

# West of Orkney Windfarm Onshore EIA Report Non-Technical Summary



W01-WOW-CON-EV-RP-0079; Approved by S.Kerr

Document Control Oct 31 2023 5:18 PM

## Revisions & Approvals

This report has been prepared by Xodus Group exclusively for the benefit and use of Offshore Wind Power Limited. Xodus Group expressly disclaims any and all liability to third parties (parties or persons other than Offshore Wind Power Limited) which may be based on this report.

The information contained in this report is strictly confidential and intended only for the use of Offshore Wind Power Limited. This report shall not be reproduced, distributed, quoted or made available – in whole or in part – to any third party other than for the purpose for which it was originally produced without the prior written consent of Xodus Group and Offshore Wind Power Limited.

The authenticity, completeness and accuracy of any information provided to Xodus Group in relation to this report has not been independently verified. No representation or warranty express or implied, is or will be made in relation to, and no responsibility or liability will be accepted by Xodus Group as to or in relation to, the accuracy or completeness of this report. Xodus Group expressly disclaims any and all liability which may be based on such information, errors therein or omissions therefrom.

A01	23.10.2023	Issued for Use	AF/JON	LS	LS	OWPL
R01	28.07.2023	Issued for Review	AF	LS	NB	OWPL
REV	DATE	DESCRIPTION	ISSUED	CHECKED	APPROVED	CLIENT

# Contents

<b>1</b>	<b>Introduction</b>	<b>5</b>
1.1	Project Overview	6
1.2	Background	8
1.3	Consent & Regulatory Requirements	10
1.4	Key Planning Policies	10
1.5	Project Need & Benefits	11
1.6	Alternatives Considered	13
1.7	Description of the Project	17
1.8	Consultation	20
1.9	EIA Methodology	24
<b>2</b>	<b>Geology &amp; Hydrology</b>	<b>28</b>
<b>3</b>	<b>Freshwater Ecology</b>	<b>31</b>
<b>4</b>	<b>Terrestrial Non-Avian Ecology</b>	<b>34</b>
<b>5</b>	<b>Terrestrial Ornithology</b>	<b>37</b>
<b>6</b>	<b>Land Use &amp; Other Users, Including Forestry</b>	<b>40</b>
<b>7</b>	<b>Terrestrial Archaeology &amp; Cultural Heritage</b>	<b>44</b>
<b>8</b>	<b>Air Quality</b>	<b>48</b>
<b>9</b>	<b>Noise &amp; Vibration</b>	<b>51</b>
<b>10</b>	<b>Access, Traffic &amp; Transport</b>	<b>55</b>
<b>11</b>	<b>Landscape &amp; Visual</b>	<b>59</b>
<b>12</b>	<b>Socio-Economics</b>	<b>64</b>
<b>13</b>	<b>Consideration of Climate, Hazards &amp; Risks</b>	<b>67</b>
13.1	Climate & Carbon Assessment	67
13.2	Assessment of Major Accidents and/or Disasters	68
<b>14</b>	<b>Summary</b>	<b>69</b>
<b>15</b>	<b>Further Information</b>	<b>70</b>

# Introduction



# 1. Introduction

Offshore Wind Power Limited (OWPL) is proposing the development of the West of Orkney Windfarm (‘the Project’), an offshore windfarm, located approximately 23 kilometres (km) from the north coast of Scotland and 28 km from the west coast of Hoy, Orkney. The Project consists of both onshore and offshore components to generate and export the power from the offshore windfarm to a new onshore substation at Spittal, Caithness.

The purpose of this Non-Technical Summary is to summarise the Onshore Environmental Impact Assessment (EIA) Report, which has been prepared to support the Planning Permission in Principle (PPP) application for the onshore Project. The structure of the Onshore EIA Report is provided in Figure 1.1. Full technical details of the EIA and all the assessments summarised within this Non-Technical Summary can be found within the Onshore EIA Report and associated supporting studies.

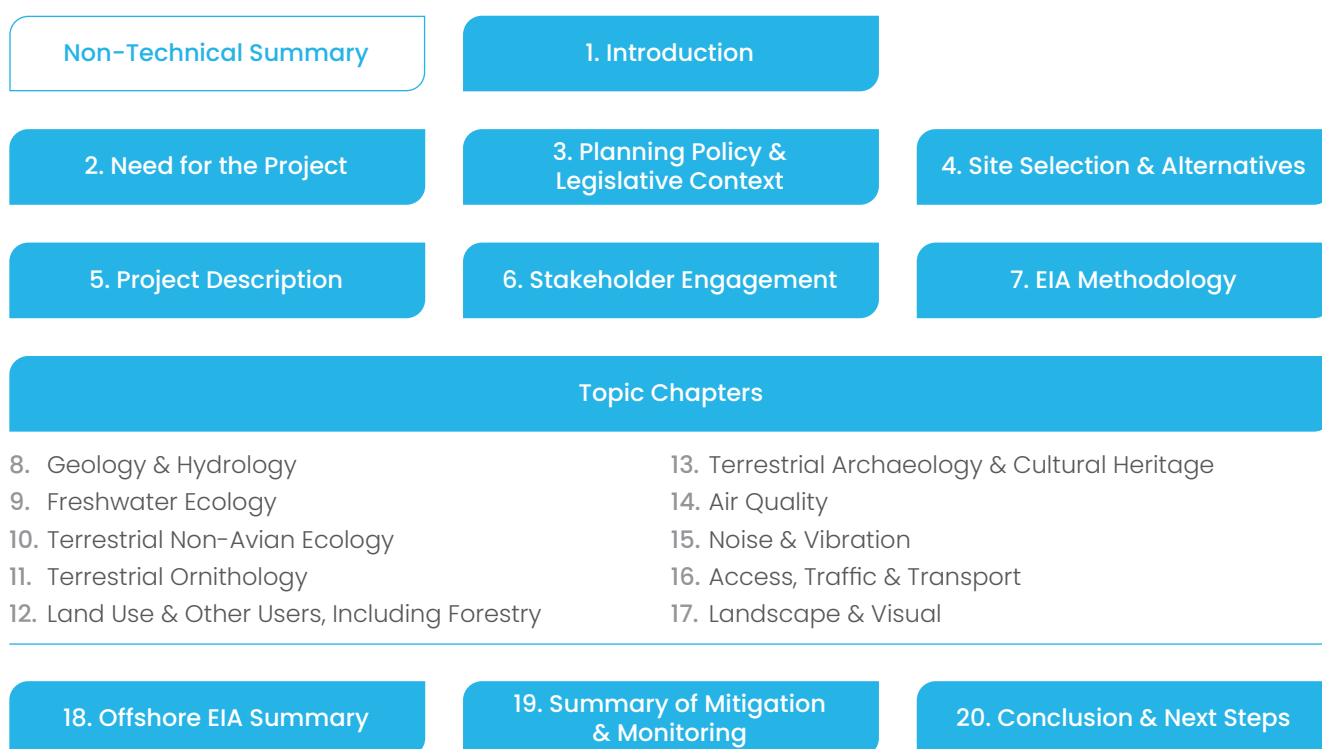


Figure 1.1 – Structure of the Onshore EIA Report

## 1.1 Project Overview

An overview of the key Project components is shown in Figure 1.2. The Project consists of onshore and offshore components:

### The 'Onshore Project'

All onshore components landward of Mean Low Water Springs (MLWS), underground (cables, onshore substation, access, and all other associated infrastructure) and all Project stages from construction to decommissioning, including temporary works.

### The 'Offshore Project'

All offshore components seaward of Mean High Water Springs (MHWS) including Wind Turbine Generators, cables, foundations, Offshore Substation Platforms (OSPs) and all other associated infrastructure, and all offshore Project stages from pre-construction to decommissioning, including temporary works.

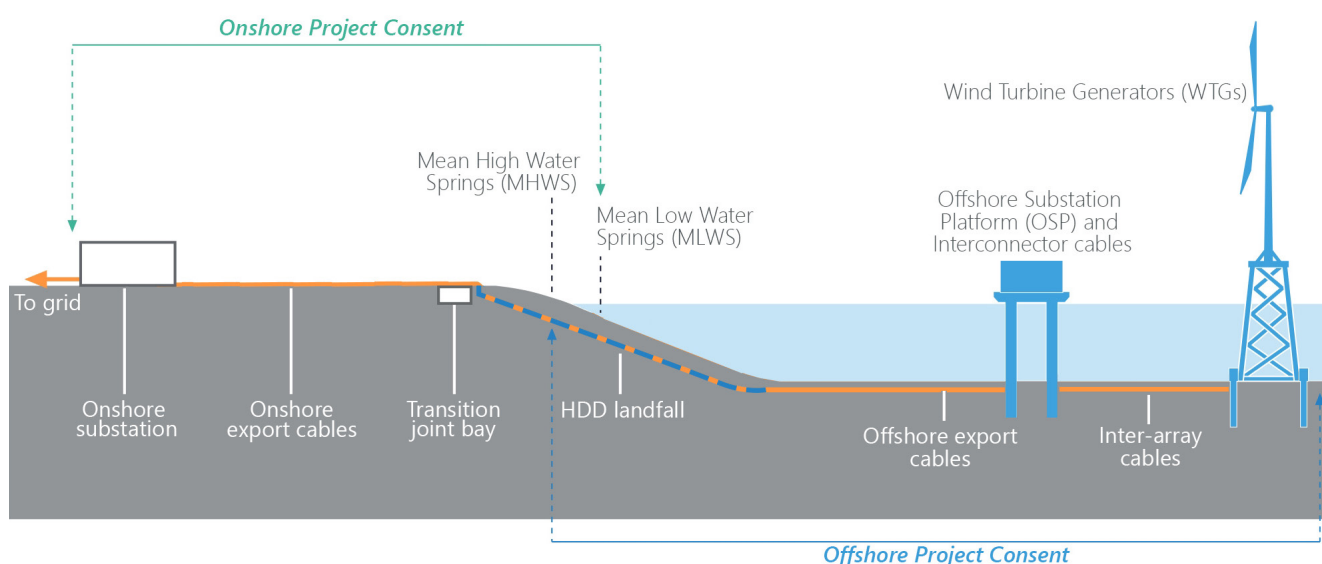


Figure 1.2 – Project Overview

The location of the offshore and onshore Project are shown in Figure 1.3. The onshore planning Red Line Boundary, known throughout this Non-Technical Summary as the "onshore Project area", which is the subject of the Onshore EIA Report, encompasses the:

- Landfall(s) (landward of MHWS) – at Greeny Geo and/or Crosskirk where the offshore export cables come ashore and interface with the onshore Project, will be installed through underground ducts via Horizontal Directional Drilling (HDD);
- Onshore export cable corridor – within which the underground onshore export cables will be located from the landfall location(s) to the onshore substation located at Spittal, Caithness; and
- Onshore substation – required to transform the power to comply with the requirements of a new Scottish Hydro Electric Transmission plc (SHET-L) Spittal 2 substation and the National Grid network.



## 1.2 Background

OWPL is a consortium of Corio Generation, TotalEnergies and Renewable Infrastructure Development Group (RIDG). OWPL was awarded the Option Agreement Area from the Crown Estate Scotland in January 2022 for the development of the Project (see Figure 1.4).



Corio Generation is a Macquarie Green Investment Group portfolio company, operating on a standalone basis. Corio has a project pipeline of over 20 GW. Their global team of offshore wind specialists take projects from origination, through development, construction and into operations.



TotalEnergies is one of the largest offshore operators on the United Kingdom (UK) continental shelf, majority owner of Seagreen OWF and the Shetland Gas Plant. Targeting 35 GW of renewables by 2025 and 100 GW by 2030.



Renewable Infrastructure Development Group (RIDG) is a Scottish offshore wind project developer with over 40 years' experience in the sector, set up to deliver high value projects alongside strategic partners.

OWPL was awarded the Option Agreement Area (OAA) from the Crown Estate Scotland in January 2022 for the development of the Project.

The Project has a connection agreement with National Grid for a connection to the grid network in Caithness, on mainland Scotland. Connection will be to a new SHET-L substation, expected to be located at Spittal, with the preferred location of this substation north of Spittal Hill at Banniskirk. OWPL are responsible for the construction and operation of their own onshore substation which is required to transform the power from the windfarm so that it complies with the requirements of the new SHET-L Spittal 2 substation and the National Grid, and this forms part of the onshore Project. The indicative location for the OWPL onshore substation, is at Achalone to the west of the preferred new SHET-L Spittal 2 substation location.

Following award of the OAA from Crown Estate Scotland, a single Scoping Report covering both the onshore and offshore aspects of the Project was submitted to Marine Scotland – Licensing Operations Team (MS-LOT)<sup>1</sup> and The Highland Council (THC) in March 2022. A Scoping Opinion was received from THC on the 9th of May 2022.

### Box 1 – Flotta Hydrogen Hub

The proposed Flotta Hydrogen Hub (Flotta, Orkney) provides a second power export opportunity for the Project. The Scoping Report for the Project included the offshore and onshore infrastructure for a private wire export option to Flotta Hydrogen Hub, in addition to the grid connection at Caithness<sup>2</sup>. Since the submission of the Scoping Report, OWPL have been negotiating the terms of this private wire export option through a 'Power Purchase Agreement'. These negotiations will provide clarity on the timing for the availability of this power export option to the Flotta Hydrogen Hub and will determine the timing of a subsequent separate Marine Licence application and Planning application for the associated offshore and onshore transmission infrastructure respectively. Therefore, the applications for the onshore and offshore transmission infrastructure associated with the connection of the Project to the proposed Flotta Hydrogen Hub will be submitted at a later date and are not considered in the Onshore EIA Report.

<sup>1</sup> MS-LOT have since been renamed Marine Directorate Licensing Operations Team (MD-LOT).

<sup>2</sup> The Scoping Report was also submitted to Orkney Islands Council (OIC), as the scoping exercise included consideration of the power export to the Flotta Hydrogen Hub, however, this scope is not covered in the Onshore EIA Report and will be subject to separate onshore planning applications and Marine Licence.



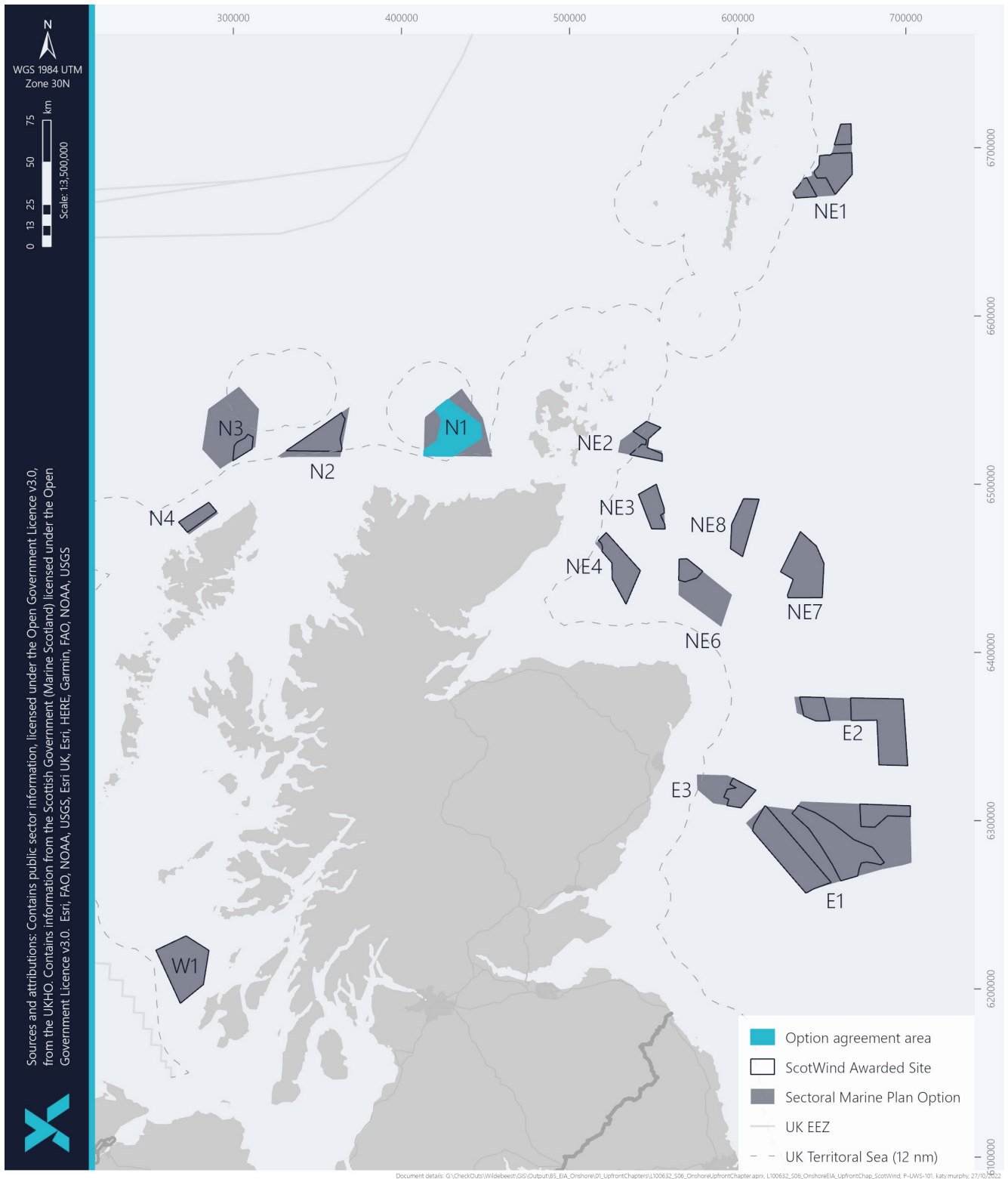


Figure 1.4 – ScotWind Plan Options and awarded Option Agreement Area

## 1.3 Consent & Regulatory Requirements

The following consent is being applied for, with respect to the onshore Project:

- Planning Permission in Principle (PPP) under the Town and Country Planning (Scotland) Act 1997 (as amended).

