

Nisthill Wind Farm

Design and Access Statement

August 2022

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1 Introduction and Background

1.1 Background

1.1.1 This Design and Access Statement (DAS) describes the design process and the resultant development proposals for the Nisthill Wind Farm Project (the “Proposed Development”), located approximately 5 km west of Birsay and immediately west of Loch of Swannay in Orkney Islands Council (OIC) area. The DAS accompanies the planning application submitted to OIC seeking permission to construct and operate the Proposed Development.

1.1.2 The purpose of this DAS is to provide information on the principles and approach that have guided the design process. This DAS demonstrates how the site and its surroundings have been fully assessed to ensure that the final design solution is the most suitable for the site. It describes the starting point for the Proposed Development design, and subsequent alterations to the layout that were made in response to the issues that were identified through the consultation and appraisal process. Details are also provided on the access arrangements to the site.

1.1.3 This DAS should be read in conjunction with the *Environmental Impact Assessment Report* (EIA Report), which also contains information on the design iteration process (Chapter 2), predicted landscape and visual effects (Chapter 6), traffic and access related effects (Chapter 11), and includes a Transport Assessment (Appendix 11.1).

1.1.4 *The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013* requires a DAS to be prepared in support of all ‘national’ and ‘major’ developments. As the Proposed Development is expected to have a total generating capacity of approximately 26.4 megawatts (MW), it will be considered a ‘major’ development. Planning guidance notes on Design and Access Statements have been taken into consideration when preparing this DAS, notably Planning Advice Note (PAN) 68. PAN 68 states that a DAS should include:

- background information;
- site details;
- site and area appraisals;
- design principles;
- public involvement;
- programme; and
- design solution.

2 Background Information

2.1 Name of the Scheme

2.1.1 The Proposed Development is called Nisthill Wind Farm.

2.2 The Applicant

2.2.1 The Applicant ‘Nisthill Wind Farm Limited’, is a partnership between farmers Mr Adrian Breck of Ludenhill, Mr Paul Archibald of Nisthouse and Infinergy Ltd.

2.2.2 Mr Breck and Mr Archibald are multigenerational Orcadian farmers and landowners of the Proposed Development site. Already Ludenhill Farm has contributed towards tackling climate change with the instalment of a 500 kW wind turbine in 2016. Together the landowners hope to generate significantly more renewable energy with this Proposed Development.

2.2.3 Infinergy Ltd is a renewable energy company developing onshore wind farms throughout the United Kingdom. The Applicant has expertise and experience needed to design, develop, build and operate wind energy developments. Infinergy is committed to helping meet the United Kingdom’s

renewable energy targets, whilst developing responsibly and putting the right sized wind farm in the right place. Infinergy is a member of trade organisations RenewableUK and Scottish Renewables. For more information please visit: <http://infinergy.co.uk>.

2.3 Advisors

2.3.1 The Applicant appointed ITP Energised to undertake the Environmental Impact Assessment (EIA) and advise on the design of the Proposed Development. ITP Energised has been supported by the following technical teams:

- David Bell (David Bell Planning) (planning policy);
- OPEN (landscape and visual);
- AOC Archaeology (cultural heritage and archaeology);
- Stuart Williams (Ornithology Surveys and Research) (ornithology);
- Pell Frischmann (transport, traffic and engineering);
- BiGGAR Economics (socio-economics and tourism);
- Wind Business Support (aviation and radar);

3 Site Details

3.1 Location and Site Plan

3.1.1 The Proposed Development site is located approximately 5 km east of Birsay and borders Loch of Swannay on Orkney at site centre British National Grid (BNG) HY 30393 27104. Also shown in Volume 2, Figure 1.1 of the EIA Report)



