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Energy Isles Wind Farm

Supplementary Environmental Information

Non-Technical Summary

August 2020



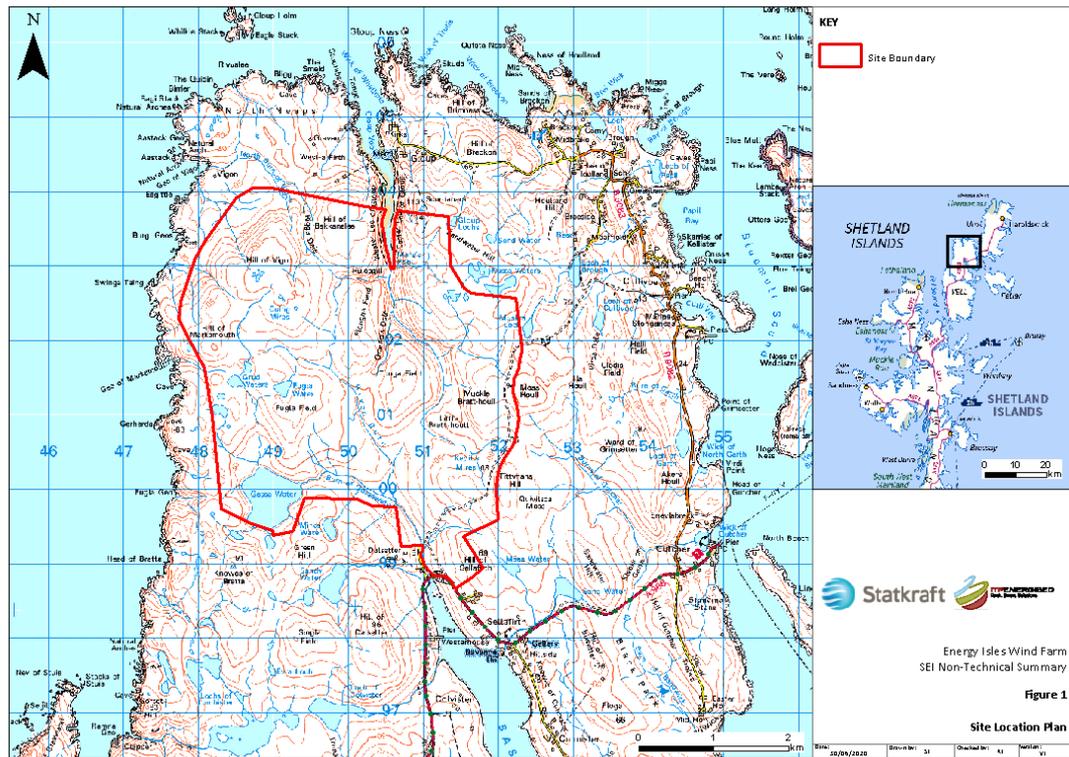
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1 Background

- 1.1 This document is a Non-Technical Summary of the Energy Isles Wind Farm Supplementary Environmental Information (2020 SEI) which provides further information in support of the application by Energy Isles Shetland Limited (the Applicant), proposing the development of a wind farm (the Proposed Development) in Yell, in the Shetland Islands (refer to Figure 1).
- 1.2 The Applicant submitted an application for Section 36 consent under the Electricity Act 1989 for the proposed Energy Isles Wind Farm (hereafter referred to as the ‘Proposed Development’) to the Scottish Ministers via the Scottish Government’s Energy Consents Unit (ECU), in April 2019.



2 Purpose of the Supplementary Environmental Information

- 2.1 This Supplementary Environmental Information supplements the information provided in the 2019 Environmental Impact Assessment (EIA) Report and has been produced for the purpose of assessing the changes to the Proposed Development following the consultation process on the 2019 EIA Report.
- 2.2 The 2020 SEI is not a standalone document. It does not replicate information previously provided within the 2019 EIA Report and therefore should be read in conjunction with the 2019 EIA Report.

3 Availability of the Proposed Development SEI

- 3.1 Copies of the 2020 SEI are available from:
EnergyIsles@statkraft.com
- 3.2 Electronic copies of the 2020 SEI can be accessed at <http://www.energyconsents.scot/> or at <https://www.energyisles.co.uk/> as required by the Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020.
- 3.3 Hard copies of the Non-Technical Summary (NTS) are available free of charge from the Applicant and a hard copy of the 2020 SEI for £800.00 (taking into account printing and distribution costs). In addition, all documents are available (as a PDF for screen viewing only) on a USB for £20.00.
- 3.4 Due to COVID-19 Pandemic and in-line with The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 (Scottish Government, 2020) no physical copies are available for public viewing at the point of submission. However, should this change during the consultation period then public copies will be made available at the following locations:

Cullivoe Village Hall	Lerwick Town Hall
Cullivoe	Hillhead
Yell	Lerwick
Shetland Islands	Shetland Islands
ZE2 9DD	ZE1 0JL

4 2020 SEI Representations to the Application

- 4.1 Any representations to the application should be made directly to the case officer at the Scottish Government Energy Consents Unit via the following:

Energy Consents Unit	email: representations@gov.scot
Scottish Government	online: www.energyconsents.scot
5 Atlantic Quay	
150 Broomielaw	
Glasgow	
G2 8LU	

