

## **Appendix 6.7: Shadow Habitat Regulations Appraisal**



EDF Energy Renewables Ltd

**Dunside Wind Farm**  
**Appendix 6.7**  
**Shadow Habitat**  
**Regulations Appraisal**

**Final report**

Prepared by LUC

June 2023



**EDF Energy Renewables Ltd**

**Dunside Wind Farm Appendix 6.7**  
**Shadow Habitat Regulations Appraisal**

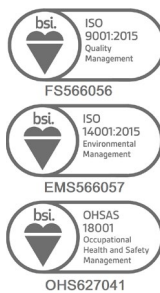
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# Chapter 1

## Introduction

**1.1** This Appendix presents a Shadow Habitat Regulations Appraisal (Shadow HRA) of the proposed Dunside Wind Farm (hereafter refer to as the 'Proposed Development').

**1.2** The Appendix has been prepared to provide the necessary technical data and interpretation to support the Competent Authority, the Scottish Ministers, in fulfilling their own legal obligations, as part of the decision-making process. The appendix transposes the findings of the Ecological Impact Assessment (EclA) presented in **Chapter 6** of the Environmental Impact Assessment Report (EIA Report) into standard HRA terminology and assessment methodologies.

**1.3** This Appendix should be read in conjunction with:

- **Appendix 6.1:** Desk Study and Legal Context.
- **Appendix 6.2:** Habitats and Vegetation (including National Vegetation Classifications) Survey Report.
- **Appendix 6.3:** Protected Species Survey Report.
- **Appendix 6.4:** Bat Survey Report.
- **Appendix 6.5:** Badger Survey Report (Confidential).
- **Appendix 6.6:** Outline Restoration and Enhancement Plan (OREP).
- **Appendix 6.8:** Peat Condition Assessment.

**1.4** This Appendix is supported by the following figures:

- EIA Report **Figure 6.1:** Ecology Survey Area; and
- EIA Report **Figure 6.2:** Statutory designated areas within 10 km and non-statutory designated areas within 5 km of the Site.

### The Requirement for HRA

**1.5** The European Habitats Directive (Directive 92/42/EEC) has been transposed into UK national legislation via the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitat Regulations'). These Regulations apply to specific reserved and devolved activities on land in Scotland, and in Scottish inshore waters, including for consents under section 36 of the Electricity Act 1989.

**1.6** The term 'European Site' is used to refer to what were previously known as 'Natura' sites. These sites were originally designated as part of the 'Natura 2000' network, a Europe-wide system of sites designated for their ecological value. Sites are either designated as Special Areas of Conservation (SACs), the qualifying features for which are normally internationally important habitats or species assemblages, or Special Protection Areas (SPAs), which qualify for their assemblages of birds.

**1.7** Ramsar sites, which support internationally important wetland habitats, are listed under the Convention on Wetlands of International Importance as 'Waterfowl Habitat' (Ramsar Convention, 1971), and form part of the Natura 2000 network in Europe. All Ramsar sites in Scotland are also European sites and are protected under the relevant statutory regimes.

**1.8** SACs and SPAs receive considerable protection through the Habitats Regulations and these protections are normally reflected in national and local planning policy. Where plans or projects have potential to affect SACs or SPAs, an HRA must first be undertaken. The HRA should be undertaken by the 'Competent Authority' - in this case the Scottish Ministers. The Competent Authority can also request that an Applicant submits a 'shadow' HRA report for consideration as part of a planning application.

**1.9** There is no change to the protection of SACs or SPAs as a result of the United Kingdom's exit from the European Union, and the requirements of the Directives continue to be relevant to the management of European sites.

## Recent Case Law Changes

**1.10** As advised in best practice<sup>1</sup>, this shadow HRA has been prepared in accordance with recent case law findings, including most notably the 'People over Wind' and 'Holohan' rulings from the Court of Justice for the European Union (CJEU).

**1.11** The People over Wind, *Peter Sweetman v Coillte Teoranta* (April 2018) judgment ruled that Article 6(3) of the Habitats Directive should be interpreted as meaning that mitigation measures should be assessed as part of an Appropriate Assessment and should not be considered at the screening stage. The precise wording of the ruling is as follows:

*"Article 6(3) .....must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of measures intended to avoid or reduce the harmful effects of the plan or project on that site."*

**1.12** The HRA report will also fully consider the *Holohan v An Bord Pleanala* (November 2018) judgement which stated that:

*"Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that an 'appropriate assessment' must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site."*

*Article 6(3) of Directive 92/43 must be interpreted as meaning that the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site."*

*Article 6(3) of Directive 92/43 must be interpreted as meaning that, where the competent authority rejects the findings in a scientific expert opinion recommending that additional information be obtained, the 'appropriate assessment' must include an explicit and detailed statement of reasons capable of dispelling all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned."*

**1.13** This HRA will fully consider the potential for effects on species and habitats, including those not listed as qualifying features, to result in secondary effects upon the qualifying features of European Sites, including the potential for complex interactions and dependencies. In addition, the potential for offsite impacts, such as through impacts to functionally linked land, and or species and habitats located beyond the boundaries of European site, but which may be important in supporting the ecological processes of the qualifying features, have also been fully considered in this report.

