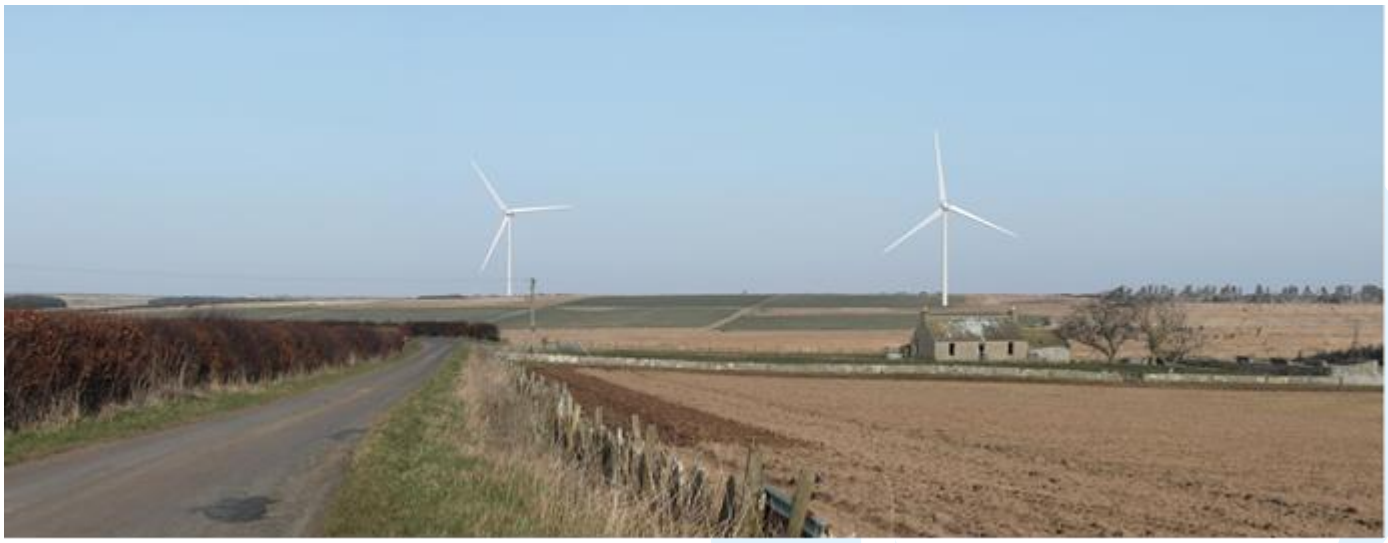
Swarclett Wind Farm

Design and Access Statement

Swarclett Wind Energy Limited



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This report is supported by the following Figures associated with the EIA Report:

Document Prepared For

Hannah Brown
Wind2 Ltd

Document Prepared By

Martina Tully
Project Manger
planning@atmosconsulting.com

Document Approved By

Malcolm Sangster
Technical Director
planning@atmosconsulting.com

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1 Introduction

This Design and Access Statement has been prepared by Atmos Consulting Limited ('Atmos') on behalf of Swarclett Wind Energy Limited ('the Applicant') to support an application for planning permission under the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (as amended, the DMP) and the Town and Country Planning (Scotland) Act 1997 (the '1997 Act) for the construction and operation of a generating station known as Swarclett Wind Farm ("The Proposed Development").

The Proposed Development is located in The Highland Council (THC) area, approximately 1km southeast of Mains Durran, Castletown, Thurso, Highlands. The Proposed Development consists of 2 wind turbines up to a maximum 149.9mm tip height, a battery energy storage system (BESS) and associated infrastructure including hardstandings, access roads, cabling, battery storage, substation and control buildings.

The Proposed Development will have an indicative electricity export output of approximately 9.6MW from wind generation and a BESS capacity of up to 12MW. The total project capacity will be approximately 21.6MW.

The application is accompanied by an Environmental Impact Assessment Report (EIA Report) prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017(the EIA Regulations)

The EIA Report presents the findings of the EIA process by describing the Proposed Development, the current conditions at the Proposed Development Site and the likely environmental effects which may result from the construction and operation of Proposed Development.

Where appropriate, mitigation measures designed to avoid, reduce or offset potentially significant effects are proposed and conclusions are presented on residual effects (those effects that are expected to remain following implementation of mitigation measures).

This Design and Access Statement does not form part of the EIA Report but should be read in parallel with it as many of the references in the Design and Access Statement refer to material produced in full in the EIA Report.

The purpose of this Design and Access Statement is to explain the design principles and concepts that have been applied in relation to the Proposed Development. Consideration has been given to Scottish Government Planning Advice Note (PAN) 68: Design Statements (Scottish Government, 2003), which outlines the key principles and concepts to be considered within a design statement.

1.1 The Applicant

The Applicant, Swarclett Wind Energy Limited, is a subsidiary of Wind2 Limited, a specialist wind developer founded in 2016. Wind2 Limited has staff based in Cromarty, Perth, Edinburgh, and Wales, with significant expertise in renewable energy, and a track record of successfully developing onshore wind farms throughout the UK.

Wind2 Limited is working on the development of a number of renewable energy projects and is committed to investing in the Highlands and Islands of Scotland.

