



Luggies Knowe Wind Farm

Non-Technical Summary

Client: Shetland Aerogenerators Ltd

Project/Proposal No: 3515

Version: 1.0

Date: 2023-11-03

Contents

Contents	2
Abbreviations	3
1. Background	4
2. Purpose of the Proposed Development EIA Report	4
3. Availability of the Proposed Development EIA Report	4
4. Representations to the Application	5
5. Site Location and Description	5
6. Site Selection and Design	6
7. The Proposed Development	8
8. Consultation	10
9. Environmental Impact Assessment	11
10. Benefits of the Proposed Development	17
11. Conclusion	18

Abbreviations

AOD	Above Ordnance Datum
BEP	Biodiversity Enhancement Plan
BESS	Battery Energy Storage System
BNG	British National Grid
CEMP	Construction Environmental Management Plan
EIA	Environmental Impact Assessment
GWDTTE	Groundwater Dependent Terrestrial Ecosystems
ha	Hectares
HES	Historic Environment Scotland
HIAL	Highlands and Islands Airports Limited
IEF	Important Ecological Feature
km	Kilometre
LVIA	Landscape and Visual Impact Assessment
M	Metre
MoD	Ministry of Defence
MW	Megawatt
NPF4	National Planning Framework 4
NS	NatureScot
NSA	National Scenic Area
NSR	Noise Sensitive Receptor
NTS	Non-Technical Summary
NVC	National Vegetation Classification
PMP	Peat Management Plan
SEPA	Scottish Environment Protection Agency
SIC	Shetland Islands Council
SM	Scheduled Monuments
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area

1. Background

- 1.1.1 This document is a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIA Report) which accompanies an application made by Shetland Aerogenerators Ltd (the Applicant).
- 1.1.2 The Applicant is proposing revisions to a permitted wind energy development, Gremista Wind Farm, (hereafter referred to as “the 2011 Permitted Development”) which lies approximately 1.2 km north of Lerwick, Shetland. The revised scheme (hereafter referred to as “the Proposed Development”) comprises one turbine and a Battery Energy Storage System (BESS) with a total installed capacity of 19.9 MW. The Proposed Development will replace two turbines which have planning permission as part of the 2011 Permitted Development, but which have not been built.
- 1.1.3 Renewable energy is a key factor in helping Scotland reach its target of Net Zero by 2045. The Proposed Development would make a meaningful contribution to Scottish and UK targets for the generation of renewable energy and reduction in greenhouse gas emissions.

2. Purpose of the Proposed Development EIA Report

- 2.1.1 ITP Energised was appointed by the Applicant to assess the environmental impacts of the Proposed Development in accordance with Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as the “EIA Regulations”).
- 2.1.2 The Environmental Impact Assessment (EIA) process is reported in an EIA Report, which describes the design iteration process and methods used to assess the beneficial and adverse environmental impacts predicted to result from the construction and operation of the Proposed Development. It also sets out mitigation measures designed to prevent, reduce and, if possible, offset any significant adverse environmental impacts, as well as enhancement measures to deliver beneficial environmental effects. An assessment of residual effects, those expected to remain following implementation of mitigation and enhancement measures, is also presented.

3. Availability of the Proposed Development EIA Report

- 3.1.1 Hard copies of this Non-Technical Summary (NTS) are available free of charge from the Applicant. The cost of a hard copy of the EIA Report will be available to purchase upon request, the cost of the EIA Report will be approximately £750 per copy.
- 3.1.2 Electronic copies of the EIA Report are available online on the application website at <https://www.shetland.gov.uk/planning-applications/view-planning-applications>
- 3.1.3 There will be a copy of the EIA Report available to view at the following locations:

Shetland Islands Council
Administrative Headquarters
8 North Ness Business Park
Lerwick
ZE1 0LZ

Shetland Library
Lower Hillhead
Lerwick
ZE1 0EL

4. Representations to the Application

Any representations in respect of the application may be submitted directly via the Shetland Islands Council (SIC) website at <https://www.shetland.gov.uk/planning-applications/view-planning-applications>; by email to SIC Planning Service at development.management@shetland.gov.uk or by post, to:

Planning Service
8 North Ness Business Park
Lerwick
ZE1 0LZ

5. Site Location and Description

- 5.1.1 The Proposed Development planning application site boundary (“the site”) is located approximately 1.2 km north of Gremista, Lerwick on the Hill of Gremista, at site centre British National Grid (BNG) HU 46191 45162 (refer to **Figure 1**). The site covers an area of approximately 66 hectares (ha), with elevation ranging from 40 m to 100 m above ordnance datum (AOD).
- 5.1.2 The existing land use of the site includes an operational turbine and access track of the 2011 Permitted Development. Otherwise, the primary land use is occasional rough grazing by sheep. There is industrial infrastructure in the surrounding vicinity, including a port facility at Dales Voe to the west and a waste recycling facility to the east.
- 5.1.3 There are no residential properties within the site boundary. The nearest residential properties are located at South Califf, on the opposite side of Dales Voe approximately ~1.1 km to the west.