An EIA is required for the onshore Project under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended).

A Habitats Regulation Appraisal (HRA) has also been undertaken for the onshore Project in accordance with the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) and The Wildlife and Countryside Act 1981. The HRA process assesses potential impacts on European Sites that form part of the UK National Site Network. The process initially assesses the potential for Likely Significant Effects (LSE) and if these cannot be ruled out, goes on to assess the potential for adverse effects on European Sites. The results of the HRA are presented in the Report to Inform an Appropriate Assessment (RIAA).

## 1.4 Key Planning Policies

The newly adopted National Planning Framework (NPF) 4<sup>3</sup> establishes the planning framework in Scotland. It is a legislative requirement that planning decisions must be made in accordance with the development plan, unless material considerations indicate otherwise. The statutory development plan for any given area in Scotland consists of the NPF and the relevant Local Development Plans (LDPs). The key Scottish planning policies relevant to the onshore Project include:

### **Draft Scottish Energy Strategy & Just Transition Plan<sup>4</sup>**

This plan sets ambitious targets to produce more than 20 Gigawatts (GWs) of additional renewable energy (both on and offshore) by 2030. The Project aligns with national policies, targets and strategies for the delivery of energy infrastructure in Scotland and the wider UK.

### **NPF4**

Sets out a spatial strategy until 2045 to coincide with the Green House Gas net zero emission and

sustainability targets. The strategy and policies are in support of developments that help to meet GHG emissions targets and those which support electricity generation and associated grid infrastructure throughout Scotland, providing employment and opportunities for community benefit.

A key concept introduced in NPF4 is biodiversity. Proposals for all National Developments, such as the Project, will only be supported where they can demonstrate how they meet a set of criteria aimed at securing conservation, restoration and enhancement of biodiversity. In accordance with this, the Project has developed an outline Biodiversity Enhancement Plan which has been submitted alongside the PPP application.

### **Local Development Plans**

The Project also aligns with the relevant policy and legislation of local development plans, including the Highland-wide local development plan and the Caithness and Sutherland Local Development Plan.

3. <https://www.gov.scot/publications/national-planning-framework-4/documents/>

4. <https://www.gov.scot/publications/draft-energy-strategy-transition-plan/documents/>

## 1.5 Project Need & Benefits

The Project need and benefits are centred around four key areas:



### Climate Change & Emissions Reduction

There are various pieces of climate change and renewable energy legislation and policy that drive the need for the Project at an international and national level (see Figure 1.5). For example, the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 commits the Scottish Government to reaching net zero emissions of all greenhouse gases by 2045, five years ahead of the rest of the United Kingdom (UK). The Project will act to offset GHG emissions that might otherwise be produced by other means of electricity generation and will, therefore, contribute to meeting various climate change and net zero emissions targets (further information can be found in the Project climate and carbon assessment in section 13.1).



### New Energy Infrastructure

The UK requires new energy transmission infrastructure in order to:

- Reduce the carbon footprint of electricity generation capacity to achieve net zero climate change targets;
- Enable the transition from fossil fuels to renewable energy sources; and
- Ensure security of supply through replacing and upgrading infrastructure systems to meet increased demands.



### Energy Security

Energy consumers need to have access to a reliable, secure and affordable energy supply. The Project will be capable of powering the equivalent of more than two million homes with clean electricity and as such will provide significant contributions to energy security.



### Economic Benefit

The development of home-grown renewable energy can help the UK to avoid paying to import energy. A Supply Chain Development Statement was prepared by the Project as part of the ScotWind Leasing Round application. The Supply Chain Development Statement, which will be reviewed by Crown Estate Scotland to ensure commitments made are realised, sets out the commitment from the Project to invest £105 million in developing the supply chain capacity within the UK, including over £9 million investment in ports and harbours located in Caithness and Orkney, support for local skills development and supply chain readiness. The Project will also deliver economic benefits to the local community and Scotland by providing jobs and opportunities for the local supply chain.

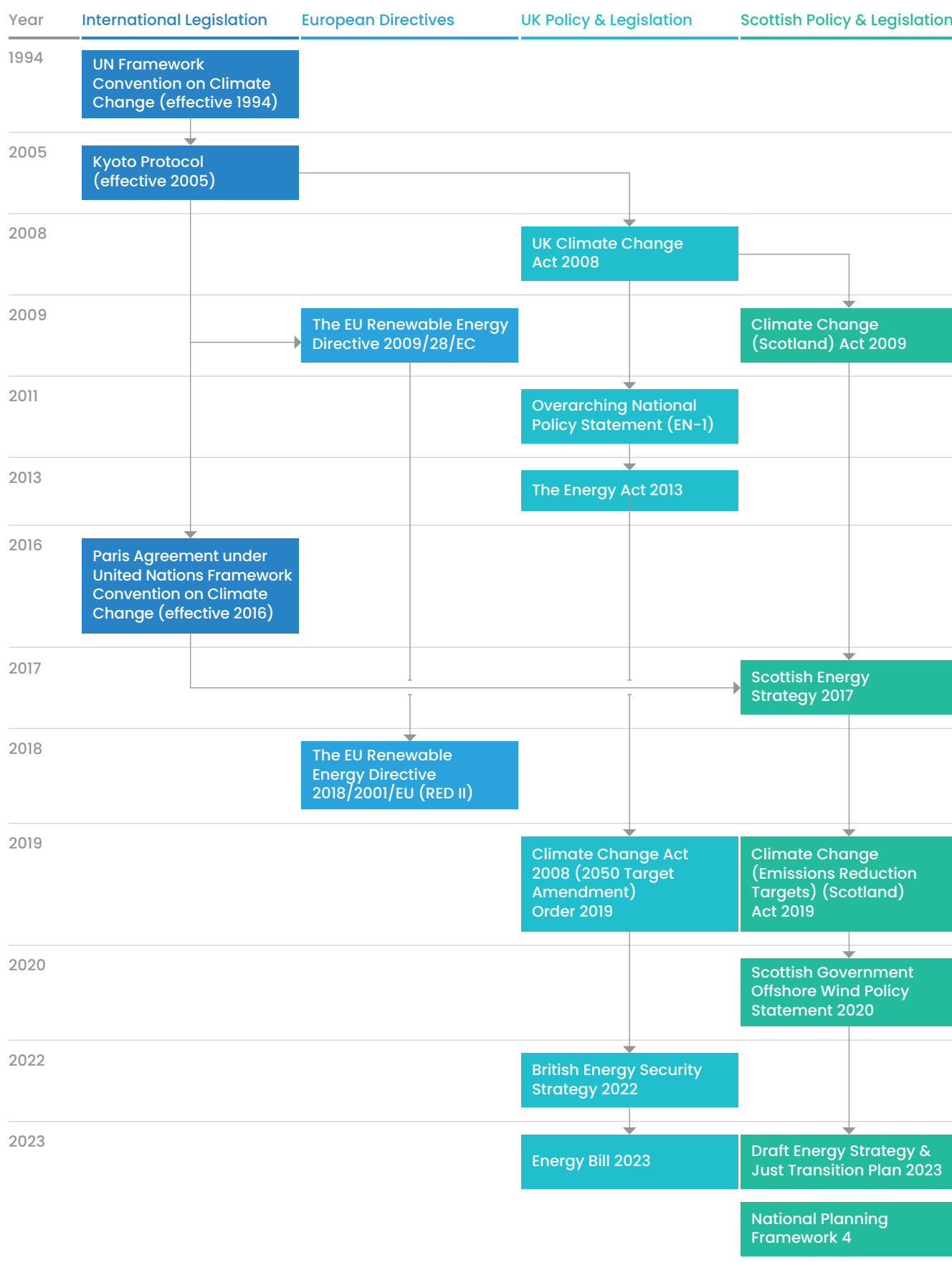


Figure 1.5 – Climate change and renewable energy legislation and policy<sup>5</sup>

5. At the time of writing The Energy Bill 2023 is passing through Parliament but has been included for completeness.

## 1.6 Alternatives Considered

A number of alternatives have been considered throughout the development of the Project, both in terms of location and design options. The site selection process and the choice of Project design are ongoing and further refinements may occur as the development of the onshore Project progresses.

### 1.6.1 Site Selection

The site selection process for the Project as a whole involved consideration of environmental (e.g. residential and ecological interests, designated sites and visual receptors) and technical (e.g. wind resource, water depths, ground conditions, utilities, and other third party assets) considerations, informed by desk-based studies and stakeholder engagement. The site selection process has been guided and informed by key events in the Project's development timeline as shown in Figure 1.6.



Figure 1.6 – Site selection process for the Project location and design to date

The process of selecting the onshore export cable route to the grid connection has been an iterative process. Considerable work was done ahead of the ScotWind bid application to define these areas. The main drivers for the selection of the onshore cable route were the landfall location(s) and the end point – the location at which the West of Orkney Windfarm will connect to the grid.

In August 2019, OWPL received a grid connection offer from the National Grid to a new SHET-L substation, with the preferred location of this substation currently expected to be north of Spittal Hill at Banniskirk. Based on this offer, a cable routing study was commissioned which highlighted both environmental and technical constraints in the region. This study identified six potential onshore export cable routes between each of six initial landfall options between the north coast of Caithness and the OWPL onshore substation search area and grid connection location near Spittal, as shown on Figure 1.7.

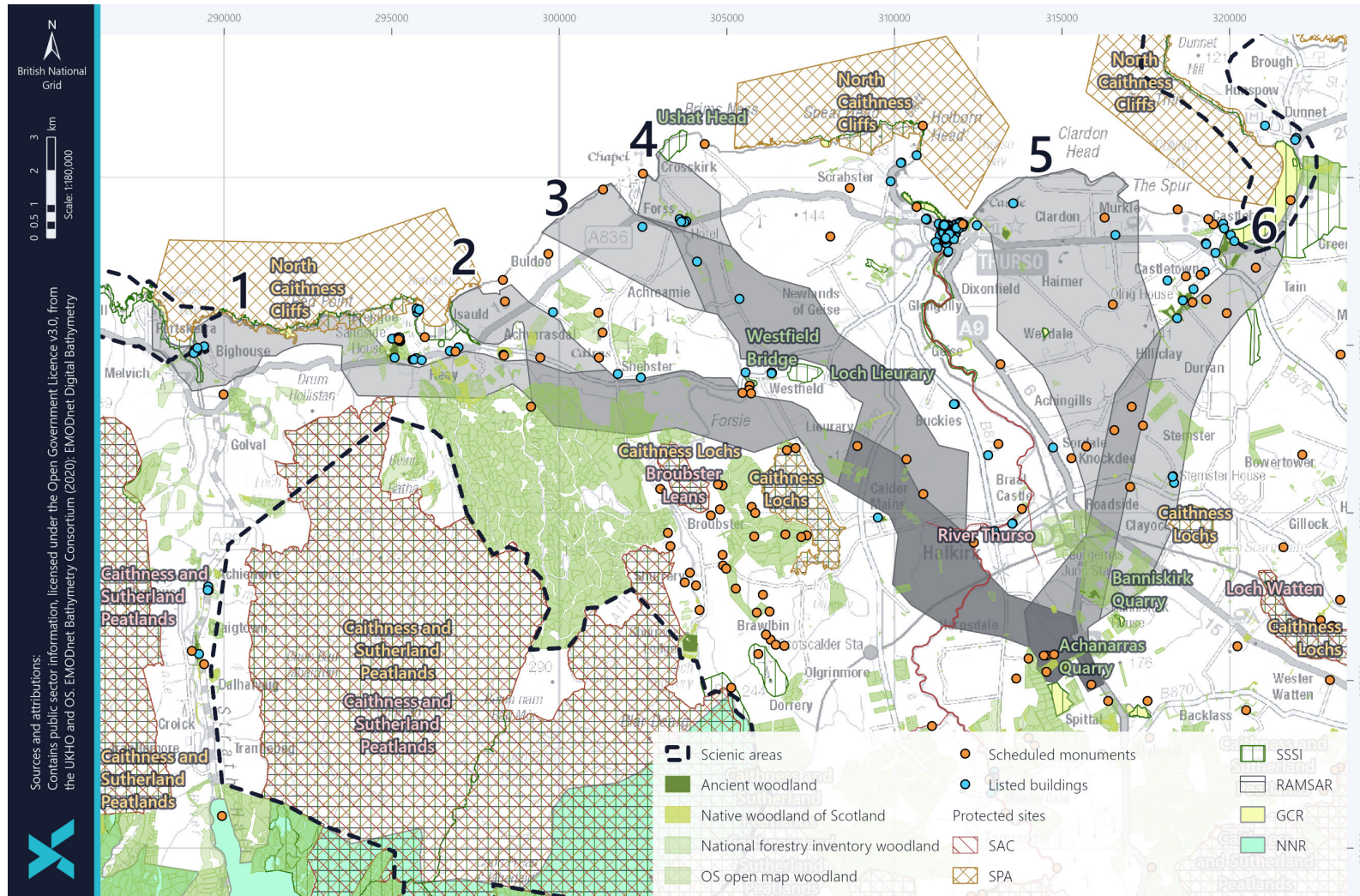


Figure 1.7 – Onshore environmental constraints for the initial landfall options and onshore cable corridors

Following further assessment ahead of the ScotWind application, the Dunnet Bay and Murkle Bay landfall options and associated offshore routes were discounted. Both offshore routes had some technical risks as well as higher environmental constraints compared to the other routes options.

The four remaining landfall options taken forward for consideration in the Scoping Report, were:

- Melvich Bay;
- Dounreay;
- Greeny Geo; and
- Crosskirk.

After the award of the Option Agreement Area for the West of Orkney Windfarm in 2022, there was further consideration of the technical and environmental constraints associated with the four remaining landfall locations and onshore cable route options to Spittal which involved the engagement of a land agent. This work led to two more of the landfall options at Melvich Bay and Dounreay being discounted. The Melvich Bay route was discounted due to it being the longest onshore route with some very constrained spatial areas along the route which were considered too high risk for the Project.

