



Bowdun
Offshore
Wind Farm

Bowdun Offshore Wind Farm, Onshore EIA Report

Non-Technical Summary

TWP-BOW-TWP-CON-RPT-00001 | November 2025

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Preface

This document is the Non-Technical Summary (NTS) of the Onshore Environmental Impact Assessment (EIA) Report which has been prepared for the onshore infrastructure of the Bowdun Offshore Wind Farm (the 'Project').

- Copies of the Environmental Impact Assessment are available to view at the following locations and hours:
 - Stonehaven Library; Evan St, Stonehaven AB39 2ET; during their opening hours: Tuesdays 9am-6pm; Wednesdays 9am-5pm; Fridays 9am-5pm; and Saturdays 10am-2pm.
 - Thistle Wind Partners; Capital Building, 12-13 St Andrew Square, Edinburgh, EH2 3AF: Monday to Friday 9am to 5pm.

The Environmental Impact Assessment (including NTS), which presents the findings of the EIA work and supporting studies undertaken can be viewed online at: **www.twp.scot/Bowdun**.

A bound paper copy of the Environmental Impact Assessment can be purchased at a cost of £150.00 or in USB format at a cost of £10.00 by writing to TWP at the above address. Copies of the NTS are available free of charge from the same address or by email to: **contact@twp.scot**

Any person wishing to express an opinion on the Environmental Impact Assessment can write to the above address FAO Bowdun Onshore. Anyone wishing to make a formal representation to the Planning Authority (Aberdeenshire Council) should contact the Council; information on how to comment on planning applications is available on their website **www.aberdeenshire.gov.uk**.

Background

This NTS provides a summary of the EIA undertaken for the onshore infrastructure of the Bowdun Offshore Wind Farm (the Project). For ease of reference the onshore infrastructure of the Project, landward of Mean Low Water Springs (MLWS) is referred to as the 'Proposed Development'. The Onshore EIA Report accompanies an application submitted to Aberdeenshire Council for Planning Permission in Principle (PPP) and reports the findings undertaken to support the application. This NTS has been written in non-technical language and is intended to act as a stand-alone document that provides an overview of the Proposed Development and its likely significant effects.

The Project includes both offshore and onshore aspects that together will bring electricity from wind turbines out at sea to the national grid onshore. The Proposed Development, subject of the EIA and PPP application includes a landfall, underground cables and a substation connecting to a grid connection point in Aberdeenshire.

Thistle Wind Partners

TWP is an offshore wind developer founded in 2020 by a Joint Venture of three companies DEME Concessions, Qair and Aspiravi. Together the shareholders and TWP team have a strong background in offshore renewable energy development and delivery in Scotland, the United Kingdom and internationally. TWP, is the development company for Bowdun Offshore Wind Farm Limited (BOWFL), of which DEME Concessions and Aspiravi are the shareholders, and BOWFL is the Applicant for the PPP application.



Nature and Need for the Project

Offshore wind plays a central role in Scotland's net-zero journey and is key to realising the economic opportunity for Scotland in the global energy transition. The Scottish Government has ambitious targets for offshore wind, as an established and a proven part of the mix of technologies that power our energy systems. Offshore wind is key to decarbonising the national grid by 2035 and also to support the UK goal to achieve net-zero by 2050.

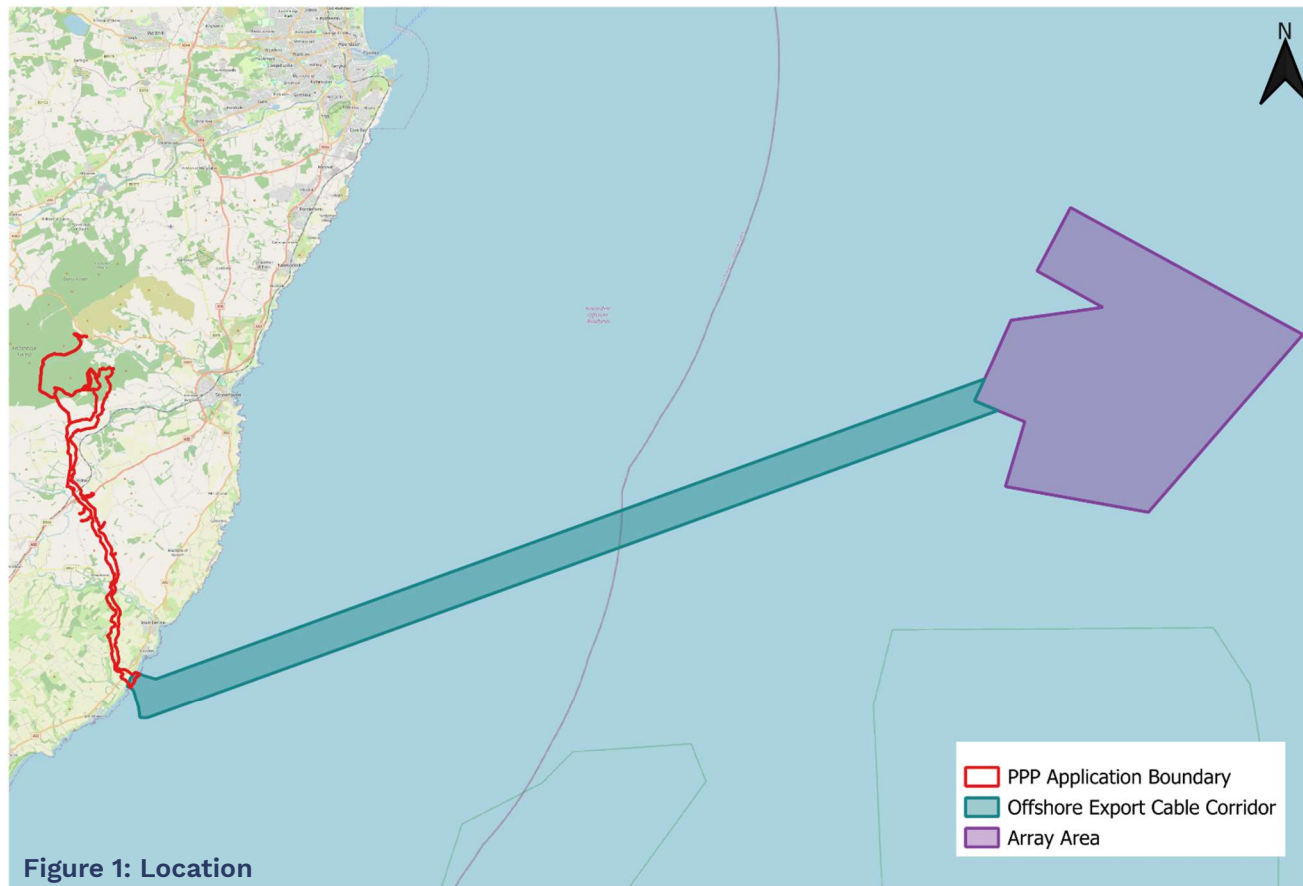
Bowdun will play a significant role in meeting these energy targets through the supply of up to 1 GW of renewable power, sufficient to power 1.2 million homes. Bowdun is unique project amongst other proposed Offshore Wind projects, for its dedicated programme to unlock access to the offshore wind for the supply chain in Scotland and support in the energy transition. By harnessing Scotland's rich resource of offshore wind, we can ensure better energy security for the people of Scotland and beyond and reduce dependence on fluctuating international markets and related price increases.

The Proposed Development is considered a national development in National Planning Framework 4, so is of national importance, as it is for the provision of large-scale electricity transmission infrastructure.

A full assessment against relevant policies and plans has been undertaken and reported in a Planning Statement that accompanies the PPP application.

The Proposed Development

The location of the Proposed Development is shown here, in relation to the Offshore Infrastructure, and is represented by the PPP Application Boundary which covers an area of approximately 807 ha from landfall near Benholm to the grid connection point within Fetteresso Forest to SSEN-T proposed Hurlie substation as shown in Figure 1.



The Project: Bowdun Offshore Wind Farm

The Project is the overarching term for the Bowdun Offshore Wind Farm comprising the Offshore and Onshore Infrastructure required to generate and transmit electricity from the array area, the area in which the wind turbines are located, to the onshore grid connection point, Hurlie Substation. The Project includes the Offshore Generation Assets, the Offshore Transmission Assets and the Onshore Transmission Assets (Figure 2).