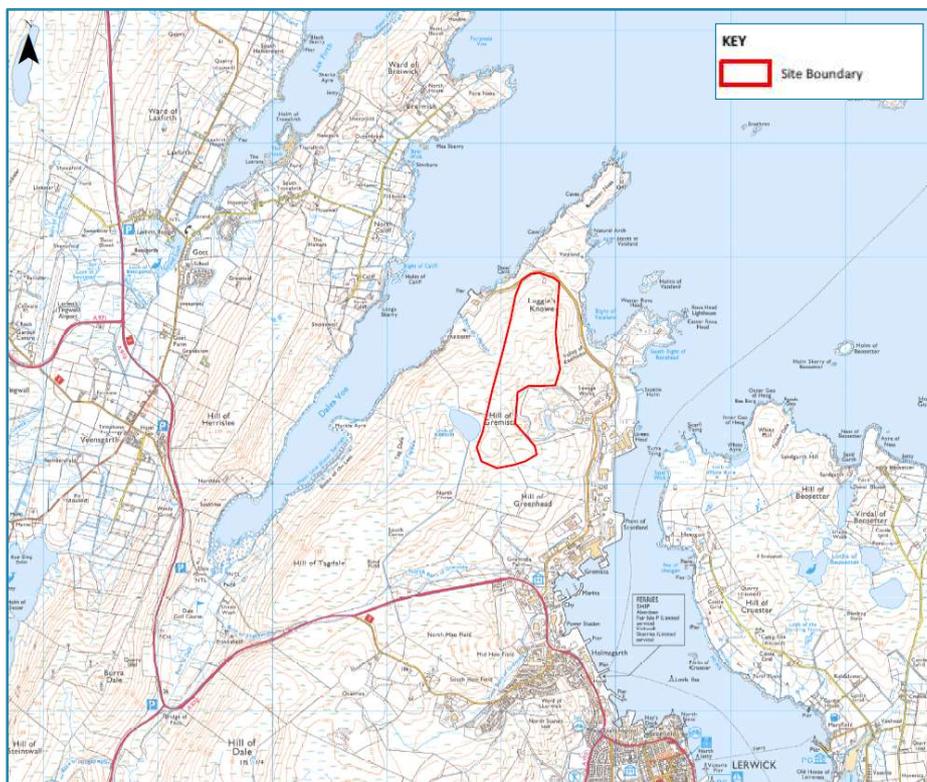
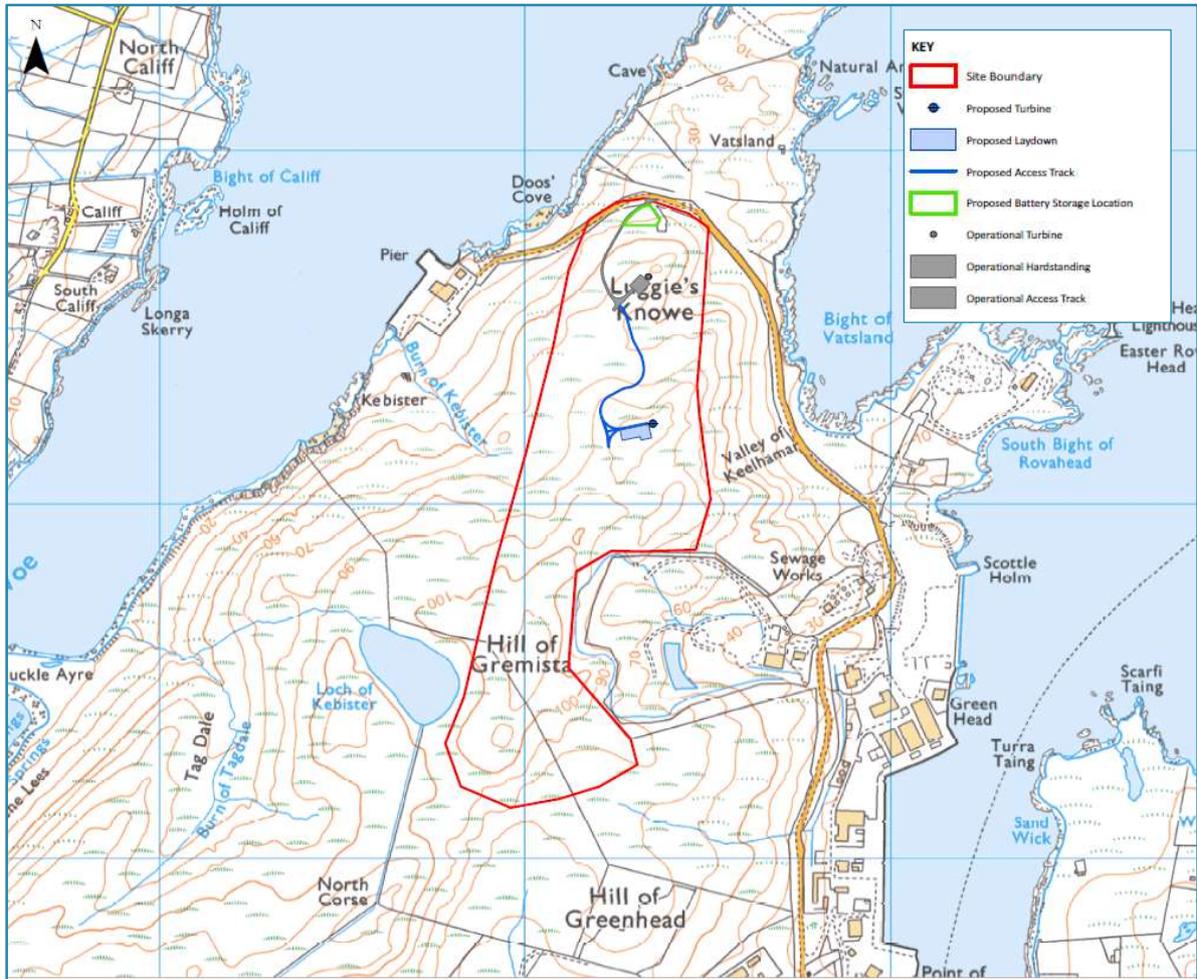