The Dounreay landfall option was discounted due to it being very constrained from a number of future consented and potential projects in and around Dounreay. Landfall options at Crosskirk and Greeny Geo were therefore retained for the PPP application. There has been some refinement of the cable route options between the landfalls and substation area of search since the Scoping Report to inform the Red

Line Boundary for the PPP application (see Figure 1.3). This was informed by ongoing engineering studies and the results of the EIA. At this time there will be no further refinement of the landfall and cable route options as onshore engineering studies and surveys are ongoing, as are land owner negotiations, both of which preclude selection of one location.

An indicative onshore substation location has been provided within the onshore substation search area at Spittal, as shown in Figure 1.8. The indicative onshore substation location takes into consideration various environmental constraints (including landscape and visual, flood risk and noise considerations) identified during the course of the onshore Project development. The final location of the onshore substation will be confirmed after planning consent has been granted, once the final design of the onshore Project is known.

The boundary of the onshore Project has been developed to avoid sensitive areas. All designated sites with the exception of the River Thurso Special Area of Conservation (SAC) have been avoided, and all landscape designations are also avoided. Identification of the final cable route, within the cable corridors, will include further consideration of cultural heritage assets, core paths and other tourism and recreational assets, sensitive habitats, including peatland, woodland and high value forestry, high value agricultural land, watercourse crossings, third party assets, utilities, roads, areas of contaminated land and private water supplies. Where impacts to such areas cannot be avoided, these will be minimised through mitigation measures.

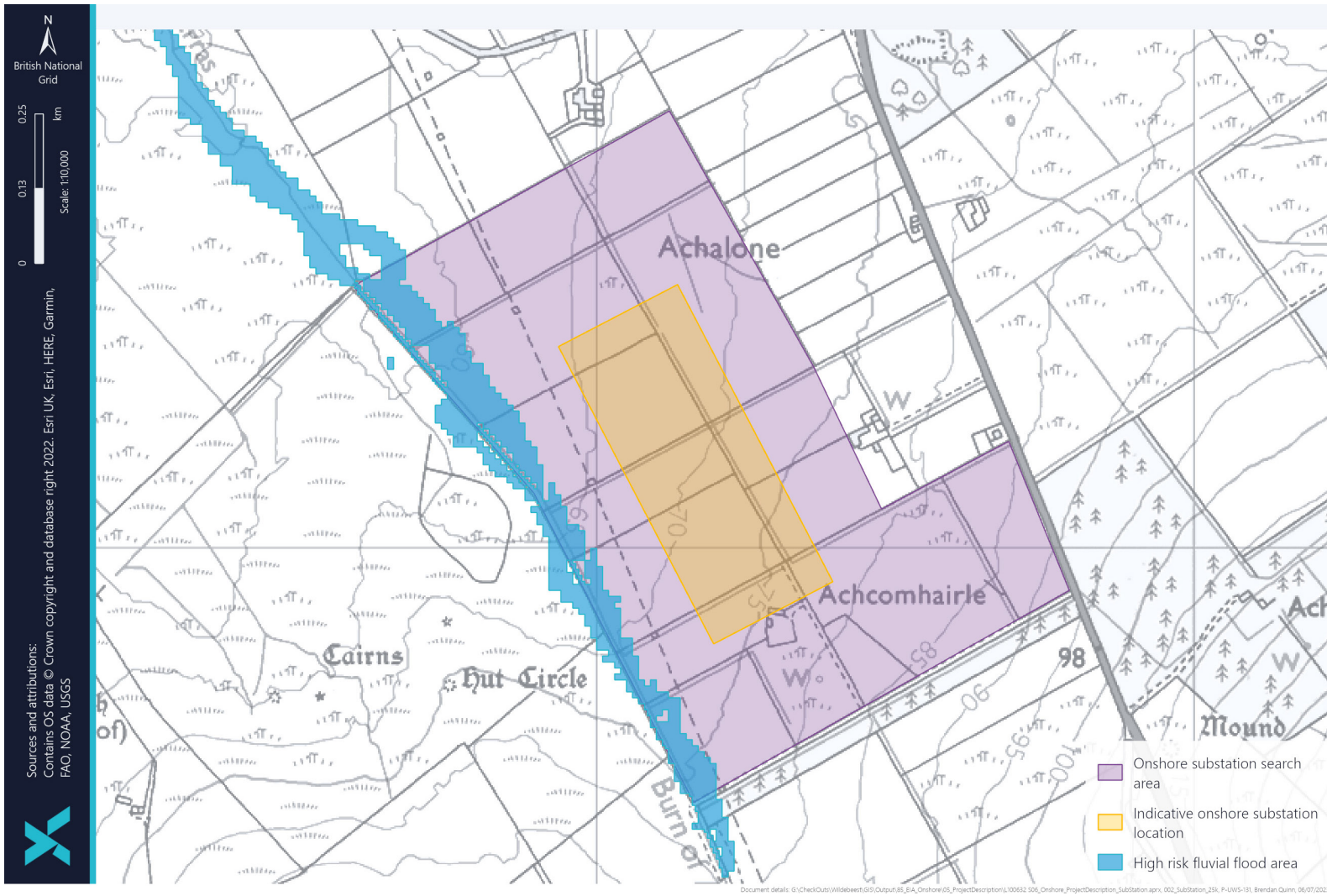


Figure 1.8 – Indicative onshore substation location



## 1.6.2 Project Design Alternatives

A number of different Project design options have been considered, and refinement of these options has occurred throughout the development of the onshore Project. Since the submission of the Scoping Report in March 2022, key design decisions have been taken which have removed the following from consideration by the Project:

- Melvich Bay and Dounreay landfall options to reduce the overall footprint of the onshore Project (as described above);
- High voltage directional current export cables; and
- Open cut trenching and rock pinning techniques to bring the export cables ashore. Cable installation at the landfall will be via HDD which will avoid any shoreline impacts.

## 1.7 Description of the Project

### 1.7.1 Onshore Infrastructure

The key components of the onshore Project include:

- Up to five offshore export cables brought ashore to connect with the onshore Project. The Onshore EIA Report only considers the offshore export cables landward of MLWS;
- Two landfall options, one at Crosskirk and one at Greeny Geo, one or both of the landfalls could be used to bring the export cables ashore;
- Up to five Transition Joint Bays (TJBs) at the landfall location(s);
- Up to five onshore underground export cable circuits laid in separate trenches, and each cable comprising three single core power cables to transmit power underground between the transition joint bays at the landfall(s) and the onshore substation at Spittal;
- One onshore substation located at Spittal which is required to transform the power from the West of Orkney Windfarm to comply with the requirements of the National Grid;
- Temporary construction compounds and working corridors for the landfall(s), onshore export cables and onshore substation;
- Temporary access tracks for the landfall(s) and the onshore cable route during construction works; and
- Up to seven permanent access tracks (indicative at this stage) across the onshore Project area.

The onshore Project design will not be finalised until after planning consent has been granted and Heads of Terms in place with regards to access to land. Therefore, a 'Project Design Envelope' approach has been used for the EIA. The 'Project Design Envelope' consists of a range of design parameters for each component of the onshore Project, providing flexibility for further refinement of the onshore Project design in order to accommodate technological advancements and more detailed site information.

An overview schematic of the Project as a whole, including the main components of both the onshore Project and offshore Project is shown in Figure 1.2.

### 1.7.2 Pre-Construction & Construction

Several activities will be required ahead of construction of the onshore Project, including:

- Pre-construction surveys, for example, ground investigation works and ecological surveys; and
- Site preparations, for example, site clearance activities and temporary access arrangements.

Construction activities will involve:

- HDD and TJB installation at the landfall(s) to bring the offshore export cables ashore;
- Installation of temporary and permanent access tracks;
- Erection of temporary construction compounds;
- Onshore export cable installation (including open cut trenching and HDD or other non-surface lay techniques);
- Cable joint bay installation to join sections of the onshore export cables together along the cable route;
- Onshore substation installation and commissioning;
- Installation of landscape screening and bunding around the onshore substation; and
- Grid connection works.

A detailed construction programme will be developed as design and procurement activities progress. Full details, including sequencing and installation methodologies, will be confirmed in the Construction Method Statements which will be produced and agreed after planning consent has been granted.

The construction of the onshore Project is anticipated to take approximately four years, followed by a final pull-through of the offshore export cables.

The onshore works will involve three main working areas:

- The landfall HDDs;
- The onshore export cable route from the landfall(s) to the onshore substation; and
- The onshore substation including interconnection to the new SHET-L substation.

### 1.7.3 Operation & Maintenance

It is anticipated that once the onshore substation is commissioned it will be unmanned and operate continuously (24 hours a day, seven days a week) except during planned shutdowns for maintenance. The onshore export cables are also anticipated to be in operation continuously.

Routine maintenance activities will include the following:

- Onshore substation – regular preventative visual checks and periodic planned inspections and maintenance of all switchgear, buildings and ancillary equipment. In addition, monthly and annual testing will be conducted for lighting systems, communication systems and fire detection systems in line with standard practices; and
- Onshore export cables – periodic visual inspection of the jointing bays (typically bi-annually) including checking for faults, water penetration or ingress, corrosion of joints and cables and structural conditions.

There will be limited amounts of traffic to and from the onshore substation for general operation and maintenance purposes, estimated at around one vehicle per week. Apart from this, there will be no day-to-day personnel on site during normal operation.

To allow for the operation and maintenance of the onshore cables, permanent access tracks primarily involving improvements to existing roads or tracks are required at certain points in the onshore Project area. It is anticipated that up to six permanent access tracks will be required along the cable route and one permanent access track at the onshore substation.

### 1.7.4 Decommissioning

The preferred decommissioning option is for as close to full removal as possible, whilst recognising that this is subject to assessments and consultation closer to the time of decommissioning. Capacity for removal of infrastructure has been a key consideration during the design stage of the onshore Project.

A Decommissioning, Restoration and Aftercare Plan will be required as a planning condition to be approved by the regulator, prior to the onshore decommissioning works. Decommissioning best practice and legislation will be applied at that time. It is expected that decommissioning follows a reverse order of the installation activities with some infrastructure potentially left in situ.

### 1.7.5 Embedded Mitigation

There are two main types of mitigation measures that are considered in the EIA process:

- Embedded mitigation – measures that are built into the Project design (primary mitigation) or implemented through standard practice or to meet legislative requirements (tertiary mitigation) that are independent of the EIA process. These measures are assumed to form part of the design of the onshore Project prior to any assessment; and
- Secondary mitigation – additional measures implemented to further reduce environmental effects to ‘not significant’ levels (where possible) and do not form part of the fundamental design of the onshore Project.

## 1.8 Consultation

Early and ongoing engagement with stakeholders is an important part of EIA best practice and the development of any project. OWPL have committed to go beyond its statutory obligations as it seeks to build effective and long-term working relationships with the Project’s stakeholders, including local communities. Box 2 below provides a summary of the community consultation activities. The key stakeholder engagement and consultation activities are shown in Figure 1.9. A range of other engagement methods were also used, outlined in Box 3.

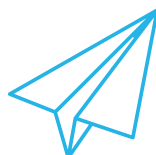
### Box 2 – Public Events Overview



**33**  
 Public  
 Events



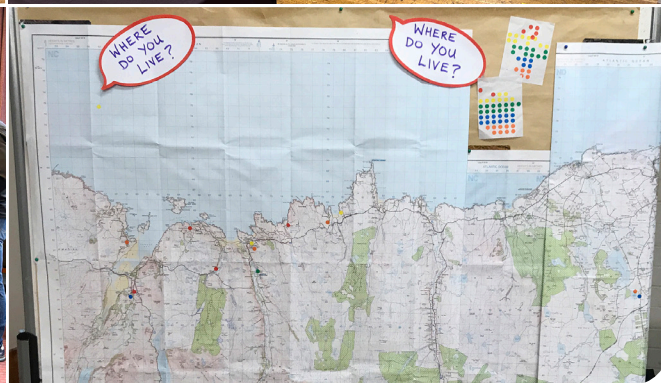
**2,488**  
 Event  
 Attendees



**61,864**  
 Leaflets  
 Delivered



**579**  
 Questionnaires  
 Completed



## Pre-application advice

OWPL began engaging with various stakeholders in late 2020 to inform them of OWPL's application to the ScotWind leasing round and receive early feedback.

## EIA Scoping

OWPL submitted an EIA Scoping Report to MS-LOT in March 2022 and a Scoping Opinion was received from THC on the 9th May 2022. Scoping is a key phase of the EIA which provides the developer and decision-maker with an opportunity to identify and consult on potentially significant environmental effects that should be considered for further assessment in an EIA Report, the methodologies by which impacts should be addressed and survey data required to inform the assessment.

## Consultation with statutory and non-statutory consultees

Consultation has occurred throughout the EIA process in the form of a wide range of topic-specific meetings. Feedback gained during these meetings has been integral to the preparation of the assessments presented within the Onshore EIA Report.

## Pre-Application Consultation (PAC)

- **Spring 2022** – launch of virtual exhibition and live Q&A sessions;
- **November 2022** – in-person public consultation events across seven venues (four in Orkney and three in Caithness and Sutherland);
- **May 2023** – formal in-person PAC events across seven venues (four in Orkney and three in Caithness and Sutherland); and
- **June 2023** – formal in-person PAC events at two venues in Caithness (Thurso and Halkirk).

Figure 1.9 – Key stakeholder engagement and consultation activities

### Box 3 – Additional Engagement Methods



#### Posters

Posters promoting events and directing people to the key information were displayed at key local venues including shops and businesses.



#### Community Panels

Community panels (with representatives from 14 community councils in the Highlands and 12 community councils in Orkney) provided liaison points and helped to share information with local communities.



#### Local Newspapers

Adverts promoting events were placed in The Orcadian, Caithness Courier and John O'Groats Journal.



#### Mail Drop

Leaflets advertising our events and sharing contacts details for feedback were sent to all addresses within the consultation zone.



#### Project Website

The Project website which hosted updates, a document library, and links to other information was set up at the start of the consultation period.



#### Virtual Exhibition

A virtual exhibition replicated face-to-face events and was updated regularly during the consultation.



#### Press Releases

Regular press releases to relevant media outlets were issued promoting consultation activities and providing Project updates.



#### Social Media

Social media posts were issued and shared via the Project partners, Community Panels, and other stakeholder groups.



#### Email

Emails were sent inviting numerous stakeholder organisations and individuals to attend all consultation events.

## 1.9 EIA Methodology

The principal aim of an EIA is to ensure that the authority granting consent (the 'regulatory authority') for a particular project makes its decision in full knowledge of any potential significant effects on the environment. EIA is a means of drawing together, in a systematic way, an assessment of a project's likely environmental impacts and effects<sup>6</sup>, both beneficial and adverse. This helps to ensure that the significance of the predicted effects, and the scope for reducing any adverse effects, is properly understood by the public and the regulatory authority before it makes its decision.

### 1.9.1 EIA process

Figure 1.10 illustrates the EIA process. The key steps are as follows:

1. Baseline characterisation to describe the relevant characteristics of the receiving environment in which the proposed onshore Project will be set, including over a defined study area. A description of the future baseline over the lifetime of the Project, including climate change, changes in practices and other reasonably foreseeable changes are also considered.
2. Description of the Project Design Envelope to set out the range of project design parameters used to determine the worst case scenario for each impact that is assessed (Box 4).
3. Assessment of potential effects to identify and assess potentially significant effects that could arise from the onshore Project, including direct, indirect, cumulative, inter-related, whole project assessment and transboundary effects (Box 5). The assessment of potential effects is informed by the worst case scenario, the baseline characterisation, feedback gained through consultation (including the Scoping Opinion) and takes account of embedded mitigation measures. Cumulative effects were assessed for each EIA topic where other plans and developments have the potential to affect the same receptors at the same time as the onshore Project. A list of developments for inclusion in the cumulative list assessment was collated through a screening exercise to identify relevant developments. Additional information was gathered for each cumulative development to inform the cumulative effects assessment.
4. Identification of secondary mitigation to reduce or remove such impacts, where practicable, if potential impacts are likely to be significant.
5. Assessment of residual effects once all proposed mitigations are taken into account.
6. Identification of relevant monitoring studies to monitor the predicted impacts of the onshore Project as appropriate for each receptor.
7. Publication of EIA Report and Non-Technical Summary and subsequent consultation with THC, its statutory consultees, other relevant stakeholders and the public on the findings of the EIA.

