Chapter 1 Introduction

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1 Introduction

1.1 Overview

1.1.1 Shetland Aerogenerators Ltd (hereafter referred to as "the Applicant") is proposing revisions to a permitted wind energy development, Luggie's Knowe Wind Farm, (hereafter referred to as "the 2011 Permitted Development") which lies approximately 1.2 km north of Lerwick, Shetland (**Figure 1.1**). The revised scheme (hereafter referred to as "the Proposed Development") will comprise a single turbine and a Battery Energy Storage System (BESS) with a combined total generating capacity of up to 19.9 megawatts (MW). The Proposed Development is intended to be constructed instead of two turbines which were previously permitted but not built (see further information in **Section 1.3** below).

1.1.2 This EIA Report has been prepared to assess the environmental impacts of the Proposed Development and will support a planning application submitted to Shetland Islands Council (SIC) under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as the 'EIA Regulations') seeking planning permission to construct and operate the Proposed Development for a period of 25 years.

1.2 Background

1.2.1 Planning permission was granted in 2012 (planning reference 2011/224/PPF) for the construction and operation of three wind turbines at Luggie's Knowe, each up to 121 m height from the ground to blade tip. Only one of these turbines was constructed which has been operational since 2015. However, the remaining two permitted turbines and associated infrastructure have not been constructed, and due to expansion works at the neighbouring Lerwick Port Authority Dales Voe Base, the western most previously permitted turbine location is no longer advisable for engineering reasons. This has necessitated consideration of a revised location for that turbine and an adjusted Proposed Development layout.

1.2.2 Technological advancements have occurred in the renewable energy industry supply chain since the original planning permission was granted in 2012 which has resulted in the consideration of larger capacity turbine models as well as the inclusion of BESS to account for grid instabilities.

1.3 Site Description

1.3.1 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) Reference HU 46191 45162. The Site covers an area of approximately 66 hectares (ha), with elevation ranging from 40 m to 100 m above ordnance datum (AOD). The Site location and Proposed Development boundary are shown in **Figure 1.1**.

1.3.2 The existing land use of the Site includes the operational turbine and access track. Otherwise, the primary land use is occasional rough grazing by sheep. There is industrial infrastructure in the surrounding vicinity, including the Dale Voe Base of Lerwick Port Authority for offshore decommissioning services to the west and Gremista Waste Management facility to the east.

1.3.3 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 north west.

1.4 The Proposed Development

1.4.1 The Proposed Development will comprise the construction and operation of one wind turbine with a ground to blade tip height of up to 149.9 m, battery energy storage system units, site access tracks and associated infrastructure. The combined installed capacity of the proposed generating station would be 19.9 MW (estimated wind turbine up to 5 MW and BESS up to 14.9 MW). A number of ancillary elements are also proposed:

- turbine foundations and crane hardstandings;
- permanent access tracks;
- switchgear and substation; and
- underground electrical cabling.

1.4.2 The Proposed Development layout is shown on **Figure 1.2** and full details of the Proposed Development are provided in **Chapter 4**.

1.4.3 The Proposed Development will be operational for 25 years, after which the development will be decommissioned, and the land returned to previous use unless otherwise agreed with SIC.

1.4.4 The proposed location of the turbine has been identified in order to enable the EIA to assess fully the Proposed Development for which permission is being sought. The BNG coordinates denoting where the turbine is proposed to be located are provided in **Chapter 4**.

1.4.5 While the location of the infrastructure described above has been determined through an iterative environmental based design process, there is the potential for these exact locations to be altered through micro-siting allowances prior to construction. A micro-siting allowance of up to 50 m in all directions is being sought in respect of the turbine and its associated infrastructure in order to address any potential difficulties which may arise in the event that pre-construction surveys identify unsuitable ground conditions or environmental constraints that could be avoided. It is proposed that the micro-siting of all infrastructure will be subject to an appropriately worded planning condition.

1.4.6 The total electricity generation capacity of the Proposed Development would be up to 5 MW (wind turbine element only). This is an indicative capacity; actual installed capacity may be less, but no greater than this, dependent on turbine model. Based on the capacity factor of Burradale Wind Farm in Shetland[1], the annual indicative total power output for the site would be around 22,770 MW hours (MWh) per annum, indicating that the Proposed Development would generate enough electricity to power the equivalent of approximately 6,900 average Scottish households (based on average annual electricity consumption per household in Scotland (Department for Business, Energy and Industrial Strategy (BEIS), 2022 of 3,295 kWh). Additionally, when comparing with the carbon emissions produced from all non-renewable fuels and those produced by the Proposed Development there would be approximately 9,650 tonnes of carbon emissions saved per year.

