

A close-up, low-angle shot of a white wind turbine blade against a clear blue sky. The blade is the central focus, extending from the bottom right towards the top left. The hub and part of the nacelle are visible where the blade is attached.

Beaw Field Wind Farm

# **Environmental Impact Assessment Report**

Volume 4: Non-Technical Summary

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# 1.Introduction

Following granting of permission for the wind farm by Scottish Ministers in November 2017, PEEL Energy is now seeking to both extend the implementation date of the permission previously granted and to extend the operational life of the wind farm from 25 to 40 years through an application under S36C of the Electricity Act.

This document is an update of the previous non-technical summary (NTS) of the Environmental Statement (ES) submitted as part of the previous application for the Beaw Field Wind Farm. Under the current Scottish EIA Regulations reporting of the findings of an EIA is provided in a document known as an Environmental Impact Assessment Report (EIAR). Whilst this is an NTS, it does contain some formal definitions and terminology that are essential language from the EIA process, and which may be unfamiliar to some readers. To assist we have provided a [Glossary](#) at the end of this document. The purpose of the NTS is to ensure that all readers can understand the proposals and the potential environmental effects of the [Proposed Variations to the Consented Development](#).

In general terms, both national and local policies and guidance reflect the Scottish Government's desire to achieve net zero of all greenhouse gas emissions by 2045, alongside providing a secure and affordable source of energy. One way of doing this is to encourage the development and deployment of [Renewable Energy](#) generation and onshore wind turbines are 'Renewable Energy generators'.

The planning policy and guidance also provides advice on how Proposed Developments should be looked at in relation to their potential impact upon a variety of environmental topics. These include potential effects upon biodiversity, aviation and defence, flood risk, historic environment, landscape character and visual amenity, land use, noise, and vibration, socio-economic, traffic and transport, waste management and water resources.

We have set out the relevant planning policy and guidance in Chapter 4 of the EIAR, updated as needed to reflect current planning policy and guidance. We also provide a detailed assessment of the Proposed Development against national and local planning policy in the Planning Statement, which has also been updated for the Proposed Variations to the Consented Development. This demonstrates that the Beaw Field Wind Farm complies with, and is supported by, the relevant official policy.

The application is being made to the Scottish Government as a variation under Section 36 (S36) C of the Electricity Act 1989 as the Proposed Development will have an installed electrical generation capacity of over 50 [Megawatts](#) (MW). Following consideration by specialist officials within the Energy Consents Unit (ECU) of the Scottish Government, any recommendation to allow the variation scheme will be considered by Scottish Ministers



# The Role and Production of the EIAR

Specific legislation<sup>1</sup> requires that our application is accompanied by an Environmental Impact Assessment Report (EIAR). The primary purpose of an EIAR is to inform the decision-making process by reporting the results of an environmental impact assessment (EIA). This is a recognised process for identifying the significant environmental effects of a project and has been a formal part of the UK planning regime since 1988.

The purpose of the EIAR is to report the significant environmental effects of the scheme and the means of mitigating them. A significant effect is one that, in the opinion of the EIA specialists, should be brought to the attention of the decision makers i.e., the relevant planning authority and other statutory authorities. Our EIAR provides a detailed description of the findings of the EIA. For each specific topic the EIA has identified the following details:

- The methodology or technique used to complete the individual topic assessment;
- Baseline or existing situation surveys;
- Potential effects of the scheme;
- Mitigation, if required to reduce the effects of the Proposed Development;
- Cumulative Effects, if applicable, and;
- Residual Effects and conclusions.

When	What	Why
2011 - Sept 2015	Baseline data collection	It is important to understand how the environment in which the scheme is proposed functions. Gathering information about the natural environment allows subsequent technical assessments to predict what might happen as a result, and if these effects are damaging, what needs to be done to prevent this.
May 2015	Scoping option request	This involves us seeking views from a range of consultees about the range of issues that should be included in the environmental assessment and whether any topics could be 'scoped out'. Following consultation, this was agreed with the planning authority and the statutory environmental bodies.
Dec 2015	Gate check 1 report	Preparation and submission of this Report is a legal requirement in Scotland. The Report is required by LECU and sets out how we propose to tackle responses received during the Scoping Stage.
Jan 2016 - March 2016	ES Preparation	The results of all of the studies and assessments are drawn together. The content of the ES is again dictated by Regulations and guidance.
May 2022	Additional Baseline Data Collection	<p>Since the submission of the original application and following consultation with SNH, surveys are currently being undertaken for Red Throated Diver to check that there have been no changes since the original application was permitted. Alongside this an ecology walkover survey has been undertaken to check that there are no changes to habitats on site.</p> <p>A review of other sensitive receptors (e.g., residential properties) has been undertaken to identify any changes to the baseline environment that need to be considered.</p> <p>In addition, consultation has also been undertaken with relevant consultees to check that there have been no changes in relation to telecommunications.</p>
May 2022	Updated EIAR Preparation	An EIAR has been produced to report on the original and updated environmental assessments.

In the course of carrying out the above, we employed a large team of experts to examine several technical issues which had been highlighted as being essential. These included: socio-economic, recreation and tourism; landscape and visual impacts; residential visual amenity; cultural heritage; ornithology; ecology; peat; geology; water assets; noise; air quality; highways and transportation; shadow flicker; telecommunications; aviation, and carbon balance.

The EIAR for our scheme is large and consequently is divided into several volumes. These are: Volume 1 (Main Text); Volume 2 (Figures); Volume 3 (Appendices). In the later sections of this NTS we set out the main findings of the various assessments and provide guidance on where further – more detailed information – can be found within the EIAR. Updated findings for this variation application are also set out in this NTS.

<sup>1</sup> Electricity Works (Environmental Impact Assessment) Regulations 2000 (as amended)



## The Applicant – Peel NRE Wind Farms (Yell) Ltd

Peel NRE Wind Farms (Yell) Ltd ('PWFY Ltd') is part of Peel NRE. Peel Wind Farms (Yell) Limited changed its company name on 19th July 2019 to Peel L&P Wind Farms (Yell) Limited and then again on 20th November 2020 to Peel NRE Wind Farms (Yell) Limited. Peel Energy<sup>1</sup> is at the forefront of delivering low carbon energy for the UK and has a balanced portfolio in generation and for development including onshore wind, tidal, hydro-electric, solar and biomass. Peel Energy is itself part of the wider Peel Group, one of the UK's leading real estate, property, infrastructure, and investment

<sup>1</sup> [www.peelenergy.co.uk](http://www.peelenergy.co.uk)

companies.

Peel Energy owns several Renewable Energy projects that are currently in operation, being constructed or have received planning consent. Peel Energy's consented wind farms include Scout Moor in Rochdale which was constructed and commissioned in 2008 (installed capacity of 65MW) and Frodsham Wind Farm in Cheshire, which became operational in 2017 and comprising 19 turbines with an installed capacity of 50.35MW

Scout Moor Wind Farm



Peel Energy Seaforth Wind Farm



## 2. The Scheme, Its Setting, and Benefits

As mentioned above, TNEI are applying on behalf of the consent holder for a variation to extend the implementation date of the permission previously granted and to extend the operational life of the wind farm from 25 to 40 years. The Consented Development consists of:

- Up to 17 turbines with a maximum height to blade tip of 145m; including foundations and transformers (internal or external);
- Approximately 11.1km of access tracks of average width 4.5m and verges plus drainage;
- Five major and one minor watercourse crossings;
- Hardstanding areas for construction and maintenance of turbines;
- Electrical substation and control building;
- Underground cabling connecting turbines to the substation and control building;
- One anemometry mast;
- One radio communications tower; and
- A number of schemes for the restoration, enhancement, and maintenance of the Site.