#### Box 4 – Worst-Case Scenario

For all EIA topics, the potential impacts of the onshore Project are assessed based on the 'worst case' parameters contained within the Project Design Envelope. The worst case scenario represents the project design option (or combination of options) that represents the greatest potential for change and is considered on a case-by-case basis, depending on the receptor and impact being considered. Given that the worst case scenario is based on the design option (or combination of options) that represents the greatest potential for change, the development of any alternative options within the Project Design Envelope will give rise to no worse effects than those assessed in the EIA.

6. An 'impact' is considered to result in an 'effect' if a pathway to a receptor exists.

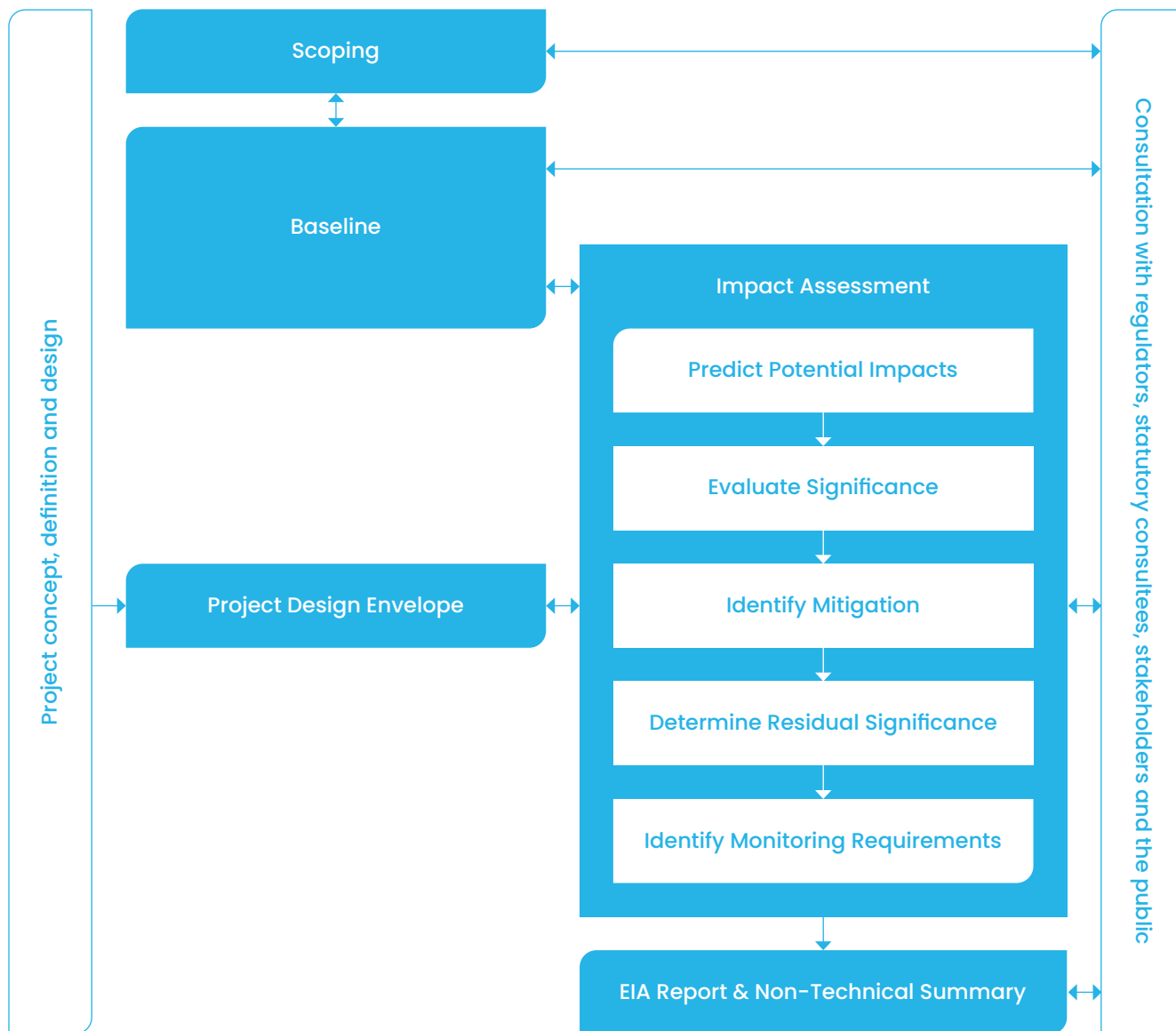


Figure 1.10 – EIA Process



### Box 5 – Types of Effects

Within each chapter of the impact assessment, the following types of effects are considered:

**Offshore Project Alone** – Assessment of the direct and indirect effects from the onshore Project construction, operation and maintenance and decommissioning stages.

**Cumulative Effects** – Assessment of the effects of the onshore Project cumulatively with other foreseeable projects (other developments), plans and activities.

**Transboundary Effects** – Assessment of the potential for the onshore Project to affect other countries other than the UK.

**Inter-Related Effects** – Assessment of the potential effects of multiple impacts affecting a single receptor, either within a single Project stage or across multiple Project stages.

**Whole Project Assessment** – Holistic overview of the effects from both offshore and onshore Project elements, to ensure that the whole Project impacts and effects are understood and that neither the offshore nor onshore Project is considered in isolation.

### 1.9.2 Assessing Impact Significance

Despite the assessment of impact significance being a subjective process, a defined methodology, outlined below, is used to make the assessment as objective as possible and consistent across different topics. However, the environmental factors under consideration vary considerably between the different receptors depending on what is being assessed, therefore there is some variation in the process between different topics and as required by receptor specific guidance.

For each impact, the assessment identifies a receptor's sensitivity to that effect and implements a systematic approach to understand the consequence and significance of the effect associated with the impact under consideration.

The process considers the following:

- Identification of receptor and impact;
- Definition of sensitivity of receptor, taking into account the receptor's tolerance to change, recoverability, adaptability and value;
- Definition of magnitude of impact, taking into account the spatial extent, duration, frequency, intensity and likelihood of the impact; and Evaluation of consequence of the effect on the receptor, considering the sensitivity of receptor and magnitude of impact using a matrix approach.

Sensitivities and magnitudes are categorised as 'Negligible', 'Low', 'Medium' or 'High' based on topic-specific assessment criteria<sup>7</sup>. Table 1.1 sets out how the magnitude of impact and the sensitivity of the receptor are combined to provide an assessment of effect significance.

*7. There are some exceptions to this generic methodology which are influenced by topic-specific guidance, for example, ecology assessments and, landscape and visual assessments.*

CONSEQUENCE OF EFFECT		MAGNITUDE			
		NEGLIGIBLE	LOW	MEDIUM	HIGH
SENSITIVITY	NEGLIGIBLE	Negligible	Negligible	Negligible	Negligible
	LOW	Negligible	Negligible	Minor	Minor
	MEDIUM	Negligible	Minor	Moderate	Moderate
	HIGH	Negligible	Minor	Moderate	Major

Table 1.1 – Significance of Effect

The categories provide a threshold to determine whether significant effects may result from the onshore Project, with ‘Moderate’ and ‘Major’ effects being defined as ‘significant’ in EIA terms. Where the impact assessment identifies that an aspect of the Project is likely to give rise to significant environmental effects, mitigation measures, above and beyond any embedded mitigation, or design changes will be incorporated into the assessment process to avoid impacts or reduce them to acceptable levels, where reasonably practicable. At this point, the impacts are reassessed, considering the additional mitigation to determine the residual effect.

The following sections of this Non-Technical Summary present the results of the topic specific assessments that have been undertaken as part of the EIA.

# 2

## Geology & Hydrology



## 2. Geology & Hydrology

The geology and hydrology assessment considers any potential impacts arising from the onshore Project to the geological and hydrological environment. The geological and hydrological environment includes bedrock geology, superficial geology, soils, peatlands, rivers, groundwater, surface waters and coastal waters.

The onshore study area for geology and hydrology receptors includes the onshore Project area plus a buffer surrounding this area which varies in accordance with the specific receptor assessed and the guidance followed.

The geology and hydrology baseline environment was informed through both desk-based assessments and survey work, including a walkover survey and a peat depth survey. Consultation with the Scottish Environment Protection Agency (SEPA) was undertaken to agree survey methodologies, mitigation measures and the scope of the assessments.

The topography of the geology and hydrology study area is characterised by cliffs at the landfall locations and gently sloping elevations inland, with the onshore export cable corridor partly following the Forss Water valley and crossing the River Thurso. The study area is underlain by Middle Old Red Sandstone bedrock forming a moderately productive aquifer<sup>8</sup>. The majority of soils are mineral soils, with small pockets of peat to the south of Halkirk. Seven nationally important protected sites, including Sites of Special Scientific Interest and Geological Conservation Review sites, with geology, hydrogeology, hydrology or peat features are located within 2 km of the onshore Project area.

The waterbody study area is located across five hydrological catchments, with just over half in the River Thurso catchment, which designated as an

SAC for the protection of Atlantic salmon. In terms of drinking water catchments, the main surface water Drinking Water Protected Area (DWPA) in the study area is the River Thurso. In terms of groundwater, the onshore Project area is primarily located in the Caithness groundwater DWPA, with the exception of the landfall option at Greeny Geo, which is located in the Dounreay groundwater DWPA. Two private water supplies are present in the onshore Project area.

The impacts of the onshore Project during construction, operation and maintenance, and decommissioning were assessed. These included impacts on groundwater flows and quality and DWPSs, impacts on soils and soil quality, impacts from potential contamination to soils and sensitive watercourses, risk of flooding, and interactions with contaminated land.

The assessment was underpinned by a number of technical Supporting Studies (SS) and an Outline Management Plan (OMP) including SS2: Ground Water Dependant Terrestrial Ecosystems (GWDTE) Assessment and SS3: Flood Risk and Drainage Assessment and OMP3: Outline Peat Management Plan. These documents aided the design of the embedded mitigation measures identified to reduce and manage impacts on geology and hydrology receptors. These embedded mitigation measures include avoidance of peatland, GWDTE, designated areas, and private water supplies (where possible), minimisation of water crossings and

*8. An aquifer is an underground layer of rock or sediment that holds groundwater.*

buffer zones which should be maintained in relation to watercourses (where possible), management of any contaminated materials and pollution prevention control measures, production of a final Peat Management Plan and final Flood Risk and Drainage Plan once the design of the onshore Project is established following planning consent. The western edge of the onshore substation search area has a high likelihood of river flooding from the Burn of Achanarras, therefore the indicative substation has been located to avoid this high risk flood area. High flood risk areas are also present in the onshore export cable corridor in the Forss Water and River Thurso valleys and will need to be accounted for with regards to the final route and design of the onshore cable installation. The assessments concluded that there will be no significant impacts to any geological or hydrological receptors with the implementation of these embedded mitigation measures.

An assessment of cumulative effects found the combined effect with other developments in the vicinity of the onshore Project area to be not significant in EIA terms for each receptor assessed. There is also limited potential for inter-related effects

between the onshore Project stages and no potential inter-related effects within an onshore Project stage with these effects considered to be not significant. Whole Project impacts were also assessed and there was found to be no significant effect cumulatively with the offshore Project with the application of the embedded mitigation measures. There is no potential for transboundary impacts upon geology and hydrology receptors as the potential impacts are localised and will not affect other countries outside the UK.

As no significant effects were identified, there is no requirement for secondary mitigation measures for the onshore Project. Nonetheless, there are potential uncertainties in the knowledge base in relation to private water supplies and surface water quality. As such, SEPA has requested monitoring prior to, and throughout, the onshore Project construction stage, which will be implemented by the Project. Authorisation and licences under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) will also be sought from SEPA, where required, to control impacts on the water environment.



*Greeny Geo landfall option*

# 3

## Freshwater Ecology



## 3. Freshwater Ecology

The freshwater ecology assessment considers any potential impacts arising from the onshore Project to the freshwater environment.

The freshwater environment includes all rivers and watercourses within the vicinity of the onshore Project area including the Forss Water and the River Thurso and their tributaries. The assessment considers the potential effects to sensitive receptors, such as fish species and designated sites, which depend on these environments.

Surveys and desk-based assessments were undertaken to underpin the assessment. The survey details are provided in full within SS4: Freshwater Ecology Technical Survey Report. Consultation meetings were held with NatureScot, Marine Scotland Science (MSS), THC, the District Salmon Fishery Boards (DSFBs) (including the Northern DSFB and Caithness DSFB), and Fisheries Management Scotland to agree the survey methodologies, mitigation measures, and the scope of the assessment.

The baseline surveys showed that all habitats for all native fish species and freshwater pearl mussels were present within the freshwater ecology study area encompassing parts of the River Thurso and Forss Water catchments. The River Thurso is an SAC designated for Atlantic salmon. The SAC overlaps several areas of the onshore export cable corridor. Freshwater pearl mussels were subsequently removed from the assessment due to results of more detailed field surveys. Suitable spawning habitats for salmon were found; along with juvenile habitats, and both rivers are functional Atlantic salmon catchments

with suitable habitats for brown trout and eel. Habitats suitable for lamprey juveniles were also found, although published information suggests they may be absent from the two catchments assessed. Diadromous fish e.g. Atlantic salmon, migrate between freshwater and marine environments during their life cycle. The complex lifecycle patterns of receptors, in particular Atlantic salmon, are recognised and considered within the assessments. A schematic highlighting this lifecycle is provided below in Figure 3.1.

The impacts of the onshore Project during construction, operation and maintenance, and decommissioning were assessed in line with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance. The impacts assessed included mortality of freshwater ecology receptors, damage to key freshwater habitats and interruptions to fish passage within these freshwater environments.

Potential impacts from the onshore Project alone were assessed as not significant with appropriate application of the embedded mitigation. This includes embedded mitigation measures to protect sensitive life history periods, such as spawning and incubation, for certain fish species by not undertaking works within and around watercourses at such times; the timings will be agreed with key consultees following planning consent.

Other measures include the adherence to best practice and regulatory guidance, prevention of barriers to fish passage and the use of HDD to install the cables beneath the River Thurso to avoid any direct channel impacts on the River Thurso SAC.

An assessment of cumulative effects found the combined effect with other developments in the vicinity of the onshore Project area to not be significant in EIA terms. There is also limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded mitigation and these effects were considered to be not significant. Whole Project impacts with the offshore Project also highlighted that although there is a pathway for impact to diadromous fish species due to their migratory life cycle (as shown in Figure 3.1), these impacts would not be significant due to the use of HDD at the landfall(s) which will avoid directly impacting the tidal reaches of the River Forss Water during sensitive periods life cycle periods. There is no potential for transboundary impacts upon freshwater receptors as the potential impacts are localised and will not affect other countries outside the UK.

Similarly, an assessment under the Habitats Regulations for the River Thurso SAC was undertaken in relation to Atlantic salmon which is a protected feature under this designation. The assessment is presented in full within the Onshore RIAA which has

been submitted alongside the application for PPP. The RIAA conclusions indicate that with the embedded mitigation measures in place, there would not be any adverse effects on the site integrity of the River Thurso SAC, either from the onshore Project alone or in-combination with other developments.

Once the final onshore Project design and infrastructure is confirmed during detailed design, and specifically once river crossing locations are known, an Aquatic Monitoring Plan will be developed in consultation with appropriate consultees. This document will detail the specific monitoring surveys required to regulate any potential effects from the onshore Project.

Finally, in line with NPF4, biodiversity enhancement proposals for the conservation of relevant freshwater ecology receptors. Rivers, in particular, are a key risk habitat to these receptors due to climate change in combination with channel modifications. These plans are discussed in further detail in the outline Biodiversity Enhancement Plan which has been submitted alongside the PPP application and will be finalised after planning consent has been granted in line with further consultations.



