# Chapter 21 Addendum:
# Soil, Geology and Hydrogeology

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

A TETRA TECH COMPANY

JERA NEX BP

Energy for generations

# ORIEL WIND FARM PROJECT

## Environmental Impact Assessment Report - Addendum
## Chapter 21 Addendum: Soil, Geology and Hydrogeology

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## 21.1 Introduction

This Addendum provides information to supplement the assessment of soil, geology and hydrogeology presented in chapter 21 of the Environmental Impact Assessment Report (EIAR)(2024) (volume 2C).

In response to the Request for Further Information (RFI) from An Coimisiún Pleanála (ACP)(formerly An Bord Pleanála) regarding the planning application (case reference ABP-319799-24) for the Oriel Wind Farm Project (hereafter referred to as "the Project"), the location of the export cable at the landfall (above the HWM) at Dunany, including the location for the Transition Joint Bay (TJB) (options 1 and 2), has been adjusted within the planning application boundary. The adjustments have been made to address concerns regarding potential impacts on the cliff and coastal habitats as outlined in RFI 6.K and 8.G on the Schedule – Further Information Request. This has removed the requirement to install the offshore cable through the cliff at Dunany, which is a County Geology Site (CGS). Further details on the adjusted design are provided in chapter 5 Addendum: Project Description (EIAR volume 2A Addendum).

The change in locations of the export cable and TJB options have resulted in a change to the assessment provided in section 21.10.3 of chapter 21: Soil, Geology and Hydrogeology relating to 'Removal of subsoil and bedrock (if required) at the landfall and in the vicinity of the Dunany Point CGS'. The revised design results in the avoidance of trenching through the cliff at Dunany Point CGS. Overall, there is a reduction in the significance of the effect. There are no other changes to chapter 21: Soil, Geology and Hydrogeology arising from the updated assessment presented in section 21.10.3.

The position of the onshore cable route between the M1 and onshore substation has been adjusted within the planning application boundary to allow the installation of the cable in the verge of the N33. This has not resulted in any changes to the assessment of soil, geology and hydrogeology presented in chapter 21 of the EIAR.

Table 21A-1 provides further information in response to RFI 6.K. It indicates where the updated assessment can be found within this Addendum to chapter 21 and provides a concluding statement on any resulting updates or changes to the assessment presented in the EIAR (2024). The reader is directed to review the information presented in this Addendum alongside the assessment presented in the EIAR chapter. Please refer to chapter 8 Addendum: Benthic Subtidal and Intertidal Ecology (EIAR volume 2B Addendum) and chapter 5 Addendum: Project Description (EIAR volume 2A Addendum) for a response to RFI 8.G.

A coastal erosion assessment at the landfall was undertaken in September 2023. This assessment has been updated in response to the RFI and is included as appendix 21-1 Addendum: Coastal Erosion Report.

**Table 21A-1: Further information requested and details on the Applicant's response.**

| Reference | Request for Further Information | Response/ Reference where information is presented | Concluding statement |
|---|---|---|---|
| **Marine Processes** | | | |
| **Coastal Erosion** | | | |
| **6.K** | It is noted that the landfall site lies within an actively eroding coastline, and that the installation of the Transition Joint Bay (TJB) at either of the 2 option locations, will require works within the footprint of the southern area of the Dunany Point County Geological Site (CGS LH017). The Board notes that the Project Description (and Appendix 5-12: Construction Methodology – Onshore Cable) indicates that a geotechnical investigation of the landfall above the high-water mark was conducted in 2021, including the drilling of boreholes and a geophysical survey of seismic refraction and electrical tomography. It is further noted that the installation of the TJB will require a permanent access track to remain insitu.<br>In the context of coastal processes and having regard to the location of the planned landfall of cables, the desktop study presented in the Coastal Erosion Assessment Report appears to be inadequate. In addition, and while the Board notes Section 4.11.3 of Chapter 4: Consideration of Alternatives of the EIAR, the Board is concerned with the proposal for landing the offshore cable via open trench rather than HDD at this sensitive location. The applicant is requested to submit both coastal processes modelling assessment and shoreline regression/cliff stability modelling to justify the finding of negligible magnitude of impact with the implementation of mitigation measures in the EIAR. | An updated assessment relating to Dunany Point CGS which examines the adjusted export cable route is provided in in section 21.10.3 of this Addendum<br><br>Appendix 21-1 Addendum: Coastal Erosion Assessment Report provides an updated assessment on shoreline regression/cliff stability.<br><br>Chapter 7 Addendum: Marine Processes (EIAR volume 2B Addendum) provides a response to 6.K regarding the coastal processes modelling assessment.<br><br>Further justification for landing the offshore cable via open trench is provided in chapter 5 Addendum: Project Description (EIAR volume 2A Addendum). | The export cable and transition joint bay locations at the landfall have been adjusted to avoid the cliff and reduce the potential for coastal erosion resulting from the proposed works. |

## 21.2 Purpose of this chapter

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.3 Study area

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.4 Policy context

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.5 Consultation

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.6 Methodology to inform the baseline

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.7 Baseline environment

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.8 Key parameters for assessment

### 21.8.1 Project design parameters

The updated project description is provided in chapter 5 Addendum: Project Description (EIAR volume 2A Addendum).