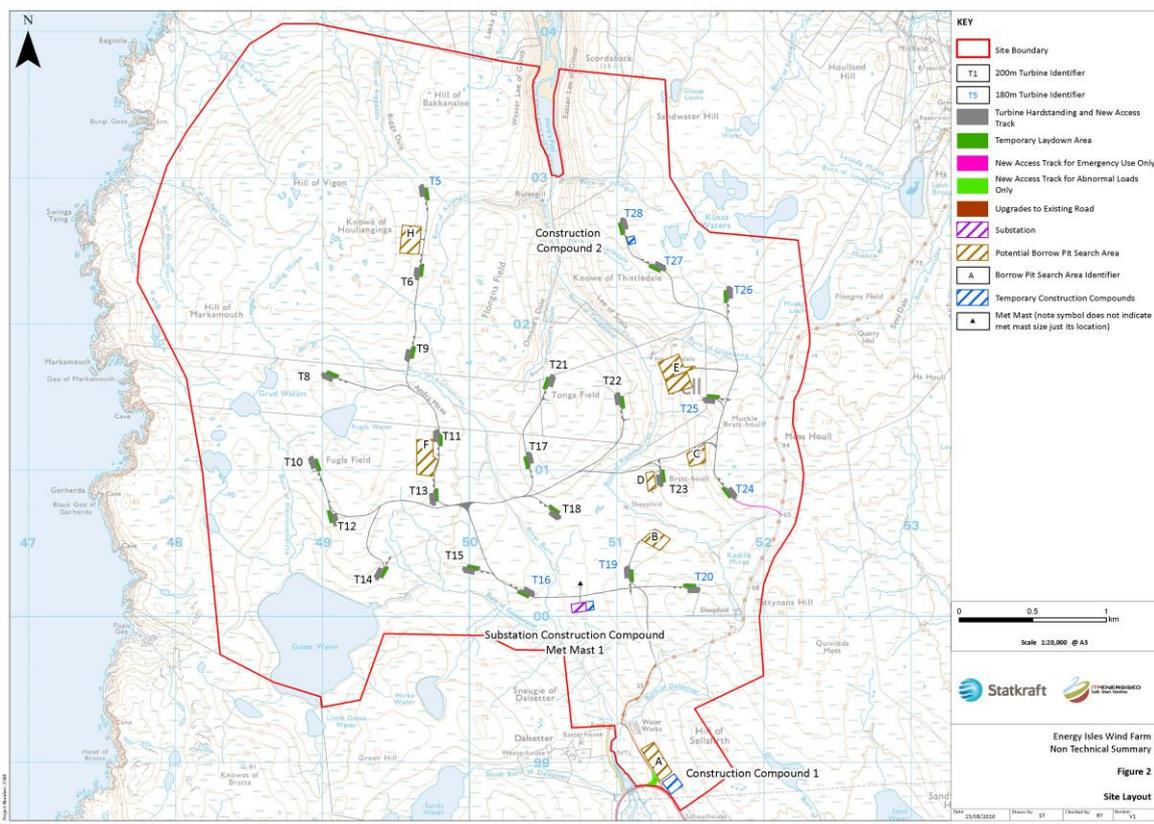
5 Description of the Development

The Proposed Development

- 5.1 The Proposed Development will now comprises 23 wind turbines, nine of which will be up to 180 m height from ground to blade tip when vertical, and 14 will be up to 200 m to tip (refer to Table 1 below). The total power output of the Proposed Development is estimated to be approximately 160 MW but will be no greater than 200 MW.
- 5.2 A number of ancillary elements are also proposed, including three temporary construction compounds, permanent hardstandings adjacent to the wind turbines, external transformers, internal access tracks including a junction off of the existing road network, a network of underground cables between turbines, an on-site substation and maintenance building, a permanent meteorological monitoring mast and, seven potential borrow pit search areas. The proposed site layout is shown in Figure 2.

KEY FACTS:

Number of Turbines	23
Turbine Tip Height	Up to 180 m or 200 m
Lifespan	30 years
Location	North Yell
Energy Generation	Approx. 160 MW



- 5.3 The design process that has led to this final layout and how this differs from the layout presented in the 2019 EIA Report are described in Chapter 3 of the 2020 SEI and is summarised in the table below.

Table 1 – Changes between 2019 Layout and 2020 Layout

Infrastructure	2019 Layout	2020 Layout
Number of turbines	29	23
Maximum height of turbines	29 turbines 200 m to tip	Nine turbines 180 m to tip and 14 turbines 200 m to tip
Number of borrow pit search areas	Nine	Seven
Number of meteorological masts	One	One
Number of construction compounds	Four (including substation construction compound)	Three (including substation construction compound)
Length of new permanent floated access track	18.35 km	12.5 km
Length of new permanent dug access track	1.75 km	990 m
Length of new temporary floated access track	980 m	720 m
Length of upgraded existing track	1.05 km	1.05 km

- 5.4 The total installed capacity of the Proposed Development based on the 2020 Layout would be approximately 160 MW, but no greater than 200 MW. Based on the capacity factors of other wind farms on Shetland and supported by independent analysis, the annual indicative energy output for the site is expected to be approximately 714,816 MWh/p.a., indicating that the Proposed Development would generate enough electricity to power over 197,572 average Scottish households (based on Department of Business, Energy and Industrial Strategy (BEIS) UK average domestic household consumption at 3,618 kWh/p.a. (BEIS, 2019)) (refer to Chapter 1 of the SEI Report). The Proposed Development is anticipated to save 180,000 tonnes of carbon emissions annually (refer to Chapter 16 of the SEI Report for further details).