Figure 3.1 – Atlantic salmon lifecycle © Robin Ade and Atlantic Salmon Trust



# 4

## Terrestrial Non-Avian Ecology



## 4. Terrestrial Non-Avian Ecology

The terrestrial non-avian ecology assessment considers any potential impacts and resultant effects arising from the onshore Project to all sensitive land-based habitat and species (excluding birds and freshwater ecology receptors).



Surveys and habitat assessments of a range of notable and protected species were undertaken across the onshore Project area in line with appropriate buffer areas as set out by best practice guidance. These included a protected species survey, National Vegetation Classification survey, bat roost survey and deer survey. Full details of the survey results are provided in SS6: Terrestrial non-avian ecology technical survey report and SS7: Deer survey supporting study. Desk-based assessments were also used to underpin the assessment. Consultation meetings were held with NatureScot to agree the survey methodologies, mitigation measures, and the scope of the assessment.

The baseline surveys identified a number of notable and protected terrestrial non-avian ecology receptors. These included key habitats and botany and protected habitats such as coastal grassland and mire communities, GWDTEs and Scottish primrose; which were abundant within 50 m of the shoreline at the landfall locations. The presence of protected species including otter (a designated feature of the Caithness and Sutherland Peatlands



SAC), water vole, pine marten and common lizard were confirmed. Whilst no evidence of badger activity was identified during the survey visits, suitable habitat was identified, and badger are known to be present within the wider area. Therefore, it is considered likely that badger do occasionally pass through the onshore Project area. No evidence of red squirrel was identified during the survey visits and the habitats present within the onshore Project area were largely considered to be unsuitable for this species, with only small, isolated, largely immature, pockets of woodland present. Similarly, no suitable ponds for great crested newt were identified. Roe deer and red deer were identified and there is suitable habitat present, including good quality pasture mixed with small woodlands.

No designated sites with terrestrial non-avian ecology features overlap the footprint of the onshore Project. However, there are six sites of international importance (SACs and Ramsar sites) within 20 km, and nine sites of national importance (Sites of Special Scientific Interest (SSSI) and National Nature Reserves) within 5 km, of the onshore Project area.

The impacts of the onshore Project during construction, operation and maintenance, and decommissioning were assessed in line with the CIEEM guidance. The impacts assessed included habitat loss, disturbance and damage / injury to habitats and species, indirect effects on habitats and species e.g. from pollution, and reduction in deer welfare.

Potential impacts from the onshore Project alone were assessed as not significant with the appropriate application of embedded mitigation. These embedded mitigations include measures to avoid sensitive habitat and species locations, HDD at the landfall(s) to reduce impacts on coastal habitats, habitat reinstatement protocols, pollution prevention control measures and implementation of a Species and Habitat Protection Plan and Habitat Management Plan during the project works. An Environmental Clerk of Works will also be present to ensure that mitigations are adhered to during the activities.

An assessment of cumulative effects found the combined effect with other plans and developments in the vicinity of the onshore Project area not to be significant in EIA terms. There is also limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded mitigation and these effects were considered to be not significant.

Whole Project impacts were also assessed and there was no pathway for effects on terrestrial non-avian ecology receptors from the offshore Project. Furthermore, there is no potential for transboundary impacts upon non-avian ecology receptors as the potential impacts are localised and will not affect other countries outside the UK.

Similarly, an assessment under the Habitats Regulations for the Caithness and Sutherland Peatlands SAC (and Ramsar) was undertaken in

relation to otter which is a protected feature under this designation. The assessment is presented in full within the Onshore RIAA which has been submitted alongside the application for PPP. The RIAA conclusions indicate that with the embedded mitigation measures in place, there would not be any adverse effects on the site integrity of the Caithness and Sutherland Peatlands SAC (or Ramsar), either from the onshore Project alone or in-combination with other developments.

In terms of monitoring, a Species and Habitat Protection Plan will be created and implemented to prevent harm to protected and notable habitats and animals. This plan will require pre-construction surveys to be undertaken for protected mammal and reptile species as well as notable habitats (such as habitats protected under Annex I of the Habitats Regulations, Scottish Biodiversity List habitats and GWDTEs) in order to identify any species making use of the onshore Project area ahead of works and allow specific mitigation and compensation measures to be developed in consultation with NatureScot. Where necessary, a NatureScot Derogation Licence will be obtained prior to works commencing.

Finally, in line with NPF4, biodiversity enhancement proposals for the conservation of great yellow bumblebee are being explored by the Project team. This is a nationally scarce species listed on the Scottish Biodiversity List that is now restricted to coastal areas of Orkney, the Western Isles, Caithness and Sutherland. The species has declined by 80% over the last century primarily due to loss of flower-rich meadow habitats. The Project therefore proposes to create more wildflower meadows with key flower species for great yellow bumblebees. These plans are discussed in further detail in the outline Biodiversity Enhancement Plan submitted alongside the PPP application and will be finalised after planning consent has been granted, in line with further consultations.

# 5

## Terrestrial Ornithology



## 5. Terrestrial Ornithology

The terrestrial ornithology assessments considers potential impacts and resultant effects arising from the onshore Project to land-based bird species, their habitats and designated sites with bird features.

A range of ornithology surveys were carried out across the onshore Project area, with appropriate survey buffers (ranging from 250 m to 6 km) used to define the study areas for each receptor. Surveys included breeding bird surveys, breeding corncrake, diver and seabird surveys, breeding raptor and owl surveys, winter bird surveys, wetland bird surveys and goose and swan surveys. Full details of the survey results are provided in SS8: Terrestrial ornithology technical survey report. Desk based assessments were also used to underpin the assessment. Consultation meetings were held with NatureScot and the Royal Society for the Protection of Birds (RSPB) Scotland, to agree the survey methodologies, mitigation measures and the scope of the assessment.

The baseline breeding bird surveys recorded 101 species of bird. Of these, 44 were confirmed to be breeding within the study area, including two highly protected species, greylag goose and barn owl. Whilst hen harrier and white-tailed eagle were recorded foraging or overflying the study area, no nest sites or territories were recorded within the study area, and no golden eagles were observed. Merlin, peregrine, short-eared owl, golden plover and greenshank were recorded overflying or foraging within the study area, but no breeding behaviour was recorded. Of the waders identified within the study area, four species (curlew, lapwing, oyster catcher and snipe) were confirmed to breed, and breeding wigeon and teal territories were identified. No nesting

seabird colonies, corncrake or divers were confirmed within the study area.

Wintering Greenland white-fronted geese, and greylag geese were recorded to forage and roost within the onshore Project area and wider landscape. The coastal area was found to be used by an assemblage of 20 species of seabirds (including ducks and gulls) for foraging during winter. In addition, 16 species of wader were recorded to make use of the onshore Project area and wider landscape during winter.

No designated sites with terrestrial ornithology features overlap the footprint of the onshore Project area. Nine designated sites with terrestrial ornithology features are identified in the proximity of the onshore Project: five sites of international importance within 20 km of the onshore Project area and four sites of national importance within 5 km.

The impacts of the onshore Project during construction, operation and maintenance, and decommissioning were assessed in line with the CIEEM guidance. The impacts assessed included habitat loss for nesting, foraging and roosting birds; disturbance and damage / injury to birds; and indirect effects on habitats used by birds e.g. from pollution.

Potential impacts from the onshore Project alone were assessed as not significant with the appropriate application of the embedded mitigation. Embedded mitigation includes measures to avoid sensitive habitat and species locations, in particular for geese and swans, pre-construction surveys for breeding birds, HDD at the landfall(s) to reduce impacts on coastal habitats, habitat reinstatement protocols, pollution prevention control measures and implementation of a Species and Habitat Protection Plan during the Project works. An Environmental Clerk



of Works will also be present to ensure that these mitigations are adhered to during the activities.

All identified impacts on terrestrial ornithology receptors are negligible, and therefore not considered for a cumulative impact assessment, as they cannot measurably affect the outcome of an impact in combination with other developments. There is also limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded mitigation. Whole Project impacts were assessed, and no terrestrial birds present within the onshore study area will be impacted by the offshore Project. In addition, HDD activities during construction would be short term, temporary and reversible and so marine ornithology receptors would not be significantly affected in the long term, as such no significant whole project effects are anticipated. There is no potential for transboundary impacts upon non-avian ecology receptors as the potential impacts are localised and will not affect other countries outside the UK.

Similarly, an assessment under the Habitats Regulations for the Caithness and Sutherland Peatlands Special Protected Area (SPA) and Ramsar site (in relation to greylag goose and golden eagle), North Caithness Cliffs SPA (in relation to peregrine) and the Caithness Lochs SPA and Ramsar site (in relation to whooper swan, Greenland white fronted goose and greylag goose) was undertaken. The assessment is presented in full within the Onshore RIAA which has been submitted alongside the application

for PPP. The RIAA conclusions indicate that with the embedded mitigation measures in place, there would not be any adverse effects on the site integrity of these designated sites, either from the onshore Project alone or in-combination with other developments.

In terms of monitoring a Species and Habitat Protection Plan will be created and implemented to prevent harm to protected terrestrial birds and the habitats which they rely on during construction. The plan will include the requirement for pre-construction surveys, such as for breeding birds, as well as potentially notable habitats. To avoid impacts on foraging geese and swans, construction activities will not take place within 500 m of feeding locations (identified by the pre-construction surveys and from data provided by NatureScot) between September and mid-May. These mitigations and monitoring activities will be carried out and implemented by the Ecological Clerk of Works.

Finally, in line with NPF4, biodiversity enhancement proposals for the conservation of farmland breeding birds are being explored by the Project team. The Project is proposing to manage important habitats for farmland breeding birds due the availability of favourable habitats within the onshore Project area and due to a notable decline in the numbers of certain breeding birds (including curlew, lapwing and redshank) over recent decades. These plans are discussed in further detail in the outline Biodiversity Enhancement Plan submitted alongside the PPP application and will be finalised after planning consent has been granted, in line with further consultations.

# 6

## Land Use & Other Users, Including Forestry



## 6. Land Use & Other Users, Inc. Forestry

The land use and other users, including forestry assessment considers impacts on other users of the land within the onshore Project area, including agriculture, forestry, recreation and tourism assets, and third-party infrastructure.

Baseline surveys, including a walk-over survey, forestry survey, deer survey and peatland survey, have been undertaken to support the assessment. Desk-based assessments were also used to underpin the assessment. The study area for the land use and other users, including forestry chapter is defined as the onshore Project area, and therefore covers all receptors within the onshore Project area. Consultation with Scottish Forestry informed the forestry assessment and identification of mitigation measures.

The study area is rural in nature, with a limited number of small settlements, including Forss, Westfield and Harpsdale. The predominant land use is agriculture, including both arable and grazing farmland. There are also some areas of traditional peat cuttings. Formal deer stalking opportunities associated with some of the agricultural sporting estates are also present.

Other prominent features include infrastructure such as electrical overhead lines, road networks and the single-track Network Rail Scotland railway line between Georgemas junction and Scotsclader, which crosses the onshore study area. Additionally, the existing SHET-L Spittal substation is located immediately south of the proposed onshore substation.

The River Thurso and Forss Water both run through the onshore Project area and offer angling opportunities. Recreational and tourism features in the vicinity of the onshore Project area include the North Coast 500 road network, the Land's End to John O'Groats cycle and walking route, core paths for walking, listed buildings and scheduled monuments, Sibster Forest and the Forss House Hotel.

Several areas of woodland are present within the study area, including commercial plantations, policy type woodland, native woodlands and private woodland around properties and estates. The majority of forest and woodland areas will be avoided by the onshore Project, including ancient woodland at Forss and Spittal Woods. Nonetheless, whilst efforts have been made during onshore design to avoid forestry and woodland areas, two areas of woodland at Hill of Howe and Sibster Forest are potentially unavoidable by the Project.

Felling in these areas will be minimised and appropriately compensated through a compensatory planting scheme, which will take account of the Caithness Land Management Plan recently published by Forestry and Land Scotland (should any tree felling be required at Sibster Forest) and require approval from Scottish Forestry. Areas of potentially unavoidable forestry are shown in Figure 6.1.





The impacts of the onshore Project during construction, operation and maintenance and decommissioning were assessed. The impacts assessed included the temporary and long-term loss of agricultural land, soils, peatlands and forestry (due to felling), temporary impacts upon recreational and tourism users and interference with third-party infrastructure.

The assessment is provided alongside several supporting studies including SS10: Forestry and woodland survey and report, SS2: GWDTE Assessment and SS7: Deer survey report. The supporting studies aided the design of embedded mitigation measures identified to reduce and manage impacts on land use and other user receptors.

Potential impacts from the onshore Project alone were assessed as not significant with the appropriate application of the embedded mitigation. This includes measures to reduce the overall footprint of the onshore Project area, avoidance of high value agriculture and forestry areas, avoidance of other third-party infrastructure, peat management measures, compensatory planting for any felled woodland, reinstatement of land to pre-construction conditions and close liaison with affected landowners.

An assessment of cumulative effects found the combined effect with other developments in the vicinity of the onshore Project area to be not significant in EIA terms. There is also limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded mitigation and these effects were considered to be not significant. There are no significant whole Project effects and no potential for transboundary effects as the potential impacts are localised and will not affect other countries outside the UK. No secondary mitigation or monitoring measures are required in relation to the potential effects of the onshore Project on land use and other users as no adverse significant impacts are predicted.

Monitoring will be required in order to ensure that local residents and users are not adversely affected by the onshore Project works. This will be undertaken via appointment of a Community Liaison Officer who will manage the external communications of the Project. The Project will also establish a complaints procedure for people and organisations affected by the onshore Project. The Habitat Management Plan will be used to monitor any compensatory planting in the event that tree felling is required.



*Forss Water*

7

# Terrestrial Archaeology & Cultural Heritage



## 7. Terrestrial Archaeology & Cultural Heritage

The terrestrial archaeology and cultural heritage assessment considers any potential impacts and resultant effects arising from the onshore Project to terrestrial archaeology and cultural heritage assets.

A baseline walkover survey was undertaken to support the assessment. The study area for the terrestrial archaeology and cultural heritage chapter is defined as the onshore Project area, and therefore covers all receptors within the onshore Project area. Desk-based assessments were also used to underpin the assessment. Consultation meetings were held with THC's Historic Environment Team and Historic Environment Scotland to agree mitigation measures and the specific viewpoints which should be considered in order to inform the setting assessment.

The walkover survey of the onshore Project area identified archaeological remains from the Neolithic, Bronze Age, Iron Age, early medieval, post-medieval and modern periods, including scheduled monuments; and historic buildings from the post-medieval and modern periods, including listed buildings. Overall, 328 known historic environment assets were identified within the study area. In addition to the walkover survey, an archaeological watching brief was maintained on site during pre-application geotechnical site investigation works (as recorded in the Onshore Site Investigation Watching Brief Report) which identified three areas of peat deposits that were of archaeological potential; however, no archaeological remains were found.

The impacts of the onshore Project during construction, operation and maintenance, and decommissioning were assessed. The impacts assessed included loss or damage to historic

assets (both known and unknown), loss or damage to palaeoenvironmental<sup>9</sup> or geoarchaeological<sup>10</sup> deposits and sites of interests, and temporary and long-term impacts on the settings of identified historic assets.

The assessment is provided alongside the SS11: Terrestrial archaeology and cultural heritage gazetteer of sites, and the OMP3: Outline Peat Management Plan which provide further detail of the survey work. These surveys aided the design of the onshore Project and the embedded mitigation measures identified to reduce and manage impacts on archaeological and cultural heritage receptors. This includes measures to avoid specific known sensitive cultural heritage assets identified during the surveys, comprising scheduled monuments, listed buildings and non-designated assets of medium and high value that could be of schedulable quality.

The onshore Project has committed to avoiding any direct, physical impacts on 23 assets during construction activities (as shown on Figure 7.1). Other embedded mitigation covering all onshore activities, include, reinstatement of terrain and ground cover, preparation of appropriate Written Schemes of Investigation, which may include archaeological intrusive evaluations, watching briefs and excavations, and a Protocol for Accidental Discoveries to avoid or mitigate accidental impacts and manage any accidental discoveries of archaeological interest.

