitive Receptor?
WTG Installation	Installation Vessels	No	No
	Support Vessels	No	No
	Transport Vessels	No	No
WTG Foundation Installation	Installation Vessels	No	No
	Support Vessels	No	No
	Transport/Feeder Vessels	No	No
	Anchored Transport/Feeder Vessels	No	No
Offshore Platform Installation	Installation Vessels	No	No
	Support Vessels	No	No
	Transport Vessels	No	No
Offshore Platform Foundation Installation	Installation Vessels	No	No
	Support Vessels	No	No
	Transport Vessels	No	No
Inter-array Cable Installation	Main Cable Laying Vessels	No	No
	Main Cable Burial Vessels	No	No
	Support Vessels	No	No
Interlink Cable Installation	Main Cable Laying Vessels	No	No
	Main Cable Burial Vessels	No	No
	Support Vessels	No	No
Offshore Export Cable Installation	Main Cable Laying Vessels	Yes	Yes
	Main Cable Jointing Vessels	Yes	Yes
	Main Cable Burial Vessels	Yes	Yes
	Support Vessels	Yes	Yes

34. The majority of activities detailed in Table 19.2: are offshore activities, involved in the construction of offshore infrastructure. The offshore array area is located approximately 54km off the coast of Lincolnshire, and therefore vessel movements associated with such activities are highly unlikely to occur within 250m and/or 1km of onshore sensitive receptor locations at the offshore and onshore interface.

35. Of the activities detailed in Table 19.2:, only vessel movements associated with ‘Offshore Export Cable Installation’ have the potential to occur within 250m and/or 1km of sensitive

onshore receptors (at the location of the offshore and onshore interface) as this includes the installation of cables near or at the landfall. The extent of vessel movements associated with this activity are detailed in Table 19.3:, for comparison against the LAQM.TG22 screening thresholds to determine whether further assessment is required.

36. It should be acknowledged that the LAQM.TG22 screening thresholds relate explicitly to large ship movements which comprise cross-channel ferries, roll on-roll off ships, bulk cargo, container ships and cruise liners. For the purposes of facilitating an assessment, it has been assumed that all vessels associated with the Project will comprise large ships. However, vessels used to facilitate the construction of onshore infrastructure (within 250m and/or 1km of the offshore and onshore interface) are unlikely to represent large ships, given the nature and location of works. Use of this assumption is therefore considered to be conservative and ensures a precautionary assessment.

Table 19.3: Number of Construction Vessel Movements Within Proximity of an Onshore Receptor

Vessel Type	Vessel Movements (Round Trips)	Vessel Movements [A]
Main Cable Laying Vessels	20	40
Main Cable Jointing Vessels	16	32
Main Cable Burial Vessels	16	32
Support Vessels	1,070	2,140
Total	1,122	2,244
LAQM.TG22 Screening Criteria	**Exposure Within 250m**	**5,000**
	Exposure Within 1km	**15,000**

Note:
[A] The total number of vessels movements (round trips) has been multiplied by two to calculate the total number of movements (one ship generating two movements).

37. The total number of vessels movements estimated to occur throughout the construction phase within 250m and/or 1km of onshore sensitive receptors (at locations of the offshore and onshore interface) are below the LAQM.TG22 screening thresholds, despite the overly conservative assessment methodology applied. Actual annual movements are believed to be lower than those values used for screening. Furthermore, offshore construction works are expected to last up to 3-years, and as such impacts are believed to be temporary, with no long-term deterioration of conditions.

38. Furthermore, this is considered a worst-case figure, as it is considered unlikely that all vessel movements associated with ‘Offshore Export Cable Installation’ would occur within 1km of the offshore and onshore interface, rather at a distance greater than this,

utilised for installation of the offshore Export Cable Corridor (ECC).

39. Whilst taking the above into account, in conjunction with baseline conditions discussed in Section 19.4, impacts from vessel emissions associated with the construction phase are considered to be negligible, and resultant effects **'not significant'**. Further assessment is therefore not required.