Figure 1 Site Location

6. Site Selection and Design

- 6.1.1 The Proposed Development will comprise one turbine with a blade tip height of up to 149.9 m with an installed capacity up to 5 MW and a BESS with up to 12 battery storage containers with an output capacity up to 14.9 MW. In addition to the turbine and BESS, associated infrastructure will include: turbine foundations and crane hardstandings; power control units (PCUs); switchgear, substation and communications buildings; and tracks connected to the existing infrastructure of the operational turbine (the 2011 Permitted Development) (**Figure 2**).
- 6.1.2 The wind turbine which is part of the Proposed Development will comprise the following components: three blades; tower; nacelle; hub; and transformer and switchgear. The wind turbine will be of a typical modern, three-blade, horizontal axis design in semi-matt white or light grey with no external advertising or lettering except statutory notices. The specific wind turbine manufacturer and model has not yet been selected as this will be subject to a tendering exercise and will be confirmed post permission. For the purposes of the EIA, the dimensions assessed include rotor diameter of 136 m and hub height of 82 m. The rotor diameter and hub height of the final selected turbine model may differ from these values, however the turbine tip height will not exceed 149.9 m.
- 6.1.3 To enable the construction of the turbine, a crane hardstanding area and turning area at the turbine location will be required to accommodate the assembly crane and construction vehicles. This will comprise a crushed stone hardstanding area measuring approximately 80 m long by 40 m wide. The actual dimensions will be subject to the specifications required by the selected turbine manufacturer and crane operator and following detailed site investigations prior to construction commencing. The crane hardstanding will remain in place during the lifetime of the Proposed Development to facilitate maintenance work.
- 6.1.4 The BESS which is part of the Proposed Development will comprise the following components: energy storage modules, heating, ventilation and air conditioning equipment, fire suppression equipment, cooling plant, control and protection equipment, switchgear, power control units, inverters, low voltage board and transformers, metering equipment, substation, communication and spare equipment building. The specific BESS manufacturer has not yet been selected and will also be subject to a tendering exercise and will be confirmed post permission.
- 6.1.5 As part of the 2011 Permitted Development a transport assessment was undertaken which remains applicable to the Proposed Development. The transport assessment provides detail on access routes to the site for construction vehicles and provides an estimate of trip generation during construction. The transport assessment includes a review of the proposed route, construction traffic impacts, and an abnormal load route review.
- 6.1.6 The on-site tracks which have already been constructed and are in use as part of the 2011 Permitted Development will be utilised as far as possible. New site tracks will be constructed to connect to the Proposed Development infrastructure and will have a typical 5 m running width, wider on bends and at junctions.
- 6.1.7 Although the layout and locations of the infrastructure have been determined through an iterative environmental-based design process (refer to the Site Selection and Design section below), there is the potential for the precise locations to be altered through micro-siting allowances prior to or during construction. A micro-siting allowance of up to 50 m in all directions is being sought in respect of all infrastructure, to suitably respond in the event that pre-construction surveys identify unsuitable ground conditions or environmental constraints that could be avoided by relocation. No micro-siting will be undertaken that results in a significant adverse effect where there would otherwise not be one.

Figure 2 Site Layout Plan



Indicative Construction Programme

- 6.1.8 The Proposed Development will be constructed over a period of approximately 12 months and the construction process will consist of the following activities:
- Site mobilisation;
 - Construction of site tracks;
 - Construction of wind turbine foundation;
 - Installing on-site cabling;
 - Construction of crane hardstanding for the wind turbine;
 - Installation of transformers, switchgear, buildings and battery units;
 - Erection of wind turbine; and
 - Site reinstatement and commissioning.
- 6.1.9 Habitat creation, enhancement and management works will be undertaken alongside the construction and site reinstatement period, with ongoing management and monitoring through the operational phase.
- 6.1.10 Normal construction hours will be between 07:00 and 19:00 Monday to Friday and 09:00 and 13:00 on Saturdays. These times have been chosen to minimise disturbance to local residents. It must, however, be noted that out of necessity due to weather conditions and health and safety requirements, some generally quiet activities, for example abnormal load deliveries (which are controlled by Police Scotland) and the lifting of the turbine components, may occur outside the specified hours stated. Any construction outwith these hours will be in line with the noise limits as assessed in **Chapter 9** and advance warning of any works out with the agreed working hours will be provided to SIC and local residents.
- 6.1.11 The operational lifespan of the Proposed Development will be 25 years, after which it will be appropriately decommissioned. It is expected that the decommissioning will take approximately 12 months unless further permissions are sought. If, after the operational lifespan of the Proposed Development has expired, there is potential for re-powering the development, this would be subject to a new and separate application.

7. The Proposed Development

Site Selection

- 7.1.1 The Proposed Development is a revised design of a permitted scheme on the site, which will sit alongside the existing operational turbine of the 2011 Permitted Development. The suitability of the site for potential wind development was first considered during the application process for the 2011 Permitted Development scheme. The opportunities and constraints identified during that process have been taken into consideration through the further design work for the Proposed Development.

Design Process

- 7.1.2 As part of the EIA process, design iterations were prepared and considered for the turbine location, on-site infrastructure and BESS.
- 7.1.3 The following principles were adopted during the design iterations made by the Applicant to ensure that the final design of the Proposed Development is the most suitable for the site:
- Avoided locating turbines on the highest points of the site to minimise visibility;

- Limited the proximity to the closest residential properties;
- Limited and minimised impact on peatland where possible;
- Accounted for other ecological constraints to minimise the impact of the Proposed Development;
- Respected cultural heritage constraints;
- Applied telecommunications buffer to avoid unacceptable impact on link operations;
- Maximised the potential electricity generation and storage of renewable energy; and
- Utilised existing infrastructure (tracks) as far as practicably possible to minimise the footprint of the development.