The location of all these features is shown in Figure 1 included at the end of this document.

The Site on which we plan to construct 'Beaw Field Wind Farm' is located in the south of Yell, the largest of the Shetlands Islands North Islands (see next page). The exceptional wind resource on Shetland means that this area is ideally suited to wind farm development.

The area within the Application Boundary extends to approximately 1,135ha, with the centre of the Site located on the Burn of Hamnavoe (Grid Reference HU 50461 82092). The land within the Site is owned by the Burravoe Estate and comprises 35 crofts.

The majority of the Site is heather moorland interspersed with expansive areas of bare peat which are the result of overgrazing by sheep. The Site is made up of areas of blanket bog, degraded blanket bog, and moorland pasture with more extensive areas of deep peat on higher ground to the west of the Site. To the south of the Site, the Application Boundary borders the settlements of Hamnavoe and Houlland. The areas around the settlements are largely in agricultural use. Peat cutting for fuel does remain active in the locality and currently takes place within the Site.

The Site is made up of undulating ground rising to more hilly terrain towards the Northwest. The majority of the Site lies between 80 to 150m AOD, the summit at the centre of the Site known as Beaw Field is 120m AOD. The Site includes a number of watercourses, waterbodies, and associated catchments.



# The Benefits of the Beaw Field Wind Farm

The Consented Development will generate approximately 239 Gigawatt hours of electricity per annum, which is the equivalent to the annual energy usage of up to 60,000 homes<sup>3</sup>. This would be enough clean energy to support the majority of homes in a city the size of Dundee.

It is expected that the Proposed Development would lead to an overall reduction of Green House Gas emissions (GHG) equivalent to approximately 3.5 million tonnes of carbon dioxide over its 40-year life. This is the equivalent of 700,000 return flights from London to Sydney.

The construction of the wind farm, including the manufacture of the turbines will create carbon dioxide emissions. However, the time that the Beaw Field Wind Farm will take “pay back” these emissions, by generating clean energy, is predicted as being 1.8 years. This is a relatively short amount of time

considering the scale of the Proposed Development and highlights the large potential wind resource that is available on the site.

Other benefits that the application will deliver include:

- The creation of a habitat plan aimed at improving the landscape around the Site for the benefit of key bird species including red-throated diver and merlin.
- A peat management plan to restore areas of degraded poor-quality peatland.
- Improved road surfaces that will serve the route to the wind farm.
- A community benefit package equivalent to £5,000 per installed MW every year.
- Substantial business rate payments to Shetland Isles Council every year the scheme operates.

## Design Evolution

The design of Beaw Field Wind Farm has been subject to an extensive review process which has refined the position and overall number of the turbines that are proposed.

Taking account of the approved Viking Wind Farm, located on Mainland Shetland, a 65-turbine design scheme was produced first. Following this stage, further ecological surveys and investigations were undertaken and as a result 18 turbines that were close to the Otterswick and Graveland Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA) were removed. This was done in order to reduce the effect of the scheme upon birds, particularly red-throated divers which have a particularly large presence in Shetland.

Once detailed investigations into the peat depth, hydrology (streams and water bodies) and ground water dependent Eco-Systems (such as blanket bog) across the Site had been completed, a further 4 turbines were removed to avoid areas of habitat that could be important for a number of important bird species. This reduced the turbine numbers to 43.

Through detailed discussions with Scatsta Airport it became clear that a large part of the Site lies within the airport's Obstacle Limitation Surface (OLS). The OLS is

an important part of the airport's navigation systems and as such any effect upon it should be avoided. As a result of this restriction, in order to minimise the effect of the Consented Development upon Scatsta airport, the turbine numbers were reduced to 20.

A further 3 turbines were removed from the Site design following detailed archaeological investigation (in relation to the Gossabrough Broch, a Scheduled Ancient Monument), ecological survey (identifying an additional red-throated diver flight path) and an allowance for impact upon telecoms infrastructure.

This reduced the number of turbines proposed to 17, which is the amount that consent is being sought for.

Alongside detailed site investigations a series of community consultation events have been held, providing the local residents with a number of opportunities to provide input and comments into the design process. The community consultations identified that the majority of the respondents were supportive of the scheme and preferred a smaller layout made up of larger turbines over a larger number of smaller scale turbines. This has been considered in the project design and the design modifications have been shared with the community who largely viewed it as an improvement over the previous design.

<sup>3</sup> This is calculated by using the average yearly Scottish household electricity consumption and the anticipated electrical output of the wind farm over a year.



# SHETLAND ISLANDS



Key  
● Site Location

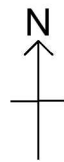
Northern Scotland



Shetland Islands



Beaw Field Wind Farm



TITLE:

Site Location  
Figure 1.1

Scale: 1:250,000 @ A3

Date: 27/01/2016



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## Construction

Beaw Field Wind Farm will take about two years to construct although it is anticipated that some site works, and other preliminary activities would take place before main construction commences. These would include site investigations and clearance as well as a variety of surveys. We assume that construction will start in 2024.

The [EIAR](#) contains an outline of the main stages of construction (Volume 1, Chapter 3) and it was on these that the environmental assessment of likely construction impacts was undertaken.