6 Consultation

- 6.1 Consultation with statutory and non-statutory consultees, interested parties and the general public has been a critical component of the process during the development of the proposals and following submission of the 2019 EIA Report. Consultee responses received as part of the statutory consultation process following the submission of the 2019 EIA Report have been reviewed and, where necessary, addressed within the 2020 SEI. Full details of this can be found in Chapter 2 of the 2020 SEI.

Public Consultation

- 6.2 The Applicant also held a public information day at Cullivoe on February 4th 2020 to update the local communities on the progress made since the EIA application submission and to allow communities the opportunity to provide feedback to the project team. Details of this and other public engagement can be found in the separate Consultation Report.
- 6.3 Sixty-one responses were received following these events and these were taken into consideration during the design process.

7 Environmental Impact Assessment (EIA)

- 7.1 The EIA considers the effects of the Proposed Development during construction, operation and decommissioning on the following topics:
- ▶ landscape and visual (effects to the character of the landscape and views from agreed locations);
 - ▶ ornithology (the effects to birds and protected bird habitats);
 - ▶ ecology (the effects to protected habitats, flora and fauna, excluding birds);
 - ▶ noise and vibration (effects to local properties from noise and vibration caused by the Proposed Development);
 - ▶ cultural heritage (effects to the integrity and setting of historic sites);
 - ▶ hydrology, hydrogeology and geology (the effects to surface water, ground water, rocks and soils);
 - ▶ traffic and transport (effects from traffic travelling to, and from, the Proposed Development);
 - ▶ socio-economics, tourism and recreation (effects to the local and national economy, local tourism businesses, recreation facilities, and the change in use of the land at the site of the Proposed Development);
 - ▶ aviation and radar (effects to civil and military aviation facilities and air space);
 - ▶ shadow flicker (effects caused by the passing of the turbine blades in front of the sun);
 - ▶ telecommunications (effects to telecommunications facilities); and
 - ▶ carbon calculator (the whole life carbon balance of the Proposed Development).
- 7.2 The 2020 SEI provides an assessment of the potential significant environmental effects of the amended infrastructure design (the 2020 Layout). The temporal and technical scope of the 2020 SEI and the assessment methodology are the same as reported in the 2019 EIA Report.
- 7.3 Large sections of the 2019 EIA Report remain valid and are therefore unchanged for the 2020 SEI. Where this is the case, this information has not been replicated in the 2020 SEI, but cross-references to the 2019 EIA report are provided. This 2020 SEI should therefore be read in conjunction with the 2019 EIA Report.
- 7.4 The revised and comprehensive Schedule of Environmental Commitments and Summary of Residual Effects for the 2020 SEI are presented in Chapters 17 and 18 and supersede Chapters 17 and 18 of the 2019 EIA Report.

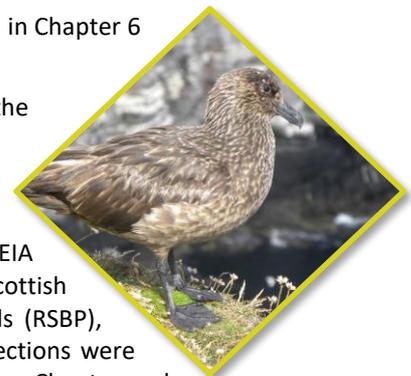
Landscape and Visual

- 7.5 The full assessment of effects on landscape and visual receptors is provided in Chapter 5 of the 2019 EIA Report and updated in Chapter 5 of the 2020 SEI.
- 7.6 The updated Landscape and Visual Impact Assessment (LVIA) has been prepared to provide an understanding of the reduced effects of the revised proposals.
- 7.7 Following on from Scottish Natural Heritage's (SNH's) consultation response to the Energy Consents Unit (ECU) of 15th July 2019, a reduction in both number of turbines and the height of some turbines is proposed. SNH's main concerns related to the views of the wind farm from the Shetland National Scenic Area (NSA).
- 7.8 In summary the reduction in the number of turbines resulting from the removal of turbines T1, T2, T3, T4, T7 and T29 and associated access track, together with the reduction in turbine tip height from 200 metres to 180 metres for turbines T5, T16, T19, T20, T24, T25, T26, T27 and T28 reduces the influence of the Proposed Development on sub units of the Shetland NSA at North Roe and Unst. The proposed reduction also simplifies the design of the Proposed Development in relation to the underlying landform, removing turbines from the flat coastal headland on Yell, and improves the relationship with the adjacent settlement pattern.
- 7.9 The revision to the Proposed Development, most notably removing Turbines 1 to 5 and 7, takes development away from the lower lying headland area of Yell, thereby setting the influence of development back from the sensitive coastlines and away from the focus of coastal views. This reduction of the Proposed Development also positions the development within the moorland interior of Yell, associating the development more clearly with a single component of the landscape. The removal of Turbine 29 and the reduction in the heights of Turbines 5, and 24 to 28 further assists in relating the profile of the turbines to the flow of the underlying terrain. Moreover, the reduction in the heights of turbines 16, 19 and 20 on the southern edge of the development assists in reducing the variation in scale with the adjacent settlement pattern, around the head of Basta Voe.
- 7.10 Following the change in design of the Proposed Development, a re-assessment of the residual effects upon the receptors identified in the 2019 EIA Report, has been undertaken. This assessment assumes that all mitigation, detailed within the 2019 EIA Report, is still secured.
- 7.11 The turbines will need to be lit at night for aviation safety and a visual assessment of night-time lighting has been undertaken within the 2019 EIA Report. The 2020 SEI recommends four options to reduce the extent of turbine lighting:
1. By reducing the number of obstruction lights,
 2. The inbuilt beam focusing of Air Navigation Order compliant lighting,
 3. Controlled attenuation in good visibility.
 4. Radar controlled lighting.
- 7.12 However the 2020 SEI continues to assume a reasonable worst case scenario and assess that the effects of lighting on night time views would be still be significant, as concluded in the 2019 EIA Report. However, it is very likely that not all turbines will be lit and the significance would be reduced.
- 7.13 The impact of the Proposed Development on Residential Visual Amenity has also been updated within the 2020 SEI, based on the amendments to the Proposed Development. When considering the changes in visual amenity from these properties, it is noted that the principally occupied rooms are orientated away from the Proposed Development. In this regard the experience of the turbines would not be overwhelming such that the properties would become unattractive places in which to live. Whilst some of the properties will experience significant visual effects, the Residential Visual Amenity Assessment threshold will not be reached. The revised assessment concludes that at none

