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# 1 Introduction

## 1.1 Overview

- 1.1.1 This Non-Technical Summary (NTS) forms part of the Environmental Impact Assessment (EIA) Report that has been prepared to accompany an application for consent under Section 36 of the Electricity Act 1989 to construct and operate Bloch Wind Farm (hereafter referred to as the proposed development). The proposed development is located approximately 5.5km south-west of Langholm, as measured to the site centre, in Dumfries and Galloway.
- 1.1.2 The EIA Report presents the findings of the EIA which aims to identify potentially significant environmental effects from the proposed development and where possible proposes suitable mitigation measures to address or minimise such effects. This NTS summarise the findings of the EIA Report in non-technical language.

## 1.2 The Applicant

- 1.2.1 Renewable Energy Systems Ltd (RES) is the world's largest independent renewable energy company active in onshore and offshore wind, solar, energy storage and transmission and distribution. At the forefront of the industry for over 40 years, RES has delivered more than 23GW of renewable energy projects across the globe and supports an operational asset portfolio of 10GW worldwide for a large client base.
- 1.2.2 RES employs more than 2,500 people and is active in 11 countries working across onshore and offshore wind, solar, energy storage, green hydrogen and transmission and distribution
- 1.2.3 From its Glasgow office RES has been developing, constructing and operating wind farms in Scotland since 1993. RES has developed and/or built twenty-one wind farms in Scotland with a total generation capacity of 597MW. The applicant has the necessary knowledge and experience in renewable energy to develop the proposed development.

## 1.3 The Proposed Development

- 1.3.1 The proposed development is located south of the B7068, approximately 5.5km south-west of Langholm in Dumfries and Galloway. The site is entirely within the administrative boundary of Dumfries & Galloway Council (DGC). Figure 1 presents a general context for the location of the site within DGC. The border between Scotland and England is located approximately 7km to the south of the site at its closest point.
- 1.3.2 The site extends to approximately 1,020 hectares (ha) and comprises open rolling moorland, the topography of which varies from west to east. Outwith the site, the landscape to the south is generally composed of lower, rolling agricultural land interspersed with small areas of woodland and forestry. To the east, west and north of the site, the landscape becomes more rugged with a greater number of steeper hills and larger areas of forestry cover.
- 1.3.3 The site is located adjacent to the operational Solwaybank Wind Farm, which comprises 15 wind turbines up to 126.5m in height to blade tip and associated infrastructure. Solwaybank Wind Farm became operational in 2020 and has planning permission for a 25-year operational life (i.e. until 2045).
- 1.3.4 The proposed development would comprise 21 wind turbines, with varying heights to blade tip as follows:
- 10 wind turbines up to 230m in height to blade tip;
  - 6 wind turbines up to 200m in height to blade tip; and
  - 5 wind turbines up to 180m in height to blade tip.
- 1.3.5 Associated permanent infrastructure would include wind turbine foundations, low to medium voltage transformers and related switchgear adjacent to each wind turbine, crane hardstand areas adjacent to each wind turbine, underground electrical and communication cabling, a substation compound containing electrical infrastructure, control building, welfare facilities and a communications mast, a battery energy storage system (BESS) compound, access tracks including watercourse crossings, turning heads and site entrances from the public road network, search areas for up to three borrow pits; and one temporary construction compound.



- 1.3.6 A BESS compound is included as part of the application to improve the efficiency of the proposed development. It is anticipated that the BESS will have a storage capacity of up to 45MW.
- 1.3.7 It is anticipated that construction activities for the proposed development would take approximately 15 months, depending upon seasonal working and weather conditions. Once constructed, it is anticipated that the proposed development would have an operational life of up to 50 years.
- 1.3.8 The proposed development and associated infrastructure are shown on Figure 2. A more detailed description of the site and the proposed development is provided in Chapter 2 of the EIA Report.

## 1.4 Need for and Benefits of the Proposed Development

### Renewable Electricity Generation

- 1.4.1 Both UK and Scottish Government energy policy recognises the need for substantial increases in renewable energy generation, in particular onshore wind, if the transition towards net zero is to be achieved. Furthermore, recent global events have also shed a spotlight once again in UK energy policy on the importance of having greater security over our future energy supplies and the importance of generating more of the UK's energy domestically.
- 1.4.2 The proposed wind turbines would have an anticipated nominal capacity of approximately 126MW. The annual generation from the wind turbines is therefore estimated at approximately 343,932 Megawatt hours (MWh) based on a site derived capacity factor of 31.16%.
- 1.4.3 Based upon this predicted annual electricity generation figure and the most recent energy statistics provided by the Department of Business, Energy and Industrial Strategy (BEIS) which identify that average UK domestic household consumption is 3,748 kilowatt hours per annum, it is estimated that the proposed development will supply renewable electricity equivalent to the current annual domestic needs of approximately 128,905 households.

### Effect on Greenhouse Gas Emissions

- 1.4.4 The First Minister of Scotland declared a climate emergency in April 2019. In response, the Scottish Government introduced amendments to the Climate Change (Scotland) Act 2009 through the Climate Change (Emission

Reduction Targets) (Scotland) Act 2019. The 2019 Act amendment sets legally binding targets requiring Scotland to reduce carbon emissions to net zero by 2045, with interim targets to reduce emissions by 56% by 2020, 75% by 2030 and 90% by 2040. A series of annual targets towards this net zero and interim target have also been set. These new greenhouse emissions targets represent a substantial increase over the targets set in the previous Act, in particular over the period to 2030.

- 1.4.5 The proposed development would reduce greenhouse gas emissions through replacing fossil fuel generation. The length of time a wind turbine needs to be in operation before it has, by displacing fossil fuel energy generation, avoided as much carbon dioxide as was released in its lifecycle is known as the carbon payback period.
- 1.4.6 A carbon balance assessment has been undertaken for the proposed development using the latest version of the Scottish Government's carbon calculator for wind farms (version 1.6.1). The results from the carbon calculator reveal that the net impact of the proposed development will be positive overall, as over its proposed 50 year operational life, it is expected to generate over 48 years' worth of clean energy if it replaced fossil fuel-mix electricity generation and nearly 47 years' worth of clean energy even if it replaces cleaner grid-mix electricity generation (which includes some fossil fuels and low carbon electricity generation sources such as nuclear, hydro-electric and wind energy).
- 1.4.7 Over the expected 48 years that the proposed development is likely to be generating carbon-free electricity, this could result in over 7.4 million tonnes of net carbon dioxide emission savings when replacing fossil fuel-mix electricity generation.
- 1.4.8 Overall, the proposed development would therefore lead to substantial net carbon savings and reduction of greenhouse gas emissions over its operational life.