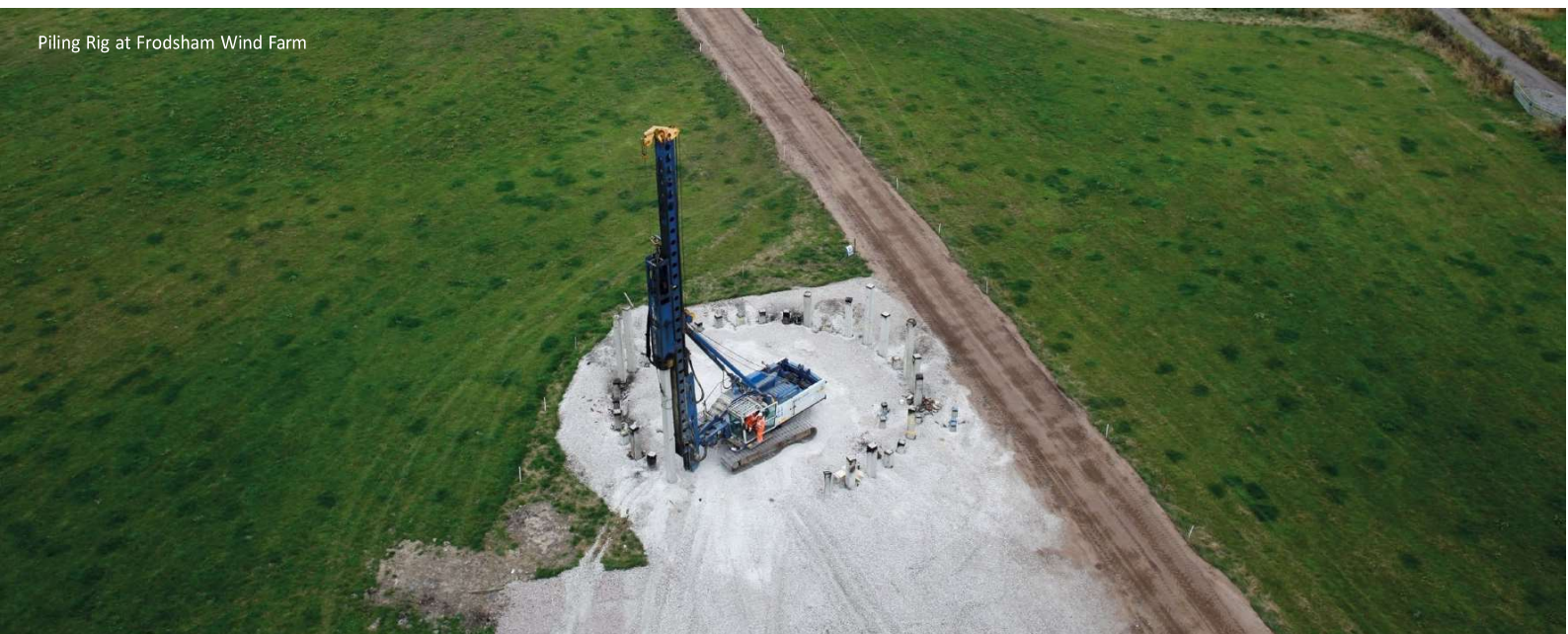
The [Principal Contractor](#) will be obliged to prepare a Construction Environmental Management Plan (CEMP) before any works are undertaken and it will be our responsibility to ensure that the works are being carried out in accordance with its requirements.

The CEMP would dictate how good environmental management would be achieved during the construction phase and would also be a means of demonstrating that the various requirements have been met.

The CEMP would include a commitment to construction best practice and would also detail how consultation and communication with the local planning authority, local residents and other interested members of the public and statutory environmental bodies is to be undertaken during the construction process.

An Outline CEMP is included in our EIAR

Piling Rig at Frodsham Wind Farm



# 3. Predicted Environmental Effects

The EIAR comprises a series of chapters considering the positive and negative effects of the Consented Development upon particular environmental issues such as water and drainage, agriculture, nature conservation and biodiversity, social and community and so on. The EIAR has been updated where relevant for the Proposed Development.

The chapters report the results of the EIA setting out the details of the impacts that the scheme would have.

These results range from negligible and slight impacts which are not significant to moderate and major impacts which are significant. This section of the non-technical summary sets out the conclusions in respect of each of the topic areas and the combined and cumulative effects. Where updates have been made to the EIA chapters, the conclusions of these updates are set out below, in addition to the findings of the previous assessments which are presented in full below.

## Landscape and Visual Impact Assessment

The visual impacts of the scheme have been assessed by a team of specialist experts who have surveyed the Site and its surrounds on a number of separate occasions. Detailed computer modelling and aerial photography has also been used to provide an accurate prediction of the likely visual effects of the scheme.

The assessment demonstrates that the Proposed Development is located far enough away from any National Scenic Areas, Wild Land, Local Landscape Areas, or other official designated landscapes to not cause a significant negative effect. In most cases, if the site is visible from a designated landscape, it would only make up a small part of that view.

The landscape and visual impact assessment shows that landscapes within approximately 2.5km (1.5 miles) of the proposed turbines in the southeast corner of Yell will be affected. This is a relatively small area given the number of turbines proposed and is a result of the design of the scheme maximising the screening effects of the rising land to the northwest of the Site.

In consultation with Shetland Island Council, we agreed 23 viewpoints around the site to be assessed. Chapter 7 of the EIAR sets out in detail the assessment of each, but out of all of the viewpoints only 10 would experience 'significant' visual effects as a result of the Proposed Development.

Significant visual effects would generally be experienced by people within 5km (3 mile) of the Proposed Development on Yell. This primarily includes locations such as Burravoe, Gossabrough and users of the B9081 on the east side of the island. Given the size of the turbines proposed this is not unexpected.

There would also be significant visual effects from some coastal areas on adjacent islands within approximately 12km (7.5 miles), which will include views of the site from the ferry crossing from Toft to Ulsta and the ferry crossing from Vidlin to the Out Skerries. Again, this is not unexpected given the absence of intervening land.

As the Beaw Field Wind Farm is located far away from existing wind farms within Shetland the landscape assessment demonstrates that there would be no significant Cumulative Effects (i.e., visual effects created by seeing more than one wind farm at the same time or in relative quick succession if traveling). Since Beaw Field wind farm was consented the height of the turbines at the consented Viking Wind Farm has increased, and the Energy Isles Wind Farm has also been consented so the cumulative position with other wind farms has changed. However, the most recent cumulative assessments for both of these wind farms do not identify any significant cumulative effects with the Consented Development.

Photomontage of Beaw Field Wind Farm from Old Museum Burravoe





## Residential Visual Amenity

A total of 101 properties or groups of properties have been identified within approximately 2km of the proposed turbines, with no new properties identified since the original application was submitted. The majority of properties assessed are oriented with their main views looking away from the Proposed Development toward the coast and out to sea. Typically, views of the turbines would only be available from rear or gable end windows, parking areas or from locations within property gardens.

Whilst significant changes in view would be likely to occur at 33 of the 101 locations considered, we do not feel that the changes would be unacceptable. There are several reasons for this:

- The land in-between the Proposed Development and the house(s) often reduces the visibility of the turbines, diminishing their apparent height and 'spread';
- In all but 7 cases the separation distances between the turbines and properties is more than 1km; and
- The location of the turbines outside the main views available from each property.

Given that no new properties have been identified these findings remain valid.

## Ecology

A thorough ecological assessment of the Site has been undertaken between 2012 and 2015 and this identified a wide variety of flora and fauna which were subsequently assessed. An updated walkover survey was undertaken in May 2022 to check if there were any changes on the Site since the original application was submitted. This walkover survey found that there had been no substantial changes on Site and therefore that the findings set out below remain valid.