- of the properties assessed will residents experience impacts on the visual component of residential amenity or living conditions.
- 7.14 From a visual perspective, the revised assessment considers effects upon residents at settlements, users of roads, ferries and recreational routes, which include locals and tourists. A revised residential visual amenity assessment is also included.
- 7.15 The assessment of cumulative effects has also been reviewed, but the impacts remain unchanged from the 2019 EIA Report. Some cumulative interactions will occur, with Garth Wind Farm and the Proposed Development appearing as separate, contrasting wind farms.
- 7.16 Whilst it is always necessary to take account and to balance the wide range of technical and environmental requirements, it is also a requirement to seek to optimise the layout design and choice of turbine from a landscape and visual perspective, in order to achieve mitigation which is embedded into the project design. Following on from the Public Information Days and feedback from consultees, including SNH, the Proposed Development layout was reviewed and amended to take account of concerns.
- 7.17 Significant landscape and visual effects are to be expected for any commercial scale wind farm, and this is no exception. A number of significant effects are predicted including significant landscape effects on the landscape character of the site and its surroundings, visual effects on residents at settlements and tourists including recreational walkers. The removal of six turbines and associated infrastructure, marks a 20% reduction in the number of turbines. These changes to the layout have reduced the magnitude of change for the majority of receptors, with a removal of significant effects in some instances. In particular the magnitude of change will be reduced for some landscape and visual receptors to the north and west of the Proposed Development. However, these changes, whilst removing significant effects for many landscape and visual receptors are insufficient to alter the overall assessment ratings for some assessment sub units and some significant effects will remain. As an example, whilst significant effects will be removed from large areas of the Gloup Voe-Breckon Coastal Character Area and Whalefirth Coastal Character Area there will remain small areas within those Coastal Character Areas where there will be locally significant effects.

Ornithology

- 7.18 The full assessment of effects on ornithology (bird life) is provided in Chapter 6 of the EIA Report and updated within Chapter 6 of the 2020 SEI.
- 7.19 The 2020 SEI chapter has examined the difference between the impact of the 2020 layout on ornithology compared with the 2019 layout and provides an update on the ornithological consultation since the publication of the 2019 EIA report.
- 7.20 The 2020 SEI chapter provides responses to objections to the 2019 EIA report on ornithological grounds. These were received from Scottish Natural Heritage (SNH), Royal Society for the Protection of Birds (RSPB), Shetland Bird Club (SBC) and Shetland Amenity Trust (SAT). Objections were made in relation to technical elements of the 2019 EIA ornithology Chapter and the responses to each of these are presented in the 2020 SEI.
- 7.21 Clarification and amendments to the collision risk analysis have been made in response to consultee objections and amendments to the Proposed Development design.
- 7.22 Following the change in design of the Proposed Development a re-assessment of the residual effects of the Proposed Development upon the receptors identified in the 2020 SEI has been undertaken. This assessment assumes that all mitigation detailed within the 2019 EIA Report is still secured. In addition, the 2020 SEI identified disturbance and displacement effects to a number of key bird species during construction and operation of the wind farm and updated the collision-related mortality predictions made in the 2019 EIA Report.



- 7.23 Construction phase effects will be minimised through the timing of the work and the use of buffer zones. Pre-development surveys and the adoption of habitat management measures will ensure that death or injury of any bird is not likely.
- 7.24 Any displaced territories will be accommodated through habitat enhancement to create more favourable nesting habitat. It is expected that displacement effects can be fully mitigated through habitat enhancement.
- 7.25 Collision-related mortality is predicted to be low for all species and of a magnitude where it is expected that there will be no discernible population-level effect above natural mortality levels.
- 7.26 Additional mitigation measures have been identified in the 2020 SEI in relation to ground-nesting birds, species-specific measures and post-construction management of breeding birds.
- 7.27 The 2020 SEI details the comparison of residual effects between the 2019 and 2020 Layout for both the construction and operational phases of the Proposed Development. The differences presented reflect a combination of the reduced development size, adjustment to the population estimates used as a basis for the assessment, and amendments to the collision risk analysis.
- 7.28 The extent of predicted disturbance and displacement impacts on most species during construction and operation of the Proposed Development has reduced for the 2020 Layout. For great skua, predicted impacts have increased due to consideration of a lower tolerance to disturbance than assumed in the 2019 EIA Report. However, even if the lower disturbance threshold is assumed for this species, the significance of disturbance effects remains low, and predicted residual effects unchanged from the 2019 EIA Report.
- 7.29 Changes made to the collision risk analysis through reduction of the Proposed Development, and amendments to the application of the model as suggested by stakeholders, has resulted in minor differences in the number of predicted collisions. The significance of collision risk effects is considered to be negligible for all species. Cumulative impacts remain negligible.