Alternatives

Proposed Development Layout

- 7.1.4 The Applicant has considered a number of alternative layouts for the Proposed Development (refer to **Chapter 3** of the EIA Report). The preliminary layouts took account of identified technical and environmental constraints based on both desk studies and field survey work, as well as preliminary wind yield analysis.
- 7.1.5 Preliminary visualisations were generated for a range of layout options, to assess the suitability of design with respect to views from key viewpoints in the local landscape. The Applicant considered the most appropriate design to maximise renewable energy generation from the site and to reflect the existing topography. In addition, other operational and permitted schemes near to the site were taken into account so the Proposed Development could be considered in keeping within the existing and future landscape in which it would be sited.
- 7.1.6 During the design iteration process, there have been seven design iterations for the Proposed Development with layout seven being that for which planning permission is sought (as shown on **Figure 2**). The design was amended from the 2011 Permitted Development layout of three turbines up to 120 m tip height, with the northern most turbine (T1) constructed and in operation since 2015. The other two turbines were not built.
- 7.1.7 Since the construction of T1, the adjacent land use to the west of the site has increased in activity and the extent of the pier in Dales Voe, which is utilised for the decommissioning of oil terminals, is proposed to be expanded south into the headland. The proximity of these works would result in the permitted location of the western most turbine of Layout 1 becoming unviable for engineering reasons. It was therefore deemed necessary to reconsider the permitted layout. Turbine technology has also advanced since the 2011 application was submitted, and due to the commercial availability of turbine models it was proposed to consider larger candidate turbine models, to deliver increased energy generation. Therefore, consideration was given to turbines up to a tip height of 149.9 m.
- 7.1.8 Initially, design iteration sought to retain a layout of three turbines in total, and to accommodate this, the site boundary was expanded in 2020. The initial layout within this revised site boundary (Layout 2) included two turbines and took account of the constraints identified during desk studies.
- 7.1.9 Ongoing consultation, desk study and site survey work identified additional information about the environmental baseline and constraints, with several design iterations undertaken to respond to those constraints. It was ultimately determined that the most suitable layout comprised a single turbine (additional to the operational turbine) in the central site area, at the location of one of the previously consented turbines. A BESS facility was added to the Proposed Development design to provide energy storage capacity, improving the use of the renewable electricity generated through grid balancing.

7.1.10 The final layout therefore comprises one three-blade horizontal axis turbine with a blade tip height of up to 149.9 m with an installed capacity up to 5 MW, and a BESS with an installed capacity up to 14.9 MW.

On-site Infrastructure Layout Iterations

7.1.11 Following the evolution of the turbine layout design, the design of the access tracks, site tracks and crane hardstanding was undertaken. The on-site infrastructure has been designed and arranged in such a way as to avoid the on-site environmental constraints where possible.

7.1.12 It is proposed all infrastructure will be transported from the Greenhead Port terminal and transferred along Gremista Road for approximately 1 km to site. The blade components of the turbine will be moved to site under escort. The public road network will be utilised for the full delivery route for all Proposed Development infrastructure.

7.1.13 The on-site tracks which were constructed for the 2011 Permitted Development will be utilised as far as possible. New on-site tracks have been designed to follow a route which minimises landscape and visual impacts, hydrogeological and hydrological impacts, and excessive gradients, to ensure the safe delivery of turbine components and associated parts.

7.1.14 The proposed crane hardstanding has been designed to accommodate a candidate model turbine in line with the height and blade dimensions described above, while minimising impacts on identified local constraints.

7.1.15 The inclusion of the BESS was considered at a later stage of the design iteration process and upon establishing the site could only accommodate the addition of one turbine. The BESS has been situated at the existing site entrance to minimise ecological, geological and visual impact as well as providing easy access for construction and maintenance purposes.

8. Consultation

Statutory Consultation

8.1.1 The Applicant submitted an Environmental Impact Assessment Screening Request to SIC in October 2020 (2020/229/SCR) and received a response from SIC in November 2020 advising that the Proposed Development will require to be subject to a formal EIA.

8.1.2 An EIA Scoping Opinion was requested from SIC in January 2021 through the submission of an EIA Scoping Report (2021/029/SCO). This EIA Scoping Report contained details of the site baseline and the Proposed Development. It also proposed which environmental impacts would be assessed in the EIA, and the assessment methodologies that would be used. A summary of how the Scoping responses have been addressed in the EIA Report can be found in EIA Report **Appendix 2.2**.

8.1.3 SIC consulted with a variety of statutory and non-statutory consultees before providing an EIA Scoping Opinion in March 2022. This information has informed the Proposed Development EIA as included in **Appendix 2.2**.

8.1.4 Direct consultation has also been undertaken with specific statutory consultees, to confirm and agree the detailed approach to the technical surveys and assessments on a topic-by-topic basis.

8.1.5 Further information on the consultation process is given in **Volume 1, Chapter 4** of the Proposed Development EIA Report.

9. Environmental Impact Assessment

9.1.1 The EIA considers the effects of the Proposed Development during construction, operation and decommissioning on the following topics:

- landscape and visual (assessing character of the landscape and views from agreed locations with NatureScot and SIC);
- ecology (protected habitats, flora and fauna, excluding birds);
- ornithology (birds and protected bird habitats);
- cultural heritage (the integrity and setting of historic sites and/or features);
- noise and vibration (effects on local properties from noise and vibration arising from the Proposed Development);
- traffic and transport (effects from traffic travelling to, and from, the Proposed Development on local roads and receptors);
- geology, hydrology, hydrogeology and peat (surface water, groundwater, rocks and soils); and
- telecommunications, aviation and radar (telecommunications facilities, civil and military aviation facilities and airspace).

9.1.2 **Volume 1, Chapter 2** of the EIA Report describes the EIA process in more detail.