1.4.7 The Proposed Development would contribute towards international and national targets for the generation of renewable energy and reduction in greenhouse gas emissions. The BESS element of the Proposed Development would also facilitate grid stabilisation as well as widening the scope for potential purchasers of the energy produced.

[1] *Capacity factor of 52%.* https://www.burradale.co.uk/

1.5 Need for Development

1.5.1 The science behind climate change is well established and points strongly towards a need to reduce our reliance on fossil fuels in order to avoid negative economic, environmental and social effects. International and European commitments to reducing Carbon Dioxide (CO_2) and tackling climate change have been made by all major economies. In response to these issues the UK and Scottish Governments have made significant, legally binding commitments to increase the use of renewable energy.

1.5.2 Scotland's overarching statutory target is to achieve a 100% reduction in greenhouse gas (GHG) emissions in line with net-zero strategies by 2045, with interim targets of 75% by 2030 and 90% by 2040. These objectives are outlined in the Climate Change (Scotland) Act 2009, as amended by the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019, which came into force in March 2020. In tandem with these legislative measures, SIC acknowledged the urgency of these climate commitments by declaring a climate and ecological emergency in 2020 with a new strategic Climate Change Programme to tackle climate change (SIC, 2020).

1.5.3 As the demand for green energy is projected to rise in the coming decades, Scotland's National Planning Framework 4 (NPF4) supports the expansion and investment in renewable energy developments. This strategic move is integral to the Scottish Government's decarbonisation plans, which are aimed at achieving a legally binding target of net-zero greenhouse gas emissions by 2045. NPF4, now an integral part of the development plan, underscores its commitment in Policy 1 by assigning significant weight to global climate and nature crises considerations in all development proposals. Page 103 of NPF4 emphasises the necessity for a substantial and swift increase in electricity generation from renewable sources to meet the net-zero emissions targets. Moreover, Policy 11 provides explicit support for various forms of renewable energy developments, including wind farms and battery storage, outlining detailed criteria for their assessment.

1.5.4 The overarching message in NPF4 is clear: such renewable energy development is deemed "*fundamental to achieving a net zero economy*," with the Proposed Development aligning directly with the aims of these commitments. Luggie's Knowe Wind Farm will provide renewable energy generation and storage, supporting the National policy for net-zero commitments, and SIC's stance on climate change.

1.6 Socioeconomic Benefit

1.6.1 Shetland Aerogenerators Ltd is a Shetland company providing jobs, economic activity and support for the local community and their projects are investments in Shetland and its people.

1.6.2 The Proposed Development has been assessed for potential impacts within the EIA Report in comparison to the previously permitted development for which planning permission was granted in 2012. The original Environmental Statement (ES) identified no adverse effects on tourism or recreation from the permitted scheme. It is considered that the Proposed Development will have similar negligible impacts.

1.6.3 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.

1.6.4 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.

1.6.5 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.

1.6.6 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.

1.7 Purpose of the EIA Report

1.7.1 ITPEnergised has been commissioned by the Applicant to coordinate the EIA process for the Proposed Development in accordance with the EIA Regulations. The EIA process is the systematic process of identifying, predicting and evaluating the environmental impacts of a proposed development. The EIA process is reported in this EIA Report, which identifies the methodologies used to assess the environmental effects predicted to result from the construction, operation and decommissioning of the Proposed Development. Where appropriate, it also sets out mitigation measures designed to prevent, reduce and, if possible, offset potential significant adverse environmental impacts. An assessment of residual effects, those expected to remain following implementation of mitigation measures, is also presented.

1.7.2 The main findings and conclusions of the EIA are summarised in a Non-Technical Summary (NTS), as required by the EIA Regulations. The NTS provides a stand-alone document which summarises the key findings of the EIA in easily accessible, non-technical language, ensuring everyone with an interest in the Proposed Development can understand and access information on its predicted environmental effects.

1.8 Structure of the EIA Report

1.8.1 The EIA Report is split into five volumes, with the NTS forming a separate document. **Volume 1** of this EIA Report (this document) is structured as follows:

- **Chapter 1** provides an introduction to the Applicant, the Proposed Development and the EIA;
- **Chapter 2** presents the methodology of the EIA process including the scope of the process, justification for topics scoped out of the EIA, and details of the Public Consultation process;
- **Chapter 3** provides a description of the design iteration process, detailing how the design and layout of the Proposed Development evolved through the course of the assessment process and the elimination of alternative development options;

- **Chapter 4** provides a description of the existing site, details of the Proposed Development, the construction, operation and maintenance processes, decommissioning process, need for the development and carbon considerations;
- **Chapters 5** to **12** assess the likely significant effects on a range of receptors. These include: landscape and visual impact, ecology; ornithology; archaeology and cultural heritage; noise; traffic and transport; geology, peat, hydrology and hydrogeology; telecommunications, and aviation and radar;
- **Chapter 13** is the Schedule of Environmental Mitigation, which summarises all the mitigation measures presented in this EIA Report; and
- **Chapter 14** provides summary tables of all predicted residual effects.