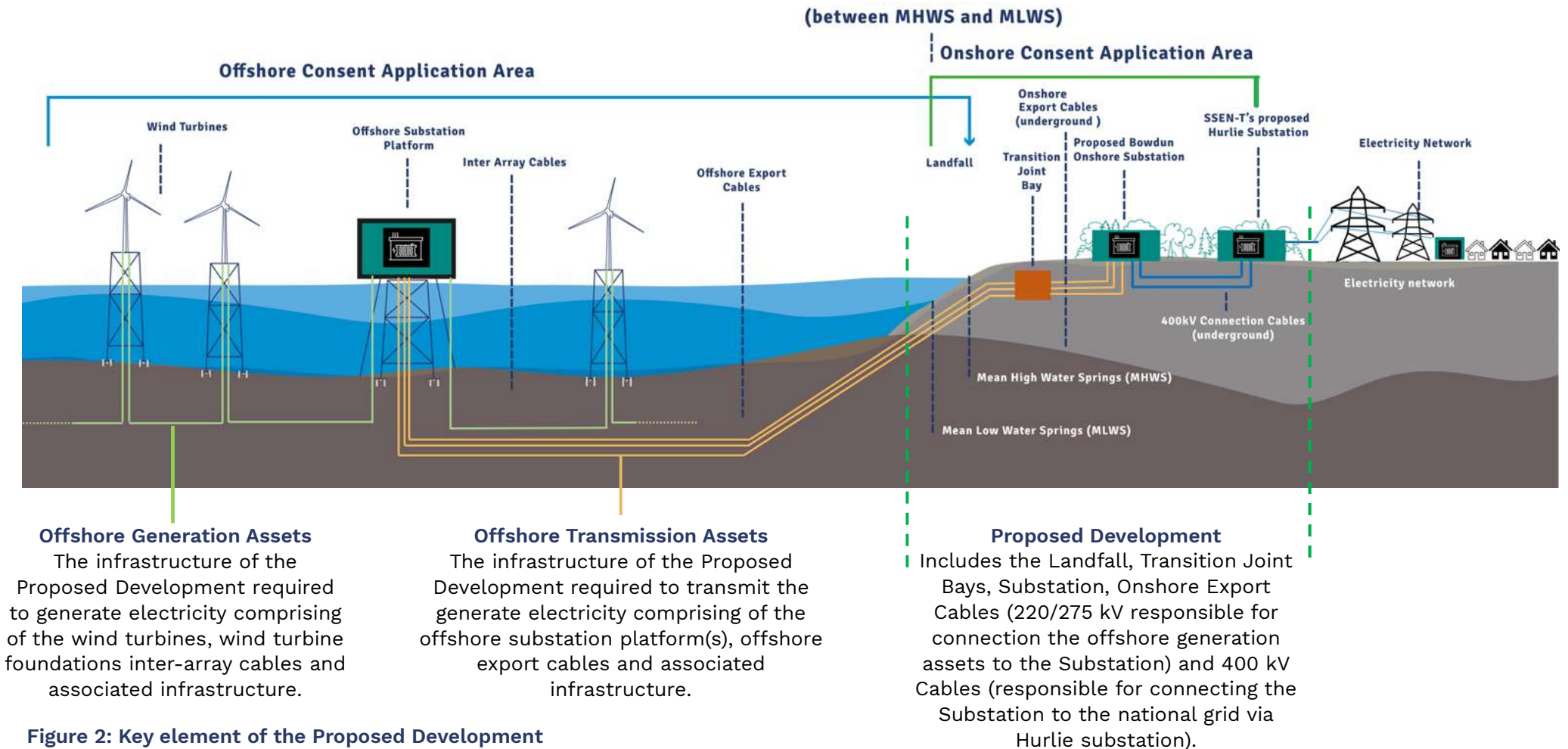


Figure 2: Key element of the Proposed Development

Project Development

Our offshore site was awarded in Crown Estate Scotland's ScotWind leasing round. The ScotWind sites were identified in the Scottish Government's Sectoral Marine Plan (SMP) for Offshore Wind Energy, based on a number of factors including wind resource, minimising of environmental impact, proximity to other infrastructure and cognisance of other marine users.

The location of our Onshore Infrastructure is driven by our allocated grid connection point, which is determined by the National Energy System Operator (NESO). A rigorous site selection process has then been undertaken, informed by environmental and engineering assessments, to identify a suitable landfall, cable corridor and substation location at the grid connection point.

Since 2022 we have been identifying potential cable corridor options for the routing of underground cables from potential landfall sites along the Aberdeenshire coast to the grid connection point determined by NESO. Work to date has included ground investigations, Light Detection and Ranging (LiDAR), ecological and ornithological surveys.

Our objective was to identify a Landfall site, cable corridor and a substation site which are technically and economically viable and cause the least disturbance to the environment and local people. A number of options were identified, and we undertook a constraints analysis to refine the options. We mapped environmental and technical constraints (such as environmental designated sites, existing infrastructure including roads, railways and pipelines, flood risk areas) within a Scoping Boundary to identify areas that should ideally be avoided as well as potential suitable preferential substation and landfall sites.

This was presented to the public in October 2024 at a series of public information days at venues in Mearns, Southern Aberdeenshire. The aim of these events was to gain feedback on our Scoping Boundary and Substation Area of Search as well as gain local knowledge as an important tool for site refinement. This information was fed into the design process and further constraint analysis work was undertaken to narrow the cable corridor and select a preferred substation location.

Since then, we have completed technical assessment work and taken account of feedback received from local people and stakeholders including Aberdeenshire Council, Scottish Environment Protection Agency (SEPA), Historic Environment Scotland and NatureScot. In August 2025, we presented our preferred Substation and Landfall location together with the proposed cable corridor as the PPP Application Boundary (Figure 3), shown as a narrower corridor in which our onshore infrastructure will be located. The constructed development footprint will be smaller following further design refinement and subject to further applications. More detailed information on our site selection and refinement is presented in the Onshore EIA Report Volume 1, Chapter 5: Site Selection and Reasonable Alternatives Considered.

BOWDUN OFFSHORE WIND FARM (ONSHORE INFRASTRUCTURE)
 RED LINE BOUNDARY SECTIONS

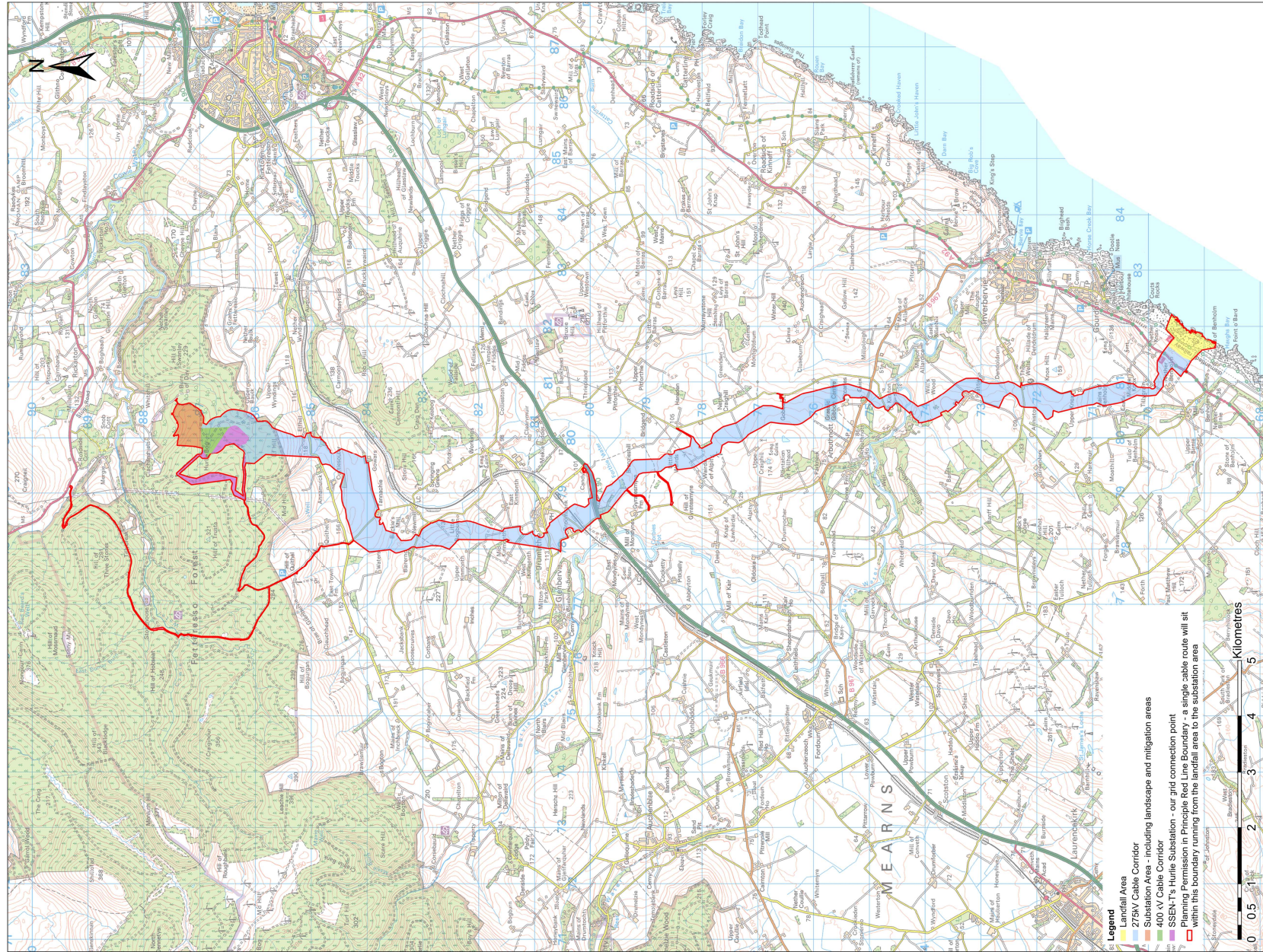


Figure 3: PPP Application Boundary

The Proposed Development Description

All aspects associated with the Proposed Development (both temporary and permanent) will be located within the local authority area of Aberdeenshire Council.

The Proposed Development key elements are shown on Figure 2 and summarised here:

- **Landfall** – This is where the Offshore Export Cables come ashore and are jointed to Onshore Export Cable Corridor inside a Transition Joint Bay.
- **Onshore Export Cable Corridor** – The area within which the cables connecting Landfall with the Substation site will be located.
- **Substation switchyard** – the platform on which the Substation containing the components for transforming the power from 220 kV/ 275 kV up to 400 kV will be located.
- **Substation** – the wider area which includes the Substation platform and surrounding areas for access roads, landscaping and drainage.
- **400 kV cable corridor** – the area the 400 kV cables will be located providing onward transmission to the grid, connects the Substation to SSEN-T’s proposed Hurlie Substation our grid connection point.

Landfall

The Offshore Export Cables will make Landfall near Benholm, Aberdeenshire, in north east Scotland. The Offshore Export Cables will be brought under the intertidal area using a trenchless installation construction technique, such as Horizontal Directional Drilling, to a location at Haughs Bay where they will be connected to the Onshore Export Cables in a Transition Joint Bay.

There will be a permanent access to this area via an operational track for the lifetime of the Proposed Development. Utilising a trenchless technique means the coastal path and the beach are not directly affected.

