Chapter 1
Introduction

This page is intentionally blank.

1 Introduction

Contents

Figures

This page is intentionally blank.

1 Introduction

1.1 Introduction

1.1.1 Spirebush Ltd (hereafter referred to as 'the Applicant'), a 3R Energy Solutions Ltd (3R Energy) group company, intends to apply to the Scottish Ministers for Section 36 (S36) consent and deemed planning permission, under the terms of the Electricity Act 1989, for permission to construct and operate the Hagshaw Energy Cluster -Western Expansion | Phase 1 (hereafter referred to as the 'Proposed Development'), at a site centred at British National Grid (BNG) NS 70740 32550 (refer to **Figure 1.1**).

1.1.2 The application is supported by this Environmental Impact Assessment (EIA) Report as required by The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the 'EIA Regulations'). This EIA Report has been prepared to assess the environmental impacts of the Proposed Development and accompanies the S36 application.

1.1.3 This chapter provides an introduction to the Proposed Development, as well as providing an overview of the purpose of the EIA Report, its structure and the EIA project team.

1.2 The Applicant

1.2.1 The Applicant for the Proposed Development is Spirebush Ltd, a company established by 3R Energy for the purpose of taking forward the Proposed Development. 3R Energy was established in 2009, with its head office now situated in Lanark. The company was initially established to help farms and rural businesses benefit from renewable energy, with the mainstay of the business being farm sized wind turbines, Combined Heat and Power (CHP) systems and biomass boilers. More recently, 3R Energy has diversified into larger-scale renewable energy projects and has developed over 330 megawatts (MWs) of onshore wind projects within the Hagshaw Energy Cluster (including a further 80 MWs of energy storage) which together will make a substantial contribution to the local area and to national renewable energy and climate change targets.

1.2.2 3R Energy is part of a group of companies which also includes: Mitchell Energy Ltd, Mitchell Farming Partnerships and William Mitchell & Sons (WMS) Ltd, based at Newtonhead Farm Rigside and Hazelside Farm Douglas respectively, which manage the farming assets of the Group. Together the Group:

- owns and manages 3,500 acres of land in the Douglas Valley;
- has farmed the land for over 120 years;
- generates a combined annual turnover of approximately £6 m; and
- employs 15 people as a direct result of its renewable energy and farming operations within the Hagshaw Cluster.

1.2.3 As a local company, 3R Energy is committed to working with the communities closest to the Hagshaw Energy Cluster for the long term to develop and deliver successful projects which create significant and tangible benefits for the local area.

1.3 The Site and Proposed Development Description

Site Description

1.3.1 The Proposed Development site comprises a total area of *c*.965 hectares (ha), split into two main development areas, as illustrated on **Figure 1.2** and briefly described below:

- Northern development area – The proposed wind turbines and associated infrastructure are located within the western and southern part of Dungavel Forest, directly to the west and south of the operational Dungavel and Kype Muir Wind Farms, within South Lanarkshire.

- Southern development area – The proposed solar development and long duration battery and energy storage system (BESS) and associated infrastructure are located on the Netherwood landholding, approximately 1.4 kilometres (km) to the north of Muirkirk in East Ayrshire at its closest point.

1.3.2 The two development areas are connected by the existing public road corridor of the B743.

1.3.3 The current contracted grid connection agreement for the project with the National Electricity System Operator (NESO) provides for the grid connection point for the Proposed Development being within the southern development area. Therefore, the Proposed Development substation, the Network Operator substation, and a short duration BESS compound are also proposed within the southern development area to the west of Linburn Farm. An alternative substation location and short duration BESS compound for the Proposed Development has been contemplated within the northern development area and for completeness this alternative option has also been shown on the plans and considered in this assessment. Further detail and explanation of this is given in **Chapter 3**.

1.3.4 Access to the two development areas is proposed to be taken from three existing entrances (with modifications) off the B743, as shown on **Figure 1.2**.

1.3.5 The northern development area extends to approximately 750 hectares (ha), comprising commercial coniferous plantation and existing forestry tracks. The southern development area extends to approximately 204 ha and comprises rough grassland principally used for silage and grazing cattle and sheep, with woodland fringes.

1.3.6 The site comprises a series of summits within the northern development area, which include Dungavel Hill (458 metres (m), Above Ordnance Datum (AOD)), Auchengilloch (462 m AOD), Brown Hill (313 m AOD) and Regal Hill (428 m AOD). The southern development area is located on the south facing lower slopes of Middlefield Law (466 m AOD).

1.3.7 There are a number of watercourses that traverse the site. The northern development area is drained by the Bught Burn, Patrick Burn, and Powbrone Burn which flow in a south-westerly directly to meet with the Glangavel Water and into the Glengavel Reservoir, located outside the site boundary. The southern development area is traversed by a number of smaller watercourses and the Back Burn, Harwood Burn, and Lamon Burn, which flow in a southerly direction to meet with the Greenock Water, located on the southern boundary of the site.