9.1.3 For each topic, the existing (baseline) conditions were identified and the effects of the Proposed Development on these conditions assessed (the potential effects). Potential effects are assessed on a scale of negligible, minor, moderate and major, with effects of moderate or major generally deemed to be significant in the terms of EIA. Mitigation measures have then been proposed to minimise significant adverse effects where required. Where possible and appropriate, enhancement measures have also been proposed, to deliver beneficial environmental effects. Following this, an assessment was undertaken of the effects of the Proposed Development on the existing conditions taking into consideration the committed mitigation and enhancement (the residual effects).

9.1.4 In addition to the above, the cumulative effects of the Proposed Development, i.e. effects considered in conjunction with other developments in the local area, primarily other wind farms, were assessed.

9.1.5 A summary of the baseline conditions, the proposed mitigation and enhancement, the resulting residual effects and the cumulative effects for each topic is provided below. Full details of the EIA for each of the topics are provided in **Volume 1, Chapters 5 to 12** of the EIA Report.

Landscape and Visual

9.1.6 The full assessment of the potential effects on landscape and visual impact at the site is provided in **Volume 1, Chapter 5** of the EIA Report.

9.1.7 The assessment of effects on landscape and visual receptors sets out the predicted effects on the landscape, which, in the context of Shetland and this assessment, also includes effects on coastal and seascape character. The scope of the assessment and the viewpoints assessed were discussed and agreed with SIC and NatureScot.

9.1.8 The assessment includes consideration of effects upon designated landscapes including the Shetland National Scenic Area and other locally designated landscapes such as the Supplementary Guidance, Local Landscape Areas, Consultation Draft 2014.

- 9.1.9 From a visual perspective, the assessment considers effects upon residents at settlements, users of roads, ferries and recreational routes, which include tourists. This was informed by assessment of visual effects at a series of representative viewpoints, which were agreed with NatureScot and SIC.
- 9.1.10 The assessment of cumulative effects is incorporated into the main assessment of landscape and visual effects, as the other wind farms with which interaction will occur are built sites which exist as part of the baseline or have been granted planning permission. Some cumulative interactions will occur, with the emerging cluster of built and permitted development extending the influence of wind energy development within the vicinity of Lerwick. However, this is a considerably developed landscape with frequent infrastructure, settlement and man-made features which are considered to be suitable characteristics for accommodating wind farm development.
- 9.1.11 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. Landscape and visual input into the turbine positioning has been provided through the design development stages of the project, through a series of design workshops.
- 9.1.12 Significant landscape and visual effects are to be expected for any commercial scale wind energy development, as is recognised in national planning policy (National Planning Framework 4 (NPF4) Policy 11 Energy, which states that significant landscape and visual impacts *“are to be expected for some forms of renewable energy,”* but that, *“where impacts are localised and/or appropriate design mitigation has been applied, they will generally be considered acceptable”*. 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 Proposed Development will also be observed from approaching ships and ferries. However, these significant effects are localised, and as noted above, design mitigation has been incorporated throughout the EIA process to minimise effects as far as possible while taking account of other constraints.
- 9.1.13 The well-defined visual compartment of Dales Voe, bound inland by a number of ridges and hills, and the northern parts of Bressay is considered to have attributes which are suited to wind farm development, as recognised in the Landscape Sensitivity and Capacity Study for Wind Farm Development in the Shetland Islands (Land Use Consultants, 2009). The Proposed Development takes advantage of the screening properties of these adjoining ridgelines that reduce detrimental effects on the adjacent NSA.
- 9.1.14 The Proposed Development is focussed away from the scattered settlement and coastal crofting land and sited away from the more sensitive coastal edge and set back on higher ground. The Proposed Development, including the BESS, will be seen in association with existing areas of development at Gremista and in local views in association with the former quarry and dismantling yard at Dales Voe. Whilst the effects will be significant at and around the site, and for some visual receptors in and around Lerwick, it is considered that these can be accommodated within this developed landscape, and that any significant effects are localised.

Ecology

- 9.1.15 The full assessment of the potential effects on flora and fauna at the site is provided in **Volume 1, Chapter 6** of the EIA Report.
- 9.1.16 The scope of the ecological assessment was determined through a combination of a desk study to identify existing ecological data and ecological field surveys of important and legally protected ecological features within the site.

- 9.1.17 Ecological field studies were undertaken in August 2021 to establish the site baseline for habitats and a range of protected or otherwise notable species. Surveys included a National Vegetation Classification (NVC) survey and an otter survey. Findings from the desk study and field surveys were taken into account during design iteration works, with the Proposed Development designed to minimise impacts on important habitats and protected species as far as possible, taking account of other constraints.
- 9.1.18 Otter spraints and foraging evidence were recorded in the wider study area during survey, but there was no evidence of holts or other resting places, and no evidence from within the site itself.
- 9.1.19 Through a standardised evaluation method, Important Ecological Features (IEFs) were identified and brought forward for assessment. IEFs taken forward to assessment include:
- blanket mire; and
 - dry dwarf shrub heath.
- 9.1.20 Potential impacts of the construction and operation phases are presented, prior to the assessment of effects. In line with standard guidelines, the impact assessment process assumes the application of standard mitigation measures.
- 9.1.21 In the absence of any additional mitigation or enhancement measures, predicted construction phase effects were assessed as being minor adverse and not significant for both blanket mire and dry heath. Predicted operation phase effects were also assessed as being minor adverse and not significant for blanket mire, with no impact predicted for dry heath.
- 9.1.22 Given these conclusions, specific mitigation measures are not necessary to avoid significant adverse effects. However, in line with the current policy requirement to demonstrate that the proposal will conserve, restore and enhance biodiversity (NPF4 Policy 3 Biodiversity), habitat management measures are proposed during the construction phase as part of a Peat Management Plan (PMP) as well as during the operational phase as part of a Biodiversity Enhancement Plan (BEP), both of which have been included as outline documents as appendices to the EIA Report (**Appendix 11.2** and **Appendix 6.4**, respectively). The Outline BEP sets out proposals for restoring, enhancing and managing areas of blanket bog habitats that show signs of degradation and erosion, as well as converting areas of acid grassland to blanket bog, and installing wildlife friendly features to support locally important species.
- 9.1.23 Likely cumulative effects of nearby developments, include the Operational Turbine on site, as well as Mossy Hill, Hoo Field, Burradale and Viking wind farms. No significant cumulative effects are predicted.