### Peatland Restoration and Habitat Management

- 1.4.9 A Habitat Management Plan (HMP) will be produced for the proposed development. The overall purpose of the HMP will be to implement positive land management for the benefit of landscape and nature conservation which will mitigate any adverse impacts that the proposed development may have. In addition to purely mitigating any adverse

impacts, the applicant is committed to enhancing the nature conservation and landscape value of the site.

- 1.4.10 The proposed HMP would be targeted to deliver benefits to peatland habitats and to the breeding bird community (particularly curlew). A draft HMP is included in Technical Appendix 7.6 of the EIA Report which outlines the proposals for the enhancement of at least 50ha of peatland. Once the proposed peatland restoration has succeeded, it is considered that it would result in a net positive impact and likely net gain in biodiversity.

## 2 Site Selection and Design

### 2.1 Site Selection

2.1.1 A site selection process was undertaken which identified the proposed site as being potentially suitable for a wind farm development. This site selection process took into account a number of potential environmental, technical and commercial constraints including, but not confined to:

- average wind speed;
- natural and built heritage constraints, in particular national and internationally designated assets;
- proximity to housing;
- slope constraint;
- aviation and defence interests;
- access for construction; and
- proximity to other wind farm sites (pre-planning, consented and operational)

#### Key Issues and Constraints

2.1.2 Once the site was identified, key issues and constraints for consideration in the design process were established through a combination of desk-based research, extensive field survey and consultation (through the EIA scoping process). The design process considered the following key issues and constraints:

- landscape designations and visual amenity;
- archaeological and cultural heritage assets;
- sensitive fauna;
- sensitive habitats;
- watercourses, private water supplies and sensitive surface water features;
- topography and ground conditions;
- public road accessibility;
- recreational and tourist routes;
- proximity of residential properties;
- aviation and defence constraints; and
- presence of utilities.

2.1.3 Information in respect of the survey work to identify various key issues and constraints and how they have contributed to the layout design is provided in the technical chapters of the EIA Report (Chapters 5 to 13).

## 2.2 Design Strategy

2.2.1 As part of the iterative approach adopted by the applicant, a number of design principles have been incorporated into the proposed development as standard practice, including the following:

- consideration to the underlying landscape and its scale;
- consideration to operational, consented and proposed wind turbines neighbouring the site;
- consideration to the size and scale of the proposed development appropriate to the location and proximity to residential properties;
- sensitive siting of the proposed infrastructure incorporating appropriate buffer distances from environmental and archaeological receptors to avoid or reduce effects;
- maximising the re-use of existing tracks as much as possible to access proposed wind turbine locations;
- optimising the alignment of new access tracks and hardstands taking due consideration to the topography of the site, to minimise cut and fill, minimise the impact on sensitive peatland habitats and reduce landscape and visual effects;
- adoption of floating access tracks to minimise disturbance of peat where appropriate;
- minimising watercourse crossings and encroachment on watercourse buffers;
- consideration to inclusion of borrow pit search areas to minimise the volume of the stone required to be imported to the site;
- using the latest wind turbine technology, consisting of more efficient and larger turbines where these can be reasonably accommodated within the landscape; and
- maximising the potential energy yield of the site through the employment of co-located technology in optimal locations (wind and battery storage).

2.2.2 The results indicated that the site would be a technically and environmentally appropriate location to develop a wind farm.

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- 2.2.3 Environmental survey of Bloch, for example for birds and other species, peat depth, archaeology and other matters of interest, ran over a period from 2020-22 and also made use of data gathered for the previous Solwaybank Wind Farm application where relevant. The data gathered enabled the team to investigate a number of different design iterations before settling on the final design which maximises the efficiency of the proposed development whilst limiting the potential environmental impacts.
  - 2.2.4 The proposed development has been in the design process for a considerable time and the layout has evolved iteratively, including responding to issues raised during and after scoping, having considered different number and size of wind turbines. Such changes have been influenced by several factors including economics, stakeholder feedback, planning policy and potential environmental effects.
  - 2.2.5 Full details of the site design process undertaken for the proposed development is provided in Chapter 3 of the EIA Report.

## 3 EIA Approach and Technical Assessments

### 3.1 Introduction

- 3.1.1 The EIA has identified the likely effects of the proposed development on the environment and an assessment has been made as to whether any of these effects could be significant. Conclusions about significance are determined by the sensitivity of the baseline conditions (the sensitivity of the receptor) combined with the predicted degree of alteration (the magnitude of change) from the baseline conditions that will occur as a result of the construction, operation and decommissioning of the proposed wind farm. Chapter 4 of the EIA Report sets out the EIA approach and methodology employed in more detail.
- 3.1.2 Good practice advises that EIA should be an iterative process rather a unique, post design appraisal. In this way the findings of the environmental assessments can be used to inform the design of the proposed development to respond to the environmental constraints and opportunities present. This approach has been adopted in respect of the proposed development; where likely adverse effects have been identified, consideration has been given to removing or reducing these through evolving the design of the proposed development.
- 3.1.3 This section provides a brief, non-technical summary of the main findings of the EIA as set out in the technical assessment chapters (chapters 5 to 13) within the EIA Report.
- 3.1.4 Consultation on the scope and methodologies for each of these technical assessment chapters was agreed through a formal EIA scoping opinion request to the Scottish Government Energy Consents Unit. In addition, there has been continued dialogue with relevant statutory and non-statutory consultees both before and after the scoping opinion request was submitted to the Scottish Government.

### 3.2 Landscape and Visual

- 3.2.1 Chapter 5 of the EIA Report considers the likely significant landscape and visual effects associated with the construction and operation of the proposed development.

## Methodology

- 3.2.2 The assessment method for this LVIA draws upon the established GLVIA3; An Approach to Landscape Character Assessment (Natural England, 2014), Landscape Institute Technical Information Note 05/2017 regarding townscape character; LI Technical Guidance Note 02/2019 Residential Visual amenity assessment (RVAA); Landscape Institute's Technical Guidance Note 02/21: Assessing landscape value outside national designations; LI Technical Guidance Note 06/19 Visual Representation of development proposals and other recognised guidelines.