Figure 1 Site Location Plan

3.2 Description

- 3.2.1 The site comprises an area of approximately 120 hectares (ha). The site is predominantly grassland with gently scoping topography up to 106 m Above Ordnance Datum (AOD).
- 3.2.2 There are no residential properties within the site boundary. The closest dwelling is approximately 100 m outside of the site boundary.
- 3.2.3 There are no major surface watercourses within the site boundary. However, the eastern boundary runs along the edge of Loch of Swannay and there are man-made drainage ditches within the site.
- 3.2.4 The site contains two Scheduled Monuments, is within the 'Sensitive Area' associated with the Heart of Neolithic Orkney World Heritage Site and is bordered by Orkney Mainland Moor Special Protected Area (SPA) and RPSB Birsay Moors Reserve.
- 3.2.5 Outwith the site boundary but within 5 km there are further environmental designations. Refer to Volume 1, Chapter 3 of the EIA Report for further information.

3.3 History

- 3.3.1 Historic map evidence indicates that the site was undeveloped. Then field patterns emerged on the western portion of the site with rough grazing to the east portion. The site has been predominantly utilised for rough grazing with the construction of the small turbine on site (Ludenhill Farm Turbine).
- 3.3.2 The site is centred around Hundland Hill although its eastern boundary extends to the western shoreline of the Loch of Swannay. Two Scheduled Monuments are located within the site boundary and consequently considered to be of National importance. The first, the Hundland Hill Enclosure (Asset 65, Asset 13451), is situated on the summit of Hundland Hill. The second on-site Scheduled Monument, Nisthouse Burial Mound (Asset 61, SM1318) is a grass covered eastern mound which stands at approximately 80 m above sea level on the upper southwestern slopes of Hundland Hill.
- 3.3.3 The site is outwith the Heart of Neolithic Orkney World Heritage Site but is within its wider 'Sensitive Area'.

3.4 Ownership

- 3.4.1 The Proposed Development site is owned by Mr Breck and Mr Archibald who are multigenerational Orcadian farmers. The loss of land to the Proposed Development footprint would not impact upon the agricultural requirements of the landowner.

4 Site and Area Appraisals

4.1 Site Search

Site Selection and Alternatives

- 4.1.1 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 state that the EIA Report must include "*A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects*" (Schedule 4.2) (Scottish Government, 2017).
- 4.1.2 The landowners of Nisthouse and Ludenhill Farm approached Infinergy with the proposal of developing a wind farm on their land. Infinergy is continually reviewing sites for possible wind farm developments across Scotland and the UK. The wind resource on the Orkney Islands is significantly higher when compared to the rest of the UK which is particularly beneficial.
- 4.1.3 Once the site was identified, the main alternatives considered for the Proposed Development included layout design, turbine specification, location, size and scale.

4.2 Area Appraisal

Landscape Context

- 4.2.1 The Site is located on and around Hundland Hill (106 m AOD) in the northern part of the West Mainland of Orkney. It is located approximately 3 km south of the north coast and set in a rural area comprising fields of improved pasture. It is enclosed by loch basins to the west and east and a broader extent of moorland hills to the south. Minor roads extend down the west and east of the hill to access a series of farmsteads and other rural properties. There is a small domestic turbine on the northern side of the hill.
- 4.2.2 West Mainland is characterised by low hills interspersed with loch basins. The coastal hills which sit close to the northern coast include Costa Hill (151 m AOD) to the north, Kurbuster Hill (102 m AOD) to the west and Hundland Hill itself, which is set between Loch of Swannay to the north-east and Loch of Hundland to the south-west, with Loch of Boardhouse further to the south-west. A series of moorland hills and smaller lochs then extend to the south, including Greeny Hill (152 m AOD), Mid Hill (193 m AOD) and Bugar Hill (159 m AOD), with the high point at Mid Tooin (224 m AOD) marking the watershed between the north and south flowing rivers in West Mainland.
- 4.2.3 The landscape comprises a mix of enclosed farm fields and unenclosed moorland. The enclosed farm fields mostly contain improved pasture with some crops grown in the lower-lying and more sheltered locations. The open moorland comprises rough pasture and is used for hill sheep farming. The low-lying vegetation combined with the very limited extent of tree cover, creates an extremely open and exposed landscape, with long-ranging views where the landform is open or elevated.
- 4.2.4 Parts of this landscape are also characterised by a dispersed pattern of settlement and accessed by a fine network of roads. The relatively low-lying landform has meant that settlement has established extensively across this landscape, with only the upland moorlands remaining unsettled. There are few nucleated settlements, with rural properties typically occurring intermittently along rural roads. While the main roads are routed through the lower-lying coastal and loch basin areas, 'B' roads and minor roads extend across the upland landscapes.
- 4.2.5 Wind farm development has introduced a larger scale of development into rural parts of West Mainland with operational Bugar Hill and Hammars Hill Wind Farms set in the moorland hills close to the north-east coastal edge. While these are larger scale commercial developments, there are also a large number of smaller scale domestic turbines associated with farmsteads or rural properties dispersed across West Mainland.