Ornithology

- 9.1.24 The full assessment of potential effects on birds is provided in **Volume 1, Chapter 7** of the EIA Report.
- 9.1.25 The ornithological assessment is based upon comprehensive baseline data, comprising specifically targeted ornithological field surveys of important and legally protected ornithological features identified during desk study and consultation feedback. A full suite of ornithological surveys was adopted for the purposes of assessing the avian baseline conditions for the Proposed Development. The surveys included: Vantage Point surveys, breeding bird surveys, breeding raptor surveys and breeding diver surveys; all undertaken from September 2020 to August 2021.

- 9.1.26 Three raptor species of high conservation value were registered in the site during the Vantage Point and walkover surveys, although no evidence of breeding was observed within the site or within the 2 km survey area for the three species. Five species of wildfowl and divers were recorded during the surveys, with only red-throated diver and greylag goose confirmed as breeding in the Study Area. Four species of gull were recorded during flight activity surveys, with great black-backed gull and herring gull recorded as breeding within the Study Area. Seven species of waders were recorded during the surveys, four were recorded as breeding with only one, snipe, recorded breeding in the site. Great skuas were frequently recorded from flight activity surveys and were noted as breeding in the site and survey buffer during the breeding season while small numbers of Arctic tern were also recorded but none of the three were noted as breeding within the site.
- 9.1.27 Levels of flight activity recorded at collision risk height were considered to be low or moderate for all target species. Collision risk modelling was undertaken for the most frequently recorded species at risk height. Red-throated diver, curlew, great skua, great black-backed gull and herring gull were the species considered likely to register a collision risk.
- 9.1.28 An assessment of ornithology effects arising from the construction and operation of the Proposed Development was undertaken, based on the finalised proposed turbine location and candidate turbine dimensions. Through a standardised evaluation method, Important Ornithological Features were identified and brought forward for assessment if concluded to be vulnerable to effects from the Proposed Development. Important Ornithological Features taken forward for further consideration included the internationally designated East Mainland Coast Special Protection Area (SPA) (specifically breeding red-throated diver, which is a qualifying feature of the SPA), great skua, curlew, snipe, great black-backed gull, and herring gull.
- 9.1.29 In accordance with guidelines, the impact assessment assumed the application of standard mitigation measures. With these in place, predicted effects were considered to be barely perceptible or minor and therefore not significant for all Important Ornithological Features. There is no requirement for further specific mitigation for construction and operation phases as they are considered to have barely perceptible or minor adverse significance, i.e. not significant. Nonetheless, additional time related mitigation and an ongoing monitoring plan are proposed to further reduce risks to breeding red-throated diver as well as to continue improving the understanding of impacts of wind farms on this species.
- 9.1.30 Additionally, biodiversity enhancement provided through implementation of a Biodiversity Enhancement Plan (provided in outline as **Appendix 6.4** to the EIA Report) will deliver habitat improvements which are beneficial to bird species.
- 9.1.31 Likely cumulative effects with nearby operational developments, as well as those currently permitted or at application stage of planning, were also considered. No significant cumulative effects are anticipated as a result of the Proposed Development.

Cultural Heritage

- 9.1.32 The full assessment of the potential effects on cultural heritage is provided in **Volume 1, Chapter 8** of the EIA Report.
- 9.1.33 The assessment has identified four known heritage assets within the site: a possible cairn on the summit of Luggies Knowe (Asset 1); the remains of a post-medieval structure (Asset 26); a sub-peat dyke which may be a historic boundary (Asset 27); and the eastern portion of the settlement of Kebister (centred Asset 2). The Proposed Development has been designed to avoid all known heritage assets and as such there will be no impacts upon known remains. All known heritage assets within 50 m of proposed working areas will be fenced off during the construction period to prevent inadvertent damage to them.

- 9.1.34 A watching brief (Site 32) carried out in 2015 for the Operational Turbine within the northern area of the site did not identify any archaeological remains. There remains a possibility that hitherto unknown remains may survive within the site. An archaeological watching brief will be undertaken during construction to ensure that any such remains can be identified and recorded.
- 9.1.35 Impacts upon the setting of designated heritage assets have generally been mitigated through the iterative design process and no significant effects have been identified.
- 9.1.36 The possibility of cumulative effects has been assessed. No significant cumulative effects were identified.