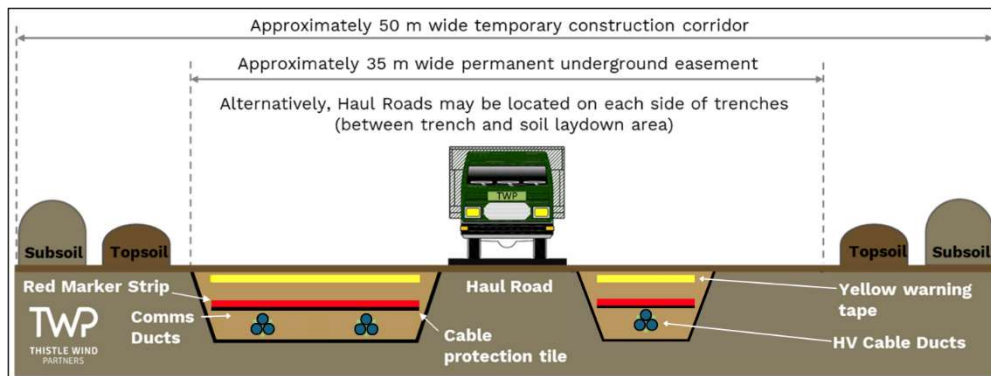
Key parameters of the Proposed Development

Parameter	Maximum Design Scenario
Total PPP Application Boundary	807 ha
Length of Cable Corridor	23.2 km
Substation	
Number of Substations	1 Gas Insulated Substation or Hybrid Insulated Substation (within 19 ha site)
Onshore Export Cable Corridor	
Voltage	220/275 kV
Circuits	Up to 3
Maximum length of 220/275 kV Cables	22 km
Cable Trenches	Up to 2
Cable Corridor Working Width	50 m
400 kV Cable Corridor	
Voltage	400 kV
Circuits	Up to 2
Maximum length of 400 kV Cables	1.2 km
Cable trenches	Up to 2
Cable Corridor Working Width	35 m
Burial Depth	1 m target

Onshore Cables

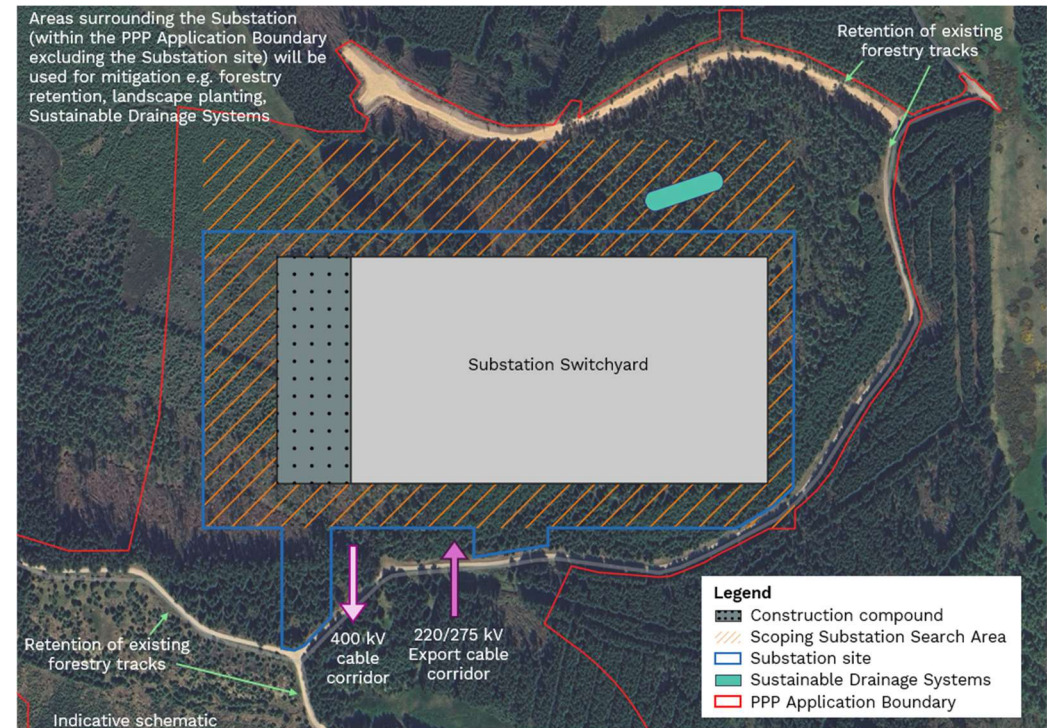
All onshore cables will be buried underground for the entire length. It is anticipated that the only visible parts of the Onshore Export Cable Corridor will be maintenance covers and above ground cable markers.

To construct our cable route within the red line boundary we will utilise a combination of open cut trenching and trenchless techniques, such as HDD, in sensitive locations. As explained we are planning HDD at the landfall, to avoid disturbance to the beach, for major road crossings such as the A90, to avoid road closures and diversions and at sensitive watercourses.



Substation

The Substation will be located within Fetteresso Forest approximately 6 km north of the village of Drumlithie and will convert the voltage of the electricity supplied through from offshore to the correct voltage to allow a connection to the national grid via SSEN-T's proposed Hurlie Substation.



The Substation will be surrounded by commercial forestry with landscape and ecological planting also proposed for areas that will be felled during construction, for screening and biodiversity enhancement. The total area for the Substation including associated mitigation and land required for construction occupies approximately 19 ha. The land for the substation is currently in commercial forestry use and is not located within statutory or non-statutory designations for landscape, ecology or historic environment, and is surrounded by existing plantation woodland.

The high-voltage Substation is equipped with essential components that ensure the efficient regulation, protection, and distribution of electrical power. It includes outdoor equipment such as transformers

and compensation systems, while the Gas Insulated Switchgear is primarily housed indoors. The Substation is expected to have an enclosed design to minimise noise disturbance to the surrounding area. The Substation steps up the voltage received from the offshore wind farm to then be passed onto the Hurlie Substation via underground cables at 400 kV. Hurlie being the allocated grid connection point where the energy will feed into the national grid. The substation will have a maximum footprint of 423 m x 230 m and a maximum building height of 15 m.

Construction

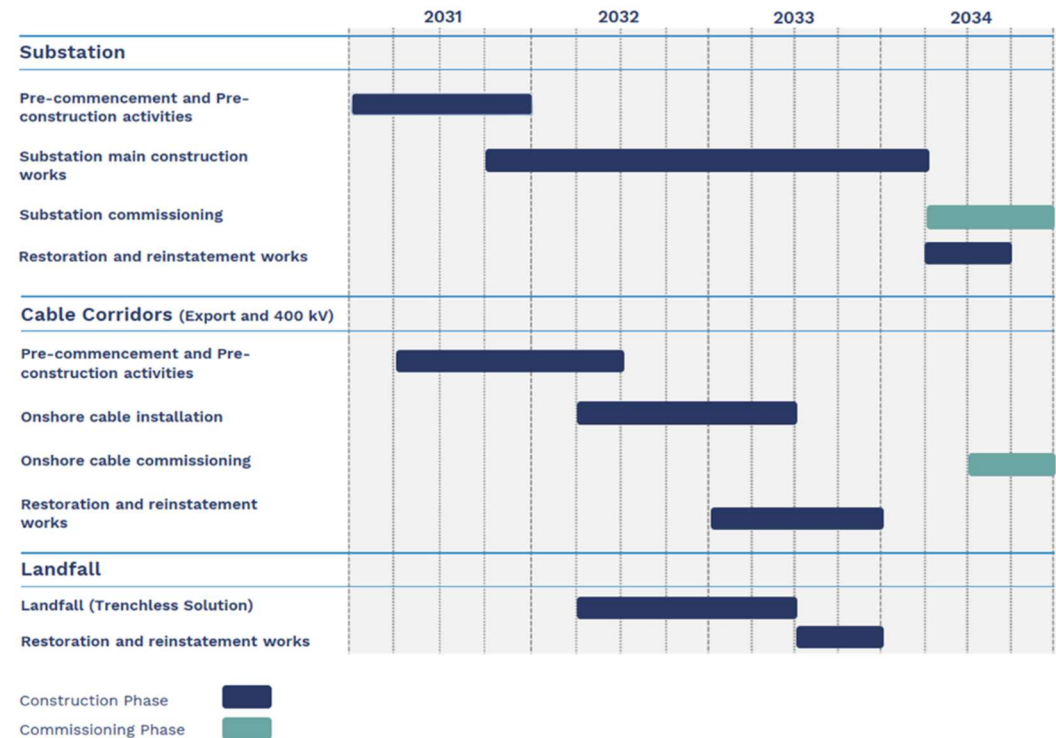
Programme

Construction and commissioning of the Proposed Development will be timed to meet the grid connection date of 2035. Subject to the Project being consented, the earliest date that construction will start is anticipated to be in 2031.

Consistent with the build-out and commissioning of the generation and transmission assets offshore, together with the Connection Agreement date, the Proposed Development is anticipated to be constructed in a single phase.

Construction Access

A detailed Construction Traffic Management Plan will be developed, through consultation and stakeholder engagement, including community councils' pre-construction commencing. The final CTMP will include necessary traffic management measures to be adhered to during the construction phase of the Proposed Development.



Temporary Construction Compounds

Construction compounds will be established early in the construction programme. Temporary construction compounds will be required at:

Landfall

Which will contain all necessary plant and equipment plus parking and welfare facilities required for the Landfall construction works.

Substation

Which will provide offices, welfare facilities, soil and material storage, storage of plant and equipment and parking for construction staff.

Onshore Export Cable Corridor

There will be one main construction compound for cable routing, with potential smaller compounds identified by the Contractor and associated with location where Horizontal Directional Drilling will take place.

These temporary construction compounds will provide offices, welfare facilities, soil and material storage, storage of plant and equipment and parking for construction staff.