Ecology and Nature Conservation

- 7.30 The full assessment of effects on ecology and nature conservation is provided in Chapter 7 of the 2019 EIA Report and updated within Chapter 7 of the 2020 SEI.
- 7.31 The Proposed Development site is upland in character, waterlogged and dominated by blanket bog and other mire types, with some areas of grassland in the more sheltered valleys and on better-drained slopes. With the change in layout from the 2019 EIA Report, an updated impact assessment has been carried out for valuable acid grassland and blanket bog habitats. The 2019 assessment remains valid for all other non-avian (bird habitat and species) important ecological features.
- 7.32 The 2020 SEI chapter provides responses to objections to the 2019 EIA Report made in relation to ecology and nature conservation. These were received from Scottish Environment Protection Agency (SEPA), SNH, Royal Society for the Protection of Birds (RSPB), Marine Scotland Science, Shetland Amenity Trust (SAT), Scottish Forestry and other stakeholders. Objections were made in relation to several technical elements of the 2019 EIA ecology and nature conservation Chapter and the responses to each of these are presented in the 2020 SEI.
- 7.33 The standard mitigations measures outlined in Chapter 7 of the 2019 EIA Report remain valid and have been developed further within the 2020 SEI. This includes the development of an Operational Site Management Plan (OSMP).
- 7.34 The 2020 Layout represents a reduction in the number of turbines, borrow pits and construction compounds, notably in blanket bog in the vicinity of summit pool complexes in the north and north-west of the site.



- 7.35 Following the change in design of the Proposed Development a re-assessment has been undertaken of the residual effects of the Proposed Development upon ecological features.
- 7.36 The changed layout has caused a reduction on the permanent loss of blanket bog from a predicted loss of 30.61 ha to 23.4 ha under the 2020 Layout. Temporary impacts have been reduced from a predicted loss of 23.2 ha under the 2019 Layout to 18ha under the 2020 Layout. Despite these significant reductions, the loss of blanket remains a significant effect.
- 7.37 An updated Outline Habitat Management Plan for restoration of blanket bog off-site has therefore included in the 2020 SEI that provides greater assurance on degraded blanket bog habitat being made available to compensate for these impacts. Overall, a net amount of c70ha blanket bog will be restored.
- 7.38 Residual effects remain similar to those outlined in the 2019 EIA Report. These have assessed as being negligible and not significant with the exception of effects to the valuable peatland habitats, assessed as a significant long term low adverse effect. No cumulative impacts are anticipated in combination with the other wind farms in the isles.

Noise

- 7.39 The full assessment of noise and vibration effects is provided in Chapter 8 of the 2019 EIA Report and updated within Chapter 8 of the 2020 SEI.
- 7.40 This assessment considered the potential noise effects associated with construction and operation phases of the Proposed Development. No potential vibration effects were identified and therefore consideration of vibration was scoped out of the 2019 EIA Report.
- 7.41 The assessment has included an update to predictions of operational wind noise; all other aspects have been assumed to be the same as those considered in the 2019 EIA Report. Additional consultation has been undertaken with Shetland Islands Council with regard to a change to the method of consideration of cumulative noise effects.
- 7.42 The 2020 Layout comprises less infrastructure than the 2019 Layout; there are fewer turbines, borrow pits, construction compounds and a smaller distance of access track. As such, construction noise effects will be lesser than those evaluated in the 2019 EIA Report.
- 7.43 No updated predictions of construction noise have therefore been undertaken; the predicted levels considered in the 2019 EIA Report have been assumed to be representative of 'worst-case' levels for the 2020 Layout. Predicted construction-phase effects are therefore the same as those reported in the 2019 EIA Report.
- 7.44 Similarly, fixed non-turbine plant (i.e. substations and transformers) remain unchanged from the 2019 Layout, and therefore no updated assessment of such plant has been undertaken. Predicted operational phase effects are therefore the same as those reported in the 2019 EIA Report.
- 7.45 This assessment has determined that operational noise from wind turbines associated with the 2020 Layout will be not significant, both during operation in isolation and cumulatively.

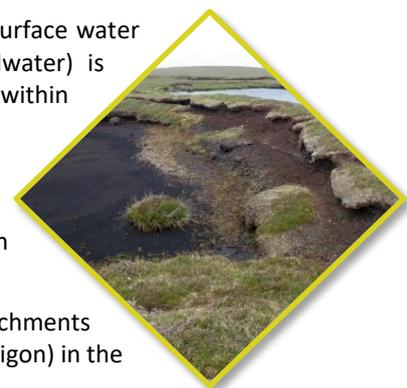
Cultural Heritage

- 7.46 The full assessment of effects on cultural heritage and archaeology is provided in Chapter 9 of the 2019 EIA Report and updated within Chapter 9 of the 2020 SEI.
- 7.47 The cultural heritage assessment identified the archaeological and cultural heritage value of the site and assessed the potential for direct and indirect effects on archaeological features and heritage assets resulting from the construction, operation and decommissioning of the Proposed Development. The assessment identifies measures that should be taken to mitigate predicted adverse effects.