In response to the RFI 6K two revised options for the location of the TJB have been identified.

- **Option 1** for the TJB is located close to the western end of the laneway along the southern boundary of Dunany Demesne at an existing layby. The export cable transitions across the intertidal area and will be pulled into the TJB by a winch system within the laneway. A trench will be installed within the laneway and the offshore cable will be buried in the laneway at depth of approximately 1.1 m to 1.5 m below existing ground level. All works above the HWM will be confined to the laneway. No works will impact on the cliff.

- **Option 2** for the TJB is located in the field at the southern boundary of Dunany Demesne. The offshore cable will be installed in a trench within the laneway, as described for Option 1 above. At approximately 120 m above and west of the HWM the onshore cable would be routed under the southern boundary wall of Dunany Demesne and into the adjacent field. A section of approximately 5 m of the southern boundary wall would be taken down to facilitate the installation of the onshore cable. On completion of the installation, the boundary wall will be rebuilt. The taking down and rebuilding of the boundary wall would be supervised by an archaeologist (see chapter 26 Addendum: Cultural Heritage for further details).

### 21.8.2 Measures included in the Project

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

### 21.8.3 Impacts scoped out of the assessment

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.9 Impact assessment methodology

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

# 21.10 Assessment of significant effects

## 21.10.1 Loss of soil reserves

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.10.2 Damage to soil structure

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.10.3 Removal of subsoil and bedrock (if required) at the landfall and in the vicinity of the Dunany Point CGS

The construction of the offshore cable and TJB at the landfall including associated temporary works has the potential to impact on Dunany Point CGS. In response to the RFI, the locations of the export cable and the TJB options have been adjusted and as a result, there will be no works at the cliff at Dunany Point CGS. The export cable will traverse the intertidal habitats which also form part of the Dunany Point CGS, however all works will be reinstated (as outlined in chapter 8 Addendum: Benthic Subtidal and Intertidal Ecology)(EIAR volume 2B Addendum). Please see chapter 5: Project Description (EIAR volume 2A Addendum) for further details on the project design.

### Construction phase

#### Magnitude of impact

The impact is predicted to be of local spatial extent, temporary duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly.

The location of the works to install a short section of the export cable have been adjusted to avoid trenching through the cliff at Dunany Point CGS in response to RFI 6.K of the RFI. In addition, the TJB option 1 and 2 are now located outside Dunany Point CGS. This adjustment will minimise the requirement for the removal of sub-soil and bedrock at Dunany Point CGS. Therefore, the resulting magnitude of impact is now considered to be negligible.

A coastal erosion assessment at the landfall was undertaken in September 2023 and this has been updated to address the changes to the export cable and TJB options (see appendix 21-1 Addendum: Coastal Erosion Report, EIAR volume 2C Addendum). It concludes the works will have a negligible impact on cliff stability and will not adversely induce coastal erosion, or be affected by coastal retreat.

#### Sensitivity of the receptor

Dunany Point CGS is considered high environmental sensitivity receptors as they are considered geological features of high value on a local scale.

#### Significance of the effect

Overall, the magnitude of the impact is deemed to be negligible. The CGS is a receptor with high environmental sensitivity, therefore, the effect will be of **imperceptible adverse significance**, which is not significant in EIA terms. Mitigation measures recommended by the GSI as outlined in section 21.10.8 still hold.

## 21.10.4 Potential contamination from importation of engineering fill, crushed stone, concrete, reinforcement and other construction material

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.10.5 Contamination of groundwater

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

### 21.10.6 Impact to groundwater level or flow path from temporary dewatering

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

### 21.10.7 Change to groundwater level or flow path from works

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

### 21.10.8 Mitigation and residual effects

#### Removal of subsoil and shallow rock (if shallow bedrock is encountered during works) at the landfall and in the vicinity of the Dunany Point CGS

The GSI were consulted regarding the Dunany Point CGS (see section 21.5 of EIAR chapter 21: Soil, Geology and Hydrogeology, volume 2B). There is no change to the following GSI recommendations following the updated assessment in section 21.10.3 of this Addendum:

(a) Access to the site is to be provided for GSI staff during construction to record the exposures of glacial till within the works.

(b) GSI are to be provided sufficient notification of the commencement of works to allow GSI staff the opportunity to schedule resources to inspect the site.

The Applicant will also discuss options with the GSI to provide explanation of the significance of the CGS in the local community.

### 21.10.9 Future monitoring

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.11 Cumulative impact assessment (CIA)

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.12 Transboundary effects

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.13 Interactions

There are no changes to EIAR chapter 21: Soil, Geology and Hydrogeology.

## 21.14 Summary of impacts, mitigation measures and residual effects

Table 21A-2 presents an updated summary of the potential impacts, mitigation measures and residual effects in respect to soil, geology and hydrogeology. Changes are shown in blue text (and strikethrough where relevant).