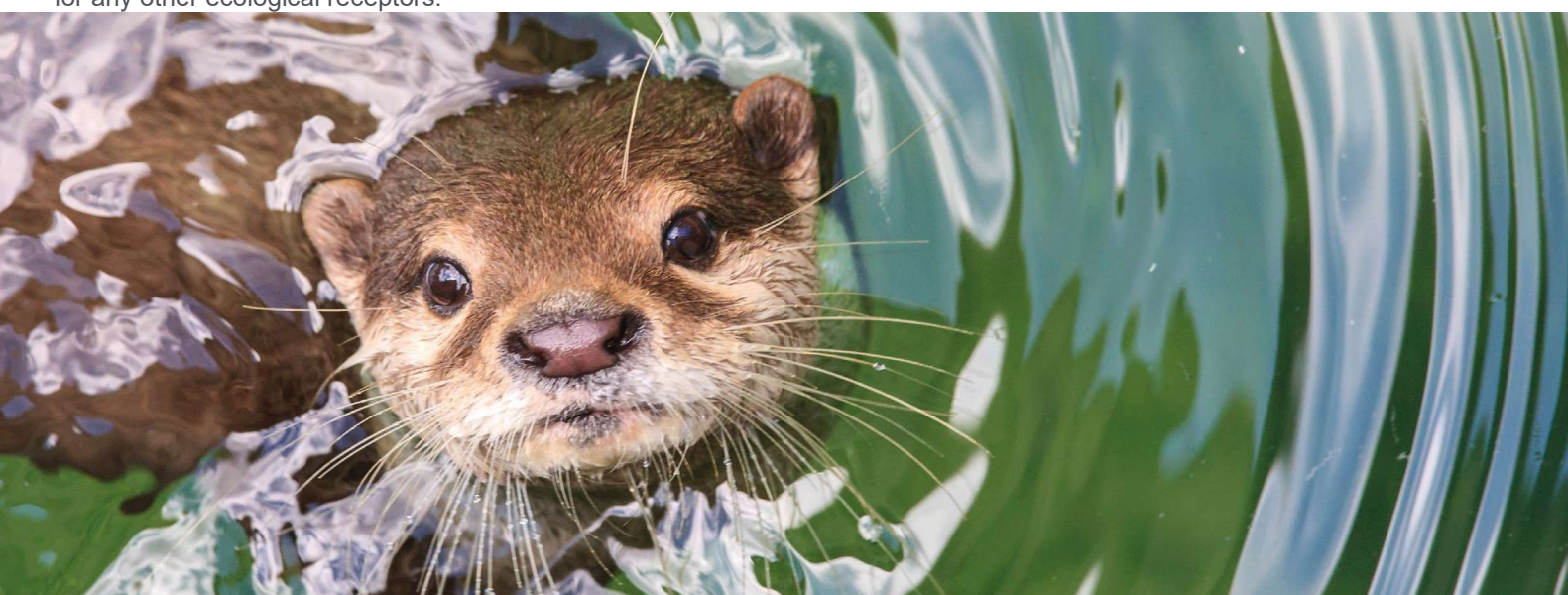
There are no designated sites within the Site, but the Yell Sound Coast Site of Special Scientific Interest (SSSI) and Special Area Conservation (SAC) lies 1.3km (0.8 miles) to the south and supports a nationally and internationally important population of breeding otters. Having considered the potential impacts of Proposed Development it was concluded that there will be no likely significant effects on the otter and therefore the integrity of the designated sites.

No potentially significant adverse ecological effects as a consequence of the Proposed Development were predicted for any other ecological receptors.

The loss of habitat as a result of the construction of the Proposed Development will be low due to the relatively low footprint of the areas to be disturbed. It was considered unlikely that the Proposed Development would substantially disrupt or block subsurface flow pathways to potential ground water dependant terrestrial ecosystems.

Although no significant effects are predicted for any ecological receptor within or close to the site, we still aim to improve the habitat quality and opportunities for important species within the Site. These measures and biodiversity enhancements are explained in the Outline Habitat Management Plan (OHMP) contained in the EIAR.

Peatland restoration will take place primarily through substantial reductions in grazing pressure over the entire Site. The evidence from land nearby in West Yell has demonstrated that a large-scale reduction in sheep grazing should result in bare peat surfaces and hags naturally revegetating and becoming a more valuable habitat.



## Ornithology

In total 77 bird species were recorded in the Study Area during targeted ornithological surveys in 2011, 2012 and 2015. The ornithological assessment included within the EIAR identified twelve potentially important bird species breeding within the Study Area. These included: red-throated diver, greylag goose, golden plover, dunlin, lapwing, ringed plover, curlew, oyster catcher, snipe, arctic skua, great skua and merlin. In response to feedback from NatureScot updated red throat diver surveys are being undertaken to support this variation application.

The May 2022 red throated diver survey provided initial results that suggest that diver activity at the Site is very similar to that recorded during the original survey effort. The habitat and NVC update survey has found that there have been no fundamental changes to the habitats and communities within the Study Area. Therefore, the baseline situation remains unchanged and, as a result, the summary below remains valid.

There are no designated sites within the Site, but the Otterswick and Graveland Special Protection Area (SPA) and SSSI lies immediately north of the Site. The SPA is designated for its red-throated diver feature. The layout of the turbines has been designed to avoid regular red-throated diver flight paths as such the risk of collision has been avoided and the Proposed Development should not become a barrier to the species movement.

Having considered the potential impacts of Proposed Development on the Otterswick and Graveland SPA and based on evidence collected during bird studies, it was concluded that there will be no likely significant effects on the red-throated diver qualifying feature or designated SPA site integrity.

Potential impacts were also considered on the twelve wider countryside species (which included red-throated divers from outside the SPA). No potentially significant adverse ornithological Residual Effects were predicted.

In 2015 a single pair of merlin (a small falcon) was observed within the Site. If this pair was to regularly breed there, and no mitigation was undertaken, it is considered likely that this merlin pair could fail and abandon the territory as a result of the construction and operation of the Proposed Development. That said, there is alternative habitat available to the merlin.

In addition, if merlin do not return to breed (as has been the case in several previous years) then the magnitude of the impacts on merlin due to the wind farm construction and operational activities is likely to be negligible, with no pairs potentially affected.

No significant effects on designated sites or any wider countryside bird species are predicted from either the Proposed or Consented Developments and so no specific mitigation is required to offset predicted significant effects. The OHMP will however provide opportunities to provide improvements for the birds that will use the Site and adjacent areas.

Particularly in relation to the possible effect of the site upon merlin, the OHMP provides details of nesting habitat enhancement measures, specifically to improve nest habitat quality at two traditional, but abandoned merlin territories away from construction and operational activities. The increase in merlin nesting habitat quality that is expected to follow as a result of the OHMP is predicted to increase merlin occupancy rates in at least one of the two territories. This would offset potentially adverse effects from the Proposed Development on the one pair of merlin's that has irregularly nested within the Application Boundary.

The OHMP also provides red-throated diver **Lochan** enhancement measures. Over recent decades many red-throated diver breeding Lochans have been lost due to overgrazing and erosion of surrounding blanket bog in Shetland. Six potentially suitable candidate Lochans in southern Yell have been identified for restoration work. When restored, each of the Lochans will quickly provide suitable water levels for nesting by red-throated divers.

Red Throated Diver





## Cultural Heritage

The cultural heritage assessment included within the EIAR at Chapter 9 has identified 73 heritage features of pre-historic to modern date within the Site. The main areas of archaeological interest are clustered in the south of the Site, close to the coast, and within the valleys of the burn systems that cross the Site. It is also possible that further points of archaeological interest may be contained within and beneath the peat that covers the majority of the Site.

There are no formally designated heritage assets within the Site, but four Scheduled Monuments have been identified within 5km of the Site.

These are:

- Wester Wick of Copister, broch (Scheduled Monument 2091);
- Burra Voe, broch (Scheduled Monument 2052);
- Gossabrough Broch (Scheduled Monument 2069): and
- Head of Brough, broch, West Yell (Scheduled Monument 2071).

A detailed assessment of the landscape around the site demonstrates that the Proposed Development will be visible from all of the Scheduled Monuments listed above, with the exception of Head of Brough broch. Significant effects are only anticipated at Gossabrough Broch.