1.2 Role and Purpose

This DAS has been prepared in accordance with Regulation 13 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (as amended, the' DMP') which sets out the detailed requirements of the content of a DAS in relation to planning permission.

A DAS is required in this case as the Proposed Development is classed as a 'Major Development', with a combined energy generation and storage capacity over 20 MW.

According to Regulation 13 of the DMP states that a design and access statement;

> *"(a) explains the policy or approach adopted as to design and how any policies relating to design in the development plan have been taken into account;*
>
> *(b) describes the steps taken to appraise the context of the development and demonstrates how the design of the development takes that context into account in relation to its proposed use; and*
>
> *(c) states what, if any, consultation has been undertaken on issues relating to the design principles and concepts that have been applied to the development and what account has been taken of the outcome of any such consultation."*

In addition, the statement should;

> "(a) explains the policy or approach adopted as to such access and, in particular, how—
>
> (i) policies relating to such access in the development plan have been taken into account; …"

The DAS covers the following matters:

- Section 2: Site Context and Development;
- Section 3: Site Selection and Design Evolution;
- Section 4: Transport and Access; and
- Section 5: Summary and Conclusions.

2 Policy Context

2.1 National Planning Policy

It is necessary to evaluate the Proposed Development in the context of relevant energy and climate policy and legislative measures from UK and Scottish Government, as well as national planning policy and guidance.

The Fourth National Planning Framework (NPF4)

The National Planning Framework 4 (NPF4) was adopted and published on 13 February 2023 and is the primary development plan for Scotland (Scottish Government, 2023). It guides spatial development, sets out national planning policies and designates national developments.

NPF4 replaces the Spatial Framework for Onshore Wind Farms, with a strategic spatial strategy with a focus on policy support to renewable electricity energy generation and associated grid infrastructure in Scotland. Therefore, the statutory Development Plan for the Proposed Development Site consists of NPF4 and the Local Development Plan (LDP as outlined in Section 2.2 of this Statement and in more detail in Chapter 4 of the EIA Report).

NPF4 sets out increased emphasis on the 'net zero agenda' to bring together cross-cutting priorities and achieve sustainable development. Policy 11 of NPF4 is clear that the generation of renewable energy is recognised as being of national importance with renewable energy generation through wind farms being a key part of the way in which the emissions reduction statutory 'outcome' and the attainment of the legally binding net zero will be fulfilled. This can be afforded significant weight.

Policy 2 of NPF4, in relation to Climate Change, stresses the importance of siting new developments in sustainable locations to ensure there are no unacceptable effects on the environment. As such, the Proposed Development has been sited in an area where there is no mapped risk of river, surface water or coastal flooding (further information can be found in Chapter 8 of the EIA Report). Further to this, there are no environmental designations within the Proposed Development Site and no priority peatland has been identified.

2.2 Local Planning Policy

The adopted Local Development Plan for the Proposed Development comprises:

- The Highland-wide Local Development Plan (HwLDP) (as continued in force, April 2012);
- The Caithness and Sutherland Local Development Plan (CaSPlan) (August 2018); and
- Relevant supplementary guidance, including the Onshore Wind Energy Supplementary Guidance (2016), and its addendum, 'Part 2b' (THC, 2017).

Highland-wide Local Development Plan (HwLDP)

The HwDLP was adopted in April 2012. An updated version of this plan is currently underway (HwLDP2), which incorporates review of the Scottish Government Planning Bill (Planning Bill, 2019) and NPF4.

At the time of writing, there is no confirmed timeline for the adoption of the HwLDP2, therefore, the HwLDP is to be considered the relevant Local Development Plan for the region. It is important to note, however, that due to the age of the HwLDP and the Highland Council's (THC) contribution to the preparation of NPF4, the weight attached to the applicability of the HwLDP is debatably lesser than other more recent LDPs.

A part of the HwLDP vision is to safeguard the environment by ensuring that "*development of renewable energy resources are managed effectively with clear guidance on where renewable energy developments should and should not be located.*" As such, the Proposed Development will be assessed on the extent to which it maximises "*energy efficiency in terms of location, layout and design-*".

However, Policy 67 of the HwLDP also stresses that a set of criteria will apply to the "*consideration of proposals irrespective of size and where they are located, enabling proposals to be considered on their merits.*"

Caithness and Sunderland Local Development Plan (CaSPlan)

The Caithness and Sutherland Local Development Plan (CaSPlan) sets out the Highland Council's vision and development strategy for the area over the next 20 years. Adopted in August 2018, the CaSPlan is one of three local development plans that, along with the HwLDP and Supplementary Guidance, will form the Development Strategy for the Highland Region.

The 'CaSPlan Strategy Map' identifies areas dedicated for plans to grow settlements and economic development. The Proposed Development Site is located in an area dedicated to 'Energy Business Expansion'.