## Structure of this Appendix

**1.14** This chapter has introduced the requirement to undertake an HRA of the Proposed Development. The remainder of the appendix is structured as follows:

**1.15 Chapter 2: Proposed Development Context** provides a summary of current land use within the Site, and an outline of the Proposed Development.

**1.16 Chapter 3: Methods** describes the stages of the HRA process and the methods applied in delivering the HRA of the Proposed Development. The methods adopted for both Screening and Appropriate Assessment stages are discussed.

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<sup>1</sup> NatureScot Guidance, available at The Handling of Mitigation in HRA [Accessed 19/05/23]

**1.17 Chapter 4: Screening Assessment** presents the first stage of the HRA process and includes the identification of relevant European Sites and the pathways by which they may experience effects arising from the Proposed Development. The Chapter concludes with an assessment of Likely Significant Effects and determines the need for Appropriate Assessment.

**1.18** This Appendix draws on information presented in the main EIA Report. Cross-referencing is provided as necessary.



# Chapter 2

## Proposed Development Context

### Terminology and Study Area

2.1 The following terminology is used throughout this Appendix:

■ **Site**

- All land within the red line boundary (as shown in **EIA Report Figure 6.1**).

■ **Proposed Development**

- The whole physical process involved in the construction, operation and decommissioning of a Wind Farm at the Dunside Site (i.e. not associated with a particular piece of land).
- Comprises a wind farm of up to 15 turbines and associated infrastructure. A detailed description of the Proposed Development is included **Chapter 3**).

2.2 The HRA has considered all European Sites within the redline boundary for the Site, plus a 10 km buffer. These sites are illustrated in **EIA Report Figure 6.2**.

### Current Land Use

2.3 The Site is located within the Lammermuir Hills in the Scottish Borders Council local authority area. The topography of the Site consists of a plateau of rolling hills ranging between 300 m and 500 m Above Ordnance Datum (AOD), separated by the steep sided valley of the Dye Water which runs west-east through the Site. The Dye is a tributary of the River Tweed. Notable hills within the Site include: Meikle Law (468 m AOD) in the north-west; Byrecleugh Ridge (440 m AOD) in the north, Dunside Hill (437 m AOD) in the south-east, and Wedder Lairs (486 m AOD) in the west. Multiple smaller watercourses join the Dye Water and further dissect the Site these small watercourses are generally oriented north-south, and include Green Cleugh, Wood Cleugh, Kersons Cleugh, and Foul Cleugh.

2.4 The landcover on the Site consists mainly of heather moor and acid grassland. Tree cover is sparse, especially so on the upper plateau where heather moorland vegetation dominates. Large areas of the Site have been managed as a grouse moor for shooting, and the patchy growth pattern of the vegetation reflects the distribution of muirburn. There are no Core Paths within the Site, however the Southern Upland Way runs approximately 0.8 km to the south of the nearest proposed turbine and aligned along a section of the existing Fallago Rig access track which would be shared by the Proposed Development.

2.5 The majority of the habitats within the Site have been influenced to varying extents by grazing pressure, recent and historical burning and artificial drainage.

2.6 The operational Fallago Rig Wind Farm which comprises (418 turbines at, 125 m height to tip, and seven turbines at 110 m to tip) is immediately to the north-west of the Site boundary. The access track to Fallago Rig runs through the Site, along the valley of the Dye Water.

2.7 Further habitat, vegetation and protected species survey findings and interpretation are provided in EIA Report **Appendices 6.2 – 6.5**.

### Proposed Development

2.8 The Proposed Development includes the construction and operation of a wind farm. The main components of the Proposed Development are:

- Up to 15 wind turbines, each with a maximum tip height of 220 m (with an external transformer kiosk).
- Crane hardstandings adjacent to each turbine position.

- Four new watercourse crossings.
- Approximately 15 km of proposed wind farm tracks and approximately 1.1 km of proposed light vehicle track.
- Approximately 17.5 km of existing Fallago Rig wind farm access tracks (including areas of widening/upgrading).
- Onsite underground electrical cables and cable trenches.
- Control building and extension to Fallago Rig existing substation.
- A 20 MW battery storage area.

**2.9** Construction of the Proposed Development will also require the following components:

- Four construction compounds (two existing compounds which will remain in situ following completion of the Proposed Development, and two proposed which will be restored following construction), including laydown area(s) and car parking.
- Up to three temporary borrow pits which will be closed and reinstated following completion of construction.

**2.10** The Proposed Development is described in greater detail in **Chapter 3: Development Description** of the EIA Report. **Chapter 2: Site Selection and Design Strategy** explains how key ecological constraints were avoided during the design process.

# Chapter 3

## Method

### Stages of HRA

**3.1** HRA is a staged process, with each stage concluding whether the next is required. The stages are summarised in **Table 3.1**.

**3.2** Stage 1, known as ‘Screening Assessment’ or the ‘Significance Test’ seeks to identify whether a plan or project could give rise to ‘Likely Significant Effects’ (LSE) on relevant European Sites. At this stage, a precautionary approach is taken and, crucially, this stage may not consider the application of mitigation.

**3.3** Where LSE are identified, Stage 2 is undertaken. Stage 2, known as ‘Appropriate Assessment’ or the ‘Integrity Test’ builds on Stage 1, relating development detail to the ecological processes underpinning the integrity of relevant European Sites. Integrity is defined as the ability to deliver the European Site’s Conservation Objectives.