The Proposed Development has been designed where possible to avoid direct impacts upon known heritage features within the Site. Two direct impacts on known heritage features are expected; a direct effect of moderate significance on part of a possible prehistoric field boundary at Hamnavoe and a direct effect of minor significance on the trajectory of a former field boundary of unknown date at The Heogals.

Given the identification of known prehistoric and post-medieval sites and the undisturbed nature of the Site, there is a possibility that unknown buried archaeological remains survive within the Site. It is proposed that operations involving ground disturbance be supervised by a qualified Archaeologist to ensure that any uncovered archaeological finds are recorded accurately.

All known heritage features within 50m of the Proposed Development (working areas) will be fenced off under archaeological supervision before works begin in order to avoid accidental damage by vehicles and machinery being used.



Plantiecrubs found on Beaw Field Wind Farm site

A possible prehistoric wall / embankment and its immediate surroundings will be subject to geophysical and topographical survey to record the extent of this feature. All works that are close to this point of heritage interest will be closely monitored to ensure that any further remains relating to it are recorded.

A Heritage Access and Interpretation Plan (HAIP) will be created to improve access to knowledge about the archaeological features that are close to the site. This could involve improved way marking signage and interpretation boards, the final details of which will be agreed with Shetland Island Council and Shetland Amenity Trust.

Possible cairn feature near Hamas of Haulland



## Soils and Peat

Peat deposits are present across the entire island and thus our site, and vary considerably in depth depending on the height, gradient, and underlying geology. Our site supports the agricultural activities (mostly grazing) of 35 crofters together with the flora and fauna assessed in the ecology and ornithology Chapters of the EIAR. An updated ecology walkover survey was undertaken on Site in May 2022 and found no substantial changes to the habitats on site and therefore the soils and peat summary set out below remains valid.

Scottish Planning Policy (SPP) defines 'blanket bog' as a priority habitat that is rich in carbon. To assess the extent and quality of the peat, an assessment of the Site included peat depth mapping, detailed vegetation surveys and highlighting areas of eroded or bare peat. This is important as peat is a valuable 'carbon store' if left undisturbed and if it is 'healthy' can actively absorb more.

The depth of peat on the Site ranges from 0m to 4.35m, with a Site wide average depth of 1.25m. Wherever possible we have tried to avoid areas of deep peat (>0.5m depth). Notwithstanding this, the majority of peatland is degraded, with extensive erosion and gullying present. This erosion has been predominantly caused by over-grazing by sheep and localised peat cutting. These activities have resulted in a loss of vegetation cover, therefore exposing areas of bare peat, which have eroded from exposure to wind and water.

The results from these surveys informed the layout of the Consented Development. A Peat Reinstatement and Management Plan (PRMP) has been developed which will be followed during the construction of the Consented Development. One key aim of the PRMP is to stabilise and restore the peat present on site.

The Consented Development would involve the removal of approximately 252,496m<sup>3</sup> of peat to allow the construction of the turbines, access tracks, borrow pits, site construction compound and substation. All of the extracted peat would be reused in the restoration of construction areas or as part of the PRMP mitigation measures.

Taking the mitigation measures into consideration and then assessing the scale of impact of the Consented Development on peat resources, we expect only a minor and thus 'non- significant' impact to occur.

Throughout the lifetime of the Consented Development, the measures proposed within the PRMP will be monitored to ensure the condition of the peat and its vegetation is maintained and improved.

Example of peat degradation across the site



## Geology

The majority of the Shetland Islands, including Yell, are formed by a group of metamorphic rocks. Many of these rocks have been used historically as a source of road stone and aggregate. Within the immediate vicinity of the Site four former quarries/pits have been identified, most of which are likely to have been used as localised sources of rock or gravel for minor construction purposes.

Excavation of bedrock and peat will be required to accommodate access tracks, turbine foundations, anemometry and radio mast foundations and crane pads.

A small amount of excavation will also be required at the site compound in order to create a level working surface.

The percentage of the Site from which bedrock strata may be removed has been calculated as being 1% of the total Site area. The effect of the removal of these materials is not classified as significant.

Compliance with established construction industry standards will ensure that the risks associated with accidental spillages from construction plant and machinery, usually highly localised in area, are minimised and any significant environmental effects are avoided.

The excavations will avoid recorded areas of historic landfill within the Site and therefore the risk of extracting existing contaminants is extremely low and will not result in a significant effect.

## Carbon Balance

The construction of the Consented Development will involve the limited creation of Green House Gases (GHG). Using the Scottish Government Windfarm Carbon Assessment Tool, the carbon balance of the Proposed Development has been re-calculated, taking account of the 40-year operational period and GHG emissions created during construction and the GHG emissions reduced through the operational phase of the wind farm.

The total net predicted GHG emissions associated with the Proposed Development are approximately 189,450 tonnes of carbon dioxide equivalent (t CO<sub>2</sub>e). Of this, approximately 150,677 t CO<sub>2</sub>e (82%) is associated with peat disturbance within the construction phase. This would be 'paid back' after around 1.8 years of operation of the wind farm.

Over the lifetime of the Proposed Development, it is predicted that a total of approximately 4,030,270 t CO<sub>2</sub>e will be saved. The operation of the Proposed Development will therefore save approximately 21 times more GHG than would be created during its construction and manufacturing phase.

The Proposed Development would have a significant, positive effect on GHG emissions and would have a cumulative positive effect when considered alongside wider efforts to increase Renewable Energy generation.



## Surface and Groundwater

The Site is characterised by undulating hilly terrain that is drained by a number of watercourses and waterbodies. The Burn of Arisdale flows north to south along the western boundary of the Site and discharges into the Hamna Voe.

The Burn of Hamnavoe and its tributaries (including the Burn of Evrawater) drain the centre area of the Site and flows in a general north to south direction and discharges into Hamna Voe near the settlement of Hamnavoe. In the east of the Site a network of lochs and interconnected watercourses discharge into the Bay of Whinnifirt. The Green Burn flows northeast and discharges into the Wick of Gossbrough.

A Flood Risk Assessment (FRA) confirms that the layout of the turbines and the interconnecting access tracks are not located within an area at risk of flooding from either surface run off, sewers or ground water.



Burn of Hamnavoe

The layout of the Consented Development reflects a 'precautionary approach' that we adopted to reduce the chances of harming the water environment. For example, we ensured that no part of the scheme is within 50m wherever practicable, from every onsite watercourse and waterbody. We also planned our access tracks and cabling layout to minimise the overall impact and limit watercourse crossings.

The relatively small footprint of the Consented Development will ensure that vegetation is retained across the majority of the Site which will in turn reduce erosion, not alter the original runoff characteristics, control sediment potentially released from site activities, and retain drainage routes and pathways for water movements. Overall, there would be no large-scale change to the hydrology or flood risk upstream or downstream from the Site.

The Outline Construction Environmental Management Plan (OCEMP) which has been included as part of the EIAR provides a number of established industry guidance and best practice measures to be employed on the Site to ensure that the release of sediment or potential pollutants into surface water and ground water is avoided. Following the CEMP will ensure the Consented Development would have no significant effects on the water environment of the Site.

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## Noise and Vibration

Noise may be emitted during the construction, operation, and decommissioning phases of the Consented Development.

Predicted noise levels generated during the construction and decommissioning periods of the Consented Development would not result in a significant effect upon any nearby sensitive residential properties.