## Baseline

- 3.2.3 33 landscape character types and areas are located within 15km of the proposed development, within the Zone of Theoretical Visibility (ZTV) study and Zone of Visual Influence (ZVI). Of these character areas 16 have been identified in Scotland and nine in Cumbria that require detailed assessment, with the remainder excluded because the Zone of Theoretical Visibility (ZTV) study and site work indicates limited or no visibility.
- 3.2.4 The different types of groups assessed within this report encompass local residents; people using key routes such as roads; cycle ways, people within accessible or recreational landscapes; people using Public Rights of Way and Core Paths; or people visiting key viewpoints. In dealing with areas of settlement, Public Rights of Way and local roads, receptors are grouped into areas where effects might be expected to be broadly similar, or areas which share particular factors in common.
- 3.2.5 17 representative viewpoints have been selected to inform the assessment of effects on visual receptors.

## Effects on Landscape Character

- 3.2.6 The findings of the assessment indicate that landscape sensitivity within the study area is variable, ranging from Medium-Low to High-Medium. This is in part due to the presence of landscape designations including Hadrian's Wall World Heritage Site core area and buffer zone, Nith Estuary National Scenic Area and Solway Coast Area of Outstanding Natural Beauty, and Regional Scenic Areas.
- 3.2.7 The proposed development is likely to become the dominant characteristic of the landscape within and to the east of the site approximately 1-1.5km, giving rise to the sense of being next to or at a wind farm. Due to the



proximity of the existing Solwaybank Wind Farm to the west and Craig Wind Farm to the north, which already influence landscape character between these wind farms and the proposed development, effects from the proposed development will be reduced in these directions. Beyond these areas and up to approximately 5km from the proposed development, it will become one of the key characteristics, giving the sense of being near a wind farm. As a result there will be localised significant effects on the following Landscape Character Types:

- LCT175 Foothills - Dumfries and Galloway (includes site)
- LCT172 Upland Fringe - Dumfries and Galloway (includes site)
- LCT177 Southern Uplands - Dumfries and Galloway (0.8km, north)
- LCT161 Pastoral Valley - Dumfries and Galloway (1.4km, east)

3.2.8 Overall effects on other character areas within the study area will range be of Medium to Negligible magnitude and Moderate to Minimal significance.

### Visual Effects

3.2.9 Effects on views will be generally of Large scale within close proximity to the site and Medium scale up to around 4.5-5km from the proposed wind farm, and will decrease to Small and Negligible scale beyond approximately 7.5km from the site boundary.

#### Effects on Visual Receptor Groups

3.2.10 The proposed development will be prominently visible from parts of the visual receptor group covering the site: Local roads, residents and core paths between the A7, A6071 and A74(M). This will give rise to significant visual effects. Other visual receptor groups within the study area will tend to have fewer and more distant views resulting in effects of no greater than Moderate significance.

#### Effects on Roads and Rail

3.2.1 Views of the proposed development from key road and rail routes through the study area will generally be intermittent views whilst travelling through the area and not looking directly towards the proposed development. Effects will be of Low Magnitude and Slight Significance for uses of the A75, the West Coast Mainline and Glasgow South Western Line, with Negligible effects for users of other main road routes through the study area.

### Effects on Long Distance Routes

- 3.2.2 All of the long-distance routes within the study area are beyond 9km from the proposed development. Effects on long distance walking and cycling routes will be no greater than Low Negligible Magnitude and Slight to Slight-Minimal Significance.

### Effects on Designated Landscapes

- 3.2.3 There will be no effects on the Solway Coast AONB or the Frontiers of the Roman Empire (Hadrian's Wall) that will be incompatible with the designations in landscape and visual terms. Effects on these designations will be Slight to Slight-Minimal and will not be significant.
- 3.2.4 There will be localised significant effects on the Langholm Hills RSA to the north-east of the site, due to its close proximity to the proposed development and its visibility from the southern part of the designated area. However, there will be no direct effects on the RSA and the proposed development would not compromise the key qualities and overall integrity of this RSA.

### Night-time Effects

- 3.2.5 The night-time effects of the proposed development are assessed within a study area of 15km.
- 3.2.6 Crossdykes Wind Farm is the only existing wind farm with red nacelle and tower lights within the study area. However, Little Hartfell Wind Farm (consented) will also include wind turbine lighting once construction is complete. Other lighting sources within and outside the study area include settlements and transport corridors, the MOD base at Longtown and Chapelcross power station. There are also 13no. 227m tall radio masts at Anthorn Radio Station, a 337m tall mast at Caldbeck Transmitting Station and one 365m tall mast at Skelton Transmitting Station. These masts have red aviation lighting that is the same colour and are assumed to be of the same intensity as required on the proposed wind turbines.

### Effects on Landscape Character

- 3.2.7 Of the LCTs within the 15km study area for night-time effects, those to the south of A74(M) corridor and those around Longtown and the A7 corridor are not assessed due to the strong presence of existing lights sources within the night time environment. Of the nine LCTs located within the study area, localised significant effects on landscape character

at night would be experienced within LCT175 Foothills - Dumfries and Galloway (includes site) and LCT177 Southern Uplands - Dumfries and Galloway (0.8km, north) due to introduction of new light sources.

### Visual Effects

- 3.2.8 Of the visual receptors within the 15km study area for night-time effects, many already experience some level of lighting at night due to the presence of roads, settlement and individual residential properties. As a result, significant visual effects at night are not assessed for any of the visual receptors.

### Designated Landscapes

- 3.2.9 Night-time effects on the Langholm Hills RSA to the north-east of the site will be Effects will be of Low magnitude, Slight (not significant), due to the existing lighting sources along the A7, and the proposed development would not compromise the key qualities and overall integrity of this RSA.

### Effects on Residential Properties

- 3.2.10 The baseline assessment identified a total of 48 residential properties within the 2.5km study area for the residential visual amenity assessment (RVAA). Of these properties, all but three have potential visibility of the proposed development and have been assessed in detail in the RVAA.
- 3.2.11 Operational effects will vary notably between residential properties due to the number and range of properties within the study area. The two properties with the highest magnitude of change are P4 (1 Bigholms Cottages) and P11 (Bloch Farm). Both properties lie within the site boundary and are financially involved with the proposed development. P4 and P11 will both experience clear views of the majority of the turbines due to their proximity to the proposed development and the aspect of the properties.
- 3.2.12 The property with the second highest magnitude of change, at High-medium, is P2 (Collin Cottage) which was taken forward for further detailed assessment. Effects on P2 are deemed not to meet the Residential Visual Amenity Threshold.
- 3.2.13 The assessment concludes that for the properties that are not financially involved with the project the Residential Visual Amenity threshold will not be reached and the effects will not be sufficiently “oppressive” or

“overbearing” that any property will be rendered an unattractive place in which to live.