The CaSPlan recognises that;

"*Investment in renewable energy generation in North Highland is not only helping to meet Council and national climate change targets but it has also delivered economic benefits for the area.*"

One of the CaSPlan key objectives also recognises that; "*onshore wind energy has grown significantly over recent years, particularly in the south and north-east of the Plan area.*"

Onshore Wind Energy Supplementary Guidance (OWESG)

The final element that forms the Development Plan for the Highlands is the suite of Supplementary Guidance for Onshore Wind Energy which currently comprises:

- Onshore Wind Energy Supplementary Guidance (2016) – which includes the Spatial Framework for the region and guidance on a range of issues including landscape sensitivity appraisal; and
- Addendum Supplementary Guidance: 'Part 2b' (2017) – further landscape sensitivity appraisals and strategic capacity approach for Black Isle, Surrounding Hills, Moray Firth Coast and the Caithness areas.

The Proposed Development will be considered against the guidance on environmental matters outlined in the OWESG, most notably in pertaining to landscape, transport, tourism and peat and soils.

Landscape considerations outlined in OWESG suggest that in keeping with guidance, any remaining capacity for wind farms should be focused around existing clusters. Much like the CaSPlan, the guidance also identifies specific pressure areas for wind energy development in the Highlands. The Proposed Development Site lies within Group 3 – areas with potential for wind farm development – on the Spatial Framework map.

Section 4.32 of the OWESG also outlines the importance of identifying peat early on in the siting and design process and sets out a list of key factors to be taken into consideration. Preliminary desktop studies and site assessments confirmed that the Proposed Development avoids areas of large, deep peat. Further detailed peat probing analysis identified some small areas of shallow Class 3 peat deposits (peaty soils) on the Proposed Development Site, however, through appropriate mitigation and management, the minimal, negligible disturbance to peaty soils would be beneficially reused locally.

2.3 Climate Change and Energy Policy

Both the UK and Scottish Governments have declared a Climate Emergency, with climate change having been described as the greatest environmental challenge facing the world today.

THC also declared a climate emergency on 9 May 2019 recognising the serious and accelerating changes to the world caused by climate change. The declaration from THC committed the Highland Council area to achieving the target of being carbon-neutral by 2025.

Scottish Energy Strategy

The Scottish Energy Strategy (SES): The Future of Energy in Scotland was published in December 2017 (Scottish Government, 2017a). The SES sets two targets for the Scottish energy system by 2030:

- The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources; and
- An increase by 30% in the productivity of energy use across the Scottish economy.

The Strategy acknowledges that as "*our energy system changes, the jobs market will change too.*" Siting the Proposed Development in an area with sparsely populated communities such as Bower, Gillock and Castletown will bring opportunities to these local communities as well as a valuable source of income for local residents and employment opportunities.

Construction and operation of the Proposed Development is predicted to create up to 96 jobs and the intended community benefit package includes a community benefit fund. Income streams from this community benefits package could provide long term revenue to support local community initiatives and could provide positive benefits to the local economy, local facilities and the general quality of life for local residents.

A more detailed examination of socioeconomic effects and benefits to local communities are discussed in Chapter 12: Socioeconomics, tourism and recreation of the EIA Report.

Onshore Wind Policy Statement (2022)

The Onshore Wind Policy Statement (OnWPS) (Scottish Government, 2022) published on 21 December 2022 sets out the Scottish Government's ambitions for the Onshore Wind Sector, highlighting how these can be delivered.

It recognises the wider economic and industrial opportunity that growing the onshore wind sector represents and acknowledges that; "*the selection of wind farm locations and technologies enables the use of the most productive modern turbines and balances the need to respect biodiversity and natural heritage*".

The OnWPS acknowledges in its vision statement that meeting increasing demand for fast deployment of wind farms requires, "*maximising the use of our exceptional natural wind resource where environmental effects are acceptable*" and keeping costs low for consumers by "*deploying the most productive modern turbines that are taller than older models*".

Observing the balance between turbine height and ensuring that environmental effects remain acceptable were some of the key considerations when determining the evolution of site location and design of the Proposed Development. Site selection and design evolution are outlined further in Section 4 of this Statement.

Siting and Designing Wind Farms in the Landscape (2017)

NatureScot has produced guidance 'Siting and Designing Wind Farms in the Landscape' (NatureScot, 2017) that focuses on the assessment of landscape and visual impacts of wind farms, and informs wind turbine design, layout, and siting.

The guidance reflects an improved understanding of the main landscape and visual issues related to wind farm development and provides guidance on the appropriate turbine design parameters and siting farms in relation to landscape character and value.

Whilst it does not address technical design considerations or other natural heritage issues, which are also significant for siting and design, it has been used alongside national and local policies to inform and support decision-making elements of turbine siting and design evolution.

2.3.1 Other relevant considerations

The Proposed Development has also considered the following in its design:

- The Town and Country Planning (Scotland) Act 1997 (UK Government, 1997);
- The Climate Change Act 2008 (UK Government, 2008);
- Climate Change (Emission Reduction Targets) (Scotland) Act 2019 (Scottish Government, 2019);
- Committee on Climate Change Sixth Carbon Budget 2020 (CCC, 2020);
- Net Zero Strategy: Build Back Greener (UK Government, 2021);
- Scotland's Climate Assembly: Recommendations for Action (Scottish Government, 2021);
- Update to the Climate Change Plan 2018-2032: Securing a Green Recovery on a Path to Net Zero (Scottish Government, 2020);
- COP26 – The Glasgow Climate Pact (UNFCCC, 2021);

- COP27 – The Sharm el-Sheikh Implementation Plan (UNFCCC, 2022); and
- Scottish Government Planning Advise Notes (PANs) (Scottish Government, various).