19.5.3 O&M Phase

40. In accordance with comments from The Planning Inspectorate contained within the Scoping Opinion (The Planning Inspectorate, 2022), an assessment of potential impacts on sensitive onshore receptors from offshore vessel movements during the O&M phase has been scoped out of the assessment. This is due to the low number of offshore vessel movements associated with the O&M phase, in comparison to the construction phase, and their location.

41. During the O&M phase, vessels will mainly be used for the maintenance of infrastructure in the offshore array area – located approximately 54km off the coast of Lincolnshire. The extent of nearshore vessel movements associated with the O&M phase will relate to maintenance activities including cable replacement at the onshore and offshore interface, in the event of a cable failure. However, these maintenance activities are believed to be infrequent and therefore no extensive nearshore activities are expected to be required in the O&M phase.

42. Furthermore, given the forecast improvements to air quality, any impacts would be lesser in comparison to those established for the construction phase. Further assessment in relation to the O&M phase is therefore not required and effects are believed to be **not significant** – as agreed with The Planning Inspectorate in the Scoping Opinion (The Planning Inspectorate, 2022).

19.5.4 Decommissioning Phase

43. Details surrounding the decommissioning phase are yet to be fully clarified. In addition, it is also recognised that policy, legislation and local sensitivities evolve, which will limit the relevance of undertaking an assessment at this stage.

44. Decommissioning activities are expected to occur for up to 3-years and are not anticipated to exceed the construction phase worst-case criteria assessed. As such, any associated impacts are likely to be lesser in comparison, given the following:

    - Landfall and cable infrastructure is expected to be left in situ where appropriate, to abate potential future impacts and minimise the extent of decommissioning activities;

- Vessel emission restrictions are expected to tighten in future years and in the interim before decommissioning activities occur (>25 years). This forecast is based on the introduction and availability of cleaner technologies and fuels, alongside legislation – as detailed in Section 19.4.1. Therefore, emission contributions from vessel emissions generated during the decommissioning phase are expected to be lower in comparison; and/or
- Air quality is expected to improve in future years, and in the interim before decommissioning activities occur (>25 years). This forecast is based on the introduction of policy and legislation, and availability of cleaner technologies. The likelihood of a significant effect arising during the decommissioning phase is therefore low.

45. These elements (alone and/or in combination) would result in a reduction in the level of significance in comparison to the assessment of construction effects. The outcomes of the construction phase assessment indicate that effects from vessel emissions on sensitive onshore receptors are **not significant**. Further assessment in relation to the decommissioning phase is therefore not required and effects are believed to be **not significant**.

46. Nonetheless, the decommissioning methodology would be finalised nearer to the end of the lifetime of the Project, to be in line with current guidance, policy and legislation. Any such methodology would be agreed with the relevant authorities and statutory consultees. Furthermore, the Development Consent Order (DCO) will include requirements for the submission of decommissioning programmes.

19.6 Helicopter Emissions

47. Consideration has been given to the extent of helicopter movements generated by the Project, during all stages, and the likelihood for a significant effect at onshore sensitive receptors to arise from associated emissions.

48. In all phases of the Project, helicopter movements that are required to interact with onshore works will use an existing onshore base/helipad; and all movements will be compliant with the relevant helipad's operational constraints and management plans, and therefore within its capacity.

49. A total of 384 return (i.e., two-way) helicopter trips will be generated by the construction phase of the Project – which has a duration of up to 51-months (when considering the combined onshore and offshore construction programme). This equates to an average of approximately seven to eight return helicopter trips per month. Of the total 384 trips, only 16 are associated with the onshore ECC and 400kV cable corridor. Impacts are therefore believed to be short-term and temporary, with no long-term deterioration of conditions.

50. During the O&M phase, it is anticipated that helicopters will only be required for the

maintenance of infrastructure in the offshore array area, which is located approximately 54km off the coast of Lincolnshire, and for the transfer of crew between shifts.

51. During the decommissioning phase, helicopter movements are expected to be comparable to those associated with the construction phase. However, the extent of impacts associated with the decommissioning phase are likely to be lesser in comparison, given the potential for infrastructure to remain in situ, forecast improvements to air quality and the introduction of cleaner emission technologies.