9. The organic remains of plants, animals and sediments highlighting past environments and human interaction with past environments.  
10. The formation of sites through geological processes and the effects on buried sites and artefacts post-deposition.



For the onshore Project alone, one significant direct impact relating to loss or damage of a Bronze Age hut circle, and one potential significant impact relating to loss or damage of an asset of uncertain value, were identified. In both cases, secondary mitigations in the form of a phased programme of archaeological evaluation and mitigation through excavation and recording were recommended. By implementing this secondary mitigation, the residual effects have been further assessed as not significant in EIA terms.

A three-stage process following Historic Environment Scotland guidance was undertaken to assess the potential effect of the onshore substation on the setting of historic environment assets that were agreed during consultation. The assets identified comprised two Neolithic cairns and a Bronze Age hut circle that are designated as scheduled monuments. Embedded mitigation involving bund construction with associated planting has been developed, and with this included, no significant impacts relating to long-term changes to the setting of these onshore

historic environment assets that reduces their value have been identified.

An assessment of cumulative effects found the combined effect with other developments in the vicinity of the onshore Project area to not be significant in EIA terms. There is also limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded and secondary mitigation and these effects were considered to be not significant. Whole Project impacts were also assessed and there was found to be no pathway for effects on archaeology and cultural heritage receptors from the offshore Project. Furthermore, there is no potential for transboundary impacts as the potential impacts are localised and will not affect other countries outside the UK.

Any monitoring requirements during construction will be detailed in the onshore Written Schemes of Investigation that are part of the embedded mitigation and will be agreed in advance with THC.



*St Thomas's Chapel, Skynet – an ecclesiastical site with potential early medieval origins that has upstanding remains © ORCA*

# 8

## Air Quality



## 8. Air Quality

The air quality assessment considers any potential impacts and resultant effects arising from the onshore Project to air quality. The primary focus of the assessment is the generation of dust and other emissions, especially in dry and windy conditions, and the potential impacts of this on human health and ecological receptors. Effects from greenhouse gas emissions are discussed separately in section 13.

Within the air quality onshore study area, human and ecological receptors have been identified, in line with the Institute of Air Quality Monitoring guidance, that have the potential to be impacted by dust and particulates.

Human receptors within 500 m of the onshore project area include multiple residential properties, a number of non-residential sites (Forss Business & Energy Park, Achscrabster Farm and Cottage, and Forss House Hotel), and amenity areas. Ecological receptors include those listed on the International Union for Conservation of Nature red list e.g. endangered species and nationally designated sites including the River Thurso SAC which overlaps the onshore Project area and SSSI which are located outwith, but adjacent to the onshore Project area, including the Achanarras Quarry SSSI; Ushat Head SSSI; and Loch Lieurary SSSI.

The study area is largely rural and has a relatively high air quality level when considered against air quality standards provided by the Scottish Government and the Department for Environment, Food and Rural Affairs. Existing local sources of particulate matter and dust likely include windblown dust from agricultural land, exhaust emissions from road vehicles, active quarries and domestic heating sources.

The impacts of the onshore Project during construction and decommissioning were assessed, including dust emissions associated with the onshore substation and onshore export cable(s) installation due to ground-breaking works. No impacts were assessed for the operation and maintenance stage; it is not expected that any significant volumes of dust or vehicle emissions will be generated once construction is completed, therefore these were scoped out of the assessment.

The assessment is provided alongside OMP2: Outline Construction Traffic Management Plan. The supporting study aided the design of the onshore Project and the embedded mitigation measures identified to reduce and manage impacts on air quality receptors. Potential impacts from the onshore Project alone were assessed as not significant due to the highly localised nature of the impacts which will only occur at low intensities and with the appropriate application of the embedded mitigation. This includes a Dust and Air Quality Management Plan, which will ensure: the placement of dust causing activities is located as far as possible from sensitive receptors; adequate non-potable water supply to facilitate effective dust / particulate matter suppression; and best practice is followed in terms of vehicles and transport to minimise the generation of dust.



An assessment of cumulative effects found the combined effect with other developments in the vicinity of the onshore Project area will not be significant with adherence to best practice and the embedded mitigation. There is also limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded mitigation and these effects were considered to be

not significant. There are no significant whole Project effects and no potential for transboundary effects as the potential impacts are localised and will not affect other countries outside the UK.

No secondary mitigation or monitoring measures are required in relation to the potential effects of the onshore Project on air quality as no adverse significant impacts are predicted.



*Forss Windfarm*

# 9

## Noise & Vibration



## 9. Noise & Vibration

The noise and vibration assessment considers any potential impacts and resultant effects arising from the onshore Project to the receptors most sensitive to noise and vibration, including residential receptors, as well as schools and healthcare users.

The study area for identifying and assessing impacts on Noise Sensitive Receptors (NSRs) was set out to a 1 km buffer around the onshore Project area, as shown in Figure 9.1.

A background noise survey was undertaken to underpin the operational substation noise assessment. The methodology for determining baseline background noise levels in the vicinity of the proposed onshore substation was discussed and agreed with THC's Environmental Health Team. This baseline noise survey was undertaken in line with industry standards over a two-week period in December 2022, at locations representative of the nearest NSRs at the onshore substation.

The study area and its surroundings are generally rural in character, and the noise environment is mostly characterised by intermittent traffic along main roads such as the A9 and local roads as well as agricultural vehicle movements in the area. Other sources of noise include 'natural' sources, such as wind-disturbed vegetation, sea waves, birds and farm animals. The baseline noise environment is considered to be typical of rural locations, with relatively low levels particularly during quiet periods, but with the aforementioned localised sources which

will increase the noise levels at times. No significant baseline sources of vibration were identified in the study area.

The impacts of the onshore Project during construction, operation and maintenance and decommissioning were assessed. The impacts assessed included noise and vibration associated with the various onshore Project construction components at the landfall(s), onshore export cable corridor and onshore substation; construction noise associated with vehicle use; and operational noise associated with the running of the onshore substation.

The assessment is provided alongside supporting studies SS12: Noise survey report and SS13: Noise modelling report. The survey and noise modelling works have aided the design of the onshore substation and the embedded mitigation measures required in respect of the NSRs in its vicinity. This includes the provision of a noise control strategy for electrical plant and equipment at the onshore substation and provision of earth bunding to reduce noise emissions.

For the onshore substation and construction works at the landfall(s) and along the cable route, construction management measures include the restriction of most works to day-time working hours (including weekdays and Saturday mornings) in line with THC's requirements. In addition, to the embedded mitigation measures, for HDD works and some of the temporary construction compounds and rock breaking activities, consideration of their location and use of temporary screening is proposed to avoid potentially significant noise effects.

Potential cumulative levels of construction traffic will be controlled through scheduling of deliveries and traffic to site in liaison with other nearby developments.

Potential significant impacts were identified in some instances where HDD works may require periods of evening and night activity. Mitigation measures will be finalised at a later stage once the final locations from which drilling works will be conducted and the necessary equipment have been determined. In addition to good practice measures and the selection of drilling locations further away from sensitive receptors, the associated mitigation could involve local use of screening barriers, interrupting the drilling at night if possible if relevant noise thresholds are exceeded or offering temporary relocation of the affected residents.

Operational substation noise has been assessed based on preliminary plant selections and the results show that, with the implementation of the noise control strategy, noise levels will be reduced to low at neighbouring properties. The noise control strategy will be finalised based on final plant selections and layout after planning consent has been granted.

Overall, no significant impacts to noise and vibration receptors are predicted, either for the onshore Project alone or cumulatively with other plans or projects. Additionally, there is limited potential for inter-related effects between the onshore Project stages or inter-related effects within an onshore Project stage with the application of the embedded mitigation and these effects were considered to be not significant. There are no significant whole Project effects and no potential for transboundary effects as the potential impacts are localised and are not expected to affect other countries outside the UK.

Some monitoring of construction noise may be required for certain activities as part of the consent conditions. The details have not yet been confirmed, but this could potentially include monitoring at the closest NSRs during night-time HDD works. The Project will appoint a Community Liaison Officer who will manage the external communications of the Project and manage a Project complaints procedure for people and organisations affected by the onshore Project.



*Noise monitoring equipment near the onshore substation search area © Hoare Lea*



# 10

## Access, Traffic & Transport



## 10. Access, Traffic & Transport

The access, traffic and transport assessment considers any potential impacts and resultant effects arising from the onshore Project to the local road, rail and port networks, their users and local communities.

The study area comprises the public road network that will be used by the onshore Project traffic during the construction and operation and maintenance stages of the development, as shown on Figure 10.1.

An automatic traffic counter survey was carried out in November 2022 on each of the road links shown in Figure 10.1. The survey was used to calculate the current and future baseline traffic flows to understand the current operation of the network and to identify capacities of the surrounding road network. The survey work was supplemented with desk-based assessments. Consultation meetings were held with THC's Transport Planning Team, Transport Scotland, and Network Rail Scotland to agree the survey methodologies, mitigation measures and the scope of the assessment.

The baseline assessment identified that traffic flows in the study area are low, even on the A9(T), and there are a low number of heavy-goods vehicle (HGV) movements. This means that only small absolute increases in traffic as a result of the onshore Project will result in large percentage increases on individual road links. The most sensitive locations in terms of traffic impacts are where roads pass through the more urban areas of Thurso and Halkirk, and on single-track roads where passing opportunities are limited.

The impacts of the onshore Project during construction and decommissioning were assessed. These included impacts from increased generation of traffic on road users, road safety, local communities (including severance, pedestrian delay and amenity, dust and dirt) and road carriageways, verges and associated structures. All operation and maintenance impacts were scoped out due to minimal traffic generation during this stage of the onshore Project.

The assessment is provided alongside supporting studies including SS14: Traffic survey report and SS15: Abnormal Loads Assessment (ALA). In addition, the assessment included the development of an outline Construction Traffic Management Plan (CTMP) which is provided as part of the PPP application (OMP2: Outline CTMP) and will be finalised post-consent. The surveys and assessments have aided the design of the onshore Project and the embedded mitigation measures required in respect of these receptors. This includes measures contained within the outline CTMP such as identification of designated construction routes, re-use of excavated materials on site and maximising HGV loads to minimise traffic generation, comprehensive traffic related health and safety measures to reduce risk of accidents, communication with stakeholders e.g. local communities and landowners, provision of laybys on single-track roads to allow HGVs and general traffic to pass each other, and adequate traffic management and banksmen where required.

The largest traffic impacts are predicted to occur during the construction stage. During construction, HDD will be used to install the cable under the railway line, which means there will be no effect on the operation of the railway.

OWPL are in consultation with Network Rail Scotland and this will continue throughout the Project, in order to ensure compliance with National Rail Scotland processes.

No significant impacts to any access, traffic and transport receptors are predicted, either for the onshore Project alone or cumulatively with other plans or projects during the construction stage. Due to low baseline traffic levels, the impact of additional development traffic was assessed as having a marginal effect on driver delay, pedestrian delay and amenity, and severance. In terms of accidents and safety, it was calculated that the development would potentially result in an overall increase of around 2.3 personal injury accidents<sup>11</sup> (from 11.7 projected to occur at the baseline, to a predicted 14.0 occurring due to the addition of Project construction traffic), which is not considered to be a significant increase. Standard on-site measures will ensure that dust and dirt effects on the public road network are minimised.

Additionally, there is limited potential for inter-related effects between the onshore Project stages or inter-

related effects within an onshore Project stage with the application of the embedded mitigation and these effects were considered to be not significant. Whole Project impacts were assessed and although there is potential overlap with the offshore Project relating to Project personnel travelling overland to ports where offshore components will be constructed, the number of vehicles related to this were low and effects were assessed as not significant. There is also no potential for transboundary effects as the potential impacts are localised and are not expected to affect other countries outside the UK.

Secondary mitigation, in the form of a new scheme of passing places on single-track roads on construction routes, is proposed. This will reduce traffic delays for a small number of local road users, and for construction vehicles using these routes. Furthermore, pre and post construction surveys will be undertaken along all of the construction routes (with the exception of the A9 and A836) to identify any damage caused by construction vehicles and ensure that the Project is responsible for any repairs. No other monitoring is proposed.



View from Junction of A9, Spittal and to Halkirk © WSP

11. Expressed in per million vehicle-km.



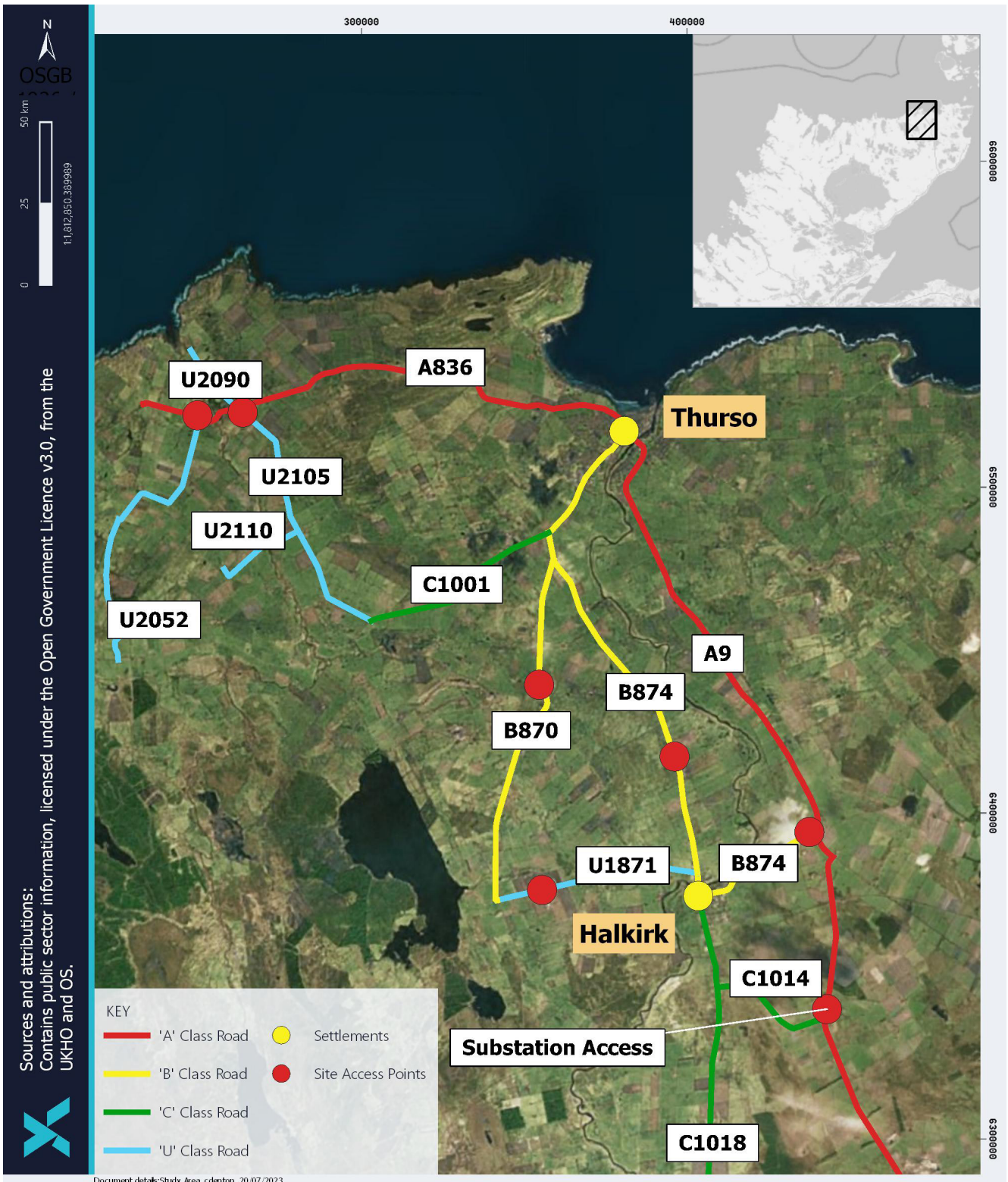


Figure 10.1 – Access, traffic and transport onshore study area

## Landscape & Visual



## 11. Landscape & Visual

The Landscape and Visual Impact Assessment (LVIA) identifies and assesses the significance of changes resulting from the construction, operation and maintenance, and decommissioning of the onshore Project.