3 Site Description and Context

3.1 Site Description

The land cover within the Proposed Development Site is predominantly grassland pastures including improved, semi-improved neutral and marshy grasslands, and is mainly used for rough grazing.

The area within which the Proposed Development will be located is defined as the 'Proposed Development Footprint'. This encompasses all the Proposed Development infrastructure including the turbine locations, hardstanding and site access.

The Proposed Development Site is centred on National Grid Reference (NGR) (approximate ND 21032 62606) and is illustrated in Figure 1-1.

3.2 Surrounding Area

The Proposed Development Site features several drains which feed into the Burn of Durran which also crosses the Site. The Proposed Development drains entirely into the Burn of Durran.

The Proposed Development is bounded by, and very close (<50m) to, the watershed divide between the Burn of Garth and the Bower Burn surface waterbody catchments to the east. The Quoynee waterbody is 350m south of the Proposed Development.

Commercial scale wind farms close to the Proposed Development Site are the operational Lochend Wind Farm located 8km to the northeast consisting of four turbines (99.5m tip height) and the consented Cogle Moss Wind Farm located 7km to the south east consisting of 12 turbines (100m tip height) (Figure 1-3).

3.3 Landscape Designations

The Proposed Development Site does not lie within any nationally protected or significant landscape designations.

There are a number of designated landscapes in the wider area (defined within the EIA Report, Chapter 5 Landscape and Visual Assessment) including:

- Dunnet Head Special Landscape Area (SLA) (5km from the Proposed Development Site);
- The Castle of Mey Inventory Garden and Designed Landscape (approximately 14km from the Proposed Development Site);
- Duncansby Head SLA (15km from the Proposed Development Site)
- East Halladale Flows Wild Land Area (WLA) (18km from the Proposed Development Site);
- Causeymire Knockin Flows WLA (16km from the Proposed Development Site) and
- The Flow Country and Berriedale Coast SLA (17km from the Proposed Development Site.

3.4 Heritage Designations

There are no designated heritage assets within the Proposed Development Site or the surrounding 1km Study Area.

There are a number of designated heritage assets within the 5km Study Area defined within the EIA Report, Chapter 10 Cultural Heritage including 17 Scheduled Monuments, eight Category B Listed Buildings and four Category C Listed Buildings (Figure 10-2).

Within the 10km Study Area defined within the EIA Report, Chapter 10 Cultural Heritage there are 36 Scheduled Monuments and two Category A Listed Buildings (Figure 10-3).

3.5 Ecology Designations

There are no environmental designations within the Site boundary.

Within 5km of the Site boundary the following environmental designations are present:

- Loch of Durran Special Site of Scientific Interest (SSSI), 1.5km north;
- Loch Scarmclate SSSI, Special Protection Area (SPA), Ramsar 1.5km southwest;
- Loch Watten, Special Area of Conservation (SAC) and SPA, Ramsar and SSSI 2km south; and
- Dunnet Links SSSI, 4km north.

Within 10km of the Site boundary a number of other designated sites are present:

- Dunnet Head SPA, 6km north;
- River Thurso SAC, 6km west;
- Shielton Peatlands SAC, Ramsar, SPA SSSI, 9.5km south;
- Stroupster Peatlands SAC, SPA, SSSI, Ramsar, 7km east;
- Loch Heilen SSSI, Ramsar and SPA, 6km north;
- Banniskirk Quarry SSSI, 6km southwest;
- Achanarras Quarry SSSI, 8km southwest;
- Spittal Quarry SSSI, 7km southwest; and
- Weydale Quarry SSSI, 6km northwest.

4 Site Selection and Design Evolution

4.1 Site Selection

Regulation 5 and Schedule 4 (2) of the EIA Regulations require the EIA Report to set out a description of the reasonable alternatives considered in terms of the development and its specific characteristics, along with the main reasons for the options chosen, taking into account potential effects on the environment.

The Proposed Development Site has been selected as suitable by the Applicant because it met the following criteria:

- There is a commercially viable grid connection;
- There is good wind speed;
- The Proposed Development location is in proximity to existing operational wind farms and is in an area where wind turbines are already operating at a reasonable distance from the Proposed Development Site;
- It is located a suitable distance from the nearest residential properties and settlements;
- The Proposed Development Site benefits from a good existing road network that has been previously used for the transportation of wind turbine components;
- It is not within international or national designations that would preclude renewable energy development; and
- Has been supported by wind farm development siting principles outlined within local development policies (HwLDP and CASPlan) and guidance (OWESG and OnWPS).

In accordance with Schedule 4 (2) of the EIA Regulations, reasonable alternatives to project design, technology, location, size and scale and characteristics of the Proposed Development were considered.

As part of the development process, the Applicant has reviewed and discounted alternative infrastructure siting (turbines, sections of new access track and access) due to a variety of factors including environmental, planning, technical and commercial constraints.