Restoration

In terms of above ground features, once the construction and installation work is complete, the haul road(s) will be removed and the ground reinstated to its previous use, using stored subsoil and topsoil. Where forestry is removed as part of the construction works, suitable areas will be replanted.

All temporary construction compounds and temporary fencing will be removed, field drainage and/or irrigation will be reinstated and the land will be restored to its original condition. Where practicable, consideration will be given to early restoration of sections of the Onshore Export Cable works. Joint bays will be completely buried, backfilled, then land above reinstated.

Operation and Maintenance

The Proposed Development will be designed to operate on a continuous basis throughout the year.

Landfall

It is not expected that the Transition Joint Bays at the Landfall will need to be accessed during operation and maintenance. However, link boxes will be provided with inspection covers to allow for access in

the event of a cable failure requiring replacement or repair, and for testing purposes.

Onshore Export Cables and 400 kV Cables

Infrequent on-site inspections of the cables may be required, and corrective maintenance activities (e.g. repairs due to cable failure). The cables will be continuously monitored remotely. In the event of a cable failure, the location of the failure would be identified using the link boxes that are at intervals alongside the cable. Once detected, excavation would be required to removed and replace the section of damaged cable.

Substation

The Substation will be unmanned. Regular routine on-site checks, as well as preventative and corrective works will be undertaken. The assumption has been made that there will be one visit to the Substation per month during the operational phase of the Proposed Development. As part of the general maintenance, there will likely be requirements for replacement or upgrade of components, however, this will be infrequent. In these instances, additional deliveries and vehicles will be required, which may include HGV movements. It is proposed that access to the Substation will be from the exiting operational forestry tracks within Fetteresso Forest.

Decommissioning

At the end of the operational lifetime the Project will be decommissioned or repowered. If decommissioning takes place, it is anticipated that all structures above ground will be completely removed. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vehicles and equipment. It is expected that the Onshore Export

cables and 400 kV cables will be removed via the Transition Joint Bays to minimise the environmental disturbance.

Planning Permission in Principle (PPP)

PPP is being sought under The Town and Country Planning (Scotland) Act 1997 for the Proposed Development; this is a common approach for projects of this type, scale and complexity.

The PPP approach offers a degree of flexibility at this point in time when detailed design has not yet been undertaken. The application is based on a set of maximum design parameters thereby establishing that the principle of developing the Proposed Development within the PPP Application Boundary is acceptable. The maximum design parameters for the Proposed Development are fully described in Volume 1, Chapter 2: The Proposed Development of the Onshore EIA Report.

Following the grant of PPP, the project will then seek to address all conditions raised by Aberdeenshire Council in ‘Matters Specified in Conditions (MSC)’ phase post consent. This is through subsequent application(s) which will confirm the exact detail and parameters of development, within the parameters established by the PPP, as well as securing any agreed mitigation measures in order to allow the development to commence.

Environmental Impact Assessment

An EIA of the Proposed Development is required under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended). The purpose of the EIA is to identify the likely significant effects of the Proposed Development on the physical, biological, and human environment during construction, operation and maintenance and decommissioning.

This NTS presents an overview of the Proposed Development and summarises the assessed beneficial and adverse impacts considered to be of particular importance (or significance), and the measures committed to mitigate against adverse outcomes.

An ‘impact’ is the change that is caused by an action during a Project’s lifetime, and an ‘effect’ is the consequence of that impact on specific environmental resources or receptors.

The EIA process provides a valuable opportunity to avoid or reduce potential environmental impacts through design refinement. Environmental constraints and issues were identified through consultation, extensive environmental surveys and technical assessments. The information gathered has informed decision-making throughout the design process, providing opportunities to address potentially significant impacts where practicable, for example by refinement of route alignment or by the incorporation of measures to avoid or reduce potential adverse impacts.

Scope of the EIA

The Onshore EIA Report has been prepared with the need for proportionate EIA in mind. EIA requires the reporting of significant effects not all effects resulting of the Proposed Development. Scoping is the process of identifying the relevant topics to consider within the EIA process (establishing the scope of the assessment) to ensure significant effects are considered and reported. Scoping is therefore an important preliminary procedure, which sets the context for the EIA process. The Onshore Scoping Report (TWP, 2024) set out the proposed scope and methodology of the EIA and was subsequently agreed by Aberdeenshire Council through the issue of a Scoping Opinion and additional consultation (Aberdeenshire Council,

2024) as explained in Volume 1; Chapter 3: Methodology of the Offshore EIA Report.

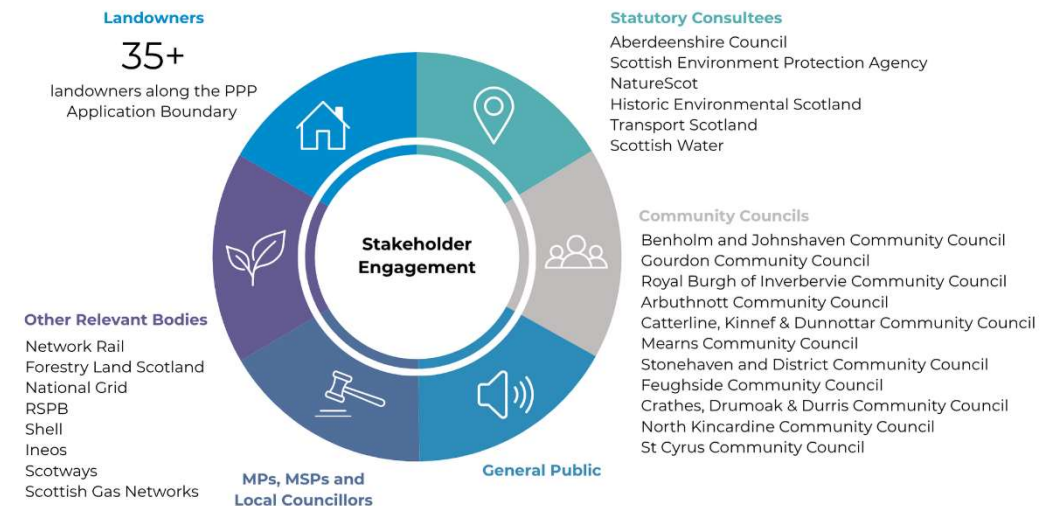
Topics Scoped into the Bowdun Onshore EIA



Consultation Activities

Throughout the pre-application stage a significant volume of stakeholder and public engagement has taken place, including formal, informal, statutory and non-statutory platforms and mechanisms facilitating this engagement. Details of this engagement are set out in our Pre-Application Consultation (PAC) Report accompanying the planning application, demonstrating that the Proposed Development have gone above and beyond the statutory minimum in terms of consultation.

Consultation has been through a wide variety of traditional and innovative approaches, including online virtual exhibition hall, fixed venue events, keynote addresses, attendance at community council meetings informational sessions at festivals and community events, and several supply chain events.



Approach to EIA

Environmental Baseline

A comprehensive evaluation of the existing environment in which the Proposed Development would be located, has been undertaken to facilitate a robust assessment of the potential impacts on receptors from the Proposed Development.

Consideration has also been given to the likely evolution of baseline conditions in the absence of the Proposed Development. Where relevant, consideration is given as to how potential climatic changes may affect topic-specific future baselines.

Identification of Impact and Significance of Effect

EIA is a means of identifying and collating information to inform an assessment of the likely significant environmental effects of a development. For each environmental topic in the Onshore EIA Report, the following have been addressed and are detailed within topic chapters of the EIA. This includes:

- assessment methodology;
- description of the existing environmental (baseline) conditions;
- identification and assessment of the significance of likely effects arising from the Proposed Development;
- identification of any additional mitigation measures, in addition to the embedded mitigation measures, proposed to avoid, reduce and if possible, remedy adverse effects;
- assessment of cumulative effects with other projects in the area, as well as inter-related effects between environmental topics.

The Proposed Development has the potential to create a range of 'impacts' and consequent 'effects' with regard to the environment. The term 'effect' has been used in the Onshore EIA Report to express the consequence of an impact on specific environmental resources or receptors.

This NTS sets out the significant effects identified during the EIA process at this stage.

Inter-related Effects

Inter-related effects may occur between topics that may lead to a greater environmental effect in combination with each other than they otherwise would when considered in isolation. This can take the form of different impacts within the same topic through the lifetime of the Proposed Development, (construction, operation and maintenance, and decommissioning) and the effects on receptors between different topics. Therefore, it is not anticipated that any inter-related effects will be produced that are of greater significance than the assessments presented for each individual impact assessed.

Assessment of Cumulative Effects

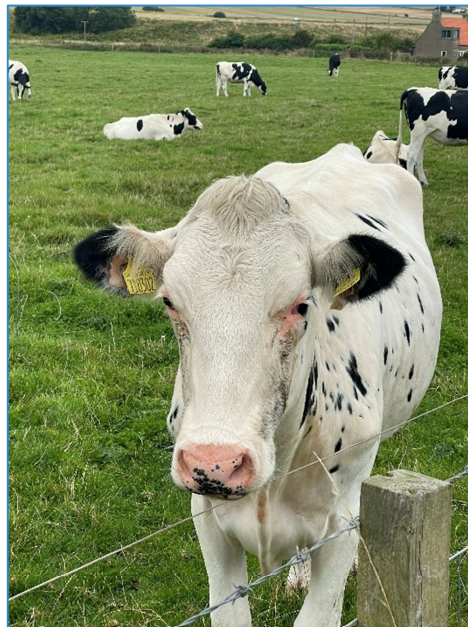
Cumulative effects are assessed as there may be a potential for an increased impact when other proposed developments in the same area are considered in combination with the Proposed Development, compared to the assessment of the Proposed Development in isolation. A Zone of Influence was implemented around the Proposed Development to enable the identification of other foreseeable major developments in the area, which were agreed with Aberdeenshire Council.