Transport and Access

- 4.2.6 The Proposed Development will be accessed from Nisthouse Road via a priority access junction constructed at the location of an existing agricultural access.
- 4.2.7 Materials for the majority of the works associated with the construction of the access track and crane hardstands will be won from the existing on-site borrow pit. Material for the initial works will however need to be imported from local sources.
- 4.2.8 The construction activities will lead to increased traffic volumes on the A965 and the A986 during the construction phase only. Following commissioning of the Proposed Development, traffic flows will fall to two vehicles every fortnight.
- 4.2.9 An assessment of likely effects using IEMA guidelines has been undertaken. This determined that no significant effects occur as a result of traffic flows associated with the Proposed Development.

5 Design Principles

5.1 Introduction

- 5.1.1 As part of the EIA process design iterations were prepared and considered for the turbine locations and on-site ancillary infrastructure. In order to propose a development layout which is considered to represent the most appropriate design; potential environmental impacts and their effects,

physical constraints and project economics were taken into account. Information was collated from desktop information, field surveys, scoping opinions, local planning policy, planning conditions and recent case law. This information provided the baseline from which site issues and sensitivities could be identified and highlighted for further detailed assessment and given priority in influencing the layout iterations of the Proposed Development. The design evolution process is described in detail below.

5.2 Environmental Constraints and Opportunities

5.2.1 The design of the Proposed Development took into consideration the following environmental constraints and opportunities.

Opportunities

Planning Policy

5.2.2 The majority of the Proposed Development site falls within Group 3, an 'Area with Potential for Wind Farm Development' as defined by the Orkney Local Development Plan 2017 (OIC, 2017). Small parts of the site lie within Group 2 'Area of Significant Protection' which relates to the Orkney Mainland Moors, Special Protection Area (SPA). Group 2 areas *"may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation."*

5.2.3 The Applicant has undertaken a number of surveys and design iterations to demonstrate that the Proposed Development site is appropriate and the reasons for the allocation of the site in Group 2 and 3 can be substantially overcome by siting, design and mitigation.

5.2.4 The Proposed Development is **not** within any areas that have been defined within the Spatial Strategy Framework as *"Areas where wind farms are not acceptable"*.

5.2.5 Wind Resource and Topography

5.2.6 The Orkney Islands are one of the windiest places in the United Kingdom (Met Office, 2021). The average wind speed across Orkney Islands is 7.5m/s at 10 m elevation (Met Office 2022). This is above the Scotland average of 6.2 m/s at 10m (Met Office 2022).

5.2.7 The site topography, rises gradually from 0 m Above Ordinance Datum (AOD) on the shore of Loch of Swanney to 106 m AOD at Hundland Hill.

Geological Designations

5.2.8 There are no geological designations within the development footprint.

5.2.9 The closest designations relating to geology are more than 7 km from the site boundary.

Ecological and Ornithological Statutory Designations

5.2.10 The closest ornithological designation is the Orkney Mainland Moors SPA and West Mainland Moorlands Site of Special Scientific Interest (SSSI) which borders the southern edge of the site, designated for breeding birds including hen harrier, red throated diver and short-eared owl. The SSSI also protects the heath and bog habitat.