- 7.48 The 2020 SEI Chapter presents the reassessment of indirect effects on Burgi Geos fort in respect of the 2020 Layout and also in light of Historic Environment Scotland's (HES) comments dated August 2019. This assessment also takes into account comments from the Regional Archaeologist received in May 2019.
- 7.49 HES objected to the 2019 Layout on the grounds that the Proposed Development would have a significant adverse impact on the integrity of the setting of Burgi Geos, promontory fort (scheduled monument Index No. 11274).
- 7.50 The HES assessment of the setting of the Burgi Geos fort and the impacts upon it largely agreed with the assessment presented within the 2019 EIA Report which identified a moderate and significant effect on the setting of Burgi Geos Fort. The principal area of objection lay with whether or not the visibility of the 2019 Layout, specifically T1, T2 and T3, would affect the ability to appreciate the fort's relationship with the surrounding land and seascape and thus affect the integrity of the setting.
- 7.51 The 2020 Layout removes T1, T2, T3 and T7 and also T29. All access tracks and borrow pits associated with these turbines have also be removed. This mitigates the impact on Burgi Geos fort.
- 7.52 Concerns raised by the Shetland Regional Archaeologist regarding the Cultural Heritage assessment presented in the 2019 EIA report have been considered and amendments made to the working of the assessment in the 2020 SEI report.
- 7.53 Following the change in design of the Proposed Development a re-assessment of the residual effects of the Proposed Development upon the receptors identified in the 2019 EIA Report has been undertaken. This assessment assumes that all mitigation detailed within the 2019 EIA Report is still secured. There would be no change in the level of cumulative effect identified as a consequence of the 2020 Layout.
- 7.54 The removal of T1, T2, T3, T4, T7 and T29 and the reduction in height of T5, T16, T19, T20, T24, T25, T26, T27 and T28 for the 2020 Layout results in a reduction in total numbers and proportions of turbines visible from heritage assets across the 10km study area.
- 7.55 The removal of turbines in the west of the site reduces the impact on the setting of the Burgi Geos to the extent that it would no longer be considered significant in EIA terms. The layout changes also result in effects on the Scheduled Monument known as Tur Ness, prehistoric houses and Norse settlement being reduced from Marginal to None. All other predicted effects remain at the same level as reported in the 2019 EIA Report.

Geology, Peat, Hydrology and Hydrogeology

- 7.56 The full assessment of effects on geology, peat, hydrology (surface water bodies, drainage and flooding) and hydrogeology (groundwater) is provided in Chapter 10 of the 2019 EIA Report and updated within Chapter 10 of the 2020 SEI.
- 7.57 The 2020 SEI chapter presents the responses to points raised by consultees following the submission of the 2019 EIA Report, and assesses the effects of the 2020 Layout on geological, hydrogeological and hydrological receptors.
- 7.58 The 2020 Layout removes any potential impacts to the catchments (Burn of Midge Glen, South Burn of Vigon and North Burn of Vigon) in the north-west of the site.
- 7.59 The 2020 Layout reduces the scale of some of the potential adverse effects, however the the potential significant adverse effects on hydrology, hydrogeology and geology remain the same as outlined with the 2019 EIA report with the exception of the diversion of watercourses that is



reduced from moderate to minor significance (and non-significant) as the requirement for a main watercourse (shown on 1:50,000 scale mapping) diversion has been removed.

- 7.60 The changes in the infrastructure in relation to the hydrology, hydrogeology and geology are summarised below:
- ▶ Reduction in the overall footprint of the development.
 - ▶ No infrastructure is located within the Burn of Midge Glen, South Burn of Vigon and North Burn of Vigon in the north-west of the site. Therefore, there will be no impacts to these catchments or potential GWDTEs within these catchments.
 - ▶ The number of turbines with the Gossa Water catchment (Scottish Water public drinking water supply source) has reduced from 3 to 2 with the removal of Turbine 7 and a reduction in the area of infrastructure within the Gossa Water catchment.

- 7.61 As the 2020 Layout is a reduction of the 2019 Layout, no additional mitigation to that previously proposed in the 2019 EIA Report is required. The 2020 Layout has reduced the total volume of peat which will be excavated from approximately 394,200m³ to 326,959m³.

Traffic and Transport

- 7.62 The full assessment of effects on traffic and transport is provided in Chapter 11 of the 2019 EIA Report and updated within Chapter 11 of the 2020 SEI.
- 7.63 The 2020 SEI chapter presents the changes in transport and access impacts that area associated with the proposed 2020 Layout and can be compared against those presented against the 2019 Layout. In addition, the size of turbine foundations has been revised in the concrete estimates to better reflect the ground conditions associated with the site.
- 7.64 Consultation responses received from Shetland Island Council's Roads Department and Harbour Master have been addressed within the 2020 SEI.
- 7.65 The 2020 Layout results in fewer construction journeys on the study network, with a reduction of 39 Cars & LGV journeys. HGV journeys are predicted to rise by 1 journey during the peak month. This is due to increased concrete required for turbine foundations compared to that included in the 2019 assessment. The impact of overall construction traffic on the A968 at Ulsta reduces by 5.65%, whilst a reduction of 8% is predicted at the site access junction. There is no change to the significance of effects between the 2019 Layout and the 2020 Layout.
- 7.66 No additional traffic mitigation measures are proposed and the Applicant has advised that they are willing to accept suitably worded planning conditions to satisfy the queries raised to date by stakeholders.