4.2 Design Principles

The design principles of the Proposed Development carry forward the principles applied to site selection through establishing a design that meets the objective of capturing the maximum wind energy whilst minimising the effects on the environment.

The locations of the turbines and proposed infrastructure have been designed to avoid, where possible, identifiable onsite environmental constraints including gradient, watercourses and sensitive peat and remain an appropriate distance away from residential properties to reduce potential effects on residential amenity.

The layout within this application therefore presents an informed and refined proposal that has evolved through an iterative design process as information has come to light through the various supporting assessments.

4.3 Design Evolution

The key constraints to site design, which were assessed during the design and Scoping process and include:

- Landscape character and visual amenity;
- Ground conditions, topography and presence of peat;
- Proximity to noise sensitive receptors;
- Presence of watercourses, private water supplies and related infrastructure;
- Presence of sensitive ornithology receptors;
- Presence of sensitive cultural heritage features; and
- Proximity to suitable grid connection.

These constraints are discussed more in the relevant chapter of the EIA Report.

Table 1 summarises the key design iterations that have taken place including Pre-Application layout, Scoping layout, post Scoping layout (Design Chill) and final layout (Design Freeze). The Design Evolution Layouts are shown on Figure 3-2. Further specific detail is provided in Sections 4.3.1 to 4.3.4.

Table 1: Turbine Layout Design Iteration Summary

Layout	Turbines	Tip Height (m)	Design Changes
1: Pre-application layout	4	149.9m	Turbines sited to avoid environmental and technical constraints on the Proposed Development Site by incorporating the following buffers: • Appropriate buffers to neighbouring wind farms; • 50m buffer for onsite watercourses; Consideration of tip heights to be more consistent with other turbines in the area.
2: Scoping Layout	4	149.9m	Turbine locations remained largely unchanged. Siting of proposed infrastructure (including battery storage) informed by further survey works, balanced onsite engineering constraints, environmental and planning considerations while still maintaining a commercial development that makes a substantial contribution to the Climate Emergency and in line with National Planning Framework (NPF4).
3: Design Chill	2	149.9m	Number of turbines reduced from four to two to reduce visual impact and avoid areas of deep peat. Battery storage and substation locations moved as a result of the change in the extent of the red line boundary.
4: Design Freeze	2	149.9m	Further minor amendments to infrastructure, battery storage and turbine locations were accommodated into Design Freeze following review of technical environmental disciplines, including hydrology (and in particular GWDTE), noise, and landscape.

4.3.1 Design Iteration 1 (Pre-app Layout); 4 Turbines, 145m Tip

In August 2021, as part of a request for Pre-Application advice, the Applicant submitted an indicative turbine layout for the Proposed Development comprising of up to 4 turbines with proposed maximum tip heights of 145m and three access options.

This design was based on an initial feasibility considering preliminary environmental and technical constraints.

The consultation advice received, as set out in Chapter 2 EIA Approach and Methodology, Table 2-1, required an examination of the ability of the landscape to absorb a wind farm that may appear as a standalone development in the context of the wider landscape.

In keeping with policy guidance as outlined Section 2 of this Statement, a discussion was had on turbine number and location. A balance was sought between the introduction of a new cluster of turbines in a landscape with limited existing designations (and therefore unlikely to be significant affected given the presence of other wind farms in the wider area) and the benefits of a scheme with more turbines versus less (more turbines allow for greater community benefit opportunities and energy production).

At this stage, turbine numbers and locations remained steadfast to gather further technical and consultee input during Scoping. Access points to the Proposed Development were also reviewed.

4.3.2 Design Iteration 2 (Scoping Layout); 4 Turbines, 149.9m Tip

Initial consultation feedback from SEPA recommended that turbines are sited out with the deep peat in the Cleanie Moss area of the Proposed Development Site. This consultation advice had been taken into consideration at the initial and scoping layout design stages following initial desktop and early phase 1 peat probing to ensure that areas of deep peat were avoided when siting turbines.

Ornithology surveys, early collision risk assessments and initial heritage and landscape appraisals confirmed that the siting of turbines in the western portion of the Proposed Development option area remained more appropriate than locating turbines further east. This ensure that there was sufficient distance from a number of key assets and therefore reduces the potential impact.

As a result of the Pre-application process, the location of the proposed turbines remained largely unchanged however options for track access and areas identified for potential battery storage were introduced. Refining these design parameters required further feedback from survey work in order to balance onsite engineering constraints and environmental and planning considerations as outlined in Chapter 2 EIA Approach and Methodology, Table 2-3.

4.3.3 Design Iteration 3 (Design Chill); 2 Turbines, 149.9m Tip

Design Iteration 3 (Design Chill) was informed by the receipt of the Scoping Opinion from THC on 28th March 2022 and further discussion with landowners. Substantive changes were made between the Scoping Layout and Design Chill, most notably the reduction in turbines, access track locations and battery storage locations.

The number of turbines was reduced from four to two to reduce overall visual impact and to ensure access to areas of deep peat were avoided. The siting of the battery storage and substation was adjusted as a result of the change in the extent of the red line boundary.