### Cumulative Effects

3.2.14 Greater effects than for the proposed wind farm alone would arise on the following receptors if any of the cumulative schemes and the proposed wind farm were consented, generally due to closer proximity to a number of the cumulative schemes:

- LCT177 Southern Uplands - Dumfries and Galloway (0.8km, north);
- LCT177 Southern Uplands - Dumfries and Galloway (3.2km, east);
- LCT166 Upland Glens - Dumfries and Galloway (3.5km, north-east);
- Langholm, local core paths and hills visual receptor group;
- Distant roads, residents and recreational landscapes between 8.7km and 29.1km west visual receptor group;
- Distant roads and residents in the low-land of Carlisle visual receptor group;
- Distant roads and residents along the estuarine landscape west of Carlisle visual receptor group;
- A75;
- West Coast Mainline;
- Glasgow South Western Line; and
- Glasgow South Western Line.

### Cumulative Night-time Effects

3.2.15 Greater effects than for the proposed wind farm alone would arise at night on the following receptors if any of the cumulative schemes and the proposed wind farm were consented, generally due to closer proximity to a number of the cumulative schemes:

- LCT177 Southern Uplands - Dumfries and Galloway (0.8km, N);
- LCT177 Southern Uplands - Dumfries and Galloway (3.2km, NE);
- Local roads, residents and core paths between the A7, A6071 and A74(M) visual receptor group;
- Langholm, local core paths and hills visual receptor group; and
- Langholm Hills RSA.

3.2.16 Effects on the receptors assessed above can be found in Table 5.13 of Chapter 5.

### 3.3 Archaeology and Cultural Heritage

- 3.3.1 Chapter 6 of the EIA Report assesses the potential impact on cultural heritage assets from the construction, operation, and decommissioning of the proposed development. The report comprises five assessments: direct impacts on heritage assets as a result of the proposed development; indirect impacts on heritage assets as a result of the proposed development; cumulative impacts on heritage assets as taking into account other windfarms that are consented or in the planning process; impacts on cultural heritage assets of the decommissioning of the proposed development; and the residual impacts on cultural heritage assets as a result of any mitigation applied as part of the proposed development. These assessments have been undertaken following national legislation, national and local government policies, and guidance from the relevant authorities. To complete the assessment, Historic Environment Scotland (HES), Historic England, and the Dumfries and Galloway Council archaeology officer were consulted in May 2022 regarding heritage assets within their respective remits. HES and Historic England responded, but no response was received from Dumfries and Galloway Council.
- 3.3.2 A baseline study was conducted, with a study area comprising the site and a 1km buffer from the site boundary. A baseline condition for the study area was compiled, which comprised a synthesis of all known heritage assets within this area to create a predictive model for the potential for unknown below-ground archaeological remains within the site. A field survey was undertaken to support this predictive model. Any heritage assets identified during this survey that were not previously recorded within the Historic Environment Record have been assigned an SLR number and are identified within the Site Gazetteer (Technical Appendix 6.1). Any heritage assets within the site, including the scheduled monument (SM4690), were assessed for direct impacts as a result of the proposed development. Assets of regional and national importance within the study area were also assessed for indirect impacts as a result of the proposed development; a screening process was then conducted, and the outcomes shown in Technical Appendix 6.2.
- 3.3.3 The assessment of the baseline concluded that the probability of unknown prehistoric remains within the site is moderately high, based on the level of prehistoric activity within the study area. There is a spread of agricultural, domestic, and funerary assets throughout the study area,

suggesting a varied use of the site. This includes the presence of the Bloch Farm scheduled monument (**SM4690**), an Iron Age enclosure in the north of the site. The potential for unknown Romano-British heritage assets within the site is low, as there is only one possible Roman settlement within 1km of the site. There is a very low potential of unknown early-medieval heritage assets within the site, as no remains from that period were recorded within the study area. There is a moderate potential for unknown medieval heritage assets to survive the site, with the majority of medieval heritage assets recorded in the study area being agricultural in nature, with some domestic farmsteads present. There is low potential for further unknown post-medieval heritage assets within the site, as whilst there is a high presence of post-medieval heritage assets within the study area, their presence and location are well documented. If any unknown post-medieval heritage assets are located within the site, they are likely to be agricultural in nature (e.g., field systems, boundaries).

- 3.3.4 The potential for construction effects has been assessed, with mitigation of any potential direct impacts embedded into the design wherever possible. The potential for direct impact onto the Bloch Farm scheduled monument (**SM4960**) was considered, with a buffer area of 0.5km embedded into the design to assure that there would be no direct impacts from infrastructure. A potential direct impact was identified to **SLR111**, a post-medieval building located c.0.15km southeast of T9, as a result of the construction of the access track. The building was identified through processed LiDAR data, but, due to forestry plantation, its full extent could not be established through a walkover survey. An archaeological watching brief is proposed for any ground-breaking works within the vicinity of **SLR111**, to mitigate any direct impact on the asset. The precise scope of the mitigation works will be agreed upon with the Dumfries and Galloway Council's Archaeological Officer.
- 3.3.5 A 15km study area from the proposed turbines was established to assess the operational effects on the setting of designated heritage assets of national importance. The EIA Report includes a consideration of the operation effects upon the 17 designated heritage assets agreed upon by HES and Historic England. A moderate significance of effect was determined for Gibbs Hill (**SM4518**), a palisaded enclosure, and Bloch Farm (**SM4690**); these are considered significant in EIA terms. Mitigation in the form of design in relation to the reduction of turbine heights and the

movement of turbine locations has been embedded into the design of the proposed development, in order to reduce impact of the operational effects.