**3.4** At this stage, consideration of mitigation measures is central to assessment. Stage 2 seeks to conclude whether a plan or project could cause ‘adverse effects’ on the integrity of the European Sites. It is essential that the Competent Authority consults with NatureScot during Stage 2.

**3.5** Where adverse effects are predicted, Stage 3 is undertaken. Stage 3 seeks to demonstrate that the plan or project is for ‘imperative reasons of over-riding public interest’ (IROPI) and that no alternative exists. Stage 3 requires the identification of appropriate compensatory measures.

**Table 3.1: Stages of HRA**

Stage	Task
<p><b>Stage 1: Screening Assessment (Significance Test)</b></p>	<ul style="list-style-type: none"> <li>■ Describes plan or project.</li> <li>■ Identifies potentially affected European Sites and factors contributing to their integrity.</li> <li>■ Assesses Likely Significant Effects (‘LSEs’) of plan or project alone or in combination with other plans and projects.</li> </ul>
<p><b>Stage 2: Appropriate Assessment (Integrity Test)</b></p>	<ul style="list-style-type: none"> <li>■ Further gathering of data (plan or project, and European Sites).</li> <li>■ Evaluates plan or project impacts, in view of European Sites’ conservation objectives.</li> <li>■ Identifies avoidance or mitigation measures which may reduce the effects of the plan or project.</li> <li>■ Assesses adverse effects on the integrity of the European Site arising from plan or project.</li> </ul>
<p><b>Stage 3: Derogation</b></p>	<ul style="list-style-type: none"> <li>■ Identifies ‘imperative reasons of overriding public interest’ (IROPI).</li> <li>■ Demonstrates that no alternatives to the plan or project exist.</li> <li>■ Identify potential compensatory measures.</li> </ul>

**3.6** The remainder of this chapter sets out the approach taken as part of the HRA of the Proposed Development.

## Guidance and Good Practice

**3.7** This HRA has been prepared in cognisance of relevant guidance, good practice and verified data sets. Reference has been made to:

- Standard Data Forms for European Sites published on the JNCC website<sup>2,3</sup>
- NatureScot's SiteLink website<sup>4</sup>;
- NatureScot: Advice to planners and developers on protected areas<sup>5</sup>;
- NatureScot's HRA Guidance<sup>6</sup>; and
- NatureScot's River Tweed Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) - Advice for developers and competent authorities when considering projects which could affect the River Tweed SAC and SSSI<sup>7</sup>.

## Stage 1: Screening Assessment

**3.8** The Screening Assessment stage of the HRA focuses on identifying LSE and seeks to conclude, based on research and analysis, whether Stage 2 Appropriate Assessment is required. In order to identify LSE, the following information is gathered:

- Relevant European Sites, including citations, boundaries and known threats and pressures.
- Baseline ecological data relating to the Site.
- Proposed Development characteristics (including both construction and operational detail).
- Potential pathways to LSEs, based on ecological principals.

**3.9** Potential pathways to LSEs are then considered for each European Site, drawing on data collated during Stage 1. Applying the precautionary principle, 'likelihood' is determined.

**3.10** Each task is detailed further below.

### Identification of European Sites

**3.11** All European Sites within 10 km of the Proposed Development are identified for consideration within the Screening Assessment. The qualifying features and conservation objectives of relevant European Sites, together with current pressures and potential threats were established using the following sources:

### Baseline Ecological Data

**3.12** A suite of ecological baseline surveys were undertaken by LUC in relation to the Proposed Development between April 2022 and September 2022. This included desk study, Phase 1 habitat and National Vegetation Classification surveys and protected species surveys. Surveys were undertaken in line with best practice guidelines. A summary of this data is provided in Chapter 4 of this report, while detailed survey reports are included in EIA Report Appendices 6.1 – 6.5. This data, as it relates to the qualifying features of the relevant European Sites, will inform the HRA Screening Assessment.

### Proposed Development Characteristics

**3.13** Drawing on information presented in EIA Report **Chapters 2 and 3**, relevant aspects of the Proposed Development's construction, operational and decommissioning phases are identified. These include design features, such as the location of

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<sup>2</sup> JNCC. River Tweed Standard Data Forms. Available at: <https://sac.jncc.gov.uk/site/UK0012691> [Accessed 19/05/23]

<sup>3</sup> JNCC. Dogsen Moss Standard Data Forms. Available at [UK0030136.pdf](https://sac.jncc.gov.uk/site/UK0030136) (jncc.gov.uk)

<sup>4</sup> NatureScot. SiteLink website. Available at: <https://sitelink.nature.scot/home> [Accessed 19/05/23]

<sup>5</sup> NatureScot. Advice to planners and Developers. Available at: <https://www.nature.scot/professional-advice/planning-and-development/natural-heritage-advice-planners-and-developers/planning-and-development-protected-areas> [Accessed 19/05/23]

<sup>6</sup> NatureScot. Online HRA Guidance. Available at Habitats Regulations Appraisal (HRA) | NatureScot [Accessed 19/05/23]

<sup>7</sup> NatureScot. River Tweed Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). Available at River Tweed SAC and SSSI guidance for planners and developers | NatureScot [Accessed 19/05/23]

infrastructure; construction methods and timescales, such as habitat removal or the use of heavy plant; and operational parameters, including maintenance requirements.