Cultural Heritage

5.2.11 There are two Scheduled Monuments Hundland Hill enclosure (Asset 65, SM13451) and Nisthouse Burial Mound (Asset 61, SM1318) situated within the site boundary with a further two situated within the adjacent Loch of Swannay, Park Holm (Asset 72, SM1362) and Stoney Holm (Asset 83, SM1394).

5.2.12 There are no listed buildings, battlefields or Conservation Areas within the Proposed Development site boundary.

Residential Receptors

- 5.2.13 There are no residential properties within the site boundary, however there are several residential properties within close proximity to the Proposed Development. Mucklehouse is the nearest property situated ~410 m south east from the site boundary.
- 5.2.14 All properties have been appropriately considered within Residential Visual Amenity Assessment (RVAA), noise assessment and shadow flicker assessment.

Landscape Sensitivity

- 5.2.15 There are no landscape designations within the Proposed Development site boundary. The closest landscape designation is the Hoy and West Mainland National Scenic Area (NSA) approximately 10 km south east.

Peat, Private Water Supplies and Watercourses

- 5.2.16 The Proposed Development site contains minimal areas of deep peat.
- 5.2.17 The Proposed Development site is not linked to any Private Water Supplies (PWS).
- 5.2.18 There are no major surface watercourses within the site boundary (as classified by SEPA).

Constraints

- 5.2.19 It is important to note that the identification of a constraint does not necessarily result in the exclusion of that area from the potential development envelope; rather it means that careful thought and attention was paid to the constraint and the design altered appropriately.

Cultural Heritage

- 5.2.20 The setting of a number of Scheduled Monuments and non-designated assets may be impacted by the Proposed Development.
- 5.2.21 There are two Scheduled Monuments within the site boundary Hundland Hill, enclosure 500 m NE of Nisthouse (Asset 65, SM13451) and Nisthouse Burial Mound (Asset 61, SM1318).
- 5.2.22 The Proposed Development has been designed where possible to minimise direct impacts upon known heritage assets through careful siting of infrastructure. Where possible, impacts upon the setting of heritage assets have been minimised during the iterative design process.
- 5.2.23 A full assessment of cultural heritage effects is presented in Chapter 9 of the EIA Report.

Landscape and Visual

- 5.2.24 Due to the open nature of the Proposed Development site, there is potential for landscape and visual effects on a number of landscape and visual receptors including residential receptors and landscape and coastal character.
- 5.2.25 The location of the site tracks and infrastructure has been carefully considered within the iterative design process in order to minimise the impacts on the nearest receptors.
- 5.2.26 A full assessment of landscape and visual effects is presented in Chapter 6 of the EIA Report.

Ecology

- 5.2.27 There are a number of Important Ecological Features (IEFs) within the site boundary including Annex 1 habitat (as defined by the Habitats Directive) and Ground Water Dependent Terrestrial Ecosystems (GWDTEs).
- 5.2.28 Existing site tracks will be utilised where possible to reduce the site footprint. The site infrastructure including tracks have been situated to ensure maximum distances from IEFs where possible.
- 5.2.29 A full assessment of effects on ornithology is presented in Chapter 7 of the EIA Report.

Ornithology

- 5.2.30 The Proposed Development site is adjacent to the Orkney Mainland Moors SPA which is protected for breeding birds. The layout has been optimised as far as possible to minimise the potential effects and provide appropriate mitigation.
- 5.2.31 A full assessment of effects on ornithology is presented in Chapter 8 of the EIA Report.

Noise and Residential Amenity

- 5.2.32 There are numerous noise sensitive receptors within close proximity of the Proposed Development. In order to mitigate against any potential noise exceedances, agreements will be in place with the owners/operators of the farm scale turbines located at Nisthouse, Hundland and Newhouse. These turbines will be switched off at wind speeds of 9 ms⁻¹ and above to preserve headroom for operation of the Proposed Development.
- 5.2.33 A full assessment of noise is presented in Chapter 10 of the EIA Report.