- 3.3.6 A cumulative assessment was carried out with regard to any wind farm developments that are consented or under planning applications and within 15km of any nationally important assets anticipated to be subject to a moderate adverse effect or above as a result of the proposed development. Callisterhall Wind Farm, located approximately 4.5km northwest of the proposed development, was considered for Bloch Farm (**SM4690**) and Gibbs Hill (**SM4518**). Whilst both Callisterhall Wind Farm and the proposed development are anticipated to be visible from both scheduled monuments, it is expected that there would only be a peripheral change to the assets' setting and the parts of the assets' significance that make the greatest contribution to their significance will be preserved. It is predicted that there would be a low adverse cumulative effect on Bloch Farm (**SM4690**) and no cumulative effect on Gibbs Hill (**SM4518**).
- 3.3.7 Potential decommissioning effects were considered, and no significant effects were predicted, assuming the decommissioning process would not cause any additional ground disturbance and the land within the Site would return to its pre-development state.
- 3.3.8 A moderate significance of effect has been identified for Bloch Farm (**SM4690**) and Gibbs Hill (**SM4518**). These impacts are not considered to be of such significance that they would reduce the ability to understand or appreciate those assets, and the integrity of their settings would therefore not be adversely affected. As the integrity of both these assets' settings would be preserved, the proposed development would thus be consistent with Paragraph 145 of Scottish Planning Policy (2014).

## 3.4 Ecology

- 3.4.1 Assessments of the relevant potential effects upon ecology are presented in Chapter 7 of the EIA Report. The assessment discusses the methods used to establish the ecological species and communities present in the vicinity of the site, together with the process used to determine their nature conservation value. The ways in which birds could be affected (directly or indirectly) by the construction and operation of the proposed development

- are explained, and an assessment is made with regards to the significance of these effects.
- 3.4.2 Desk-based studies and field surveys were carried out in and around the site over respective 'study areas' to establish baseline conditions and the species and communities present. The proposed development is not located within any ecological designation.
- 3.4.3 Five high sensitivity (EU Habitats Directive Annex 1) habitats would be affected by the proposed development: blanket bog, wet heath, wet modified bog, marshy grassland (purple moor grass) and acid/neutral flush. Though a small loss of these habitats will occur, implementation of the proposed Habitat Management Plan (HMP) will offset these losses.
- 3.4.4 Additional measures will be put in place during the construction phase to protect key species and will be detailed in the Construction Environment Management Plan (CEMP), HMP and Species Protection Plan. An Environmental Clerk of Works (ECoW) will be appointed to monitor adherence to such plans.
- 3.4.5 Potential impacts on fisheries will be mitigated by using best practice protocols to address potential fish access issues, silt management and pollution risks.
- 3.4.6 The only operational phase ecological impact identified was collision risk to bats. Up to medium magnitude risks were identified, which would be mitigated by preventing the wind turbine blades from turning when they are not operational at low wind speeds.
- 3.4.7 Overall, there are not likely to be any significant impacts on ecology resulting from the proposed development, assuming that the mitigation measures referred to within Chapter 7 are adopted (and which are required to ensure compliance with the nature conservation legislation). In relation to the key NatureScot wider countryside test, the proposed development would not affect the favourable conservation status of any species/community of conservation importance within the Natural Heritage Zone, either alone or in-combination with other schemes. It would also not contribute to any Likely Significant Effect on any Special Area of Conservation (SAC) qualifying interests. No effects would result in any breach of the Habitats Regulations.



## 3.5 Ornithology

- 3.5.1 Assessment of the relevant potential effects upon ornithology is presented in Chapter 8 of the EIA Report. The assessment discusses the methods used to establish the bird species and populations present in the vicinity of the site, together with the process used to determine the nature conservation value of the birds that used the site. The ways in which birds could be affected (directly or indirectly) by the construction and operation of the proposed development are explained, and an assessment is made with regards to the significance of these effects.
- 3.5.2 Desk-based studies and field surveys were carried out in and around the site over respective 'study areas' to establish baseline conditions and the bird populations present. The proposed development is not located within any ornithological designation.
- 3.5.3 The focus of the ornithological impact assessment were the key bird species identified by NatureScot as being at potential risk of impact from wind farms that were recorded at the site. These included three species breeding within the potential disturbance zone: greylag goose (2 pairs), lapwing (2 pairs) and curlew (4 pairs).
- 3.5.4 Key species recorded using the potential disturbance zone outside the breeding season included red kite, hen harrier, goshawk, curlew, golden plover, peregrine and merlin.
- 3.5.5 Key species recorded at risk of collision (i.e. flying through the site at wind turbine rotor height) included whooper swan, pink-footed goose, greylag goose, barnacle goose, red kite, hen harrier, goshawk, curlew, golden plover, lapwing, dunlin, peregrine and merlin.
- 3.5.6 Overall, there are not likely to be any significant impacts on ornithology resulting from the proposed development, assuming that the mitigation measures identified within Chapter 8 are adopted. In relation to the key NatureScot wider countryside test, the proposed development would not affect the favourable conservation status of any bird species of conservation importance within the Natural Heritage Zone, either alone or in-combination with other schemes. It would also not contribute to any Likely Significant Effect on any Special Protection Areas (SPA) qualifying interests. No effects would result in any breach of the Habitats Regulations.

3.5.7 Whilst there are no significant effects predicted, additional controls will be put in place during the construction phases and will be detailed in the Construction Environment Management Plan (CEMP) and Breeding Bird Protection Plan. The detailed measures will be implemented during construction to protect species within the site, and an Environmental Clerk of Works (ECoW) will be appointed to monitor adherence to such plans.

## 3.6 Hydrology, Hydrogeology, Geology and Soils

3.6.1 Chapter 9 of the EIA Report assess the potential effects of the proposed development on geology, hydrology, hydrogeology and soils. Site survey work has been undertaken in two phases with the purpose of identifying and mapping sensitive receptors with the results subsequently informing the site design and assessment. Scottish Water, the Scottish Environment Protection Agency (SEPA), NatureScot, Galloway Fisheries Trust (GFT), Dumfries & Galloway Council (D&GC) and other engaged stakeholders have been consulted during the EIA and their guidance used in designing the layout to protect these receptors from disturbance and potential effects during construction and operation.

3.6.2 The baseline of the site has been established through a desk study and survey work. The majority of site drainage drains into the Wauchope Water which forms part of the River Esk Catchment. The potential flood risk to the site is considered to be low. The location of private water supplies has been confirmed and following the implementation of appropriate mitigation there will be no significant effect. Potential Ground Water Dependent Terrestrial Ecosystems (GWDTE) have been identified and the source of water that sustains such habitats has been confirmed as being generally surface water, not groundwater.

3.6.3 Potential effects in relation to nationally important carbon rich soils are most likely during construction and may relate to effects on peat stability and effects as a result of excavation. As part of the proposed development design, the disruption of peat has been minimised by avoiding areas of deeper deposits as far as practicable, and the re-use of excavated peat would be maximised in accordance with current industry good practice. Proposed mitigation measures following good practice measures include a Geotechnical Risk Register, micro-siting recommendations, appropriate drainage design, additional investigation pre-construction and

management of excavated peat as outlined in the site-specific Stage 1 Peat Management Plan.