52. In consideration of the above, the likelihood for potential effects to occur from helicopter emissions are considered unlikely given the frequency of use, transient exposure, and separation distances from emission sources (i.e., helicopters) to receptors. Further consideration of helicopter emissions has therefore been screened out for all phases of the Project, and effects can be concluded as **not significant**.

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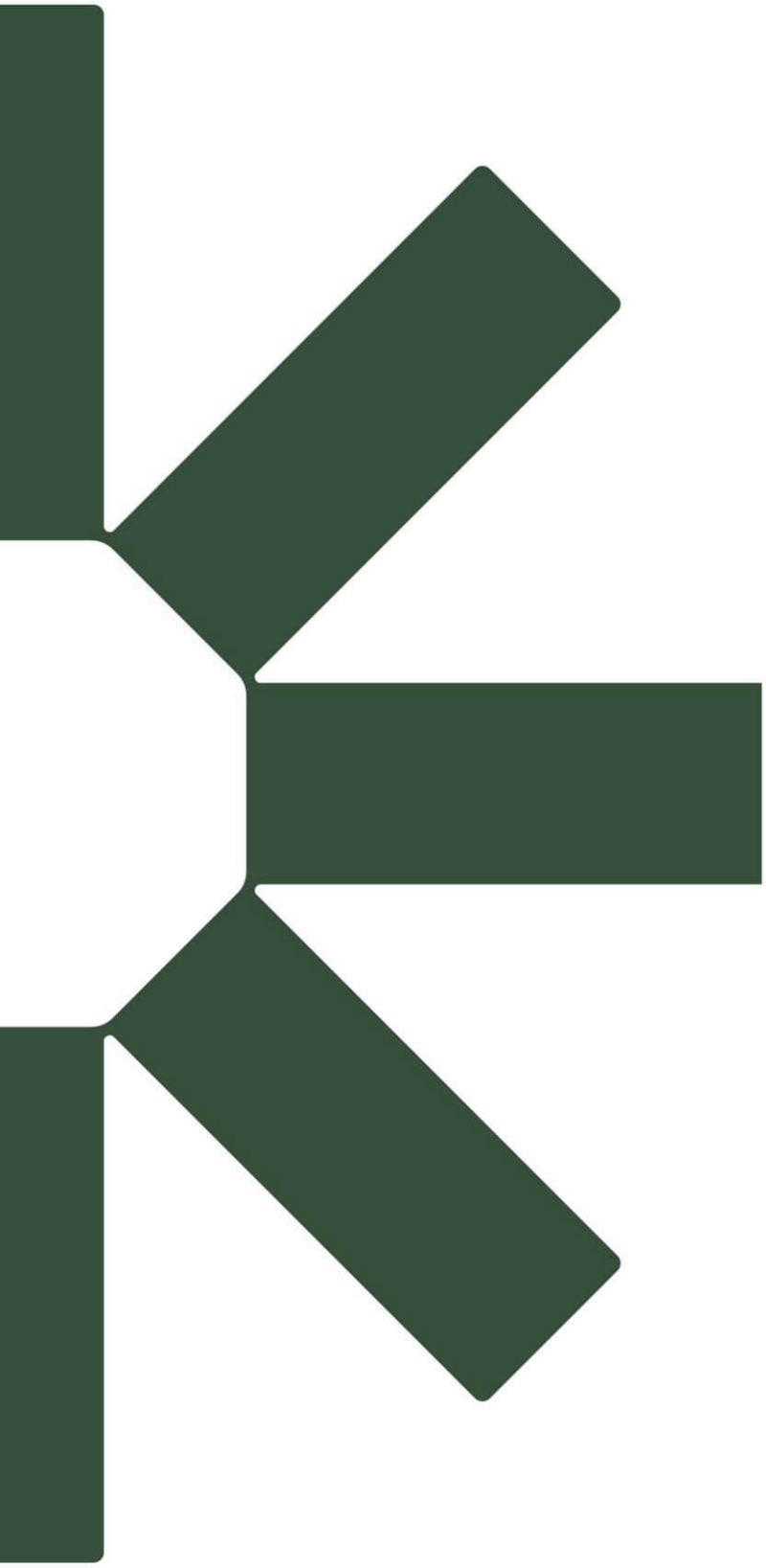

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