Transboundary Effects

Regulation 41 of the EIA Regulations outlines that where a development in Scotland is likely to have significant effects in a European Economic Area (EEA), that certain steps and provisions in this regard apply. Due to the onshore nature and location of the Proposed Development there will be no transboundary effects. Transboundary effects were agreed to be scoped out through the submission of the Onshore Scoping Report (Aberdeenshire Council, 2024).

Land Use, Agriculture and Public Access

Volume 1, Chapter 6: Land Use, Agriculture and Public Access of the Onshore EIA Report sets out the assessment of effects in relation to land use, agriculture and public access. This includes consideration of effects of agricultural capacity, land holdings, forestry areas and public access (e.g. Public Rights of Way, including Core Paths, Local Paths, National Cycle Routes, Heritage Paths and Scottish Hill Tracks) and their users (e.g. pedestrians, cyclists, equestrians etc).



Baseline conditions were informed through detailed desktop reviews of existing studies and datasets. No dedicated site-specific surveys were undertaken solely for the assessment, but the use and condition of land was verified on site

visits for other topics (ecology geology etc.) and landowner engagement.

The Proposed Development intersects 45 agricultural land holdings and land used for forestry. The land is predominantly prime agricultural land, with non-prime also common. The Substation is located within the commercial forestry plantation of Fetteresso Forest.

The Proposed Development does not coincide with any public parks and gardens, play areas, or other public spaces except for the beach at Benholm. However, a number of Public Rights of Way intersect the PPP Application Boundary, particularly in Fetteresso Forest, and core paths and National Cycle Routes.

Potential impacts to land use, agriculture and public access include the temporary and permanent loss of agricultural land, disruption to operational farm holdings and forestry, and temporary and/or permanent impacts to recreational resources including Public Rights of Way.

In order to mitigate these potential impacts, a number of embedded, standard and project specific mitigation measures have been developed through an iterative design process. These include:

- avoidance of private property and housing
- avoidance of community land and community assets (such as public parks and gardens, play areas and sports areas)
- trenchless construction methods at the landfalls, to avoid closure of coastal paths
- a detailed Construction Traffic Management Plan; and
- a Construction Environment Management Plan, which will include maintaining access within and between fields for agricultural operations, and a Soil Management Plan

- Reduce permanent loss of prime agricultural land
- Reducing impacts on forestry and woodland, through avoidance, but where avoidance is not possible (i.e. the Substation) compensatory planting is proposed
- Cable routing will follow field boundaries and existing linear features where feasible
- Pre-construction drainage survey will be conducted and land drains will be restored post construction to their previous condition.

Where significant effects have been identified a number of Additional Mitigation measures designed to address specific, practical issues that may arise have been identified. This is to protect landowner interests and to address land restoration, biosecurity and operational continuity. The assessment concluded that during construction 23 agricultural land holdings are likely to experience temporary significant effects, these effects are primarily due to temporary restrictions on land use, which may impact a crop year and require moderate management adjustments. No significant permanent residual effects are expected after mitigation. No significant cumulative effects with other proposed projects are expected.

Biodiversity, Terrestrial Ecology and Ornithology

Volume 1, Chapter 7: Biodiversity, Terrestrial Ecology and Ornithology of the Onshore EIA Report sets out the assessment of effects in relation to habitats, protected species and birds.

The assessment has been informed by collection of existing data, including records of protected species and sites, and site-specific surveys undertaken for the Proposed Development. Figure 4 shows the ecological designated sites in the area, and Figure 5 shows the Ornithological designated sites.

Predominant habitats in the PPP Application Boundary are arable farm land, pastoral agricultural land, woodland and commercial forestry with wetland and riparian habits, several watercourses and some heathland and native hedgerows. Key species in the area studied include badger, otter, pine marten, red squirrel, water vole and bats. A variety of birds are known to use the area including, pink-footed Goose, Goshawk and Nightjar.

Potential impacts considered included loss or modification of habitats used by species for foraging commuting or living; disturbance caused by increased noise, light, and dust, death through contact with machinery, and accidental pollution and/or contamination of habitats.



Haughs Bay, Benholm

Mitigation measures to reduce significant adverse effects have been proposed such as:

- Appointment of an ecologist to undertake pre-construction surveys; identify protected species; monitor construction activities; and oversee delivery of mitigation measures.
- Construction Environmental Management Plan; Species Protection Plans; Breeding Bird protection Plan; Pollution Prevention Plan; Biodiversity Management Plan

As a result of the implementation of the measures set out no significant environmental effects on biodiversity, terrestrial ecology or ornithology arising from the Proposed Development were identified.



Otters, (NatureScot, no date)

Landscape and Visual

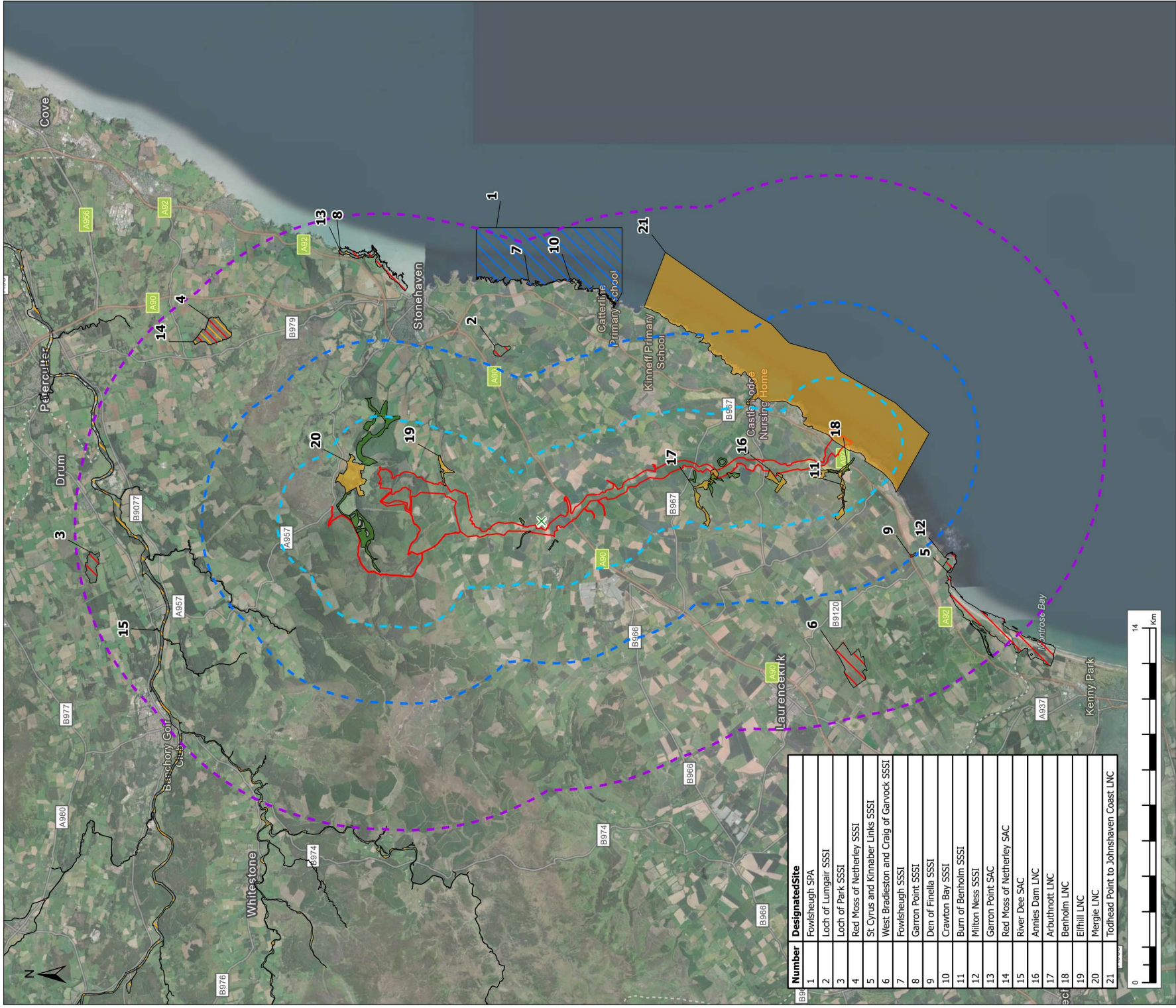
Volume 1, Chapter 8: Landscape and Visual Impact Assessment (LVIA) of the Onshore EIA Report sets out the assessment of effects in relation to the landscape and visual receptors surrounding the Proposed Development.

Baseline conditions were established through desk-based research of existing landscape studies and datasets. A field survey was undertaken to verify baseline conditions and to take viewpoints photography. Based on NatureScot's Landscape Character Assessment (2019), there are three Landscape Character Types within the Study Area. These comprise Raised Beach Coast, Coastal Farmed Ridges and Hills and Summits and Plateaux.

Given that the only above ground infrastructure is the Substation, the assessment has mainly focused on the potential impact of the Substation.

A Zone of Theoretical Visibility (ZTV) was used to determine which receptors require detailed consideration in the assessment of effects attributable to the Substation.

The ZTV is shown on Figure 6 and indicates areas of potential visibility of the Substation modelled at a maximum height of 15 m as per the maximum design parameters. The ZTV is based on a bare earth model so gives a worse case as it does not capture screening that is provided by vegetation. Based on the ZTV analysis, eight representative viewpoints were selected to support the assessment in order to demonstrate the effects attributable to the proposed Substation (Figure 6), for which visualisations have been prepared and are presented in Volume 3: Visualisations and Photomontages of the EIA Report.