1.3.8 A small stand of woodland noted on the Ancient Woodland Inventory of semi-natural origin is located along the southern boundary of the site around Middlefield.

1.3.9 In terms of cultural heritage, there is one scheduled monument, Dungavel Hill cairn (SM2848), which lies within the north-west of the site boundary.

1.3.10 Three residential properties lie within the site boundary which are all in the ownership of one of the principal landowners for the Proposed Development:

- Linburn Farm, Muirkirk, Cumnock, KA18 3NL
- Middlefield Farm, Muirkirk, Cumnock, KA18 3NL
- Middlefield Cottage, Muirkirk, Cumnock, KA18 3NL

Environmental Designations

1.3.11 **Figure 1.3** shows environmental designations within 10 km of the Proposed Development site boundary.

1.3.12 The existing road corridor (B743) between the two development areas crosses the Muirkirk and North Lowther Uplands Special Protection Area (SPA) designated for its breeding and non-breeding hen harrier as well as breeding bird populations and overlaps with the area of the Muirkirk Uplands Site of Special Scientific Interest (SSSI), designated for its breeding bird assemblage and upland habitats including blanket bog.

1.3.13 The Blood Moss and Slot Burn SSSI is located to the west of the B743 road corridor, outside the site boundary. It is an area of around 162 ha designated for its fossil-bearing rocks (yielding fossil fish and water scorpions) alongside the Slot Burn, and blanket bog. The Airds Moss Special Area of Conservation (SAC) is designated for its blanket bog habitat and located approximately 2.3 km to the south-west of the site boundary.

1.3.14 There are three further scheduled monuments within 5 km of the site, all located to the south and south-west of the site boundary, alongside a number of scattered B-listed and C-listed structures. Two historic battlefield locations are also located approximately 3.6 km to the north-west of the site and relate to the Battle of Loudoun Hill and Battle of Drumclog.

1.3.15 There are a number of operational and consented wind farm developments, as well as those in planning, that are in the vicinity of the Proposed Development site. Those of relevance will be considered in the cumulative assessment, with the main neighbouring projects shown in **Figure 1.1**.

Overview of the Proposed Development

1.3.16 The Proposed Development is planned to comprise approximately 415 megawatts (MW) of renewable energy generation and energy storage output capacity, consisting of approximately 130 MW wind energy, approximately 60 MW solar energy, and an approximately 225 MW BESS (200 MW of long duration BESS and 25 MW of short duration BESS – refer to **Chapter 3** for further details). It should be noted that although the Proposed Development comprises approximately 415 MW of renewable energy generation and energy storage output capacity, no more than 400 MW will be exported to the grid at any one time.

1.3.17 As discussed further in **Chapter 2**, initial development proposals for the site were more extensive and included some development within the Muirkirk and North Lowther Uplands SPA and Muirkirk Uplands SSSI. Extensive consultation was held on the initial development proposals, during which concerns were raised by NatureScot and RSPB about the elements of proposed development located within the SPA and SSSI. The decision was subsequently taken by the Applicant to split the project into two separate phases. The Proposed Development, which is the subject of this EIA Report, is Phase 1. The Applicant intends to continue discussions with relevant stakeholders about the potential to bring forward proposals for a Phase 2 project in the future, subject to a separate EIA and consenting process.

1.3.18 The main elements of infrastructure associated with the Proposed Development include:

- wind turbines;
- wind turbine foundations;
- crane hardstandings;
- photovoltaic (solar) panels and mounting frames;
- inverters and transformers;
- BESS units and associated infrastructure;
- substations and associated electrical equipment;
- on-site access tracks from the points of access to the wind turbines/solar panels/BESS/substations and between the wind turbines/solar panels/BESS/substations;
- watercourse crossings;
- temporary construction compounds and laydown areas, with a concrete batching plant at one of the construction compounds;
- borrow pits for excavation of stone to use in the construction of the Proposed Development;
- underground cabling between the wind turbines/solar panels/BESS/substations;

- perimeter fencing; and
- CCTV cameras.

1.3.19 The Proposed Development is described in detail in **Chapter 3: Project Description**. The proposed layout is illustrated on **Figure 1.2**.

1.3.20 It should be noted that there are two areas shown for the substation and short-duration BESS, as noted in **Paragraph 1.3.3** above, with further explanation in **Chapter 3**. These will both be assessed within this EIA Report but only one of the two locations will be built-out.