The assessment focuses on the operation and maintenance stage, as this is when the significant effects are most likely to arise over the long-term, although construction impacts are still considered. LVIA is carried out in relation to landscape character as an environmental resource in its own right, and on people's views and visual amenity.

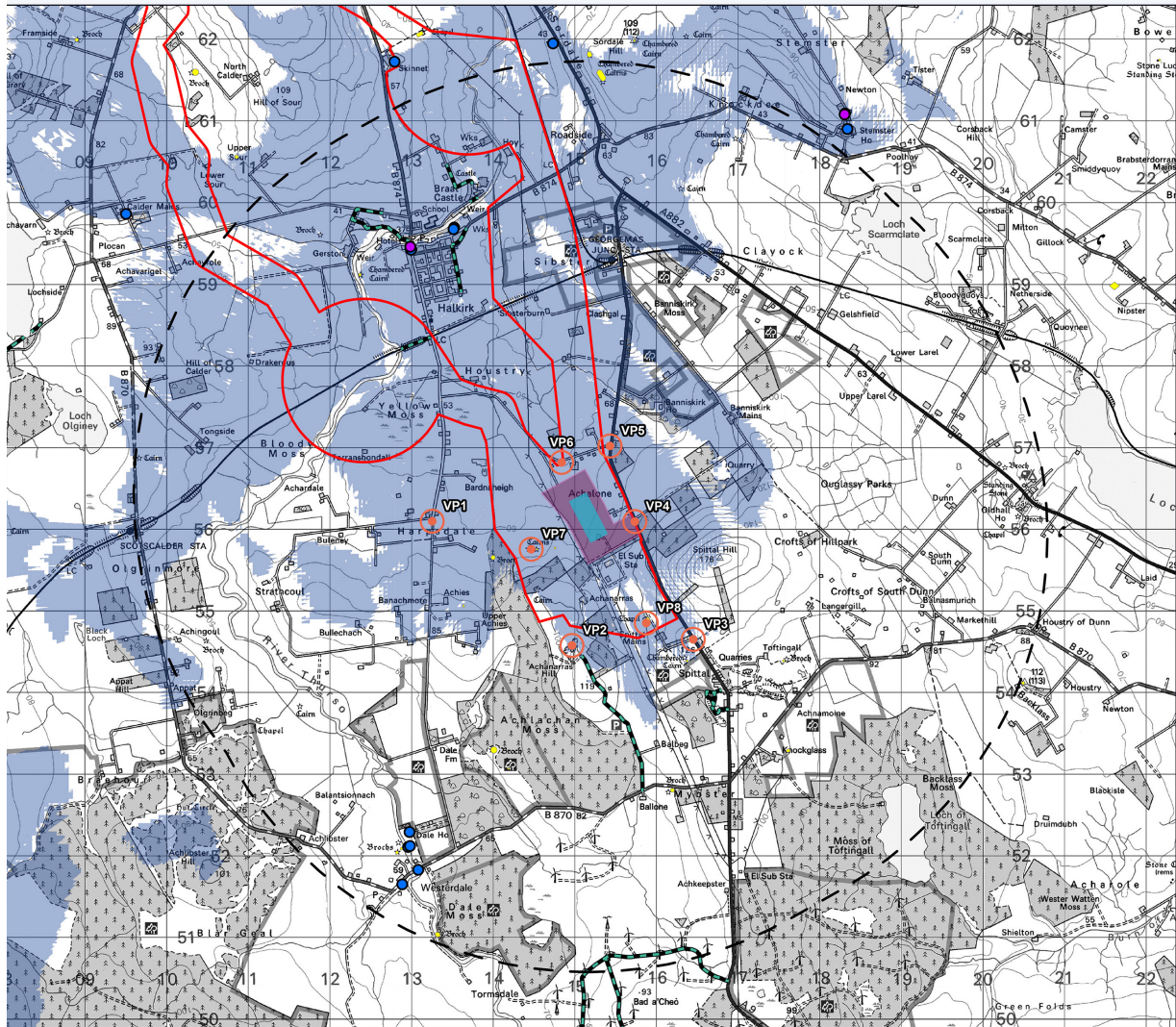
The LVIA has been informed by desk-based studies and field survey work undertaken within the LVIA onshore study area. The LVIA onshore study area extends 3 km from the onshore Project area and 5 km from the onshore substation. The assessment was informed by desk-based studies and field work based on a defined Zone of Theoretical Visibility<sup>12</sup> of the onshore substation, and a proposed height of 13.5 m. To understand the key visual receptors potentially impacted, eight viewpoints were assessed, as shown in Figure 11.1. The extent of the study area and the viewpoints considered were agreed in consultation with THC and NatureScot.

There are no designated landscapes within the study area. The baseline assessment identified four Landscape Character Types likely to be affected by the onshore Project. The landscape within the study area is vast, exposed and open, generally dominated by a horizontal emphasis. This, as well as the clarity of the air and light, allows for extensive views both within the lowland plain and to the landscapes and seascapes beyond. The undulating landform forms a series of broad, shallow valleys which provides some

visual enclosure. Woodland is sparse and limited to small coniferous shelterbelts and clumps of broadleaf trees sheltering farms, but where present, does screen and enclose views.

The site selected for the onshore substation is located in an area where there is already a strong influence of this type of infrastructure, including the existing SHET-L substation at Spittal and the proposed new SHET-L Spittal 2 substation. The iterative design of the onshore substation has been subject to ongoing consultations with THC to understand how the design and layout of the onshore substation in this area could be designed to ensure that the visual effects on receptors are reduced. This iterative design process has therefore been an integral part of the LVIA and concluding levels of effect. This has resulted in embedded mitigations to secure favourable design of the onshore substation such as siting it in a linear arrangement, ensuring the colour of it and associated plant are in a recessive colour (such as dark brown or grey) to further reduce impacts, and setting the location back from the A9 to respond to existing terrain. Additionally, landscape screening options are included and have been consulted on with THC and informed by feedback from community stakeholders received at PAC events. These include bunding options to be designed in keeping with existing landforms and landscape planting of trees and bushes to soften views and landscape effects. A 3D model of the onshore substation once constructed and planting has matured is shown in Figure 11.2 and Figure 11.3.

*12. Zone of Theoretical Visibility is a computer-generated analysis which evaluates visibility. It is not used to determine actual visibility, only theoretical visibility as it does not consider visually significant structures, vegetation and settlements, which may screen or partially obscure views of the onshore substation.*



Note:  
 The ZTV is calculated based on the platform extents up to a height of 13.5m (i.e. 83.5m AOD) as a worst case scenario from a viewing height of 1.6m above the ground level.  
 The terrain model assumed bare ground and does not take into account the potential screening effects of vegetation and buildings. It is derived from OS Terrain 50m and 5m height data.  
 Earth curvature and atmospheric refraction have been taken into account.

**ZTV and Visual Receptors: Substation**

- Indicative substation location
- Onshore substations search area
- 5km substations search area
- Onshore Project area
- Core paths
- Listed buildings**
- B
- C
- Viewpoints
- Scheduled monuments
- Zone of theoretical visibility

Figure 11.1 – Zone of Theoretical Visibility and Visualisation Viewpoints

The impacts of the onshore Project during construction, operation and maintenance, and decommissioning were assessed. The impacts assessed included landscape effects from the onshore substation and onshore export cables on landscape character areas and visual amenity effects of the landfall(s) and onshore export cables on sensitive visual receptors.

The assessment is provided alongside supporting studies including SS16: LVIA viewpoint assessment and SS18: LVIA visualisation pack. The assessment concluded that there were no significant effects on landscape character as a result of the onshore Project, either for the onshore Project alone or cumulatively with any other developments. There were also no significant effects on landscape character from the onshore export cable corridor and no significant cumulative effects with other plans or projects on visual amenity receptors from the onshore Project. Construction of the onshore export cable corridor will introduce minor to moderate effects, however these will be temporary during the construction period.

Nonetheless, significant visual amenity effects of the onshore Project are anticipated for high sensitivity receptors in the immediate vicinity of the onshore substation due to the scale of infrastructure being introduced in the existing agricultural fields. Residential properties along the A9 to the immediate east of the onshore substation and residents along the road to Halkirk, between the A9 and Bridge Street are likely to experience a major to moderate adverse effect during the construction phase and at Year 1 of the operational stage, which is considered significant.

At Year 15, once the proposed planting has established and matured, this is likely to reduce to a moderate to minor adverse residual effect, although this is still considered to remain significant. The significant residual effect would persist due

to the extent of change to the view, however, the onshore substation itself would not be visible from the residential properties, being fully screened by the proposed bunds and planting.

Residents at Harpsdale with views of the onshore substation are likely to experience a medium magnitude of change, resulting in a moderate level of effect during the construction phase and at Year 1 of the operational phase, which is considered significant. At Year 15, this is likely to reduce to a minor level of residual effect, which is not significant.

Inter-relationship effects were also assessed and there was found to be no additional significant effects: the effects from removal of hedgerows and a very small discreet section of the broadleaf woodland within the onshore substation area during the construction stage will persist into the operational stage, however, compensatory planting will have established equivalent trees elsewhere. This effect was assessed in full in the main assessment as part of the Year 1 and Year 15 assessment, therefore no additional inter-related effects have been identified.

Whole Project impacts were assessed and although there is potential overlap with the offshore Project relating to the construction period at the landfall(s), this would be short term, localised and temporary in nature. There are no areas from which it is possible to see both the offshore Project and the onshore substation at the same time and these two parts of the whole Project affect different areas of landscape character. There are therefore no effects on visual amenity or on landscape character arising from these two parts of the Project considered together. There is also no potential for transboundary effects as the potential impacts are localised and are not expected to affect other countries outside the UK.

There is no proposed secondary mitigation. The embedded mitigations proposed, including landscape

bunding as the principle means of screening the onshore substation, with proposed planting to soften the landscape effect, will continue to be refined after planning consent has been granted, in line with ongoing consultations with THC to ensure effects are minimised as far as practicable. Monitoring of landscape and visual receptors will be required in order to ensure that local residence are not adversely affected by the onshore Project works. This monitoring will be undertaken through close liaison with affected landowners, asset owners and members of the public,

to ensure that local residents are not adversely affected by the onshore Project works.

In relation to the acceptability of significant impacts on landscape and visual receptors, NPF4, that was adopted earlier this year, recognises ‘that such impacts [significant landscape and visual impacts] are to be expected for some forms of renewable energy. Where impacts are localised and/or appropriate design mitigation has been applied, they will generally be considered to be acceptable.’

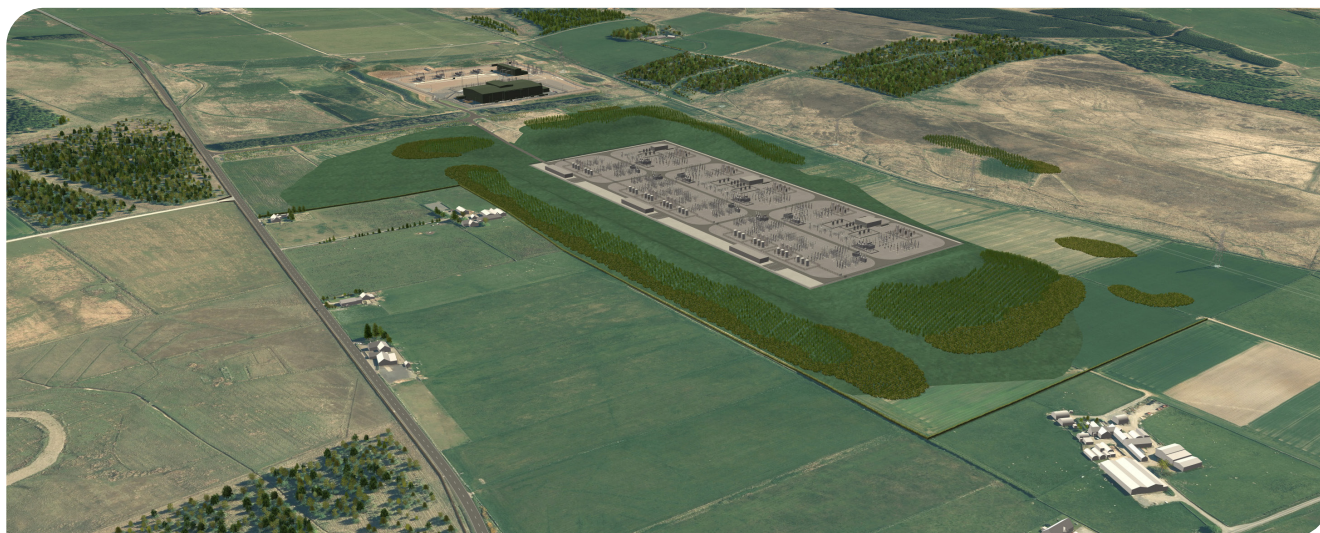


Figure 11.2 – 3D model of the onshore substation and landscape design (aerial view)

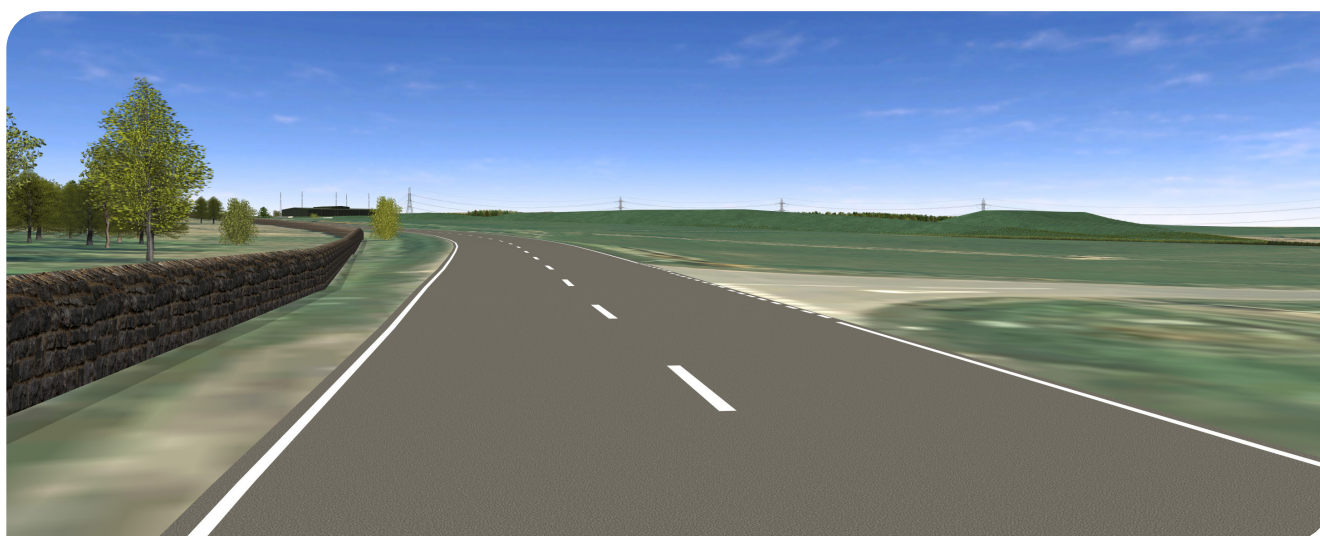


Figure 11.3 – 3D model from A9 showing screening of onshore substation from planting maturation at year 15

# 12

## Socio-Economics



## 12. Socio-Economics

The socio-economics assessment (including tourism) evaluated the potential socio-economic effects in the following spatial areas: UK; Scotland; Highland; Orkney; Caithness and Sutherland.

The assessment considered potential effects from the onshore and offshore Project as a 'whole Project'. This is because project expenditure for the onshore and offshore Projects is intrinsically linked, and people have the potential to be affected by impacts from both aspects. It should be noted that the socio-economics assessment and chapter is provided in the offshore Project EIA Report.