Number	Designated Site
1	Fowlsheugh SPA
2	Loch of Lumgair SSSI
3	Loch of Park SSSI
4	Red Moss of Netherley SSSI
5	St Cyrus and Kinaber Links SSSI
6	West Bradleston and Craig of Garvock SSSI
7	Fowlsheugh SSSI
8	Garron Point SSSI
9	Den of Finella SSSI
10	Crawton Bay SSSI
11	Burn of Benholm SSSI
12	Milton Ness SSSI
13	Garron Point SAC
14	Red Moss of Netherley SAC
15	River Dee SAC
16	Annie's Dam LNC
17	Arfathott LNC
18	Benholm LNC
19	Elhill LNC
20	Mergie LNC
21	Todhead Point to Johnshaven Coast LNC

- Legend**
- PPP Application Boundary
 - PPP Application Boundary - 2 km Buffer
 - PPP Application Boundary - 5 km Buffer
 - PPP Application Boundary - 10 km Buffer
 - Tree Preservation Orders (250 m)
 - Ancient Woodland Inventory (250 m)
 - Special Protection Areas (10 km)
 - Sites of Special Scientific Interest (10 km)
 - Special Areas of Conservation (10 km)
 - Local Nature Conservation Sites (2 km)

Sources: Earthstar Geographics, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
 Contains public sector information licensed under the Open Government Licence v3.0

2	14/11/25	Initial Issue	US	AB	AB	AB	AB
Rev.	Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd	
Scale @ A3	Scale: 1:140,000		DO NOT SCALE				
Jacobs No.							

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Client
Bowdun Offshore Windfarm - Onshore Ecology

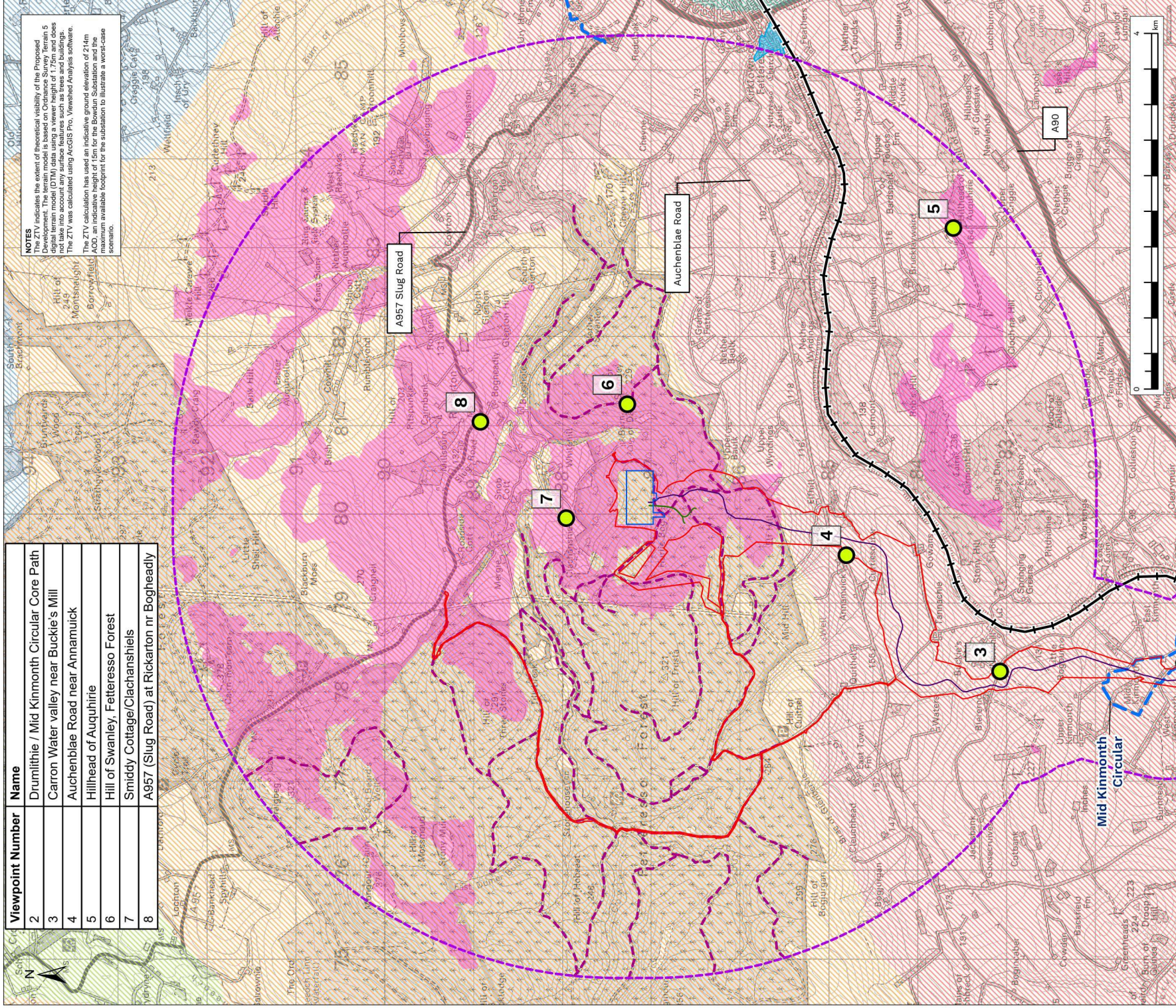
Project
Onshore Ecology - Designated Sites

Drawing Title
Onshore Ecology - Designated Sites

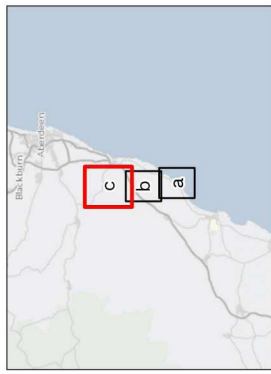
Annex Number
Drawing Status

Figure 4

Viewpoint Number	Name
2	Drumlithie / Mid Kinmonth Circular Core Path
3	Carron Water valley near Buckie's Mill
4	Auchenblae Road near Annamuick
5	Hillhead of Auquhirie
6	Hill of Swanley, Fetteresso Forest
7	Smiddy Cottage/Ciachanshiels
8	A957 (Slug Road) at Rickarton nr Bogheadly



NOTES
 The ZTV indicates the extent of theoretical visibility of the Proposed Development. The terrain model is based on Ordnance Survey Terrain 5 data and does not take into account any surface features such as trees and buildings. The ZTV was calculated using ArcGIS Pro, Viewshed Analysis software. The ZTV calculation has used an indicative ground elevation of 214m AOD, which is used for 15% of the maximum available footprint for the substation to illustrate a worst-case scenario.



- Legend**
- PPP Application Boundary
 - Indicative Bowdun Substation Site
 - Indicative 220/275 kV Cable Centreline
 - Indicative 400 kV Cable Centreline
 - LVIA Study Area
 - Viewpoint Locations
 - Bowdun Substation ZTV
 - Dundee to Aberdeen Rail Line
 - Core Paths (Aberdeenshire Council)
 - Fetteresso Forest Local Paths
 - Conservation Areas (CA)
 - Landscape Character Types (LCT)
 - LCT 11: Fragmented Rocky Coast
 - LCT 24: Coastal Farmed Ridges and Hills - Aberdeenshire
 - LCT 27: Farmed Moorland Edge - Aberdeenshire
 - LCT 28: Summits and Plateaux - Aberdeenshire
 - LCT 314: Wooded and Farmed Valley

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Client
 Bowdun Offshore Wind Farm Onshore EIA Report

Project
 Bowdun Offshore Wind Farm Onshore EIA Report

Drawing Title
 Landscape and Visual Assessment ZTV with Landscape and Visual Receptors

Annex Number
 TWP-BOW-ICB-ONE-DWG-00043

Drawing Status
 FINAL

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Rev.	Date	Initial Issue	TM	AH	LR	GG
02	NOV 25	Purpose of revision	Drawn	Check'd	Rev'd	App'd
Scale @ A3 Scale: 1:40,000						
DO NOT SCALE						
Jacobs No. B2487500						

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Figure 6

While the ZTV provides a useful indication from where visibility of the Substation might be experienced, it should be noted that just a fraction of the modelled highest Substation building used in the ZTV generation may give rise to the wide colour band indicating visibility. Therefore, the ZTV could at the same time indicate visibility of the whole building or only a fraction of it. This phenomenon is well illustrated by Viewpoint (VP) 7, which falls within the ZTV, but does not have real visibility of the Proposed Development, in Volume 3: Visualisations and Photomontages.

Fieldwork observations confirmed that distance, in combination with intervening vegetation, in particular the commercial forestry, and localised undulations in the landform within the surrounding landscape, would further reduce the extent of visibility of the Substation.

Based on the field survey verifications, it was concluded that potential visibility of the Substation would primarily be concentrated in elevated areas such as Hill of Swanley, Fetteresso Forest, and local paths within Fetteresso Forest, as well as from the A957 (Slug Road) at Rickarton and Hillhead of Auquhirie.

The key visual receptors for the Proposed Development are assessed in the Chapter within the following categories: residential; recreational routes and road users.

During the operational and maintenance phase significant adverse and direct visual effects attributable to the proposed Substation would affect local paths within Fetteresso Forest, and also Hill of Swanley and the Slug Road. With the exception of the local Fetteresso paths and Hill of Swanley effects are expected to be reduced over time and by year 15, would have no significant residual effects. Visualisations

and photomontages generated are included in Volume 3: Visualisations and Photomontages of the EIA Report.

There would be adverse direct visual effects during the construction of the Onshore Export Cable but these would be temporary.

Significant cumulative landscape character effects have been identified for the Coastal Farmed Ridges and Hills and Summits and Plateaux Landscape Character Area during the winter of the first-year post construction with the Hurlie Substation and Glenskinnan Renewable Energy Park. As planting mitigation establishes over the years this effect would reduce in significance. This also applies to significant cumulative visual effects for the Fetteresso Forest local paths and Hill of Swanley.

Existing commercial forestry planting will be retained on the boundary of the Substation area to provide immediate screening. Additional planting will also take place which will support screening as well as seek to enhance biodiversity.