1.8.2 **Volume 2** contains the figures that inform **Volume 1** of the EIA Report.

1.8.3 **Volume 3** contains the visualiations which support the Landscape and Visual Impact Assessment and the cultural heritage assessment.

1.8.4 **Volume 4** contains supporting information and appendices for each of the technical chapters, and additional studies that have been prepared to inform the relevant assessments as reported in the EIA Report.

1.8.5 **Volume 5** contains confidential technical appendices.

1.8.6 A Planning Statement will also form part of the Planning Application assessing the Proposed Development against all relevant planning and energy policy.

1.9 EIA Project Team

1.9.1 The EIA was undertaken and coordinated by ITPEnerigsed's environmental teams supported by external consultants. Error! Reference source not found. outlines the full EIA team and their experience.

Table 1.1 EIA Project Team

Consultant	Input to the EIA	Company	Experience
Jenny Hazzard	EIA Project Director	ITPEnergised	BSc (Hons) Geological Engineering, MSc Engineering Geology, PIEMA. 20 years' experience in environmental consultancy.
Emma Bathgate	EIA Project Manager, Traffic and Transport and Telecommunications	ITPEnergised	BSc (Hons) Environmental Management, MSc Sustainability and Environmental Studies. 4 years' experience in the renewable energy industry.
Alicia McDowall	EIA Assistant Project Manager	ITPEnergised	BSc (Hons) Marine Science with Oceanography & Robotics. 2 years' experience in environmental consultancy.
Alan Farningham	Planning and Policy	Farningham Planning	BSc (Hons) Town Planning. 40 years' experience as Planning Consultant.

Consultant	Input to the EIA	Company	Experience
Peter Dunmow	Landscape and Visual Impact Assessment	HEPLA	BA (Hons) Landscape Architecture, Dip LA Landscape Architecture, MA (Hons) Landscape Architecture, CMLI. 25 years' experience in landscape architecture and urban design
Richard King	Ecology Assessment	ITPEnergised	BSc (Hons) Science & Management Studies, MSc Wildlife Biology & Conservation, CIEEM 15 years' experience in ecology and conservation
Allan Taylor	Ornithology Assessment	ITPEnergised	BA (Hons) Geography, MSc Environmental Management, AIEMA 10 years' experience in environmental consultancy
Lynne Roy	Archaeology and Cultural Heritage Assessment	AOC Archaeology	BA (Hons) Archaeology and Prehistory, MSc Geoarchaeology. MCIfA, FSA (Scot) 15 years' experience in providing archaeology and cultural heritage assessments for EIAs for renewable projects across the UK including the assessments for over 35 onshore wind farm projects.
Gregor Massie	Noise Assessment	ITPEnergised	BEng Civil Engineering, MSc Environmental Sustainability, AIEMA, AMIOA 5 years' experience as a noise consultant.
David Nisbet	Geology, Hydrology, Hydrogeology and Peat Assessment	ITPEnergised	BSc (Hons) Earth Science. Over 10 years' experience as a geologist.
Ian Fletcher	Aviation Assessment	Wind Business Support	BEng Mechanical Engineering. Over 20 years' experience as an aviation consultant.

1.10 Availability of the EIA Report

1.10.1 Electronic copies of the EIA Report are available online on the application website at www.shetland.gov.uk/planning-applications/view-planning-applications

1.10.2 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.

1.10.3 There will be a copy of the EIA Report available to view at Shetland Island Council located at:

8 North Ness Business Park
Lerwick
Shetland
ZE1 0LZ

1.10.4 An additional copy of the EIA Report will be available to view at the Shetland Library:

Shetland Library
Lower Hillhead, Lerwick
Shetland
ZE1 0EL

1.11 Representation to the Application

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

Planning Service
8 North Ness Business Park
Lerwick
Shetland
ZE1 0LZ

1.11.2 Representations should be dated, clearly stating the name of the project (in block capitals), full return email and postal address of those making representations.

1.12 References

Scottish Government (2009). Climate Change (Scotland) Act 2009. Available at: https://www.legislation.gov.uk/asp/2009/12/contents

Scottish Government (2019). Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. Available at: https://www.legislation.gov.uk/asp/2019/15/enacted

Scottish Government (2023). National Planning Framework 4. Available at: https://www.gov.scot/publications/national-planning-framework-4/Scottish Government (2017). The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: http://www.legislation.gov.uk/ssi/2017/102/contents/made

Shetland Islands Council (2020). Climate Change Programme. Available at: https://www.shetland.gov.uk/climate-change