Noise

- 9.1.37 The full assessment of the potential noise and vibration effects from the Proposed Development on local receptors is provided in **Volume 1, Chapter 9** of the Proposed Development EIA Report.
- 9.1.38 This chapter has considered potential noise effects associated with construction and operation of the Proposed Development. Operational noise effects included noise from the 2011 Permitted Development. No potential vibration effects have been identified and consideration of vibration has therefore been scoped out.
- 9.1.39 The assessment of noise comprised consultation with SIC, qualitative characterisation of the baseline noise environment, assessment of construction traffic noise effects, prediction of noise levels associated with construction activities, operational wind turbines and operation of other non-turbine fixed plant, and evaluation of predicted levels against derived criteria.
- 9.1.40 Baseline noise levels in the study area are typically dominated by noise from natural sources, including bird calls, the wind, wind-blown vegetation and waves from the North Sea. Anthropogenic noise sources including noise from the industrial estate, road traffic and the 2011 Permitted Development, are minor contributors to total noise levels.
- 9.1.41 Predicted noise levels associated with construction activities meet threshold noise levels set out in the relevant guidance at all identified representative noise-sensitive receptors. Noise effects from construction activities are therefore not significant.
- 9.1.42 The predicted change in road traffic noise levels associated with construction traffic is not significant.
- 9.1.43 Noise limits have been derived for non-turbine fixed plant associated with operation of the Proposed Development, including the BESS and substation. Items of fixed plant will be specified such that they meet the derived noise limits at all representative NSRs. Noise effects from fixed plant are therefore not significant.
- 9.1.44 Predicted wind turbine noise levels associated with operation of the Proposed Development and the 2011 Permitted Development meet derived day and night-time noise limits at all the identified representative noise-sensitive receptors, for all wind speeds. Noise effects due to operation are therefore not significant.

Traffic and Transport

- 9.1.45 The full assessment of the potential effects on traffic and transport is provided in **Volume 1, Chapter 10** of the Proposed Development EIA Report.
- 9.1.46 The Proposed Development will be accessed from the existing access junction for the operational turbine, off the Gremista to Dales Voe Road, and the same delivery method will be used for the Proposed Development. In order to construct the Proposed Development, bulk materials such as concrete and rock will be imported to the site from local sources. The turbine components will arrive to Greenhead port terminal, Shetland by sea and will be transported to the site via Gremista road for approximately 1 km.

9.1.47 The 2011 Permitted Development transport assessment remains relevant for both the construction and operational phases of the Proposed Development. The assessment undertaken for the 2011 Permitted Development found no anticipated significant effects as a result of the traffic associated with the construction or operation of the Gremista Wind Farm.

9.1.48 It is assumed the levels of traffic associated with the Proposed Development would be the same as those predicted within the Environmental Statement for the 2011 Permitted Development and therefore, no significant effects would occur.

Geology, Hydrology, Hydrogeology and Peat

9.1.49 The full assessment of the potential effects on hydrological, hydrogeological and geological resources is provided in **Volume 1, Chapter 11** of the Proposed Development EIA Report.

9.1.50 A combination of desk study and field survey work was undertaken to identify and characterise the geological, hydrological and hydrogeological receptors which could be subject to impacts from construction, operation and decommissioning of the Proposed Development.

9.1.51 The site is located within the Shetland Coastal catchment, with on-site and adjacent watercourses and waterbodies including the Burn of Kebister, Loch of Kebister and its tributaries and drains in the surrounding area. The nearest watercourse classified by the Scottish Environment Protection Agency (SEPA) is Burn of Dale which is considered to be of 'Good' quality, therefore surface water receptors in the study area are considered to have a precautionary value of 'Good' quality.

9.1.52 The bedrock beneath the majority of the site is metamorphic, with sedimentary bedrock to the south-east. Superficial deposits comprise peat, which is typically low permeability. The peat is identified as Class 1 peatland (areas of peat soil and peatland habitats, considered nationally important) according to the Scottish Natural Heritage (SNH) (now NatureScot) Carbon and Peatlands Map 2016.

9.1.53 Extensive peat surveys were undertaken and identified that approximately 77% of survey locations (peat probes) recorded peat exceeding 1 m depth, otherwise known as deep peat. Several design iteration works were undertaken to avoid siting turbines or other infrastructure on deep peat. Due to the characteristics of the site, this was not possible, but the deepest peat to the south has been avoided.

9.1.54 A peat slide risk assessment has identified that there is a low likelihood of a peat landslide at the proposed turbine location.

9.1.55 Potential construction and operational effects arising from the Proposed Development (in the absence of mitigation) include changes to surface water and groundwater flow and quality, excavation of peat, peat slide risk and effects to water abstractions, designated sites and Groundwater Dependent Terrestrial Ecosystems (GWDTE).

9.1.56 Mitigation measures to avoid or reduce adverse effects will be included within a Construction Environmental Management Plan (CEMP), to be agreed with SIC prior to the commencement of construction activities. An outline CEMP is presented as **Appendix 3.1** to the Proposed Development EIA Report. Measures include pre-construction site investigations to inform micro-siting, water quality monitoring where required, implementation of a Peat Management Plan and a Biodiversity Enhancement Plan to restore degraded peatland habitat. A Drainage Strategy and water crossing designs will be developed to ensure appropriate control of run-off. Detailed designs will be agreed with SEPA and SIC prior to construction.

9.1.57 These mitigation measures are considered to be robust and implementable and will reduce the potential impacts on peat resources and watercourses. The significance of residual effects on geology, peat, hydrology and hydrogeology receptors following the implementation of these mitigation measures is considered to be negligible to minor and therefore not significant. No cumulative effects are predicted.