To assess the noise effect generated whilst the Consented Development is operational, the existing noise levels were monitored at five locations around the site. These locations, positioned in East Yell, Gossabrough, Burravoe (north), Upper Neepaback and Burravoe (west) were chosen to be representative of the noise levels that would be experienced by the sensitive properties that were closest to the Consented Development.

The assessment undertaken (following methods outlined in the ETSU-R-97 "Assessment and Rating of noise from Wind Farms" document) shows that there would be no significant effect in terms of noise. At some locations, under certain wind conditions and for a limited proportion of the time wind farm noise would be audible, meaning that a person could hear it however, it would still be at an acceptable level in relation to the official guidelines.

For the variation application a review has been undertaken in May 2020 to identify any noise sensitive receptors within the Study Area that have been granted planning permission since the original EIA and that would not be represented in the original assessment. No additional properties have been identified and so the summary findings of the original assessment (as set out above) remain valid.

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## Air Quality

During the operational lifespan of the Consented Development the generation of electricity from the wind turbines will not produce any gaseous emissions and will not directly contribute to local air pollution and this remains the case for the Proposed Development. The air quality impacts associated with the Consented Development are confined to the initial construction, and later decommission phases only.

The existing sources of gaseous emissions and particulate matter around the Site consist of road traffic, domestic fuel burning, sea spray and atmospheric dust transportation. The weather on Yell has the potential to limit dust transportation given the rainfall across the island.

The construction of the access routes, turbine foundations, borrow pits, compound and the substation all have only limited potential to create temporary air quality impacts.

The mineral extraction associated with the borrow pits has the greatest potential of all site activities to create dust. There are, however, no long-term residential sensitive receptors located within 350m of any of the construction activities associated with the Consented Development.

At distances greater than 350m any dust impacts are expected to be negligible as dust will have deposited naturally before reaching this distance.

In order to ensure that effects upon air quality are suitably mitigated, a Dust Management Plan (DMP) will be implemented. The DMP will outline dust mitigation measures for each of the construction activities. With the implementation of these dust prevention measures, the likelihood of dust generation affecting sensitive users is at the most low and is therefore not classified as a significant effect.



## Highways and Transportation

Getting plant and equipment to wind farm sites can be challenging. For Beaw Field Wind Farm it is proposed that access to the Site will be taken from a new junction with the B9081 approximately 3.5km (2 miles) north east of the Ulsta Ferry Terminal.

With the exception of the turbine elements, the vast majority of traffic will be normal construction plant, and most will arrive on site on low loader transporters. The turbine parts (tower, blades, and nacelle) will arrive on specialist transport vehicles. A large-scale self-propelled crane and supporting ballast vehicles would be used to erect the turbines.

The nearest suitable Port of Entry is Sullom Voe. Turbine parts would exit the port and continue along an unclassified road to the B9076 and then follow the B9076 and the A968 to Toft Voe Pier. They would then be transported by ferry to the Ulsta Ferry Terminal, continue on the A968 and B9081 before turning left into the Site.

To accommodate the movement of abnormal indivisible loads, traffic management; provision of load bearing surface to accommodate overrun; road widening; works to a bank, culvert, and bridge; and street furniture removal will be required at a number of locations along the route.

The highest level of traffic generation will be associated with the construction phase. An assessment of the likely trip generation concluded that the highest flow of traffic would

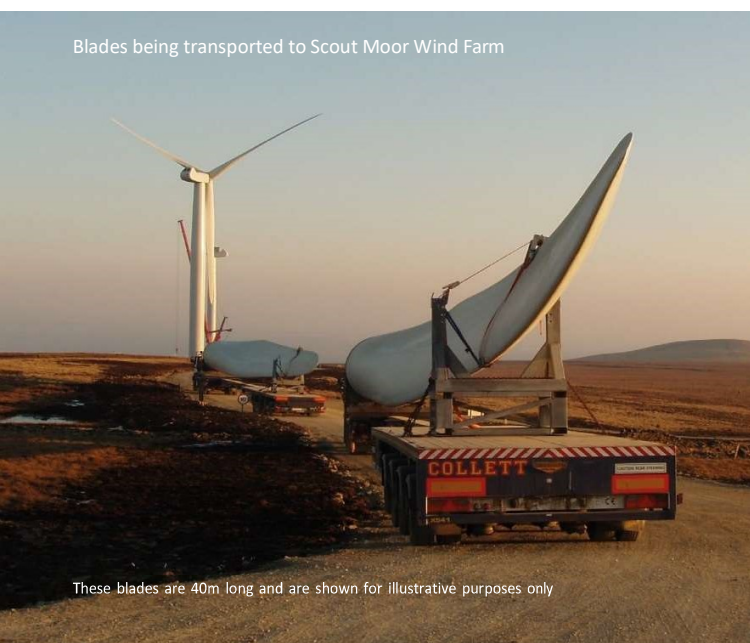
occur during month 7. This will be similar to approximately 70 movements per day (i.e., 35 coming into the Site and 35 leaving the site). It is estimated that during this peak period of construction, there would be an average of 38 HGV movements per day with a further 32 car and light van movements to transport construction workers to and from the Site. Traffic flows would fall off substantially over the remainder of the construction period.

Traffic generated during operation will be limited to around 2 vehicles per week for maintenance purposes.

At the end of the operational lifetime of the wind turbines, they may be decommissioned, and the Site reinstated. This would involve similar access requirements as the construction phase though the number of HGV movements would be reduced as it is unlikely that the cast in-situ turbine foundations would be removed.

The potential impact of these levels of traffic on the road network is not considered significant when compared to the current capacity and usage of the roads.

There will be a significant effect upon walking and pedestrian routes within the Site that will be crossed by the Site access routes. These impacts will be minimised through development of the Traffic Management Plan and Construction Traffic Management Plan which will be agreed with Shetland Islands Council.



## Telecommunications

Wind turbines can interrupt telecommunication links (Microwave, Ultra High Frequency telemetry, TV, and radio signals) if these pass in close proximity to the turbine locations.

We consulted OFCOM (Office of Communications) and various network operators to find out if any such links crossed the site and we discovered four links passing over or through the Consented Development. These include a BT link which carries telephone and internet signals, a Vodafone link an Airwave Solutions link which is operated on behalf of the emergency services and a Shetland Islands Council link.

For this variation application an updated consultation has been undertaken and no new telecommunications links have been identified and therefore the summary below remains valid.

An effect upon the BT link has been avoided by relocating turbines to ensure that there is sufficient space for the transmitted signal to be received without

interference occurring. Similarly, the Vodafone and Shetland Islands Council links, which operate from the same broadcasting towers will pass through the Site without experiencing interference. Without mitigation, the Airwave Solutions link would currently be affected by two turbines. The best way to resolve this is to move the link. Airwave Solutions have been commissioned to look into this and has suggested an appropriate location from where a radio mast can rebroadcast the signal around the Consented Development.

Digital television signals are not normally affected by the presence of wind turbines. Although it is unlikely to be required, a planning condition has been suggested to protect residents of Yell against any potential deterioration in the quality of TV reception.

Once these mitigation measures have been put in place there will not be any significant effects to Telecommunications infrastructure arising from the Consented Development.