The following environmental and technical considerations also informed the refinement of the Proposed Development:

- Extended Phase 1 and National Vegetation Classification (NVC) surveys;
- Presence of protected habitats (including Groundwater Dependant Terrestrial Ecosystems (GWDTE) and species confirmed by survey works;
- Landscape character and visual amenity appraisal;
- Review of ground conditions, topography and peat confirmed by survey works;
- Proximity to noise sensitive receptors and further modelling;
- Presence of watercourses, private water supplies and related infrastructure confirmed by survey works;
- Presence of sensitive ornithology receptors confirmed by survey works; and
- Presence of sensitive cultural heritage features confirmed by survey works.

4.3.4 Design Iteration 4 (Design Freeze); 2 turbines, 149.9m Tip

The Site Layout in Design Chill represented a robust layout with substantive changes from previous design stages.

Design Iteration 4 (Design Freeze) therefore incorporated minor amendments to the site layout as the remainder of technical environmental disciplines were concluded. These included feedback from hydrology in terms confirming locations of Groundwater dependent terrestrial ecosystems (GWDTEs) and further feedback from noise surveys/modelling and landscape photography.

As a result, the final site layout was further refined to incorporate minor amendments to the location of infrastructure. Battery storage was relocated approximately 250m west away from potential new water crossing areas.

5 Final Design Overview

The Proposed Development **consists of 2 turbines up to a maximum 149.9m** tip height, up to **12 MW of battery storage** and associated infrastructure. This combination of wind power and battery storage will allow the efficiency of the Proposed Development to be optimised.

The associated infrastructure includes:

- 0.6km upgraded existing access tracks;
- 1.8km new access tracks;
- Construction of turbine foundations and crane hardstandings;
- Underground cabling;
- One Substation; and
- Up to two watercourse crossings of minor watercourses.

The wind turbine generators will have an indicative output of approximately **9.6MW** and **an indicative battery storage capacity of up to 12MW, resulting in a total capacity of 21.6MW.**

The Proposed Development has been designed with an operational life of 30 years, at the end of which it will be decommissioned unless further consent is granted.

The Proposed Development components are summarised in Table 3-3 in Chapter 3 Description of Development. "Permanent Infrastructure" in the context of this EIAR means infrastructure that will be in place for the operational life of the Proposed Development and includes new and existing access tracks, turbine foundations, crane hardstanding, substation and battery storage area.

Following expiry of planning permission, the decommissioned above ground infrastructure will be removed and reinstated in an environmentally sensitive way agreed with statutory consultees. The above ground infrastructure is permanent only for the duration of the planning permission.

Once the turbines have been installed, the access tracks and hardstand areas around the turbines will remain in place as permanent infrastructure subject to consultation and agreement in line with a decommissioning plan.

The permanent and temporary infrastructure is shown on Figure 3-1.

6 Sustainable Design Statement

The Proposed Development will provide a renewable source of electricity generation, supporting the Scottish Government targets to reduce greenhouse gas emissions and achieve Net Zero (EIA Report; Chapter 4 Planning and Energy Policy and Chapter 13 Climate Change and Carbon Balance).

Sustainable design has been embedded in the Proposed Development following the three pillars of sustainability;

- Economic Viability: Careful siting has resulted in the maximum efficiency of each turbine (EIA Report; Chapter 3 Description of Development)
- Environmental Protection: Appropriate assessments undertaken have resulted in a final design which minimised the impact on the environment (EIA Report Volume 2)
- Social Equity: Impact on socio-economic, tourism and recreation has been fully assessed and considered in the final design iteration (EIA Report; Chapter 12 Socio-economic, tourism and recreation)

Additionally, a key consideration in the design of the Proposed Development has been the HwLDP Supplementary Guidance, Sustainable Design Guide (THC, 2013) with particular emphasis placed on the HwLDP four principles of sustainable design;

- Conserving and enhancing the character of the Highland area;
- Using resources efficiently;
- Minimising the environmental impact of development; and
- Enhancing the viability of Highland communities.

An iterative design process, focused on minimising the environmental impact of the Proposed Development has ensured that a meaningful contribution towards creating a sustainable future and tackling climate change will be made. This process has sought to safeguard the character of the surrounding area whilst minimising the unnecessary use of resources. The final design of the Proposed Development demonstrates the informed approach which has been taken, encompassing technical and environmental assessments and advice from experts in the appropriate subject area.

The Applicant is committed to investing in the viability of Highland communities through renewable energy projects through the allocation of community benefits and the additional positive enhancements that the Proposed Development will bring (EIA Report Chapter 12 Socio-economics, Tourism & Recreation).

The key design challenges detailed within the HwLDP have been evaluated in relation to the Proposed Development and are presented in Table 2.