- 3.6.4 Good practice measures during construction, adherence to the Construction Environmental Management Plan (CEMP) and the included water monitoring programme agreed with DGC in consultation with SEPA, NatureScot and GFT as well as appointment of an Environmental Clerk of Works (ECoW) have been considered as embedded mitigation. As a result of the proposed good practice measures the proposed development would not have a significant effect on soils, geology, and water.
- 3.6.5 It has been proposed in the CEMP that a programme of water monitoring is undertaken prior to any construction activity and during construction of the proposed development. It is expected that the monitoring programme would be agreed with the local planning authorities in consultation with SEPA, NatureScot and GFT and would include monitoring watercourses within and downstream of the proposed development.
- 3.6.6 The performance of the good practice measures would be kept under constant review by the water monitoring programme, based on a comparison of data taken during construction with a baseline data set, sampled prior to the construction period.

## 3.7 Climate and Carbon Balance Assessment

- 3.7.1 The results of the Climate and Carbon Balance Assessment (Technical Appendix 9.7) reveal that the net impact of the proposed development at Bloch will be positive overall.
- 3.7.2 Peatland is an important carbon store, and the proposed development has potential to impact peat, despite mitigations proposed to limit disturbance to peat and bog habitats. A carbon balance assessment report has been produced and Scottish Government's online carbon calculator tool completed to determine the carbon payback time for the proposed development (see EIA Report Technical Appendix 9.7 for full details). The results from the carbon calculator reveal that the net impact of the proposed development will be positive overall, as over a 50-year lifespan of the proposed development, it is expected to generate over 48 years' worth of clean energy if it replaced fossil fuel-mix electricity generation and nearly 47 years' worth of clean energy even if it replaces cleaner grid-mix electricity generation.

3.7.3 In addition, over the expected 48 years that the wind farm is likely to be generating carbon-free electricity, this could result in over 7.4 million tonnes<sup>1</sup> of net CO<sub>2</sub> emission savings when replacing fossil fuel-mix electricity generation. Since, in the worst case (maximum scenario), when replacing fossil fuel-mix generation, the payback period represents approximately 5 % (2.5 years) of the operational period (50 years) and the positive contribution through clean energy production is 95% (47.5 years), it is possible to conclude that the positive contribution is statistically significant. The proposed development therefore illustrates a significantly positive net impact in terms of its contribution towards the reduction of greenhouse gas emissions from energy production.

## 3.8 Noise

3.8.1 An assessment of the noise impact from both the construction and operation of the proposed development was undertaken taking into account the identified nearest residential properties. The assessment is presented in Chapter 11 of the EIA Report.

3.8.2 The operational noise impact was assessed according to the guidance described in the ‘The Assessment and Rating of Noise from Wind Farms’, referred to as ‘ETSU-R-97’, as recommended for use in relevant planning policy. The methodology described in this document was developed by a working group comprised of a cross section of interested persons including environmental health officers, wind farm operators and independent acoustic experts. It provides a robust basis for assessing the noise impact of a wind farm and has been applied at the vast majority of wind farms currently operating in the UK.

3.8.3 ETSU-R-97 makes clear that any noise restrictions placed on a wind farm must balance the environmental impact of the wind farm against the national and global benefits that would arise through the development of renewable energy sources. The assessment also adopts the latest recommendations of the Institute of Acoustics ‘Good Practice Guide to the Application of ETSU R 97 for the Assessment and Rating of Wind Turbine Noise’.

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<sup>1</sup> Calculation is 48 years x 154,769 tCO<sub>2</sub> (as shown in Table 7.1 of EIA Report Technical Appendix 9.7 and online submission).

- 3.8.4 Representative baseline conditions (the “background noise level”) at nearby residential properties were established by undertaking noise surveys. These measured levels were then used to infer the background noise levels at other nearby residential properties as the ETSU R 97 document recommends. As background noise levels depend upon wind speed, as indeed do wind turbine noise emissions, the measurement of background noise levels at the survey locations were made concurrent with measurements of the wind speed and wind direction. These wind measurements are made at the wind turbine site rather than at the survey locations since it is this wind speed that would subsequently govern the wind farm’s noise generation.
- 3.8.5 A sound propagation model was used to predict the noise levels due to the proposed wind farm at nearby residential properties over a range of wind speeds, taking into account the position of the proposed wind turbines, the nearest residential properties, and the candidate wind turbine type. The model employed (which considered downwind conditions at all times) took account of attenuation due to geometric spreading, atmospheric absorption, ground effects and barriers. It has been shown by measurement-based verification studies that this model tends to slightly overestimate noise levels at nearby residential properties.
- 3.8.6 The relevant noise limits for the proposed development were then determined through analysis of baseline conditions and the criteria specified by the ETSU-R-97 guidelines. The general principle regarding the setting of noise criteria is that limits should be based relative to existing background noise levels, except for very low background noise levels, in which case a fixed limit may be applied. This approach has the advantage that the limits can directly reflect the existing noise environment at the nearest residential properties and the impact that the wind farm may have on this environment. Different limits are applicable depending upon the time of day. The daytime limits are intended to preserve outdoor amenity, whilst the night-time limits are intended to prevent sleep disturbance.
- 3.8.7 The predicted operational noise levels are within noise limits at nearby residential properties at all considered wind speeds with the adoption of a noise management strategy. The proposed development therefore complies with the relevant guidance on wind farm noise and the impact on the amenity of all nearby properties would be regarded as acceptable.

- 3.8.8 A cumulative operational noise assessment has also been undertaken. Considering the mitigation measures identified, the predicted cumulative noise levels are within noise limits at nearby residential properties. Compliance with relevant guidance implies that the cumulative impact on the amenity of nearby properties would be regarded as acceptable.
- 3.8.9 A construction noise assessment, incorporating the impact due to increased traffic noise, indicates that predicted noise levels likely to be experienced at the nearest residential properties could exceed construction noise criteria for a short period of time although appropriate mitigation measures have been identified.
- 3.8.10 An acoustic assessment of the proposed BESS in accordance with BS 4142: 2014 shows that the impact would be low and the levels insignificant in comparison to the wind farm noise levels.