## Aviation

Wind turbines can – if poorly located – affect commercial and military aviation operations. There are a number of civil aviation operations close to the Consented Development. The closest is Scatsta Airport which is an operational aerodrome and is also equipped with a radar system to monitor aircraft. Radar systems are also installed at Sumburgh and Fitful Head, while NATS operates a network of radar systems across the UK to track airborne aircraft en-route between civil airports.

The Ministry of Defence used to operate a radar at RAF Saxa Vord and they have now re-commissioned the site as a Remote Radar Head with a wind farm friendly radar installed. Whilst not directly related to aviation, the Met Office operates a radiosonde station at Lerwick which tracks weather balloons and potential effects on its operations must also be considered.

The Consented Development has been designed to minimise impacts on the aviation assets in its vicinity. This has been achieved by modifying the layout to ensure it is outside all protected areas. Notwithstanding this, some modification of the flight procedures associated with Scatsta Airport will be required in order to maintain safe operation of flights into and out of the Airport during operational hours.

There are not expected to be any adverse impacts on either the Sumburgh or Fitful Head radars.

No adverse impacts are expected on MoD assets based on representations received at the Scoping stage. The MoD has been reconsulted when the application was submitted to the Scottish Government.

No impacts are expected on any facility or service operated by NATS and no impacts are expected on the Lerwick Radiosonde Station.

## 4. Conclusion

The Beaw Field Wind Farm will produce a significant volume of clean Renewable Energy by utilising a currently unused wind resource on Yell. The Consented Development and Proposed Variations are consistent with the relevant national and local planning and environmental policy and guidance.

For a development of this scale, there are a relatively low amount of significant environmental effects, all of which are limited to a small number of landscape effects once the outlined mitigation has been applied. This conclusion remains valid for the Proposed Variations.

There would be a significant number of positive effects from the scheme in terms of provision of clean energy (enough to power 60,000 homes) and associated saving in greenhouse gas emissions, creation of jobs, improvement of habitats within the site, reinstatement of large areas of degraded peat and creation of a heritage access and interpretation plan.

Residents of Yell would also stand to benefit from the Community Benefit Fund which would provide a minimum of £250,000 a year to assist in delivery of community projects and initiatives.

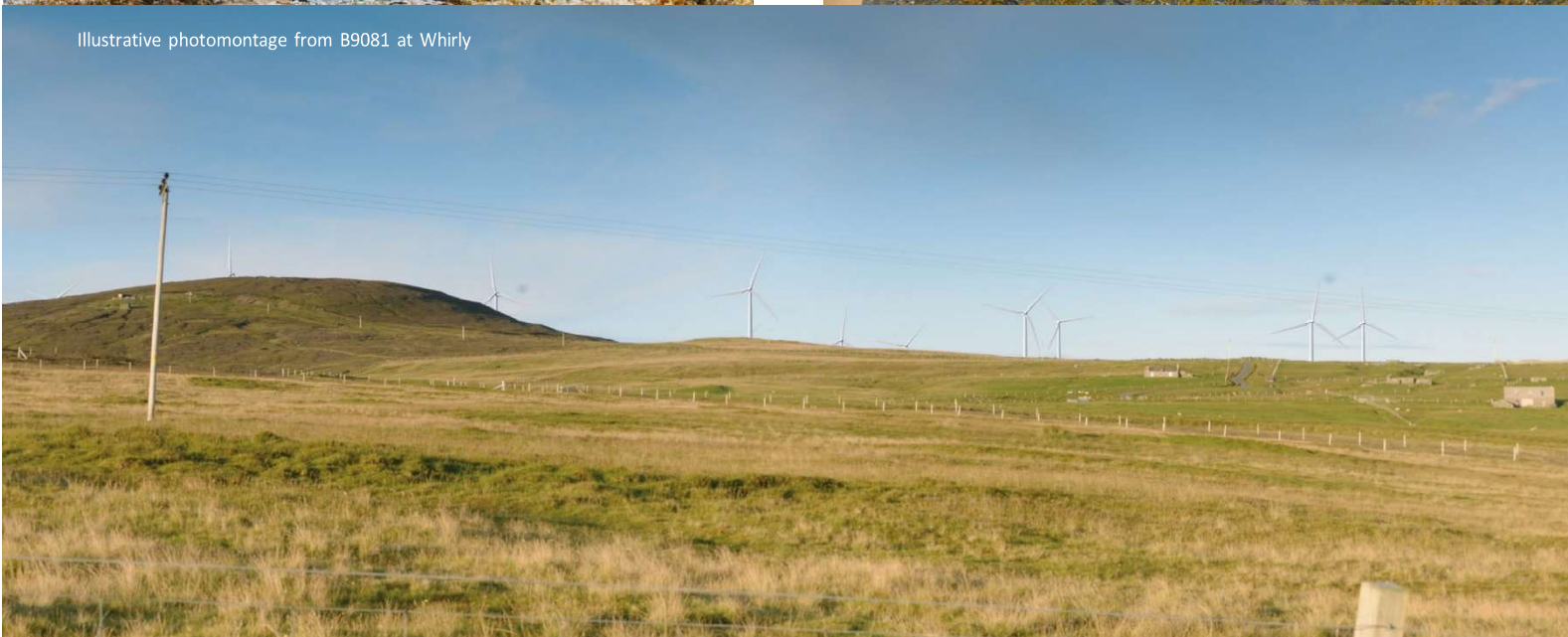
Golden Plover



Dunlin



Illustrative photomontage from B9081 at Whirly





# Glossary

## Cumulative Effect

The increase in quantity and / or severity caused by successive additions.

## Eco-system

A biological community of interacting organisms and their physical environment.

## EIAR

Environmental Impact Assessment Report.

## Lochan

A small loch.

## Megawatt

A unit of power equivalent to one million watts, typically used as a measure of the output of a power station.

## Principal Contractor

A civil engineering company that will be given overall responsibility for the construction of all elements of the wind farm, save for the erection of the wind turbines themselves.

## Consented Development

The onshore wind turbine generating station on land shown edged in red on Figure 1 comprising up to 17 wind turbines with a total combined generating capacity of in excess of 50MW and ancillary components comprising: wind turbine transformers and housings; access tracks; crane pads; turbine foundations; anemometry mast; radio communications tower; sub-station and control building and; appropriate cabling and ducting.

## Proposed Variations

Extending the implementation date of the permission for the Consented Development and to extend the operational life of the wind farm from 25 to 40 years.