### Potential Pathways to LSEs

**3.14** Potential pathways to LSEs were identified from available literature and existing guidance documents in relation to the River Tweed SAC<sup>8</sup>.

**3.15** It is considered that there is potential for the Proposed Development to result in LSE via the following effect pathways:

- Physical damage/loss of habitat through direct habitat loss or via run-off/ pollution.
- Physical disturbance and/ or mortality.
- Non-physical disturbance (noise, vibration and light).
- Reduction in water quality (via pollution or sedimentation).

### Identifying Effect Significance

**3.16** Good practice guidance<sup>9</sup> highlights that the identification of LSE should be 'relatively quick and straightforward'. The identification of any pathway or connectivity between a plan or project and a European Site is sufficient to require further investigation through Stage 2 Appropriate Assessment.

**3.17** A risk-based approach involving the application of the precautionary principle is adopted in the Screening Assessment, such that a conclusion of 'no significant effect' will only be reached where it is considered 'obviously' very unlikely, based on current knowledge and the information available, that the Proposed Development would not have a significant effect on the integrity of the European site.

**3.18** Relevant case law helps to interpret when effects should be considered as being likely to result in a significant effect. In the Waddenzee case, the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive including that:

- An effect should be considered 'likely', "if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site" (para 44).
- An effect should be considered 'significant', "if it undermines the conservation objectives" (para 48).
- Where a plan or project has an effect on a European Site "but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned" (para 47).

### In-combination Effects

**3.19** Regulations require that consideration is given in the Screening Assessment of whether it is likely that a plan or project could have a likely significant effect on a European Site in combination with other plans or projects, even if there is no LSE on its own.

**3.20** The potential for in-combination effects will only be considered for those Proposed Development components identified as unlikely to have a significant effect alone, but which could act in combination with other plans and projects to produce a significant effect.

## Stage 2: Appropriate Assessment

**3.21** Where LSE are identified, they are further assessed via detailed scientific interpretation through an Appropriate Assessment. At this stage, an effect likely to adversely affect the integrity of relevant European Sites is considered. An effect may be adverse to the integrity when it has potential to:

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<sup>8</sup> NatureScot. River Tweed Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). Available at River Tweed SAC and SSSI guidance for planners and developers | NatureScot [Accessed 19/05/23]

<sup>9</sup> NatureScot. Online HRA Guidance. Available at Habitats Regulations Appraisal (HRA) | NatureScot [Accessed 19/05/23]

- Cause delays to achieving the conservation objectives of the European Site.
- Interrupt progress towards achieving the conservation objectives of the European Site.
- Disrupt those factors that help to maintain favourable condition of the European Site.
- Interfere with the balance, distribution and density of key species that are the indicators of favourable condition of the European Site.
- Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the European Site functions as a habitat or ecosystem.
- Change the dynamics of relationships that define the structure or function of the European Site (e.g. relationships between soil and water, or animals and plants).
- Interfere with anticipated natural changes to the European Site.
- Reduce the extent of key habitats or the population of key species.
- Reduce the diversity of the European Site.
- Result in disturbance that could affect the population, density, or balance between key species.
- Result in fragmentation.
- Results in the loss of key features.

**3.22** In the Appropriate Assessment baseline data will be interrogated alongside pathways, within the context of each European Site's Conservation Objectives, ultimately concluding whether effects may be adverse to each site's integrity.

# Chapter 4

## Stage 1: Screening Assessment

### Identification of European Sites

**4.1** Two European Sites were identified within 10 km of the Site. Table 4.1 provides key features of each site while EIA Report Figure 6.2 shows their spatial arrangement in relation to the Proposed Development. Further information is provided below.

#### River Tweed SAC

**4.2** The River Tweed is a large SAC, encompassing the Tweed and numerous tributaries within the river’s catchment. The scale and complexity of the SAC recognises the need for extensive habitat for its most highly mobile qualifying species (Atlantic salmon *Salmo salar*, see **Table 4.1**).

**4.3** The Dye Water, located in the northern edge of the designation, rises to the west of the Site and flows through its centre. The Dye Water is a tributary of the Whiteadder Water, which is a tributary of the Tweed. The Dye Water flows for approximately 5.5 km through the Site, however only 3 km of the watercourse is designated, representing 0.002% of the SAC’s total c.1285 km length<sup>10</sup>.

**4.4** The Proposed Development’s access track, which utilises existing farm tracks<sup>11</sup>, also crosses the Blackadder Water, a tributary of the River Tweed, which rises to the south of the Proposed Development, in the Harecluegh Forest.

#### Dogden Moss SAC

**4.5** Dogden Moss SAC covers approximately 156.4 ha and qualifies for its raised bog habitats (see **Table 4.1**). Dogden Moss is located more than 7 km from the nearest proposed turbine, however it is less than 3 km from the Proposed Development’s access point on the B6456 road. The European Site is separated from the Proposed Development by the B6456 and rough grazing pasture.