## 3.9 Traffic and Transport

- 3.9.1 Chapter 11 of the EIA Report considers the effects on receptors along the transport routes resulting from vehicle movements associated with the construction and operation of the proposed development.
- 3.9.2 The methodology adopted in this assessment involved the following key stages:
- Determine baselines;
  - Review development for impacts;
  - Evaluate significance of effects on receptors;
  - Identify mitigation; and
  - Assess residual effects.
- 3.9.3 The proposed development will be accessed via access junctions on the C70A. The C70A connects to the A7 via the Old Irvine - Kerr track, U251A and Auchenrivock Road. Auchenrivock Road is connected to the A7(T) via a priority junction to the north, and also by a priority junction to the south.
- 3.9.4 It is proposed that vehicles accessing and egressing from the site will exclusively use the A7(T) / Auchenrivock Road priority junction (south). This avoid any direct impact on rural settlements as far as is possible.
- 3.9.5 Baseline traffic information was obtained from the UK Department for Transport (DfT) database and from Transport Scotland database survey information. National Road Traffic Forecast (NRTF) low growth factors, as

well as committed development trips, were applied to the current baseline to estimate future baseline flows.

- 3.9.6 Part of the access route, the Old Irvine - Kerr track, is currently designated as a Core Path and specific management measures are proposed to assist in the safe movement of all users along this link.
- 3.9.7 The peak of construction occurs in Month 8 with 126 HGV movements per day (63 inbound and 63 outbound) and 84 Car / LGV movements (42 inbound trips and 42 outbound trips). This represents an additional 13 HGV journeys every hour during construction activities, which is not significant in terms of overall traffic flows.
- 3.9.8 The assessment of significance suggests that U251A, Auchenrivock Road and core path users would experience significant effects, prior to the application of mitigation measures.
- 3.9.9 It should be noted that the impacts relate solely to the peak of construction activities and that the construction period is short lived and the effects transitory in nature.
- 3.9.10 The following measures will be implemented to mitigate any adverse effects of construction traffic during the construction phase:
- Outline Construction Traffic Management Plan;
  - Abnormal Load Transport Management Plan;
  - Path Management Plan; and
  - A Staff Sustainable Access Plan.
- 3.9.11 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be slight or insignificant and as they will occur during the construction phase only, they are temporary and reversible

## 3.10 Socioeconomics, Recreation and Tourism

- 3.10.1 The socio-economic structure of Dumfries and Galloway and the South of Scotland highlights the need for the creation of job opportunities. This is both reflected in the demographic profile of the two areas, which have relatively older populations than Scotland, and in worse labour market outcomes. Future demographic pressures are expected to exacerbate

these trends making job creation a priority to retain the existing population and attract more workers to the area.

- 3.10.2 The assessment of the economic impacts associated with the proposed development was based on 21 wind turbines for a total generating capacity of 126MW. On this basis, it was estimated that the expenditure associated with construction and development activity could generate:
- £7 million GVA and 90 job years in Dumfries and Galloway;
  - £8 million GVA and 110 job years in the South of Scotland; and
  - £32 million GVA and 460 job years in Scotland.
- 3.10.3 The expenditure required for the operations and maintenance of the proposed development could generate each year:
- £1 million GVA and less than 10 jobs in Dumfries and Galloway;
  - £1 million GVA and less than 10 jobs in the South of Scotland; and
  - £3 million GVA and 30 jobs in Scotland.
- 3.10.4 The proposed development is expected to support the provision of local public services and the investment priorities of local communities. During its operations, it is expected to generate each year £0.9 million in non-domestic rates and result in an annual contribution of £0.6 million in community benefits.
- 3.10.5 The assessment has also considered any impacts on the local tourism economy and considered tourism assets within 15km of the proposed development. It found that the proposed development is not expected to affect local accommodation providers, recreational activities and tourism attractions.
- 3.10.6 This finding is in line with the literature on the relationship between wind farm developments and tourism. Published research finds there is no evidence that wind farm developments have an impact on tourism assets at the Scottish and regional level, nor in those areas in the proximity of an onshore wind farm development.

## 3.11 Aviation and Radar

- 3.11.1 The Civil Aviation Authority (CAA) requires any structure equal to and taller than 150m in height to be fitted with visible aviation warning lighting. The CAA has been consulted and an aviation lighting scheme has been agreed.



- 3.11.2 Under the usual planning conditions expected in the consent, if granted, the Ministry of Defence (MOD) would be informed of the dates of commencement, completion, final wind turbine locations and heights. In addition, infrared lighting will be agreed with the Defence Infrastructure Organisation (DIO) for the MOD low flying requirements.
- 3.11.3 The proposed development will potentially impact the MOD Deadwater Fell and Berry Hill radar and NATS En-Route Ltd (NERL) Lowther Hill radar. Radar mitigation schemes will be agreed by the applicant with MOD and NATS to address the effects of the proposed development on these radars.
- 3.11.4 In summary, it is concluded in the EIA Report that with this mitigation in place there are no significant residual effects from the proposed development upon aviation interests.

## 3.12 Shadow Flicker

- 3.12.1 Wind turbines are tall structures which can cast long shadows when the sun is low in the sky. Given a conjunction of certain meteorological conditions (clear skies, enough wind for the wind turbines to be rotating and a low angle of the sun in the sky), observers close to a wind farm could experience a phenomenon commonly known as ‘shadow flicker’, where the rotating wind turbine blades pass between the sun and the observer, usually through narrow openings such as doors or windows, creating an intermittent shadow.
- 3.12.2 There are 12 properties within 10 rotor diameters of any wind turbine. Ten out of the 12 occupied properties may potentially experience shadow flicker from the proposed development, two of which are financial beneficiaries to the proposed development.
- 3.12.3 In the event of shadow flicker causing a nuisance, a range of mitigation measures could be incorporated at the operational phase of the Proposed Development to reduce the instance of shadow flicker. Mitigation measures include planting tree belts between the affected residential property and the responsible wind turbine(s), installing blinds at the affected residential property or shutting down individual wind turbines during periods when shadow flicker could occur.