1.3.21 Based on the Proposed Development's location and estimated capacity factor, the annual indicative total electricity generation output for the site form the wind and solar generating components would be an estimated 477,434 megawatt-hours (MWh)[1], per annum. The wind and solar components of the Proposed Development would generate enough electricity to power approximately 200,192 average Scottish households and would contribute towards international and national targets for the generation of renewable energy and reduction in greenhouse gas emissions.

1.3.22 The Proposed Development long duration BESS would in addition provide up to 2,400 MWh of electricity storage to support the National Grid. That is enough electricity to power 569,201 homes for up to 12 hours, further contributing to national targets in terms of energy storage requirements to support the country's transition to a clean power grid.

1.4 Purpose of the EIA Report

1.4.1 SLR Consulting was appointed by the Applicant to undertake an Environmental Impact Assessment (EIA) of the Proposed Development and produce an EIA Report 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. Where appropriate, it also sets out mitigation measures designed to prevent, reduce and, if at all reasonably possible, offset potential significant adverse environmental effects. An assessment of residual effects, those expected to remain following implementation of mitigation and enhancement measures, is also presented.

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

1.4.3 This EIA Report and its NTS accompany the application for S36 consent being submitted to the Scottish Ministers.

1.5 Structure of the EIA Report

1.5.1 The EIA Report is split into five volumes, with the NTS forming a further separate document. This document is **Volume 1** of the EIA Report and it is structured as follows:

- **Chapter 1 – Introduction:** provides an introduction to the EIA Report;
- **Chapter 2 – Site Selection & Design:** provides a description of the site selection and design iteration process, detailing how the Proposed Development evolved through the course of the assessment process and the elimination of alternative development options;
- **Chapter 3 – Project Description:** 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;

1.1.1

[1] *Based on a measured onsite wind capacity factor of 37.1% and industry average of 10.2% for solar (DUKES,2024). Average annual Scottish domestic household consumption is 3,078kWh (DESNZ, 2024).*

- **Chapter 4 – Approach to EIA:** sets out 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 5 – Landscape & Visual Impact:** assesses the potential and residual effects on landscape and visual amenity;
- **Chapter 6 – Ornithology:** assesses the potential and residual effects on ornithology;
- **Chapter 7 – Ecology:** assesses the potential and residual effects on ecology and nature conservation;
- **Chapter 8 – Geology, Peat, Hydrology & Hydrogeology:** assesses the potential and residual effects on peat, hydrology, hydrogeology and geology;
- **Chapter 9 – Noise & Vibration:** assesses the potential and residual effects of noise and vibration;
- **Chapter 10 – Cultural Heritage:** assesses the potential and residual effects on the historic environment;
- **Chapter 11 – Traffic & Transport:** assesses the potential and residual effects on access, traffic and transport;
- **Chapter 12 – Aviation & Radar:** assesses the potential and residual effects on aviation and radar;
- **Chapter 13 – Forestry:** assesses the potential and residual effects on forestry;
- **Chapter 14 – Shadow Flicker:** assesses the potential and residual effects of shadow flicker from the wind development component;
- **Chapter 15 – Glint and Glare:** assesses the potential and residual effects of glint and glare from the solar development component;
- **Chapter 16 – Schedule of Mitigation:** summarises all of the mitigation and enhancement measures presented in this EIA Report; and
- **Chapter 17 – Summary of Residual Effects:** provides summary tables of all predicted residual effects.

1.5.2 **Volume 2** contains the figures that inform the EIA Report.

1.5.3 **Volume 3** contains the elongated visualisations and photomontages that inform Chapter 5 Landscape and Visual Impact Assessment and Chapter 10 Cultural Heritage.

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

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

1.5.6 Additional supporting documents which form part of the application submission include a **Non-Technical Summary** of the EIA Report, a **Planning Statement**, a **Economic and Community Impact Report** and a **Pre-Application Consultation (PAC) Report**.

1.6 Assessment Team

1.6.1 The assessment was undertaken by SLR's environmental teams supported by external consultants. **Table 1.1** outlines the full EIA team and their experience.