**Table 4.1: European Sites within 10km of the Proposed Development**

Distance from Development	Qualifying features	Conservation Objectives
River Tweed SAC		
<p>Within the Site, the river itself crosses the Site west to east, but only the eastern half (approximately) of the length is designated.</p> <p>The Site’s existing access track crosses the River Tweed SAC in a separate location.</p>	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> <li>■ Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation (sub-type 2)</li> </ul> <p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> <li>■ Atlantic salmon <i>Salmo salar</i>, Otter <i>Lutra lutra</i></li> </ul>	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ol style="list-style-type: none"> <li>1. The extent and distribution of qualifying natural habitats and habitats of qualifying species;</li> <li>2. The structure and function (including typical species) of qualifying natural habitats;</li> <li>3. The structure and function of the habitats of qualifying species;</li> </ol>

<sup>10</sup> JNCC. River Tweed Standard Data Forms. Available at: <https://sac.jncc.gov.uk/site/UK0012691> [Accessed 19/05/23]

<sup>11</sup> Which are also the access tracks to the operational Fallago Rig Wind Farm

Distance from Development	Qualifying features	Conservation Objectives
	<p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> <li>■ Sea lamprey <i>Petromyzon marinus</i>, Brook lamprey <i>Lampetra planeri</i>, River lamprey <i>Lampetra fluviatilis</i></li> </ul>	<p>4. The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;</p> <p>5. The populations of qualifying species; and</p> <p>6. The distribution of qualifying species within the site.</p>
Dogden Moss SAC		
<p>2.7 km south-east of the Proposed Development's access track.</p> <p>The European Site is approximately 6 km from the nearest proposed turbine.</p>	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> <li>■ Active raised bog</li> </ul>	No conservation objectives available.

4.6 Further information on the qualifying features, threats/ pressures and condition assessment of the Sites above can be found on their JNCC Data Sheets<sup>12, 13</sup>.

## Relevant Ecological Baseline

4.7 Ecological baseline collected to inform the Ecological Impact Assessment is presented in **EIA Report Appendices 6.1 – 6.5**. Data relevant to the qualifying features of each European Site is summarised below.

### River Tweed SAC

#### *Ranuncion fluitans* and *Callitricho-Batrachion* Vegetation

4.8 The Dye Water within the Study Area supported the geological and hydrological features necessary to support these vegetation types, however their presence was not recorded during Phase 1 Habitat or National Vegetation Classification surveys (**EIA Report Appendix 6.2**). Desk study data included no records of associated species (**EIA Report Appendix 6.1**).

#### Atlantic Salmon

4.9 Desk study data (**EIA Report Appendix 6.1**) identified 15 records of Atlantic salmon within the Study Area since 2000, including five records within the Dye Water and one within the Blackadder Water.

4.10 No targeted fisheries surveys were undertaken to inform the Ecological Impact Assessment, however the Dye Water was assumed to provide all necessary habitat components to support the species, including spawning substrates.

#### Otter

4.11 The desk study (**EIA Report Appendix 6.1**) identified five records of otter within the Study Area since 2000.

4.12 Detailed surveys (**EIA Report Appendix 6.3**) identified suitable habitat for the species. Many of the larger watercourses and drainage channels within the Study Area offer suitable conditions for commuting and foraging, although shelter was limited across the Study Area. However, the Study Area has been heavily impacted by human disturbance including historical and recent grazing or burning which reduces the overall suitability for sheltering, foraging and commuting otters.

<sup>12</sup> JNCC. River Tweed Standard Data Forms. Available at: <https://sac.jncc.gov.uk/site/UK0012691> [Accessed 19/05/23]

<sup>13</sup> JNCC. Dogsen Moss Standard Data Forms. Available at [UK0030136.pdf](https://sac.jncc.gov.uk/site/UK0030136) (jncc.gov.uk)



**4.13** Three temporary resting sites were identified on the Dye Water and nine spraint cluster locations were recorded on the same watercourse at various locations within the central section of the Study Area. In addition, spraint was also recorded at one location on Bogan Burn and two locations on Kersons Cleugh watercourse.

**4.14** The levels of activity recorded indicate that while the Study Area forms part of a territory for an otter population, it is unlikely to be a core territorial area and unlikely to be of importance to breeding due to the lack of holts.

#### Lamprey (All Species)

**4.15** Desk study data (EIA Report **Appendix 6.1**) identified two records of lamprey (species undetermined) within the Study Area in 2003 and 2004. Neither record was from within the Site, with one on the Eden Water to the south, and the other on the Brunta Burn to the west.

**4.16** No targeted fisheries surveys were undertaken to inform the Ecological Impact Assessment, however the Dye Water was assumed to provide all necessary habitat components to support these species, including spawning substrates.

#### Dogden Moss SAC

##### Active Raised Bog

**4.17** While the Site supported extensive upland habitats, many underlain by relatively shallow peat deposits (EIA Report **Appendix 6.2**), no raised bog habitats or vegetation communities were recorded.

### Proposed Development Characteristics

**4.18** The Proposed Development is described in detail in **Chapter 3: Development Description** of the EIA Report. **Chapter 2: Site Selection and Design Strategy** explains how key ecological constraints were avoided during the design process. Relevant measures included:

- Avoidance of sensitive habitats; observing appropriate separation distances with respect to protected species and associated habitat features.
- Maintaining a 50 m buffer where possible from watercourses, designing site infrastructure to minimise the number of new watercourse crossings.
- Using existing access tracks as far as possible, minimising the necessity for new excavation.
- Minimising the need for new watercourse crossings.