Socio-economic, Recreation and Tourism

- 7.67 The full assessment of socio-economic effects, and effects on recreation and tourism is provided in Chapter 12 of the 2019 EIA Report and updated in Chapter 12 of the 2020 SEI.
- 7.68 The renewables industry is an important economic asset to the UK and Scotland, and supports a substantial and growing number of employment opportunities. Although not significant in terms of the EIA regulations, the Proposed Development will further contribute to the positive economic effect of renewable energy, and associated skills base within the UK and Scotland.
- 7.69 Due to the reduction in scale of the Proposed Development, the beneficial socio-economic impacts associated with construction and operation has marginally decreased. However, the effect on the Shetland and Scottish economies has not changed.
- 7.70 The Proposed Development is expected to generate a moderate beneficial effect on the economy in the local area (Northern Isles), Shetland and in the wider Scottish economy during construction,

operational and decommissioning. This is due to the contracts that could be secured in these areas by businesses, the jobs supported by these contracts and the additional spend of money by contractors in the local and regional areas.

7.71 Based on an installed capacity of 160 MW, the updated assessment of the Proposed Development's economic impact presented in the 2020 SEI found that:

- ▶ during the development and construction phase it would generate up to
 - £20.3 million and 178 job years of employment in Shetland, and
 - £70.2 million and 635 job years in Scotland (including Shetland).
- ▶ during each year of the operational phase it would generate up to:
 - £0.5 million and 4 jobs in Shetland, and
 - £1.2 mil and 9 jobs in Scotland

7.72 The Proposed Development would also contribute non-domestic rates estimated at £2.2 million per year, or £66.8 million over the lifetime of the Proposed Development, supporting the delivery of public services.

7.73 The Proposed Development is expected to bring wider benefits to Yell, Unst and Fetlar, including community benefit fund of up to £0.8 million annually, and £24.0 million over the lifetime of the development. This could:

- ▶ support initiatives aimed at reducing fuel poverty, which affects households in Shetland at a much higher rate than Scotland as a whole;
- ▶ increase the local area's attractiveness to tourists through the development of visitor attractions and accommodation, a new strategy and better marketing; and
- ▶ support existing community councils and voluntary organisations that have seen their budgets cut, as well as new initiatives that could support entrepreneurship and business growth on the islands.

7.74 The Applicant remains committed to maximising the local economic impacts of the proposed development through partnerships with Shetland College, engaging with local suppliers and working with other renewable energy developments.

7.75 In addition, the Applicant is committing to offering the local community the opportunity to invest in the Proposed Development through Shared Ownership. This investment opportunity has been discussed with the Energy Isles Community Liaison Group (CLG), and a Memorandum of Understanding has been sent to the local community trusts. The Applicant has been working closely with Local Energy Scotland throughout the process.

7.76 For a number of effects, such as those on tourism and recreation, and land use, there is no change to the level of effects as a result of the 2020 Layout compared to those assessed in the 2019 EIA report.

Aviation and Radar

7.77 The full assessment of effects on aviation and radar is provided in Chapter 13 of the 2019 EIA Report and updated in Chapter 13 of the 2020 SEI.

7.78 The 2020 SEI chapter has examined the difference between the impact of the 2020 Layout on aviation and radar compared with the 2019 Layout and provides an update on aviation consultation since the publication of the 2019 EIA Report. In summary the changes do not result in any significant change to the overall impact on aviation and radar.

- 7.79 SERCO were instructed by the Applicant to undertake an assessment on potential mitigation measures for the performance of the TPS-77 air defence radar at Saxa Vord. The assessment demonstrates that it is feasible to establish a mitigation measure which would enable the MOD's coverage requirements (the Aviation Specification) to be met. Provided the MOD agree with the findings of the SERCO report it will be possible to agree a suitably worded condition to protect the interests of the MOD
- 7.80 Scatsta Airport has now closed and Tingwall Airport and National Air Traffic Services (NATS) have confirmed that there will be no impact on their operations from the Proposed Development.

Shadow Flicker

- 7.81 The full assessment of shadow flicker effects is provided in Chapter 14 of the 2019 EIA Report and updated in Chapter 14 of the 2020 SEI.
- 7.82 Shadow flicker is the effect of the sun passing behind the moving rotors of turbines casting a flickering shadow through the windows and doors of neighbouring properties. This occurs in certain combinations of geographical position, time of day, time of year and specific weather conditions. No impact can occur from this during the construction or decommissioning phases of the Proposed Development.
- 7.83 The study area within which properties could potentially be affected by shadow flicker extends 1,600 m from each turbine and covers a distance of 10 rotor diameters from each turbine and lies 130 degrees either side of north (relative to each turbine).
- 7.84 The 2019 EIA Report identified seven receptors with potential to experience flicker effects during operation of the turbines. Following the change in design of the Proposed Development a re-assessment of the residual effects of the Proposed Development upon the receptors identified in the 2019 EIA Report has been undertaken. This assessment assumes that all mitigation detailed within the 2019 EIA Report is still secured.
- 7.85 With the removal of the north-westerly most turbines from the 2019 Layout, the study area of the 2020 Layout now excludes the potential shadow flicker receptors identified within the 2019 EIA Report. As such, all seven previously identified receptors are now outwith the study area and there are no potential receptors within the study area
- 7.86 The removal of turbines from the north-westerly area of the site has removed the potential significant shadow flicker effects. There are now no potential significant effects and therefore no proposed mitigation measures necessary, but all mitigation detailed in the 2019 EIA Report will be secured.