Table 2: HwLDP Sustainable Design Checklist

Sustainable Design Checklist	Where addressed:
1. Layout, scale, proportion, materials, construction and finishing	The visual appearance of the development, site layout and influence on the character of the landscape are fully considered within EIA Report Chapter 3 Description of Development; Chapter 5 Landscape and Visual Impact Assessment; Design and Access Statement; Technical Appendix 15-1 Outline Construction Environmental Management Plan.
2. Landscaping	An iterative design process has ensured that the

Sustainable Design Checklist	Where addressed:
	Proposed Development will integrate into the landscape character due to careful siting outlined in EIA Report Chapter 3 Description of Development; Chapter 5 Landscape and Visual Impact Assessment. The Proposed Development is predicted to have no significant effects on tourism and recreational receptors, including attractions, trails and core paths as detailed in EIA Report Chapter 12 Socio-Economics Tourism and Recreation.
3. Cultural Heritage	All potential effects on culturally and archaeologically important features both on the Proposed Development site and cumulatively have been evaluated in EIA Report Chapter 10 Cultural Heritage.
4. Materials	The Applicant has sought to minimise the use of non-recycled source materials where possible throughout the design of the development. The sourcing of aggregate for use during the construction of the development, detailed in EIA Report Chapter 3 Description of Development, will remove the need for borrow pits.
5. Natural Heritage	The ecological value (flora and fauna) of the Proposed Development site and cumulative effects are considered in EIA Report Chapter 6 Ecology; Chapter 7 Ornithology. No significant effects or loss of habitats and/or species is predicted to occur. The suggested measures to prevent impacts from occurring as well as further enhancements to habitats (such as the planting of a screen of riparian trees) are outlined in EIA Report Appendix 6-4 Outline Habitat Management Plan.
6. Enhancing wildlife	All ornithological and ecological features (flora and fauna) which could be potentially affected by the Proposed Development are considered in EIA Report Chapter 6 Ecology; Chapter 7 Ornithology. No significant effects or loss of habitats and/or species is predicted to occur. The suggested measures to further enhance habitats whilst preventing impacts from occurring are outlined in EIA Report Appendix 6-4 Outline Habitat Management Plan.
7. Energy efficiency	Measures taken towards reducing CO2 emissions during the construction phase have been included through the design of appropriate routing to and from the Proposed Development Site outlined in EIA Report Chapter 9 Transport and Access and; Chapter 13 Climate Change and Carbon Balance.
8. Renewable energy	The Proposed Development is expected to produce in the region of 66,225 MWh per year of renewable electricity based on an estimated capacity factor of 35%, therefore not demanding any energy. Measures taken to ensure the efficiency of the design are detailed in EIA Report Chapter 3 Description of Development.
9. Foul wastewater treatment	Not applicable.
10. Flooding	Mitigation measures embedded within EIA Report Chapter 8 Hydrology and Hydrogeology will result in the design of all watercourse crossings to convey the 1 in 200

Sustainable Design Checklist	Where addressed:
	year plus Climate Change event. All necessary CAR licenses will be sought from SEPA prior to commencement of on-site operations.
11. Surface water runoff	Surface water runoff during the construction phase of the Proposed Development will be appropriately captured and treated to ensure no adverse impact on the environment as described in EIA Report Chapter 8 Hydrology and Hydrogeology.
12. Water conservation	Not applicable.
13. Waste and recycling	Not applicable.
14. Site Management	Disturbance to neighbouring properties and the environment has been mitigated and is detailed within EIA Report Appendix 15-1 Outline Construction Environmental Management Plan (CEMP). Additionally, the presence of an Ecological Clerk of Works (ECoW) on site will allow any potential unforeseen effects to be mitigated if they occur (EIA Report Appendix 15-1 Outline Construction Environmental Management Plan (CEMP)). A Construction Traffic Management Plan (CTMP) will mitigate any potential transport effect, an outline of which can be viewed in EIA Report Chapter 9 Transport and Access.
15. Transport	The potential effects of the Proposed Development on transport are considered in EIA Report Chapter 9 Transport and Access. The cumulative effect of the construction phase will be mitigated in the CTMP (EIA Report Chapter 9 Transport and Access). This will ensure that there is a line of communication with other wind farm developments in order that high traffic generating activities.
16. Pedestrians and Cyclists	Not applicable.
17. Efficient use of land and existing buildings	The potential disturbance to soils has been minimised through the design process by the inclusion existing track on the Proposed Development Site. This measure is detailed in EIA Report Chapter 3 Description of Development.
18. Design for flexibility	The Proposed Development has been designed with flexibility through the inclusion of a micrositing allowance for wind turbines and associated infrastructure (including tracks and other hardstandings) of up to 50m as detailed in EIA Report Chapter 3 Description of Development.
19. Private amenity space	Not applicable.
20. Accessibility of community facilities	Not applicable.

7 Access

7.1 Site Access

Turbine components are expected to be delivered to Wick Harbour. The components will be transported by road via a series of with abnormal indivisible loads (AILs) to the Site access point.

The route to the Site from Wick Harbour will travel southwest via the Martha Terrace / River Street, A99 then travelling north via the A9 then travelling east using the U2188 Weydale Road, U2196 Sordale / Hilliclay Road and C1069 Poolhoy / Wester Road to approach the Proposed Development as illustrated in Figure 11-4.

Other construction traffic (general construction heavy goods vehicles (HGVs) and staff trips) travelling from the Thurso area will do so via the A9(T), before accessing the site from the west on the U2188 Weydale Road, U2196 Sordale / Hilliclay Road and C1069 Poolhoy / Wester Road.

Those coming from the Wick area will travel via the A882 to the east, before heading north to the site via the U1782 Dunn / Corsback Road, B874 and C1069 Poolhoy / Wester Road.