Cultural Heritage

Volume 1, Chapter 9: Cultural Heritage of the Onshore EIA Report sets out the assessment of effects in relation to cultural heritage. This comprises the physical evidence for past human activity that connects people with a place. This includes both built heritage and upstanding archaeological features, as well as buried archaeology and deposits of paleoenvironmental interest.

Baseline conditions were established through desk-based research of existing datasets, and site visits. The Proposed Development lies in an area with extensive evidence of human activity from the Palaeolithic to the present day. This includes artefact scatters, cropmarks, earthwork remains and upstanding buildings.

There are no designated cultural heritage assets within the PPP Application Boundary. In the wider Cultural Heritage Study Area there are four scheduled monuments and 42 Listed Buildings of which two are Category A.

Potential impacts to Cultural Heritage prior to mitigation range from minor disturbance to sub-surface and upstanding archaeological features and deposits, to complete removal during construction activities. Changes in the wider setting of cultural heritage assets can also occur whereby they can no longer be understood and appreciated in their context.

To mitigate these potential impacts, a number of embedded, standard and project specific mitigation measures have been developed through an iterative design process. These include:

- modification of the PPP Application Boundary to ensure that no designated heritage assets are present, to prevent physical impacts from cable routing.
- designing/routing the cable to avoid physical impacts on known cultural heritage assets.
- a programme of archaeological work to ensure appropriate recording of affected cultural heritage assets where they cannot reasonably be avoided or preserved in situ.

As a result of the implementation of the proposed mitigation measures no significant environmental effects arising from the Proposed Development are anticipated.

Geology and Ground Conditions

Volume 1, Chapter 10: Geology and Ground Conditions of the Onshore EIA Report sets out the assessment of effects in relation to geological

features and ground conditions (including ground contamination), as well as the effects on quality of groundwater.

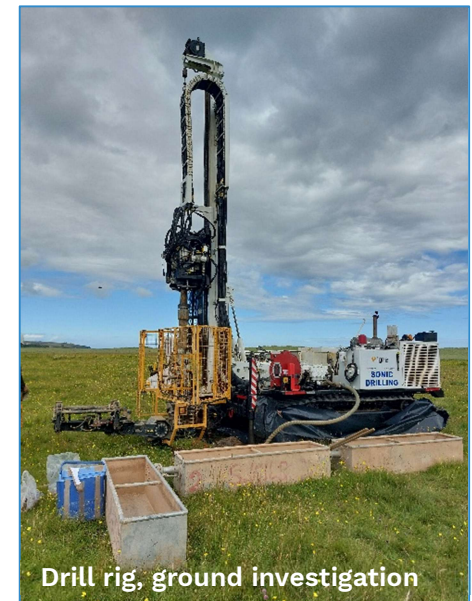
Baseline conditions are established through desk-based research of existing datasets, ground investigations and peat probing.

The bedrock geology is diverse with several distinct geological groups present from south east to north west and comprise various mudstone, sandstone, conglomerates.

Superficial deposits comprise Till (Devensian – Diamicton), Alluvium (clay, silt, sand and gravel) adjacent to surface water features, raised marine deposits and Glaciofluvial deposits. Small pockets of peat are presented within the area of the Substation. Potentially contaminated sites within the PPP Application Boundary comprised railway land, quarries, gravel pits, two Landfill sites and Made Ground associated with the construction of road (A92 and A90 in particular).

Potential impacts on geology and ground conditions can arise due to permanent loss or degradation of soils, impacts on Groundwater Dependant Terrestrial Ecosystems and Private Water supplies from dewatering or accidental pollution, and impacts to human health and groundwater via contaminated land.

In order to mitigate these potential impacts, a number of embedded, standard and project specific mitigation measures have been developed through an iterative design process. These include:



- pre-construction site investigations.
- a Construction Environment Management Plan.
- a Decommissioning Plan.

As a result of the implementation of the proposed mitigation measures outlined above, no significant environmental effects arising from the Proposed Development are anticipated.

Water Quality and Flood Risk

Volume 1, Chapter 11: Water Quality and Flood Risk of the Onshore EIA Report sets out the assessment of effects in relation to water quality and flood risk with a particular focus on the impacts to onshore surface water bodies, including rivers and streams. The Chapter is also supported by Volume 2, Appendix 11.1: Flood Risk and Drainage Assessment.

Baseline conditions were established through desk-based research of existing datasets, and a site survey.

The Proposed Development is located within two river catchment areas: Kincardine and Angus Coastal and Bervie Water, as well as the Tay Basin District. There are six watercourse catchment areas: Burn of Benholm, Bervie Water – Lower Catchment, Bervie Water – Upper Catchment, Forthie Water, Carron Water and Cowie Water – Fetteresso Forest. The Substation is located in the Cowie Water – Fetteresso Forest Catchment and the Landfall is located within the Tay Basin District Figure 7.

Potential impacts in the absence of mitigation include contaminated runoff affecting the quality of surface and groundwater; the increased flood risk arising from additional surface runoff, damage to existing flood defences, watercourse diversion and changes to watercourse crossings.

In order to mitigate these potential impacts, a number of embedded, standard and project specific mitigation measures have been developed through an iterative design process. These include:

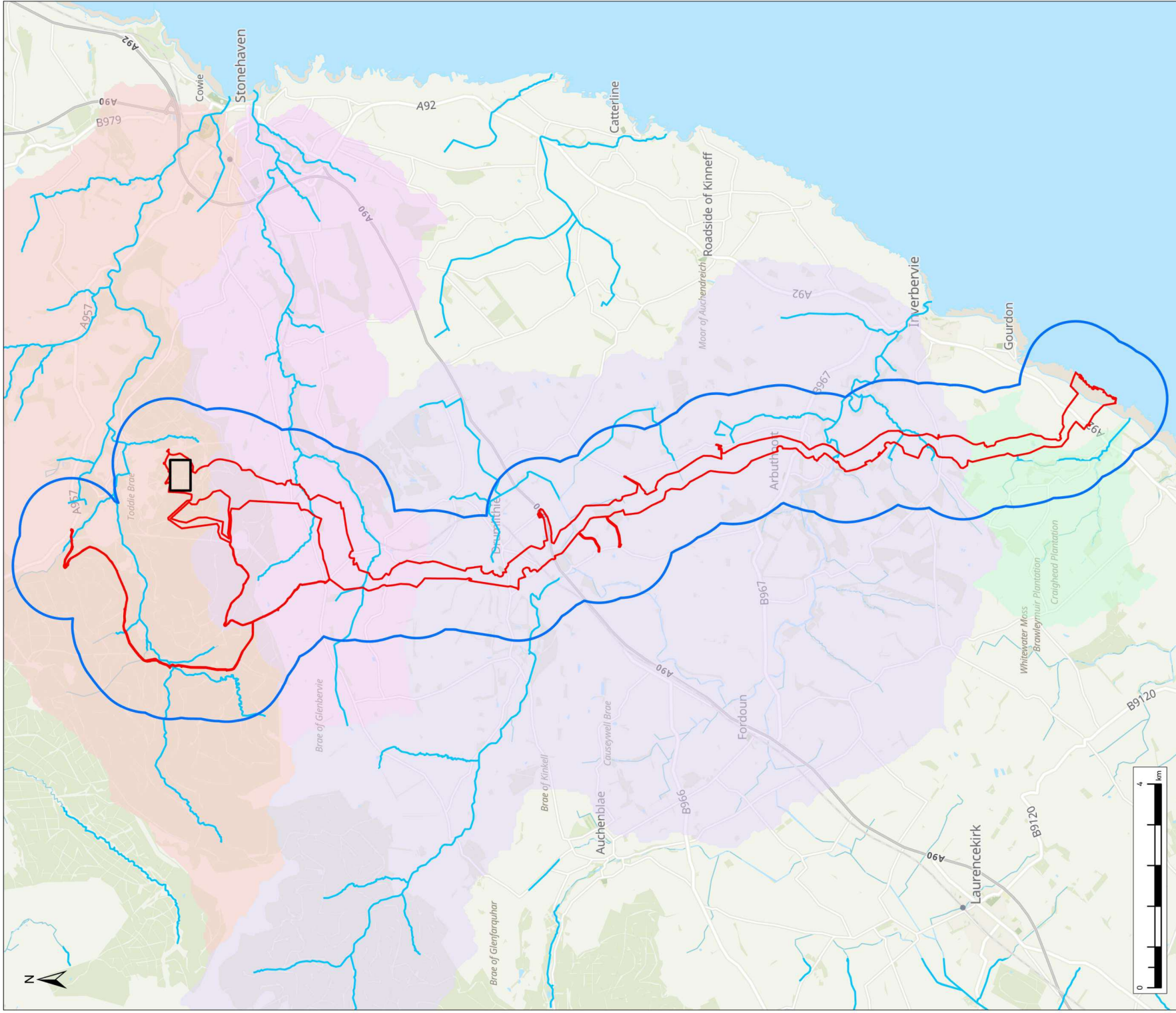
- measures to intercept and attenuate surface water drainage and that surface water discharges are controlled in quality and volume.
- appropriately designed watercourse diversions and watercourse crossings in line with guidance to ensure flows are adequately maintained.

As a result of the implementation of the proposed mitigation measures outlined above, no significant environmental effects arising from the Proposed Development are anticipated.

Air Quality

Volume 1, Chapter 12: Air Quality of the Onshore EIA Report sets out the assessment of effects in relation to air quality, a term used to measure and describe the level of pollutants present in the air.

Baseline conditions were ascertained through a detailed desktop review of existing studies and datasets. No site-specific surveys were undertaken. The air quality of the area is characterised as very good and there are no Air Quality Management Areas within the PPP Application Boundary.