Telecommunications, Aviation and Radar

- 9.1.58 The full assessment of the potential effects on telecommunications, aviation and radar is provided in **Volume 1, Chapter 12** of the EIA Report.
- 9.1.59 The telecommunications assessment, as informed by current guidance and legislation, has been undertaken through consultation with the appropriate consultees.
- 9.1.60 A review of the telecommunication links and consultation with telecommunication providers showed a BT link crossing the site. The design iteration process has considered the location of this link and no infringements will occur. No effects from the construction, operation or decommissioning of the Proposed Development were therefore identified.
- 9.1.61 As the Proposed Development will not impact any telecommunication links, the Proposed Development will not have any cumulative effects on telecommunication links with other developments.
- 9.1.62 The requirement is for the Proposed Development to have no significant residual effects on aviation infrastructure. This is addressed through consultation with all relevant stakeholders within the planning process. In addition, the Applicant has independently assessed the potential impacts.
- 9.1.63 The impact assessment scoping process involved considering all military and civil aerodromes in the wider area out to circa 60 km, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities.
- 9.1.64 NATS, Airtask (Lerwick/Tingwall Airport), Highlands and Islands Airports Limited (HIAL, specifically Sumburgh Airport) and the Ministry of Defence (MoD) were identified as relevant stakeholders.
- 9.1.65 NATS and Airtask have raised no objections. HIAL has raised no objections, subject to an Instrument Flight Procedure impact assessment for Sumburgh Airport showing no impacts.
- 9.1.66 The MoD scoping response has raised concerns about impacts to the Saxa Vord air defence radar and to low flying operations. It is important to appreciate that the MoD process of responding to scoping submissions is not the same as the process for responding to a full planning application. Scoping responses exclude an operational impact assessment by subject matter experts within the MoD. Neither of the issues which raised concerns are expected to generate objections at full submission.
- 9.1.67 There are no apparent aviation impacts. A requirement from the MoD to fit MoD accredited infra-red obstruction lighting (not visible to the naked eye) is anticipated and will be met.

10. Benefits of the Proposed Development

- 10.1.1 The principle of Proposed Development in this general location has already been established by the existing and 2011 Permitted Development. The addition of the Proposed Development will deliver important benefits as set out below.
- 10.1.2 The Proposed Development will contribute to the achievement of UK and Scottish Government targets for renewable electricity generation. The Proposed Development, with a total overall capacity of approximately 19.9 MW, would make a valuable contribution to meeting such targets.
- 10.1.3 There is existing infrastructure at the site, suitable for use for the Proposed Development, therefore limiting the requirement for new tracks and a new access junction. The Proposed Development will be accessed from the existing access junction for the 2011 Permitted Development off the Gremista to Dale Voe Road, and the same delivery method will be used for the Proposed Development.

- 10.1.4 Based on a principle of £5,000 per installed MW per year, the Applicant anticipates a Community Benefit payment of approximately £25,000 per year arising from the Proposed Development, once operational. The Applicant is exploring options to route the Community Benefit payment into schemes such as Hjaltland Housing Association's existing Fuel Vouchers scheme, to provide a contribution to reducing fuel poverty for householders in areas known to have higher social deprivation, e.g., Lerwick North.
- 10.1.5 During the construction phase, socio-economic benefits to the local area are likely to include the following:
- Supply chain opportunities during construction with the aim of maximising local involvement;
 - Local labour will be required for civil engineering activities and local contractors will be preferred;
 - Specialised teams, including personnel from outwith Shetland, will be required for installation of turbine components. This will require the provision of accommodation, food, machine hire, etc. for visiting contractors;
 - Specialised haulage firms will be required, with local options being preferred; and
 - Local companies will be used for component offload, storage and transport from base to site.
- 10.1.6 The production of wind turbine tower, blades and internal components is expected to take place within the wider UK and Europe, due to low level manufacturing capabilities within Shetland.
- 10.1.7 During the operational phase, socio-economic benefits to the local area are likely to include the following:
- Direct full-time employment of management and engineering teams by the Applicant to support the operation and maintenance of the Proposed Development over its lifetime;
 - New job opportunities benefitting individuals through income and skills, with indirect benefits to the local area through salary spend;
 - An increased number of training opportunities being made available to local people;
 - Land rental payments to landowners and crofters in the affected area; and
 - Business rates and local engineering supply chain opportunities.

11. Conclusion

- 11.1.1 This Non-Technical Summary of the EIA Report provides an overview of the EIA undertaken for the Proposed Development. A schedule of commitments is in **Chapter 13** of the EIA Report. This details the environmental mitigation and enhancement measures, summarised above, which the Applicant has committed to implement.
- 11.1.2 **Volume 1, Chapter 13** of the EIA Report summarises the potential effects, the mitigation and enhancement measures to be implemented, and the resulting residual effects. It also provides a summary of the cumulative effects of the Proposed Development in combination with other proposed, permitted and operational developments in the local area.
- 11.1.3 The final layout has been informed by a robust EIA and lengthy design iteration process, considering potential environmental impacts and their effects, physical constraints, and health and safety considerations. The information used to inform the design iteration process included consultation responses, baseline data and the impact assessment undertaken.

- 11.1.4 Consideration has been given to a range of design issues as well as various environmental, ecological and technical requirements. Predicted environmental effects arising from the Proposed Development have been mitigated as far as possible, if not eliminated during the iterative design process. Biodiversity enhancement will be delivered through implementation of a Biodiversity Enhancement Plan, the aims of which include restoring, enhancing and managing areas of blanket bog habitats that show signs of degradation and erosion, as well as converting areas of acid grassland to blanket bog, and installing wildlife friendly features to support locally important species.
- 11.1.5 Overall, the Proposed Development is an appropriately designed, and sensibly located wind farm which is in line with policies in the local and strategic development plans and conforms to national policy. The Proposed Development has been designed to maximise renewable energy generation from the site, within acceptable environmental limits. The Proposed Development will provide a valuable contribution towards the ambitious national targets for electricity generation from renewable sources.
- 11.1.6 Importantly, the Proposed Development effectively represents replacement of part of the 2011 Permitted Development which was not built. Planning permission has previously been granted for two additional wind turbines in addition to the one operational turbine on-site. The Proposed Development represents an evolution of the project design to deliver beneficial renewable energy generation and storage, taking account of surrounding land use constraints and advances in turbine technology, and including biodiversity enhancement measures which will result in beneficial effects in comparison with some predicted adverse effects associated with the previously permitted development.