Telecommunication

- 7.87 The full assessment of effects on telecommunications is provided in Chapter 15 of the 2019 EIA Report, and updated in Chapter 15 of the 2020 SEI.
- 7.88 Responses to the 2019 EIA Report relating to telecommunications were received from Joint Radio Company and British Telecom, who both confirmed they had no objection. No other responses were received from telecommunication or television consultees.
- 7.89 The 2019 Layout was not anticipated to have any effects on television and telecommunications infrastructure, and no mitigation measures were deemed necessary. The location of turbines within the 2020 Layout has not changed and have only been removed or reduced in height which is not anticipated to result in any change in effects.

Carbon and Climate Change

- 7.90 The full assessment of the whole life carbon balance of the Proposed Development is provided in Chapter 16 of the 2019 EIA Report and updated within Chapter 16 of the 2020 SEI.

- 7.91 The 2020 SEI assesses the effects of the 2020 Layout on the whole life carbon balance of the Proposed Development. With the removal of T1, T2, T3, T4, T7 and T29 and associated infrastructure from the 2019 Layout the input parameters for the assessment have changed and the Carbon Calculator assessment has been updated.
- 7.92 The results of the updated carbon calculator show that the Proposed Development is estimated to produce annual carbon savings in the region of 152,000 tonnes of CO₂e per year through the displacement of grid electricity, based on a counterfactual emission factor of 0.281 kgCO₂e/kWh. This is a slight decrease from the carbon savings in the region of 180,000 tonnes of CO₂e associated with the 2019 Proposed Development.
- 7.93 The most significant cumulative impact of the Proposed Development remains the long-term grid electricity carbon factor. As the renewable generation capacity increases, the overall carbon intensity of the National Grid will decrease; this grid decarbonisation is a key component of the Scottish Government's strategy to reduce overall emissions and meet the Climate Change (Scotland) Act 2009 targets.
- 7.94 The assessment of the carbon losses and gains from the 2020 Layout has estimated an overall loss of around 334,000 tonnes of CO₂e, mainly due to embodied losses from the manufacture of the turbines and provision of backup power to the grid, in comparison to the 311,000 tonnes of CO₂e predicted for the 2019 Layout. It should be noted that the increase in embodied carbon is due to an increase in the installed capacity of the wind farm; there are fewer turbines but each one produces a higher output.
- 7.95 The estimated payback time of the 2020 Layout, using the Scottish Government Carbon Calculator, is estimated at 1.9 years, with a minimum/maximum range of 1.4 to 2.3 years, compared against the estimated 1.7 years payback time for the 2019 Layout. There are no current guidelines about what payback time constitutes a significant impact but 1.9 years is only around 6 % of the anticipated lifespan of the Proposed Development. Compared to fossil fuel electricity generation projects, which also produce embodied emissions during the construction phase and significant emissions during operation due to combustion of fossil fuels, the Proposed Development has a very low carbon footprint and after 1.9 years, the electricity generated is estimated to be carbon neutral and will displace grid electricity generated from fossil fuel sources. The carbon intensity of the electricity produced by the Proposed Development is estimated at 0.016 kgCO₂e/kWh. This is within the range of the carbon intensity required by the Scottish Government to meet the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 target by 2045 and therefore the Proposed Development is evaluated to have an overall beneficial effect on climate change mitigation.

8 Conclusion

- 8.1 This Non-Technical Summary of the 2020 SEI provides an overview of the Supplementary Environmental Information provided to the 2019 EIA undertaken for the Proposed Development on Yell, in the Shetland Islands.
- 8.2 Within Chapter 17 of the 2020 SEI Report a schedule of commitments can be found which details the environmental mitigation measures, summarised above, which the Applicant has committed to implement. Chapter 18 of the 2020 SEI Report summarises the differences in residual effects between the 2019 Layout and the 2020 Layout.
- 8.3 The final 2020 Layout has been informed by a robust EIA, a lengthy design process, and additional assessments within this 2020 SEI Report taking into consideration consultation responses received, baseline data, best practise and appropriate guidance and planning policy. Consideration has been given to potential environmental impacts and their effects and where predicted effects have been found as a result of the Proposed Development, mitigation measures have been implemented as far as possible to reduce or eliminate these. The amendment Proposed Development layout is

considered to represent the most appropriate design, taking into account potential environmental impacts on their effects, consultation responses, physical constraints, and health and safety considerations, while maximising the generating capability of the site.

- 8.4 The 2020 SEI Report provides additional clarity as well as amendments to the assessments presented with the 2019 EIA. The amendments to the Proposed Layout has led to decreased environmental impact which is evidenced throughout the 2020 SEI Report.