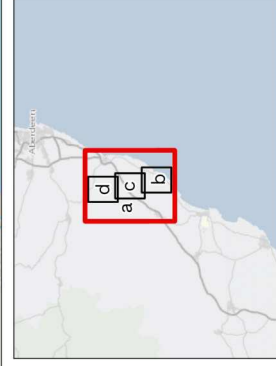


Legend

- PPP Application Boundary
- Substation Search Area
- Water Quality and Flood Risk Study Area
- Watercourses

FEH Catchments

- Bervie Water
- Burn of Bernholm
- Cowie Water
- Carron Water



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02	NOV 25	FINAL	TM	EB	LR	GG
Rev.	Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
Scale @ A3	Scale: 1:70,000		DO NOT SCALE			
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TWP THISTLE WIND PARTNERS

Client

Project
Bowdun Offshore Wind Farm
Onshore EIA Report

Drawing Title

Surface Water Features

Annex Number
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Drawing Status
FINAL

Figure 7

The impact of dust during construction and the impact of emissions from traffic associated with construction have been assessed. The main effect of any dust emissions during the construction phase, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars and laundry and the effects on human health from suspended particulate matter from dust and associated with construction traffic. However, it is normally possible, by implementation of proper control, to mitigate the impacts of significant adverse effects, although short-term events may occur (for example, due to technical failure or exceptional weather conditions).

In order to mitigate these potential impacts, embedded, standard and project specific mitigation measures have been developed through an iterative design process. This includes a CEMP developed based on the Outline CEMP in Volume 2, Appendix 2.2 of the Onshore EIA Report, that would include dust control measures to reduce disturbance to residential properties, as well as recreational and existing land users. This will include dust control measures based on the guidance provided by the Institute of Air Quality Management. A CTMP will also be developed, which will manage of the movement of construction vehicles seeking to minimise their use of the public road network.

As a result of the implementation of the proposed mitigation measures outlined above, no significant environmental effects arising from the Proposed Development are anticipated.

Noise and Vibration

Volume 1, Chapter 13: Noise and Vibration of the Onshore EIA Report sets out the assessment of effects in relation to how unwanted noise and vibration can lead to adverse impacts on existing residential amenity and public health.

Baseline conditions were characterised by site-specific surveys, including long-term and short-term noise monitoring. The noise monitoring data was then used to inform the assessment of noise effects.

Much of the area within which the Proposed Development is located is quiet due its rural nature. The dominant sources of noise come from traffic using the A90, and the Dundee to Aberdeen railway line.

A number of potential noise and vibration impacts associated with the construction, operations and maintenance, and decommissioning phases of the Proposed Development were identified. These included:

- Noise impacts arising from the construction of the Onshore Export Cable, Substation and 400 kV cable corridor.
- Vibration impacts arising from the construction activities.
- Noise from additional construction vehicles on the road network
- Operational noise impacts due to the Substation plant.



In order to mitigate these potential impacts, a number of embedded, standard and project specific mitigation measures have been developed through an iterative design process. These include:

- Designing the alignment of the cable route to avoid close proximity to residential receptors where practicable.
- a CEMP containing measures to avoid or reduce impacts of noise and vibration during the construction;
- a CTMP containing measures to manage of the movement of construction vehicles seeking to minimise their use of the public road network
- application of Best Practicable Means in line with legislative requirements to minimise noise during construction
- the Substation building will be designed to meet specific operational noise limits through attenuation, to avoid impacts on residential amenity and public health.

As a result of the implementation of the proposed mitigation measures outlined above, no significant environmental effects arising from the Proposed Development are anticipated.

Traffic and Transport

Volume 1, Chapter 14: Traffic and Transport of the Onshore EIA Report sets out the assessment of effects in relation to active travel routes and the parts of the road network most likely used by construction traffic.

A traffic and transport study area for the assessment of environmental traffic and transport impacts was identified and includes active travel routes and parts of the highway network most likely to be used by construction vehicles generated by the Proposed Development where impacts would likely occur.

Information on traffic and transport within the study area was collected through a detailed desk-top review of existing data sources. In addition, site-specific surveys were undertaken to inform the baseline assessment for traffic and transport. For the assessment the 2025 baseline traffic flows were compared to 2031 future traffic scenarios to reflect the anticipated peak year of construction traffic.

A number of potential traffic and transport impacts associated with the construction phase of the Proposed Development were identified in the absence of mitigation:

- driver and non-motorised users delay, including temporary delays to public transport services
- Severance
- Non-motorised user delays
- Non-motorised user amenity
- amenity, fear and intimidation of non-motorised users
- reduced road safety.
- Abnormal Indivisible Loads.

In order to mitigate these potential impacts, a number of embedded, standard and project specific mitigation measures have been developed through an iterative design process. These include:

- production of a CTMP, which will also include and Abnormal Loads Management Plan.
- use of access tracks and haul roads to minimise the number of construction vehicles on the road network.
- provision of an appropriate number of car parking spaces for construction workers.
- controlled working hours.
- Implementation of a construction specific Travel Plan to promote shared and sustainable travel for workers.

- Road/access upgrades and reinstatement.
- measures to reduce the number and movement of HGVs.
- appropriate design of vehicle access points.
- measures secured through a Special Order to permit movement of Abnormal Indivisible Loads, where required.

As a result of the implementation of the proposed mitigation measures outlined above, no significant environmental effects arising from the Proposed Development are anticipated.

Climate Change

Volume 1, Chapter 15: Climate Change of the Onshore EIA Report sets out the assessment of affects in relation to Climate Change with a particular focus on greenhouse gas emissions (GHG) arising from the Proposed Development, as well as potential risks to the Proposed Development arising from Climate Change, such as flooding and extreme weather. The impacts assessed include:

- GHG emissions arising from the manufacturing and installation of the Proposed Development.
- GHG emissions arising from the consumption of materials and activities required to facilitate the operation and maintenance of the Proposed Development.
- GHG emissions from decommissioning works (plant, fuel and vehicle use) and recovery or disposal of materials.
- GHG emissions arising from land use change during the construction, operation and maintenance and decommissioning phases.
- Climate change resilience of the Proposed Development over the operation and maintenance phase.

Overall, it is concluded that there are no significant residual effects once mitigation has been accounted for.

The Proposed Development will enable the abatement of fossil fuel generation within the national grid, through the transmission of renewable energy generated by the Offshore Generation Assets.

Overall, it is concluded that there will be the following likely beneficial significant cumulative effects from the Proposed Development alongside other projects/plans:

- Net whole life GHG emissions: the avoided emissions resulting from the displacement of higher emitting electricity generation sources, as reported within the climate change assessment for the Project, are enabled by the Proposed Development. This would result in a significant beneficial effect in EIA terms.

Within the context of national policy, the purpose of the Project is to provide a source of renewable energy, thereby contributing towards UK and Scottish climate change policy goals and associated renewable energy targets (in particular the respective net zero targets). The total effect will, therefore, be a beneficial effect, which is significant in EIA terms.

Socio-Economics, Tourism and Recreation Assessment

Volume 1, Chapter 16: Socio-economic, Tourism and Recreation Assessment of the Onshore EIA Report sets out the socio-economic, tourism and recreation impacts of the Project. The assessment is based on the Project Supply Chain Development Statement (SCDS) and desk-based data. It is recognised that the socio-economic aspects of the Proposed Development cannot be viewed in isolation, as the Onshore and Offshore aspects of the Project would not be developed independently of each other. As such the assessment has considered the Proposed Development and the Project, where appropriate.

The Project would result in:

- an initial capital investment of approximately £84 million in the North East for development, manufacturing/fabrication, and installation, with a total of £240 million for Scotland and £732 million for the UK economies through direct, indirect, and induced spending.
- Generation of substantial Gross Value Added (GVA), particularly in the North East of Scotland, with moderate to major beneficial effects during construction, operation, and decommissioning phases.
- Creation of hundreds of jobs during construction and operation and maintenance, with a focus on high-value, skilled roles in engineering, technical, managerial, and support services. A significant proportion of those jobs are targeted for local residents, supporting workforce retention and upskilling, especially transitioning from the Oil & Gas sector.
- STEM outreach to encourage young people in the region to pursue careers in renewables.

- Supply chain and local business growth, emphasising local and Scottish suppliers and the implementation of the Supply Chain Pathways Programme, unique to Bowdun, to support the energy transition and provide a unique opportunity for Scottish business to engage early with a Tier 1 contractor.

During the construction phase (2031 to 2034) of the Project, the following are anticipated:

- 488 full-time equivalent (FTE) jobs, and generate £597 million GVA in the North East region;
- 1,393 FTE jobs, and generate £1,705 million GVA in Scotland; and
- 4,170 FTE jobs, and generate £2.2 billion GVA across the UK..

This economic activity and jobs include those directly employed by the Project and its contractors as well as the supply chain companies who have allocated a proportion of their time to the Proposed Development. The total construction workforce for the Proposed Development is estimated at 221, with up to 140 workers during peak construction. In addition, this direct employment activity will have an impact on the wider economy where the wages of these workers are spent.

The economic impacts during the operational and maintenance phase of the Project will be long term and this phase represents a significant opportunity for the North East region. During the Operation and Maintenance phase, between 207 and 296 high-value skilled jobs are estimated for the North-East Region, with 107 of these direct to the Project, with £517 million GVA estimated for the North East.

TWP are actively considering the provision of a community benefit fund and/or shared ownership with potential links to operational performance of the wind farm. This would provide direct financial or

in-kind benefits to local communities, final details will be agreed post-consent and in line with evolving policy.

The Project is expected to have only minor temporary impacts on tourism and recreation, primarily limited to short-term disruption of some local recreational routes (such as walking and cycling paths) during construction, with no significant effects on major tourism attractions like Dunnottar Castle or the broader visitor economy. Research and survey evidence indicate that the presence of wind turbines does not deter the majority of tourists, and the regional tourism sector is considered robust and resilient. Overall, the project is not anticipated to have any significant long-term adverse effects on tourism in the region.

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