## 4 Next Steps and Further Information

### 4.1 Next Steps

- 4.1.1 The Scottish Government Energy Consents Unit will process the application on behalf of Scottish Ministers. At this stage, there will be an opportunity to make representations on the application to:

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

Email: [representations@gov.scot](mailto:representations@gov.scot)

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

### 4.2 Further Information

- 4.2.1 The EIA Report comprises the following:
- Volume 1 EIA Report;
  - Volume 2a-b Figures;
  - Volume 3 Technical Appendices; and
  - Volume 4 Non-Technical Summary;
- 4.2.2 Hard copies of the NTS and EIA Report will be available for viewing in the following locations:
- Langholm Town Hall; and
  - Middlebie Community Centre.
- 4.2.3 An additional hard copy will be available upon request with Middlebie and Waterbeck Community Council.
- 4.2.4 Printed copies of the NTS and EIA Report (including figures and appendices) may be obtained from:

RES Ltd, Third Floor,  
120 Govan Road,  
Glasgow,  
G51 1PQ

Email: [carey.green@res-group.com](mailto:carey.green@res-group.com)

- 4.2.5 The NTS is available free of charge, and a limited number of hard copies of the EIA Report is available for £1,500 per copy. The price of the hard copy reflects the costs of producing the Landscape and Visual visualisations.
- 4.2.6 Alternatively, a DVD or USB memory stick containing PDF files of the EIA Report are available for £15 per copy. These PDF files can also be downloaded for free from the Bloch Wind Farm website page at:  
[www.bloch-windfarm.co.uk](http://www.bloch-windfarm.co.uk)





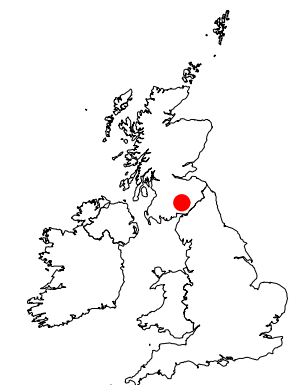
# BLOCH WIND FARM

## FIGURE 1 SITE LOCATION

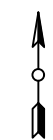
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### KEY

— SITE BOUNDARY



SITE LOCATION - NOT TO SCALE



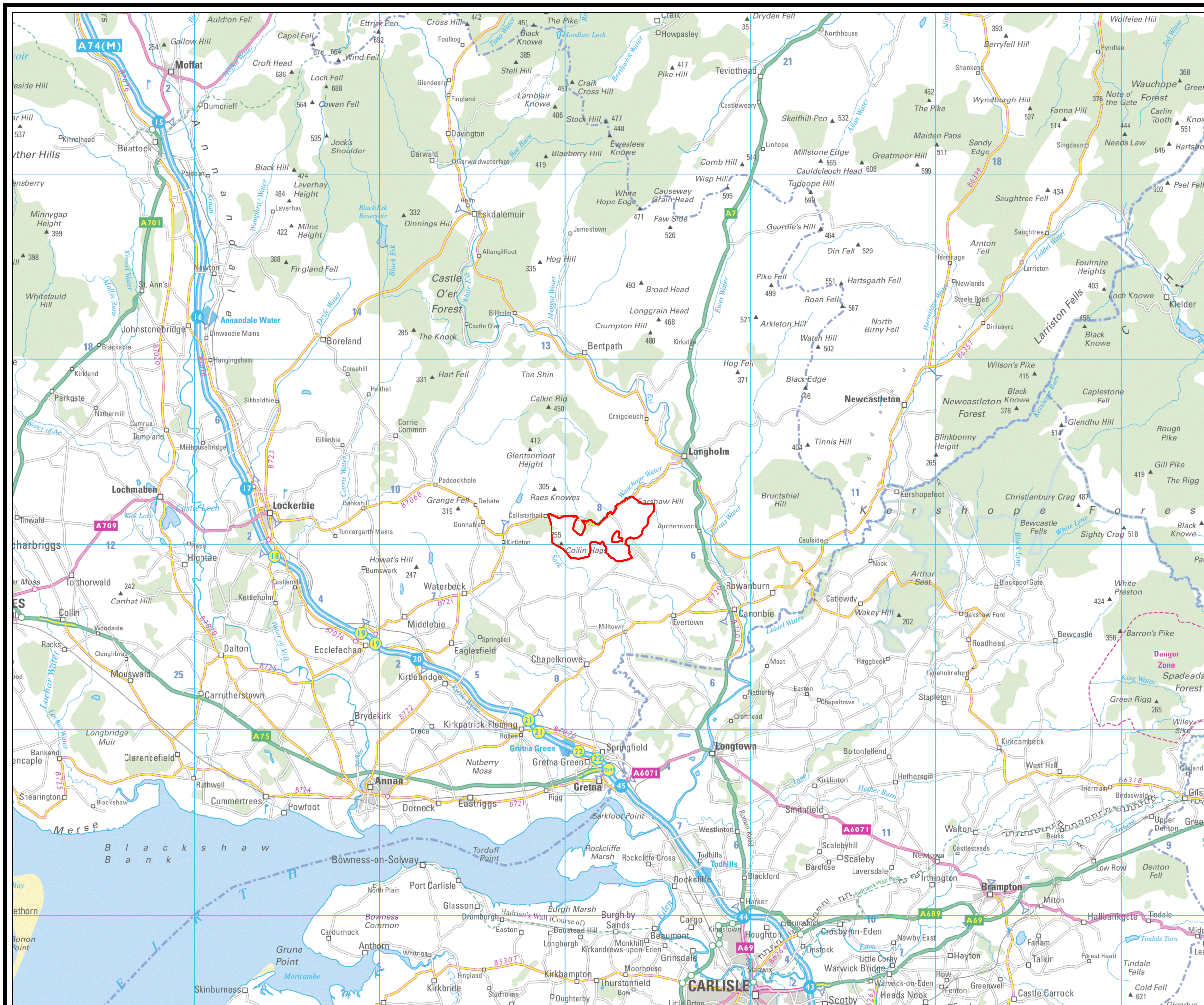
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SCALE - 1:200,000 @ A3

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2022

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# BLOCH WIND FARM

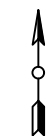
## FIGURE 2

### PROPOSED DEVELOPMENT

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#### KEY INFRASTRUCTURE

- SITE BOUNDARY
- ⊕ Txx WIND TURBINE (180m TIP HEIGHT)
- ⊕ Txx WIND TURBINE (200m TIP HEIGHT)
- ⊕ Txx WIND TURBINE (230m TIP HEIGHT)
- NEW SITE TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTAND AREA
- PERMANENT
- TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
- BATTERY STORAGE COMPOUND
- SUBSTATION COMPOUND INCLUDING TELECOMMUNICATIONS MAST
- BORROW PIT SEARCH AREA
- ↔ SITE ENTRANCE LOCATION



LAYOUT DWG N/A T-LAYOUT NO. PSCOsbe024

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