The desk-based study, supplemented with data received through stakeholder and community consultation, including an extensive questionnaire, and consultation with Community panels (groups of local Community Councils in Orkney, Caithness and Sutherland) identified evidence of local economic vulnerability, especially in Caithness where there is a depopulation trend. At the time of the assessment, a total of 356 local resident responses to the questionnaire survey were received, including 240 Orkney residents, 85 Caithness residents and 31 Sutherland residents. In addition, a Socio-Economics Working Group was set up to provide a forum for local authorities, local enterprise agencies and other key stakeholders to provide views on the Project, input to initial assessment findings and share relevant information. The Socio-Economics Working Group has met regularly since June 2022.

Labour market activity metrics indicate long-term structural weakness to the Caithness economy, but there is also evidence of increasing vulnerability for the Orkney economy. Tourism is identified as an important

industry in Caithness and Sutherland, and also in Orkney, with visitor numbers rebounding following the difficulties caused by the Covid-19 pandemic. The baseline assessment indicates that there are business sub-sectors that have the potential to contribute to the supply chain for the Project, including the provision of civil engineering, transport services, and professional services. There are existing concentrations of deprivation in Caithness, particularly in Wick, but not in areas that are likely to be epicentres for the Project.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. These included beneficial impacts such as employment opportunities, economic output (Gross Value Added) and supply chain opportunities. Potential adverse effects were identified on tourism, fish processing, and the commercial fishing industry, socio-cultural receptors (e.g. the potential for the Project to exacerbate existing social problems such as crime) and distributional receptors (e.g. changes in income distribution and housing affordability).

OWPL are committed to implementing a range of initiatives to support the local community and economy. As part of the ScotWind leasing round application process, the Project was required to develop a Supply Chain Development Statement (SCDS), with the objective of enhancing the level of participation of UK, Scottish and local suppliers within the supply chain for the Project.



The SCDS outlines a commitment to:

- Provide £33.5 million into a supply chain investment fund to enhance key supplier capability and competitiveness prior to Contract for Difference (CfD) award;
- Fund UK supplier design and supply studies to allow suppliers to plan investment in additional capability and capacity, and to position themselves competitively in terms of OWPL's procurement requirements;
- Invest £9.3 million to support local port and harbour infrastructure in Orkney and Caithness;
- Fund a bespoke programme with the European Marine Energy Centre to support innovation and cost reduction relevant to the Project and other ScotWind developments;
- Invest in a local skills development programme;
- Develop a Local Accommodation Strategy, including partnership arrangements with local hotels and other accommodation providers to provide a temporary construction workforce with good quality accommodation as close to the Project assembly and marshalling site(s) as possible; and
- Provide a community benefits programme to deliver a range of short-term to longer-term strategic goals, such as support for energy bills, provision of local business grants, and sponsorship of local community events (which OWPL are already involved in). Discussions are ongoing around the specific details of the community benefit fund.

The assessment of effects was informed by Project-specific economic modelling, using a range of assumptions around Project expenditure. The assessment of potential effects took account of embedded mitigation measures, including the commitments in the SCDS that the Project agreed with Crown Estate Scotland as part of the ScotWind bid application. Several significant beneficial effects were identified including impacts on local employment, economic output, and demand for housing and local services. For example, the Project will result in

job creation, directly for those employed by OWPL, indirectly through job creation (i.e. those not directly employed by OWPL but involved in the supply chain), and through induced employment as a result of Project expenditure in the local areas. The modelling predicted up to an 8.3% increase in jobs and 5.6% increase in Gross Value Added in Caithness and Sutherland and 17.1% increase in jobs and 6.4% increase in Gross Value Added in Orkney. No significant adverse effects on socio-economic receptors were identified in the assessment, either for the Project alone or cumulatively with other plans and developments. No transboundary effects were predicted. There was not considered to be any residual potential for inter-related effects within Projects stages that have not yet been taken into account.

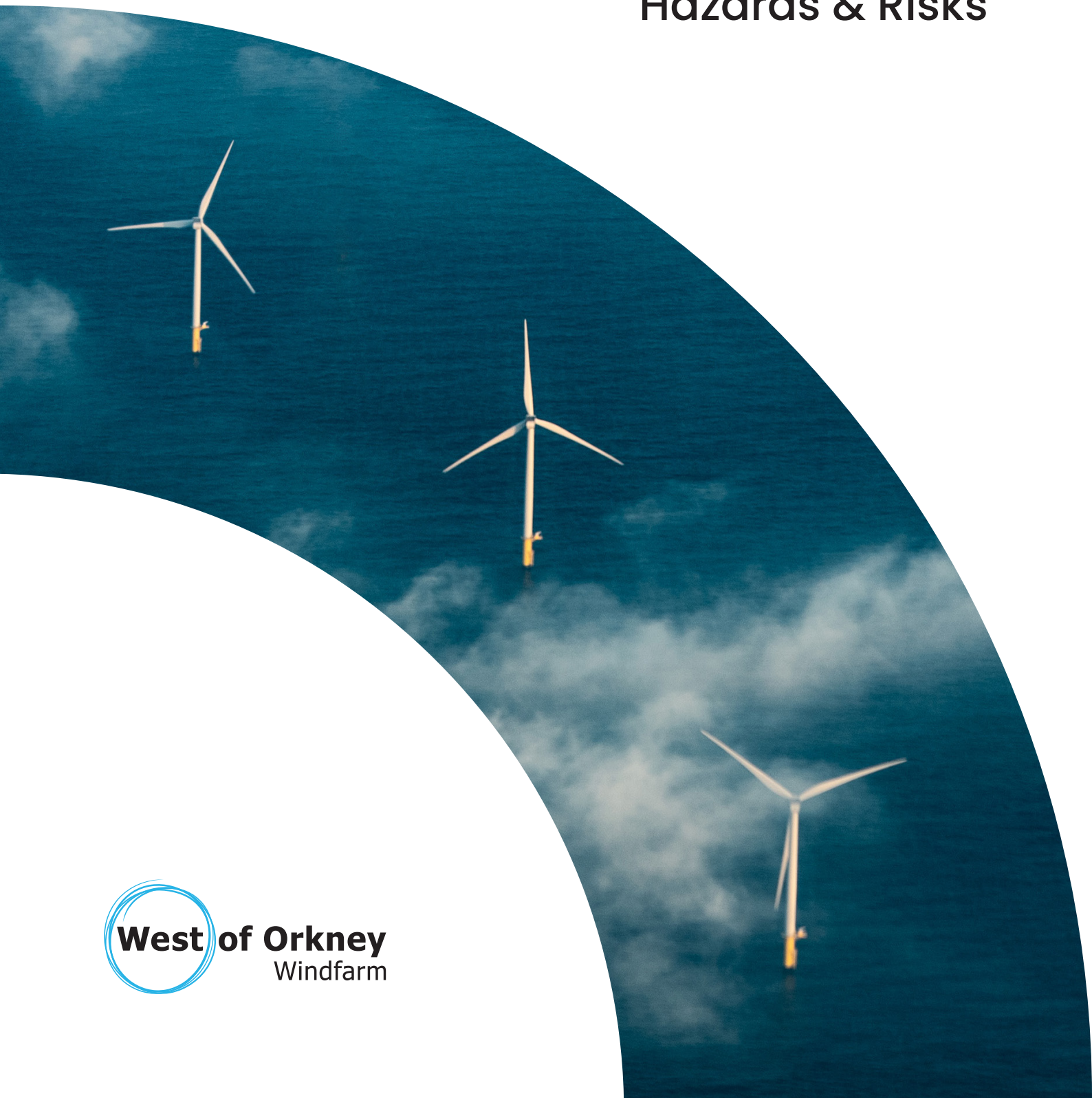
As no significant adverse effects were identified, no secondary mitigation requirements are proposed with respect to socio-economics receptors. OWPL intend to continue monitoring socio-economic related issues in the same manner it has to date. OWPL has built a strong relationship with national and local (mainland Scotland and Orkney) organisations through the Socio-Economics Working Group (or equivalent post-consent). This group (or equivalent) will continue to meet post-consent and play a role in ensuring local and national benefits are maximised as appropriate and to monitor any potential adverse effects.



Scrabster port/harbour

# 13

## Consideration Of Climate, Hazards & Risks



## 13. Consideration Of Climate, Hazards & Risks

### 13.1 Climate & Carbon Assessment

As required by the EIA Regulations<sup>21</sup>, consideration must be given to the “potential impact of the development on the environment resulting from the impact of the Project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change”. The onshore EIA Report is supported by a Climate and Carbon Assessment, covering both the onshore and offshore Project, to fulfil this requirement. This provides an assessment of:

1. Climate resilience review: the vulnerability of the Project to climate change impacts (e.g. increased frequency of storms);
2. Carbon assessment: the potential impacts of the Project on climate (e.g. the nature and magnitude of carbon emissions);
3. Assessment of effects on biological carbon stores / sequestration: the potential impact of any disturbance or loss of habitats that store or sequester carbon (e.g. peatland, woodland and ‘blue carbon’ habitats and sediments); and
4. In-combination climate impact assessment: the potential influence of climate change on the assessment of effects presented within the Offshore and Onshore EIA Reports (i.e. whether any effects from the Project could be exacerbated or reduced by climate change).

The climate resilience review has assessed the ability for the Project to withstand projected changes in climate variables that could present a climate hazard or risk (e.g. projected changes and frequency of storms) and was informed by the Project engineers. Overall, the Project is assessed as being effectively designed to withstand the predicted changes in climate over the operational life of the Project.

The carbon assessment concluded that the Project would make a significant beneficial contribution to the UK carbon budget through the avoidance of more carbon-intensive energy sources. The payback period, the period of time before the Project has avoided more carbon emissions than has been produced by its construction and operation, was estimated to be eight years.

The Project may result in disturbance of biological carbon stores which could result in the release of CO<sub>2</sub> into the atmosphere. However, the prevalence of these types of habitats within the offshore and onshore Project area is considered to be low, as informed by Project-specific surveys, including the onshore forestry and peat surveys. Any effects on these carbon stores or the future sequestration of CO<sub>2</sub> was assessed as not significant, both for the Project alone and cumulatively with other developments.

The in-combination climate impact assessment considers how the assessments of effects within each topic-specific assessment could be exacerbated or reduced by climate change. The in-combination climate impact assessment identified several impacts which could be affected by climate change, such as populations of terrestrial and freshwater animals in relation to increased air temperature and storms affecting breeding seabirds, and reduced food abundance resulting from increased air temperature and decreased summer rainfall. However, in all instances, embedded mitigation measures were considered to adequately manage impacts and no significant effects from the Project, in-combination with the impact of climate changes were identified, and no additional mitigations are required.

*21. The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.*

## 13.2 Assessment of Major Accidents and/or Disasters

Major accidents and disasters have been considered within the onshore EIA Report, specifically those in relation to the health and safety of human receptors and those which pose a risk to the onshore Project. Accidents and disasters such as coastal, fluvial and surface water flood risk, traffic and transport accidents and severe weather events have been considered where relevant when compiling the topic-specific assessments and supporting studies.

It is considered that there is no potential for major accidents and/or disasters to arise from the onshore Project and the onshore Project is not vulnerable to these considered accidents and disasters due to careful design and by adhering to best construction practices, Construction Design Management Regulations and Health and Safety regulations.

All Project risks are considered to be As Low as Reasonably Practicable with the implementation of embedded mitigation measures and no additional mitigation has been identified to reduce risk further at this time. Risk reduction will continue to be refined during detailed engineering design, to ensure that a hierarchy of controls are in place through the various management plans and method statements produced after planning consent has been granted, once the final design of the onshore Project is known.



*North Sea stormy weather*

## 14. Summary

The Onshore EIA has undertaken a robust assessment of potential impacts from the construction, operation and maintenance, and decommissioning of the onshore elements of the West of Orkney Windfarm ('the onshore Project') in support of the PPP application and in accordance with relevant guidance and regulations.

A Project Design Envelope approach has been used to provide flexibility for further refinement of the onshore Project design. Flexibility in design is required and necessary at this stage, due to the scale of the Project and potential for supply chain advancements ahead of procurement and construction, alongside the need for appropriate access to land. The design parameters and spatial area which represent the worst case scenario for the impact assessments have been determined using the Project Design Envelope on a topic-by-topic basis, depending on the receptor and impact being considered. This approach results in an impact assessment, that provides security and confidence that the likely significant environmental effects of the onshore Project will be no greater than those identified and assessed within the Onshore EIA Report.

The significance of effects was determined within each topic-specific assessment by defining the sensitivity of each receptor (influenced by tolerance to change, recoverability, adaptability and value) and the magnitude of impact (influenced by spatial extent, duration, frequency, intensity and likelihood) using professional judgement and industry best practice guidance, science, and accepted approaches.

Each impact assessment took account of embedded mitigation measures, and where significant effects were identified in the initial assessment, appropriate and proportionate additional mitigation measures

were proposed in order to reduce the residual effects to non-significant levels, where reasonably practicable. Overall, with the implementation of the identified mitigation measures (embedded and secondary) and monitoring proposals, the majority of potential effects of the onshore Project were predicted to be reduced to non-significant levels. The exception to this are localised, significant (adverse) visual amenity effects on nearby residents during the operation and maintenance stage. In relation to the acceptability of significant impacts on landscape and visual receptors, NPF4, that was adopted earlier this year, recognises 'that such impacts [significant landscape and visual impacts] are to be expected for some forms of renewable energy. Where impacts are localised and/or appropriate design mitigation has been applied, they will generally be considered to be acceptable.'

OWPL will continue to consider the environmental impacts of the onshore Project during further design refinement after planning consent has been granted to reduce and manage effects as appropriate. If successful in attaining the required consents and licences, the development of the Project will play a key role in fulfilling Scottish and UK renewable energy and climate change reduction targets. The Project will have beneficial impacts for energy security and on the local and Scottish economy, for example through positive contributions towards employment opportunities, biodiversity enhancements and wider economic output.

## 15. Further Information

In accordance with legislative requirements and industry best practices, submission of the onshore Project application will be advertised, and this Non-Technical Summary and associated Onshore EIA Report will be publicly available. Stakeholder engagement will continue following submission, and there will be an opportunity to make formal representations to THC.

Paper copies of the consent application together with the Non-Technical Summary and Onshore EIA Report and other documentation are available to view publicly at the following locations below.

### Bettyhill Hotel

A836, Bettyhill, KW14 7SP  
Monday to Sunday, 3pm-10.30pm

### Ulbster Arms Hotel

Bridge Street, Halkirk, KW12 6XY  
Monday to Sunday, 4.30pm-8.30pm

### The Highland Council Headquarters

Glenurquhart Road, Inverness, IV3 5NX  
Monday to Friday, 8am-4pm

### Thurso Library

Davidson's Lane, Thurso, KW14 7AF  
Monday and Wednesday, 10am-6pm  
Tuesday and Friday, 10am-8pm  
Thursday and Saturday, 10am-1pm

### West of Orkney Windfarm

32 Charlotte Square, Edinburgh, EH2 4ET  
Monday to Friday, 9am-5pm

Additional hard copies of the Onshore EIA Report can be purchased for £350 ([info@westoforkney.com](mailto:info@westoforkney.com)), and electronic copies of this Onshore EIA Report, including all figures, supporting studies, and accompanying documents, are available to view on the Project website at [www.westoforkney.com](http://www.westoforkney.com).

Anyone having difficulty accessing the application documents through this website can contact [info@westoforkney.com](mailto:info@westoforkney.com) for assistance.

The application documents are also available via THC consents portal at <https://wam.highland.gov.uk/wam/>. If you wish to comment on this Onshore EIA Report or make representations to THC, you must do so within the representation period specified in the relevant newspaper advert or in any neighbour notification or consultation letter you receive.

A full guide on how to make a formal representation to THC and THC's formal representation process is available on THC's website at: [www.highland.gov.uk/info/planning\\_applications](http://www.highland.gov.uk/info/planning_applications)