**Table 21A-2: Summary of potential environmental effects, mitigation and monitoring during the construction phase.**

| Description of impact | Measures included in the Project | Magnitude of impact | Sensitivity of receptor | Significance of effect | Additional measures | Residual effect | Proposed monitoring |
|---|---|---|---|---|---|---|---|
| Soil removal | Excavated materials will be carefully managed in accordance with industry best practice during construction, to prevent any potential negative impact on the receiving environment and the excess material will be taken directly to an appropriately licenced facility avoiding contact with any open surface water drains. Excavated material will not be left uncovered to avoid run-off of silty water and trial pits will be backfilled at the earliest convenience to avoid leaving stockpiles exposed. | Negligible | High (Soils) | Imperceptible (not significant in EIA terms) | None | N/A | None |
| Damage to soil structure through compaction and replacement | During the earthworks phase of construction, all lands including those temporarily acquired, will be re-instated to pre-construction conditions unless otherwise agreed with the landowner. The construction of the substation, TJB, onshore cable joint bays will require lands permanently. The lands for construction compounds, passing bays and access routes will require lands temporarily and as such may be potentially damaged due to the construction and need re-instatement.<br>All drainage likely to be affected or disturbed during the construction phase will be identified and reinstated. Field drainage systems currently in-situ may be disturbed and in places disabled during construction. This disturbance may lead to wet or flooded fields during spells of wet weather and farm productivity could be reduced.<br>Management of topsoil and subsoil will be managed in accordance with industry best practices such as the Department of Environment, Food and Rural Affairs (UK) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites and the EPA's Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects.<br>For all trenching along the road, all excavated material will be taken off-site in trucks and managed, under licence from the appropriate authority, thus preventing any contaminated run-off to roadside | Negligible | High (Soils) | Imperceptible (not significant in EIA terms) | None | N/A | None |

| Description of impact | Measures included in the Project | Magnitude of impact | Sensitivity of receptor | Significance of effect | Additional measures | Residual effect | Proposed monitoring |
|---|---|---|---|---|---|---|---|
| | drains during heavy rainfall. In off-road areas where the top 400-500 mm of topsoil will be set aside within the wayleave for later reinstatement, these stockpiles will be stored at least 10 m back from drains and watercourses on level ground with a silt fence inserted at the base. | | | | | | |
| Removal of subsoil and bedrock (if required) at the landfall and in the vicinity of the Dunany Point CGS | - | ~~Moderate Adverse~~ Negligible | High (proximity to County Geological Site) | ~~Significant/Moderate (significant in EIA terms)~~ Imperceptible (not significant in EIA terms) | ~~Design of installation updated to reduce footprint and extent of excavation.~~ None | N/A | None |
| Potential contamination from importation of engineering fill, crushed stone, concrete, reinforcement and other construction material | Imported materials to the site will be sourced from a reputable supplier (who will provide certification of materials where required) to ensure that only clean material is brought to site. | Negligible | High (Soils and Bedrock) | Imperceptible (not significant in EIA terms) | None | N/A | None |
| Contamination of Groundwater | Temporary storage of Cement Bound Material (CBM) will be carefully managed. This will be stored on hardstanding areas only where there is no direct drainage to surface waters and where the area has been bunded. Measures will be applied by using sandbags and geotextile sheeting or silt fencing to contain any solids in run-off.<br>The storage and handling of oils, fuel, chemicals and hydraulic fluids will be in secure areas within the site compounds and will not occur within a minimum of 10 m from watercourses; and,<br>Storage of fuels, chemicals and lubricants at the Contractor's compound must be fenced off and have a lockable gate to prevent unauthorised access or vandalism. | Moderate | Low (Poor Aquifer) | Slight (not significant in EIA terms) | Yes. See measures as outlined in section 21.10.8. | Imperceptible | None |

| Description of impact | Measures included in the Project | Magnitude of impact | Sensitivity of receptor | Significance of effect | Additional measures | Residual effect | Proposed monitoring |
|---|---|---|---|---|---|---|---|
| Impact to Groundwater Level or Flow Path from Temporary Dewatering | Dewatering all groundwater from the trench, joint bays, etc. will be managed in line with industry best practices.<br>Groundwater and surface water accumulating in the base of trenches will not be pumped directly to roadside drains or watercourses unless it is clean and free from solids. Solids-contaminated water will be discharged to a designated percolation area designated by a competent person if the soil is not waterlogged. In the case of heavy contamination, the water will either be removed off-site for disposal in a licensed facility by tank truck or pumped to a portable on-site settlement tank for treatment. These operations will be monitored by a designated competent member of the construction team on a regular basis to ensure that they are working effectively. | Small Adverse | Low (Poor Aquifer) | Imperceptible (not significant in EIA terms) | None | N/A | None |
| Change to Groundwater Level or Flow Path from Works (trench or HDD) | All drainage likely to be affected or disturbed during the construction phase will be identified and reinstated. Field drainage systems currently in-situ may be disturbed and in places disabled during construction. This disturbance may lead to wet or flooded fields during spells of wet weather and farm productivity could be reduced. | Small Adverse | Low (Poor Aquifer) | Imperceptible (not significant in EIA terms) | None | N/A | None |

## References

No change to EIAR chapter 21: Soil, Geology and Hydrogeology.