**4.19** As a consequence of these design parameters, the Proposed Development does not include any new crossings over the River Tweed SAC, and a minimum 50 m buffer will be established between site infrastructure and the watercourse.

**4.20** However, in order to use existing access tracks as far as possible, it will be necessary to repair or widen existing water crossings, which include one crossing over the Blackadder Water and one over the Dye Water. Similarly, an existing access track which runs parallel to the Dye Water valley for approximately 4 km of its length (3 km of which is designated) will require localised widening, realignment or resurfacing. In some locations, these works may require working within 50 m of the watercourse.

### Potential Pathways to Likely Significant Effects

**4.21** Guidance specifically developed for the River Tweed SAC<sup>14</sup> has established generic impacts from development. These are set out in **Table 4.2**, which also establishes the pathways by which these impacts may occur. The table then relates the potential for these pathways arising from the Proposed Development.

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<sup>14</sup> NatureScot. River Tweed Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). Available at River Tweed SAC and SSSI guidance for planners and developers | NatureScot [Accessed 19/05/23]

**Table 4.2: Impact Pathways and Proposed Development Activity**

Impact	Impact Pathway	Proposed Development Activity
Physical damage/loss of habitat	<ul style="list-style-type: none"> <li>■ Direct habitat loss</li> <li>■ Disrupted distribution of species in site</li> <li>■ Loss of extent of supporting habitat via fragmentation</li> </ul>	<ul style="list-style-type: none"> <li>■ Repairs and/or widening of existing crossings over the Dye Water and Blackadder Water</li> </ul>
Physical disturbance and/ or mortality and non-physical disturbance (noise, vibration and light)	<p>Physical disturbance:</p> <ul style="list-style-type: none"> <li>■ Change in distribution of species in Site.</li> <li>■ Loss of structure, function and supporting processes of supporting habitats</li> </ul> <p>Non-physical disturbance:</p> <ul style="list-style-type: none"> <li>■ Direct disturbance to species</li> <li>■ Change in distribution of species</li> </ul>	<ul style="list-style-type: none"> <li>■ Repairs and/or widening of existing crossings over the Dye Water and Blackadder Water</li> <li>■ Increased human and plant presence within the Site (during construction and operation), particularly in relation to use of the existing access track that runs parallel to the SAC</li> </ul>
Changes in water quality (e.g. pollution event, sedimentation) and hydrological regime	<ul style="list-style-type: none"> <li>■ Direct loss of habitat</li> <li>■ Habitat fragmentation</li> <li>■ Disturbance of species</li> <li>■ Change in distribution of species and habitats</li> </ul>	<ul style="list-style-type: none"> <li>■ Repairs and/or widening of existing crossings over the Dye Water</li> <li>■ Increased human and plant presence within the Site (during construction and operation)</li> <li>■ Proximity of plant to watercourse and subsequent potential for hydrocarbon and/or chemical spill</li> <li>■ Access track upgrades and subsequent potential for mobilised sediment</li> </ul>

**4.22** While there is no specific guidance relating to Dogden Moss, the generic impacts listed in Table 4.2 are equally relevant to this European Site.

## Assessment of Likely Significant Effects

### River Tweed SAC

**4.23** Each impact type in **Table 4.2** could be experienced by each of the River Tweed SAC's qualifying features, however the absence of *Ranuncion fluitans* and *Callitricho-Batrachion* Vegetation from the Site means that wider effects on this feature could only occur via changes in water quality and subsequent downstream effects.

**4.24** In the absence of mitigation and protective measures, and in recognition of the requirement of apply the precautionary principle during Screening, it is considered that Proposed Development activity listed in **Table 4.2** can be considered LSE, requiring further investigation through Stage 2 Appropriate Assessment.

**4.25** **Table 4.3** summarises LSE.

### Dogden Moss SAC

**4.26** Dogden Moss SAC is designated due to the presence of active raised bog habitat. The Site is not functionally, structurally or hydrologically connected to the qualifying features of the SAC. The Site is sufficiently disconnected from the SAC that there will be no physical damage, disturbance or effects arising from changes in water quality as a consequence of the construction or operation of the Proposed Development, irrespective of the application of mitigation. Therefore, it is unlikely that there will be any LSE.

**4.27** Table 4.3 summarises LSE.

**Table 4.3: River Tweed SAC and Dogden Moss SAC Screening Assessment Summary**

Qualifying feature	Potential Pathway to Impacts on Qualifying Features		
	Physical damage/loss of habitat	Physical disturbance and/ or mortality And non-physical disturbance (noise, vibration and light)	Changes in water quality (e.g. pollution event, sedimentation) and hydrological regime
River Tweed SAC			
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	No LSE	No LSE	LSE
Otter	LSE	LSE	LSE
Atlantic salmon	LSE	LSE	LSE
Lamprey (all species)	LSE	LSE	LSE
Dogden Moss SAC			
Active Raised Bog	No LSE	No LSE	No LSE

### In-combination Effects

**4.28** A search of other wind farm developments within the Planning System identified two Proposed Development sites within 10 km, both of which are in proximity to the River Tweed SAC and are at the scoping and design stages:

- Wedderlie Farm – proposal for five turbines located approximately 5.79 km from the Site.
- Newlands Hill – proposal for 17 turbines located approximately 6.46 km from the Site.