## Renewable Energy

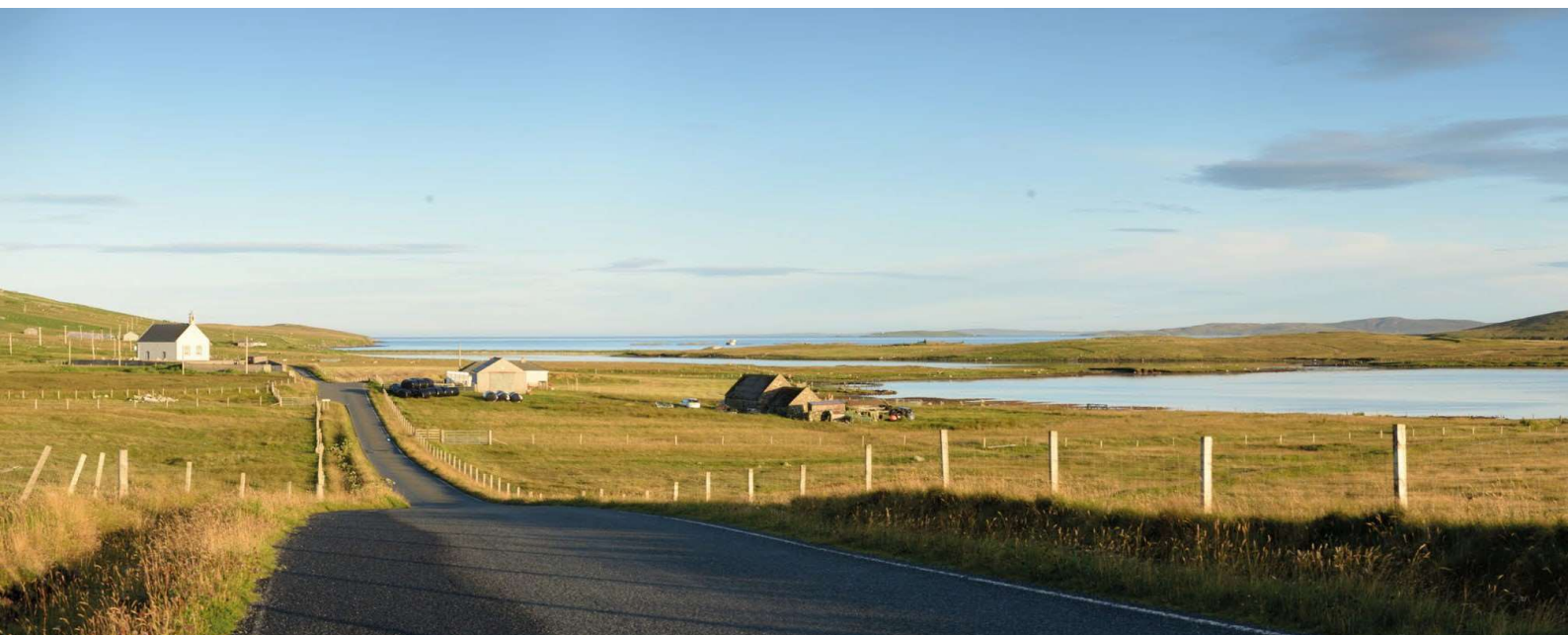
Energy from a source that is naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat.

## Residual Effect

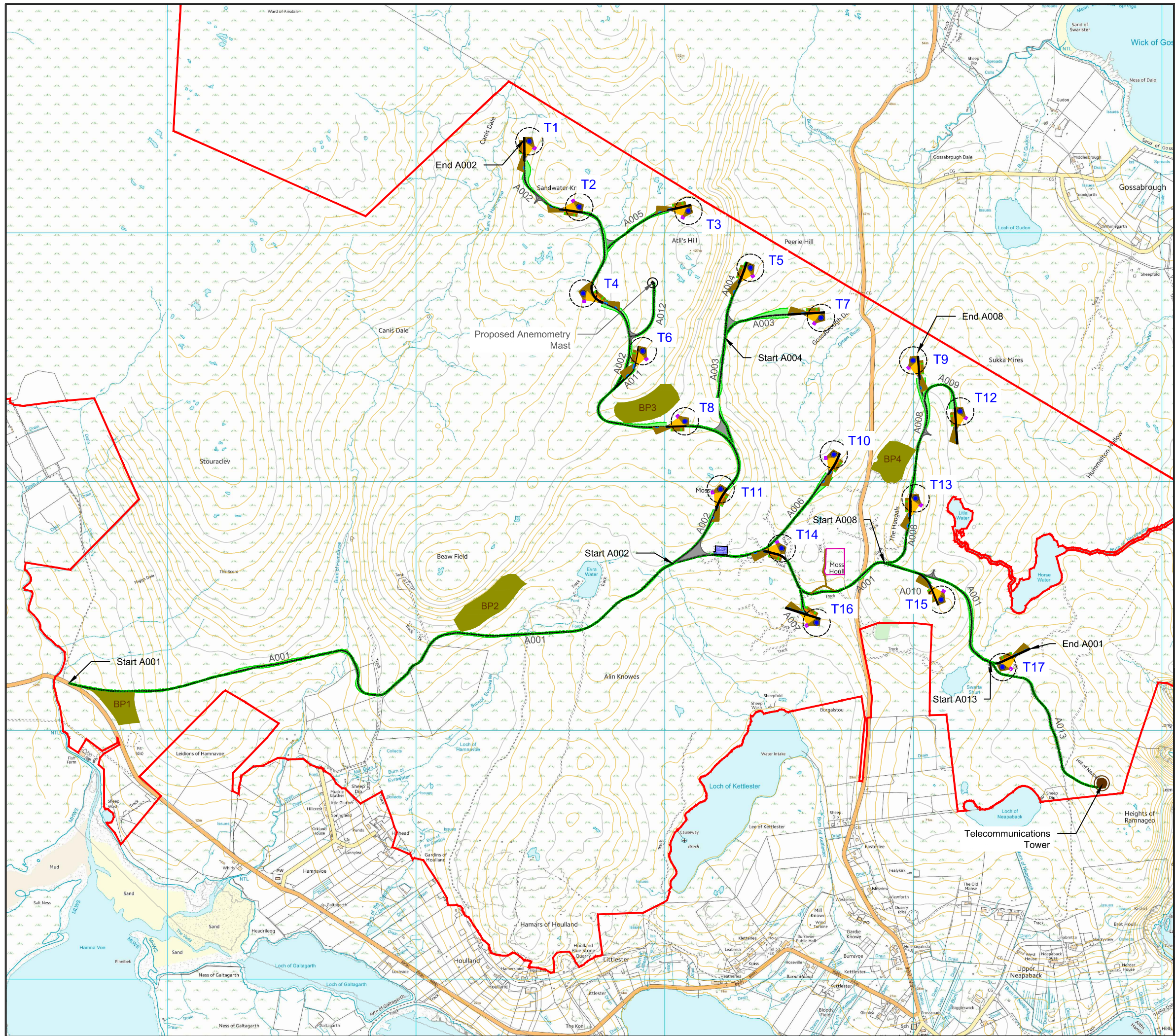
What is remaining after all mitigation has been carried out.

## Statutory Environmental Body

A body (organisation/agency) set up by the government to consider evidence and make judgements in some field of activity.







**Key**

- Application Boundary
- Location of Turbines T1 to T17 and 104m Wind Turbine Rotor Diameter
- Borrow Pits
- Hardstanding and Area Clear of Obstruction for Crane Operation
- Compound during Construction
- Substation
- Proposed access track (with earthworks)
- Existing Tracks to be Updated for Compound Access
- Anemometry Mast
- Telecommunications Tower
- Existing minor contour (5m)
- Existing major contour (25m)

**Notes:**

All existing contour data is based on 5m LIDAR data.

All site design has been in accordance with site design criteria specification by Siemens, Vestas, Nordex, Servion.

Substation design and final sizes of perimeter fence are to be confirmed.

All borrow pits are subject to further design, the sizes shown on this drawing are for planning purposes only.

**Beaw Field Wind Farm**

**TITLE:**

Site Layout

Figure 3.1

**Scale:** 1:15,000 @ A3 **Date:** 28/01/2016

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