Table 1.1 – EIA Project Team

Consultant	Input to EIA	Company	Experience
Jenny Hazzard	EIA Project Director	SLR	BSc (Hons) Geological Engineering, MSc Engineering Geology, PIEMA. 25 years of experience in the environmental consultancy industry.
Gregory Walton	EIA Assistant Project Manager and GIS Lead	SLR	BSc Environmental Sciences (Hons), MSc Environmental Sciences. Over 1.5 years' experience in environmental consultancy.
Andrew Roberston	EIA Assistant Project Manager	SLR	MA (Hons) Geography, GradIEMA. Graduate EIA Consultant.
Dale Turner	Landscape and Visual Impact Assessment	Pegasus Group	BSc (Hons) MSc Over 15 years' experience in undertaking and overseeing LVIA for energy developments.
David Gooch	Landscape and Visual Impact Assessment	Pegasus Group	MA (Hons) Over 10 years' experience in undertaking LVIA for energy developments.
Allan Taylor	Ornithology	SLR	BA Geography (Hons), MSc Environmental Management, ACIEEM, Wildlife & Countryside Act Schedule 1 Birds – SNH: 138114 Over 10 years' experience in undertaking ornithological survey and assessment.
Stephen Lockwood	Ecology	RPS	BSc (Hons) Zoology, MSc Biodiversity and Conservation CEcol MCIEEM. 16 years' experience in the UK ecological consultancy industry.
David Nisbet	Geology, Peat, Hydrology & Hydrogeology	SLR	BSc (Hons) Earth Science, FGS. 12 years' experience in environmental consultancy.
Simon Waddell	Noise	SLR	BSc (Hons) Environmental Geoscience, Postgraduate Diploma in Acoustics and Noise Control (via Institute of Acoustics). Over 13 years' experience in environmental noise, much of which has centred on wind farms and renewable energy development.
Oliver Rusk & Jack Litchfield	Cultural Heritage	CFA	MA (Cantab) MLitt ACIfA. & BA MA PhD ACIfA Over eight years' experience in commercial archaeology and practised experience of producing input to EIA reports for a range of development projects, including wind farms, grid connections and overhead power transmission lines.

Consultant	Input to EIA	Company	Experience
Alan Devenny	Traffic & Transport	SYSTRA	BEng (Hons) Civil & Transportation Engineering, PhD Civil Engineering, CEng, MICE. Over 25 years' experience in transport consultancy.
Ian Fletcher	Aviation & Radar	Wind Business Support	BEng Mechanical Engineering. Over 20 years' experience as an aviation consultant.
David Galloway	Forestry	Bidwells	BSc in Forestry and Conservation. A Chartered Forester with 20 years of experience in the forest industry.

1.7 Availability of the EIA Report

1.7.1 In accordance with Section 18 of the EIA Regulations, copies of the EIA Report will be available for inspection by the public, notice of which will be published on the application website, in The Herald, the Edinburgh Gazette, the Cumnock Chronicle and the East Kilbride News.

1.7.2 Printed copies of the NTS and EIA Report are available by request from:

3R Energy
Lanark Auction Market
Hyndford Road
Lanark ML11 9AX

Phone: 01555 660 244

Email: info@3renergy.co.uk

Website: https://3renergy.co.uk/projects/hagshaw-energy-cluster-western-expansion/

1.7.3 A printed copy of the EIA Report will be available to view during opening hours at the following locations:

East Kilbride Library
The Olympia Shopping Centre
East Kilbride
South Lanarkshire
G74 1PT

Opening Hours:
Mon-Wed 09:15 to 17:00
Thurs 09:15 to 20:00
Fri- Sat 09:15 to 17:00

The Hub
Muirkirk Enterprise Group
Furnace Road, Muirkirk
East Ayrshire
KA18 3RE

Opening Hours:
Tues-Wed 10:00 to 12:00
Thurs 16:30 to 18:00
Fri 10:00 to 11:30

1.7.4 Electronic copies of the EIA Report, including all figures, appendices and accompanying documents are available to view on the project website https://3renergy.co.uk/projects/hagshaw-energy-cluster-western-expansion/ and can be accessed at https://www.energyconsents.scot.

1.7.5 Hard copies of the full submission documents can be made available at a charge of £2,000 per copy. Alternatively, a USB copy can be made available on request at a charge of £20, by emailing info@3renergy.co.uk.

1.8 Representations to the Application

1.8.1 Any representations to the application should be made directly to the Scottish Government at:

Energy Consents Unit
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

Email: representations@gov.scot

Online: http://www.energyconsents.scot/

1.9 References

Scottish Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/ssi/2017/101/regulation/18/made

UK Government Department of Energy Security and Net Zero (DESNZ) (2024). Digest of UK Energy Statistics (DUKES): renewable sources of energy. DUKES chapter 6: statistics on energy from renewable sources. Available at: Digest of UK Energy Statistics (DUKES): renewable sources of energy - GOV.UK Accessed: Dec 2024

UK Government Department for Energy Security and Net Zero. (2024). Subnational electricity and gas consumption summary report 2023. London: Department for Energy Security and Net Zero. Available at: https://assets.publishing.service.gov.uk/media/65b12dfff2718c000dfb1c9b/subnational-electricity-and-gas-consumption-summary-report-2022.pdf Accessed: Jan 2025

UK Government (1989). Electricity Act 1989. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents

UK Government (1997). Town and Country Planning (Scotland) Act 1997. Available at: https://www.legislation.gov.uk/ukpga/1997/8/contents