**4.29** A search of Scottish Borders Council's and East Lothian Council's planning portals and dedicated scheme websites have not provided sufficient information on these proposals, as they are at very early stages, to allow an in-combination assessment to be completed.

**4.30** A review of publicly available aerial photography of these development sites indicate that they are dominated by managed upland habitats. Habitats present in these developments are likely to be broadly similar in composition to the Site, therefore of similar ecological importance. The above developments are also likely to support low levels of the qualifying species for the River Tweed SAC and Dogden Moss SAC.

**4.31** Therefore, with the information available, it is determined that no LSE are likely to occur as a result of in-combination effects.

## Chapter 5

### Stage 2: Appropriate Assessment

**5.1** The Screening Assessment considered the Proposed Development's design parameters, as they related to environmental protection. However, case law<sup>15</sup> dictates that the Screening Assessment cannot consider how LSE may be reduced through the implementation of mitigation.

**5.2** As established in the Ecological Impact Assessment presented in **Chapter 6 of the EIA Report**, mitigation measures are an intrinsic part of the Proposed Development. In this chapter, committed mitigation measures, of relevance to the River Tweed SAC, are summarised before potential effects identified through Screening are re-assessed against the European Site's Conservation Objectives.

### Mitigation

**5.3** Mitigation measures that will be implemented during the construction of the Proposed Development include:

- The development and implementation of a Construction Environment Management Plan (CEMP) (Outline CEMP presented in EIA Report **Appendix 2.1**). The CEMP will set out guidance on compliance with nature conservation legislation and policy. This will include:
  - Production of, and compliance with, a Pollution Prevention Plan (PPP) and adherence to Guidelines on Pollution Prevention (GPPs)<sup>16</sup>, which will significantly reduce the likelihood and severity of pollution events.
  - Development of excavation management methods to protect against erosion and sediment mobilisation.
  - Production of Species Protection Plans (SPPs) to set out the approach to the monitoring of protected species prior to and during construction. The SPPs will include, but not be limited to, the following measures:
    1. Pre-construction update surveys will confirm the current status of the Site with regards to the protected and notable species that have been confirmed to be present within the Site.
    2. Security lighting will be designed to minimise light-spill on sensitive habitat features such as watercourses, waterbodies, and woodland edges.
    3. Pre, during and post-construction fish habitat surveys and monitoring<sup>17</sup> will be undertaken to ensure that mitigation measures are effective, that crossings maintain fish passage, and that potentially sensitive habitats are retained, and to identify any requirement for improvements or remedial works.
    4. Relevant method statements and controls will be implemented in relation to biosecurity.
      - All watercourse crossings will be designed and constructed in line with current best practice and in accordance with a Construction Site Licence (from SEPA) that will be necessary before works commence.
- An Advisory Ecological/Environmental Clerk of Works (ECoW) will be appointed to advise on the content of the CEMP and its delivery. The ECoW will be present during construction and will monitor compliance with the CEMP and relevant legislation. The ECoW will regularly provide reports which will be made available to all relevant site staff including the developer. A detailed Scope of Works for the role will be agreed with NatureScot before construction commences.
- Production of and compliance with a Peat Management Plan to set out a number of good practice measures in relation to minimising disturbance and the management of peat during construction (further detail provided in EIA Report **Chapter 8**).

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<sup>15</sup> NatureScot Guidance, available at The Handling of Mitigation in HRA [Accessed 19/05/23]

<sup>16</sup> Netregs (2022). Guidance for Pollution Prevention. Available at guidance-for-pollution-prevention-3-2022-update-v2.pdf (netregs.org.uk) [accessed October 2022]

<sup>17</sup> Scottish Government (2021). Monitoring Watercourses in relation to onshore wind farm developments. Available at Monitoring watercourses in relation to onshore wind farm developments: generic monitoring programme - gov.scot (www.gov.scot)

## Assessment of Adverse Effects

**5.4** The following assessment considers whether previously identified pathways could result in adverse effects on the integrity of the River Tweed SAC, considering the application of mitigation. By considering each pathway set out in good practice<sup>18</sup>, as identified in **Table 4.3**, consideration of each of the SAC's Conservation Objectives, listed in **Table 4.1** are intrinsic and robust.

**5.5** The assessments are set in the context that the Proposed Development is adjacent to a small section of the extensive River Tweed SAC. Approximately 3.5 km of the Dye Water, accounting for 0.002% of the SAC, is considered.

### Physical damage/loss of habitat

**5.6** There will be no direct habitat loss or fragmentation on the River Tweed SAC within the Site as a result of the Proposed Development.

**5.7** Design parameters dictate that no new water crossings will be installed across the River Tweed SAC. Where existing structures require repair or widening, the CEMP establishes a requirement to ensure continued passage for the qualifying features of the European Site, namely otter, Atlantic salmon and lamprey.

**5.8** Similarly, the CEMP, via SPPs, will address the need for baseline data to be up to date, with emerging changes in baseline informing design and mitigation measures through the presence of an ECoW. Ongoing monitoring of fish populations, in particular, will ensure mitigation measures are responsive to emerging species distribution data.