Transport

- 5.2.34 There will be increased traffic volumes on the local road networks largely between Haston Pier and the Proposed Development site specifically during the construction phase. A Construction Traffic Management Plan (CTMP) will be prepared to ensure the least disruption to the local residents where possible.
- 5.2.35 A full assessment of transport is provided in Chapter 11 of the EIA Report.

Telecommunications

- 5.2.36 An telecommunications link operated by EE crosses the northern edge of the site boundary. The current layout particularly turbine 3 has the potential to cause interference on this link. A 125 m micro-siting buffer in a southern direction is proposed for turbine 3 only in order to prevent any infringement.
- 5.2.37 A full assessment of telecommunications is provided in Chapter 15 of the EIA Report.

5.3 Design Principles

- 5.3.1 Taking into consideration the above constraints and opportunities, the following principles were adopted where possible during the design iterations undertaken by the Applicant to ensure that the final design of the Proposed Development was the most suitable for the site:
- Avoided locating turbines on the highest points of the site to minimise visibility;
 - Respected cultural heritage constraints;
 - Limited impact on protected habitats where possible;
 - Proximity from Hoy and West Mainland National Scenic Area (NSA); and
 - Maximised the potential generation of renewable energy.

5.4 Proposed Development Layout Iterations

- 5.4.1 The Applicant has undertaken design iterations of all aspects of the Proposed Development. This section describes the principal design iterations that have been undertaken as the Applicant has sought to maximise the number of turbines on the site, whilst minimising the environmental effects as identified above.

Turbine Layout Iterations

Layout 1 (EIA Scoping Report)

- 5.4.2 Layout 1: was the initial layout with four turbines up to 180 m tip height based on known site constraints at the time.

Layout 2

- 5.4.3 Layout 2: adjusted the site tracks based on the on-site constraints and requirement for cut and fill. The number of turbines, location and scale remained the same as the initial layout.

Layout 3

- 5.4.4 Layout 3: the site infrastructure was included and reduced impact on cultural heritage features was ensured. The number of turbines, location and scale remained the same as the initial layout.

Layout 4

- 5.4.5 Layout 4: sees the site access tracks adjusted to minimise the requirement for cut and fill and impact on the cultural heritage features as well as landscape and visual impacts from key receptors.