Site access is discussed further in Chapter 11 Transport and Access.

7.1.1 Access Track

New Access Track

Approximately 1.8km of new access track will be constructed to the specification required by the wind turbine supplier, these will have a total width of up to 6m. The tracks will be designed to have sufficient radii for turning of the construction vehicles, abnormal loads and plant. The access tracks have been designed to avoid sensitive features.

The access tracks will be constructed using 'cut track' design. Topsoil is stripped to expose a suitable rock or sub-soil horizon on which to build the track. The track is then built up on a geotextile layer by laying and compacting crushed rock to a depth dependent on ground conditions and topography. Generally, the surface of the track will be flush with or raised slightly above the surrounding ground level.

An indicative track construction design is shown in Figure 3-7.

Soils removed from the excavated area will be stored separately in piles, no greater than 3m in height, directly adjacent to, or near the tracks on ground appropriate for storage of materials i.e., relatively dry and flat ground, a minimum of 50m away from any watercourses. Wherever possible, reinstatement will be carried out as track construction progresses.

Prior to the commencement of site construction, detailed engineering specification for the access track design will be submitted to the planning authority as part of a Planning Conditions Compliance Statement, which will include Construction Method Statements for all aspects of construction.

Access Track Drainage

The drainage design will comply with General Binding Rules (GBR's) 10, 11 and 21 for the track drainage, under the Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as amended) (Scottish Environment Protection Agency (SEPA), 2011).

A Drainage Management Plan (DMP), which will detail proposed surface drainage measures to treat and deal with surface runoff from the site, will be designed in accordance with sustainable drainage systems (SuDS) principals. This plan will form part of a Construction Environmental Management Plan (CEMP) and in consultation with SEPA.

Consideration of Alternatives

The preferred track route considers environmental constraints and seeks to minimise environmental impact as much as possible. In addition, engineering viability has been taken into account such that the tracks work 'on paper' and 'in practice' should consent be granted. The proposed layout has gone through multiple design iterations and existing tracks have been incorporated where possible.

The proposed access route aims to minimise impacts on the local road network with the detailed design process ensuring that the volume of material to be imported to Site and HGV numbers necessary are kept to a minimum.

7.1.2 Watercourse Crossings

The Proposed Development has been designed to minimise construction works in the vicinity of mapped watercourses and to minimise the need for new water crossings in order to reduce the risk of pollution and changes to watercourse morphology.

Two watercourse crossings will be required for the proposed new access tracks within the Proposed Development Site, these locations are shown in Figure 3-1. Both watercourses are field boundary drains.

The two new watercourse crossings will be constructed by installing a culvert crossing at both locations (Table 3). All new watercourse crossings will be designed to accommodate the 1 in 200-year flood event. Figure 3-8 shows an indicative plan of proposed structures.

Table 3: Watercourse Crossing Summary

Crossing ID	Easting	Northing	Proposed Crossing Type
WC1	320612	962435	Bottomless stone arch culverts
WC2	320959	962540	Bottomless stone arch culverts

It is proposed that the final solution and detailed design for all water crossings will be addressed through an appropriately worded planning condition associated with the planning consent.

7.1.3 Construction Programme

Subject to receipt of consent and deemed planning permission and discharge of pre-commencement conditions; construction works are anticipated to commence in 2028 with a total duration estimated at approximately 12 months. The work will proceed in the phases as summarised in Table 4.

Table 4: Construction Programme

Phase	Summary of Works
Phase 1 (months 1 to 6); Enabling/Access Works and Civil Balance of Plant Works	Construction of new access routes from existing access tracks to the turbine locations. Establishment of site facilities, turbine foundation and turbine cabling.
Phase 2 (month 6 to 12); Development and Commissioning	Delivery of turbine components & installation with cranes. Testing and commissioning equipment and turbines.
Phase 3 (month 12): Reinstatement and Restoration	Removal of temporary facilities and re-instatement of temporary working areas. Restoration of working areas as set out in the Schedule of Mitigation and CEMP.
Phase 1 (months 1 to 6); Enabling/Access Works and Civil Balance of Plant Works	Construction of new access routes from existing access tracks to the turbine locations. Establishment of site facilities, turbine foundation and turbine cabling.

The proposed normal hours of operations for construction activity are between 07:00 - 19:00 Monday to Saturday, with deliveries on a Saturday restricted to the hours of 07:00 to 12:00. During the installation phase, there may be a requirement for extended working hours as some critical elements of installation cannot be stopped once started such as concrete pouring, and this will be agreed in advance with THC.

8 Conclusion

This document provides an overview of the design process undertaken by the Applicant. The careful placement of the proposed turbines and associated infrastructure within the Proposed Development Site has facilitated effective mitigation of the majority of potentially significant effects through the design process.

This document has described the principles that have shaped and influenced the design of the Proposed Development and how issues of access have been dealt with.

The Proposed Development has undergone numerous iterations taking into account feedback from statutory consultees and the local community. This has resulted in a development which is sympathetic to the local landscape and environmental sensitivities. The proposed turbine size has also been selected with consideration to height of turbines within other developments within the area.

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