**5.9** Furthermore, the implementation of a Pollution Prevention Plan, set out in the OCEMP will avoid the accidental loss of suitable habitat for qualifying features via pollution events, including both sediment and chemical/hydrocarbon release.

**5.10 Physical damage/loss of habitat is unlikely to result in adverse effects on the integrity of the River Tweed SAC.**

### Physical disturbance and/ or mortality and non-physical disturbance (Noise, vibration and light)

**5.11** Physical disturbance may occur at the location of water crossing repairs, and where the existing access track runs in close proximity to the SAC.

**5.12** In relation to the water crossing upgrades, existing baseline data does not suggest the current presence of otter resting sites. A requirement for updated surveys, as established in the OCEMP, and the presence of an ECoW, will ensure that any changes in baseline are fully considered during the construction phase. Wider construction parameters, established in the OCEMP, will ensure that construction activity will not occur during the largely crepuscular activity of otters.

**5.13** Prior to construction activity, fisheries monitoring activities will identify whether Atlantic salmon or lamprey species are active at the water crossing upgrade locations. Where necessary, specific mitigation measures will be designed and implemented, including the timing of works, to avoid spawning seasons, while retaining suitable spawning substrates.

**5.14** When considered within the wider context of the River Tweed SAC resource, and the application of mitigation, physical disturbance is unlikely to result in an adverse effect on the integrity of the River Tweed SAC.

**5.15** Non-physical disturbance of qualifying features could occur as a direct result of increased human and plant presence. The Proposed Development design has sought to achieve a minimum 50 m buffer between the works and the River Tweed SAC. Significantly larger buffers have been adopted for site compounds and turbine locations, where the loudest and most disturbing activities are likely to occur.

**5.16** Mitigation measures, established in the OCEMP, include a programme of survey updates, which will ensure wider mitigation measures respond to contemporary data, such as otter resting sites. Notwithstanding this measure, it is recognised that while the Site supports an otter population, no evidence of core activity, such as maternity holts, were identified. Toolbox talks, which will educate site staff on ecological matters, will ensure buffer zones are respected at all times during construction and operation.

**5.17 Non-physical disturbance is unlikely to result in an adverse effect on the integrity of the River Tweed SAC.**

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<sup>18</sup> NatureScot. River Tweed Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). Available at River Tweed SAC and SSSI guidance for planners and developers | NatureScot [Accessed 19/05/23]

### Changes in water quality and hydrological regime

**5.18** In the absence of avoidance and mitigation, there is potential for the water quality and hydrological regime to be altered as a result of the Proposed Development. All River Tweed SAC qualifying features rely on the aquatic environment, and are particularly susceptible to changes in the water environment. Furthermore, changes in water quality on the Water of Dye, a tributary at the head of the River Tweed SAC, could have wider reaching downstream consequences.

**5.19** However, the Proposed Development includes a series of precautionary design and mitigation measures to maintain and monitor water quality to safeguard the qualifying features of the River Tweed SAC. The implementation of a CEMP, including a site-specific Pollution Prevention Plan, monitoring by an ECoW, will ensure mitigation measures are flexible and respond to specific site conditions throughout the construction period. Similarly, ongoing fisheries monitoring activity will ensure water quality is maintained for the benefit of Atlantic salmon and lamprey species and that any population changes can be recorded and evaluated in light of water quality data.

**5.20** Changes in water quality and hydrological regime is unlikely to result in an adverse effect on the integrity of the River Tweed SAC.

**5.21** Table 5.1 summarises adverse effects on the qualifying features of the River Tweed SAC.

Table 5.1: Appropriate Assessment Summary

Qualifying feature	Potential Pathway to Impacts on Qualifying Features		
	Physical damage/loss of habitat	Physical disturbance and/ or mortality And non-physical disturbance (noise, vibration and light)	Changes in water quality (e.g. pollution event, sedimentation) and hydrological regime
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	N/A	N/A	No Adverse Effect
Otter	No Adverse Effect	No Adverse Effect	No Adverse Effect
Atlantic salmon	No Adverse Effect	No Adverse Effect	No Adverse Effect
Lamprey (all species)	No Adverse Effect	No Adverse Effect	No Adverse Effect

**5.22** This Appropriate Assessment outcome accords with the findings of the EclA presented in EIA Report Chapter 6.

### Enhancement

**5.23** The HRA process does not take into account biodiversity enhancements delivered by development projects. However, for the purposes of context, it should be noted that an Outline Restoration and Enhancement Plan (OREP), presented in EIA Report Appendix 6.6 establishes a series of habitat interventions that seek to achieve benefits for the qualifying species of the River Tweed SAC. In particular, the enhancement of riparian corridors within the Site will create new opportunities for sheltering and foraging otters, while Atlantic salmon and lamprey species will benefit from a varied riparian canopy structure. Over time, a developing canopy cover will improve spawning opportunities.

### Conclusion

**5.24** This Shadow HRA has demonstrated that, in the absence of mitigation, the Proposed Development may result in Likely Significant Effects (LSEs) on European Sites. However, once mitigation measures are fully considered, as part of an Appropriate Assessment, it has been determined that there will be no adverse effects on the integrity of said European Sites.