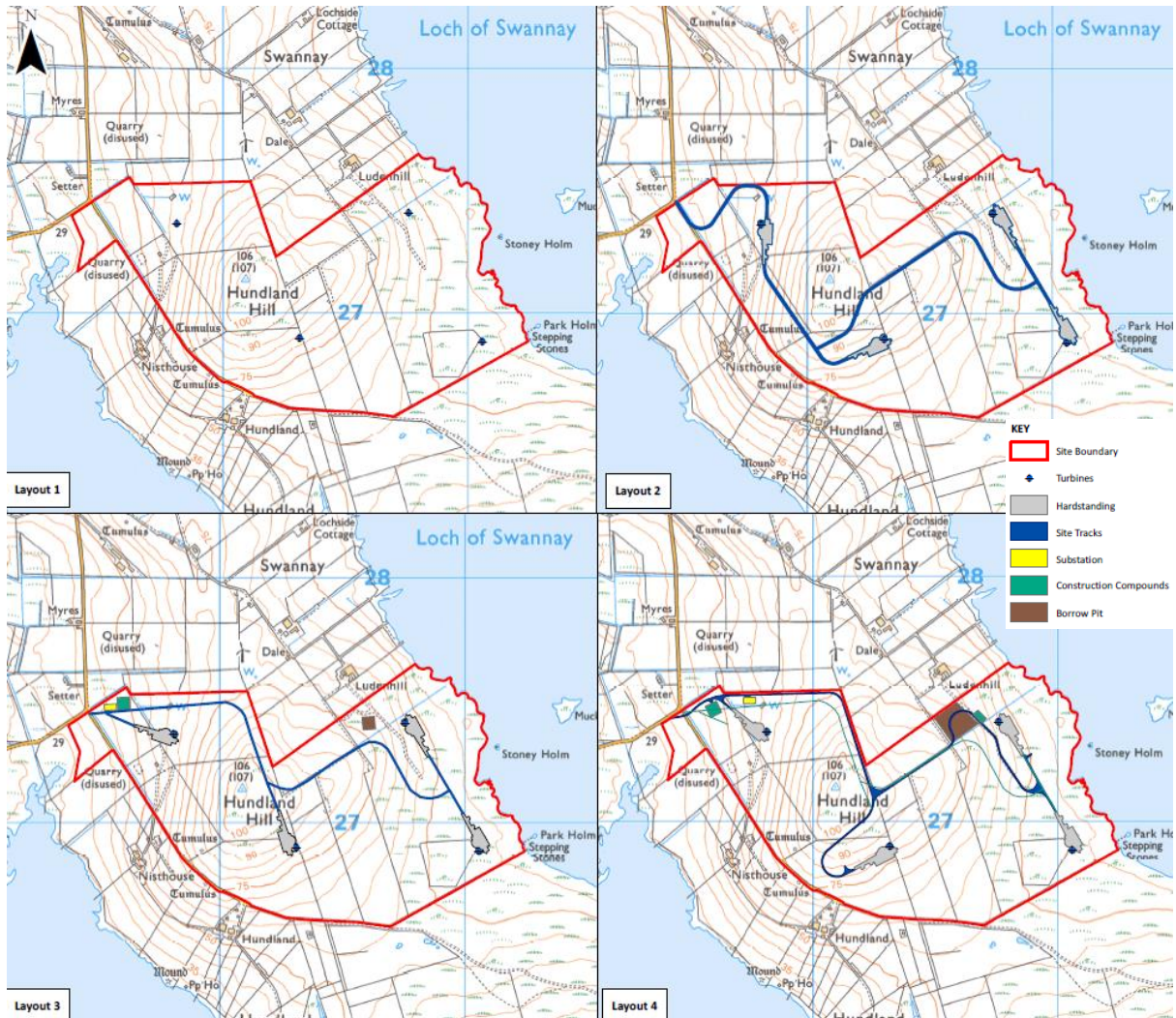


Figure 2 Nisthill Wind Farm Layout 1 - 4

6 Public/Community Involvement

- 6.1.1 The Applicant has engaged with local communities throughout the design phases of the Proposed Development. This engagement has been undertaken through a variety of approaches:

- Door-knocking on the nearest properties in January 2022;
- Website with information and consulting opportunity on the Proposed Development (March 2022);

- Birsay Community Council engagement and meeting attendance in March/April 2022;
 - Community Open Day was held in June 2022; and
 - Social Media to provide information on the Community Open Day.
- 6.1.2 The Applicant submitted a Proposal of Application Notice (PAN) in March 2022, outlining the proposed approach to consultation with the local community, prior to the submission of a potential planning application in order to comply with the requirement of planning legislation and guidance.
- 6.1.3 This consultation also allowed local residents to provide their opinions on the principle and design of the Proposed Development, while also raising any concerns. Full details are provided in the Pre-Application Consultation Report submitted separately in support of the planning application.

7 Programme

7.1 Construction

- 7.1.1 The construction period of the Proposed Development will occur outwith the pupping season for grey seals. Therefore, unless otherwise agreed with OIC and NatureScot, construction will not take place between mid-September and December inclusive.
- 7.1.2 Wherever possible, all vegetation clearance will occur outside the bird breeding season (i.e. between December and March, inclusive), to ensure that no active nests are damaged or destroyed by the proposed works. If work is required after March 31st, a Suitably Qualified Ecologist (SQE) will search areas of clearance in advance of works and buffer active nests as appropriate.
- 7.1.3 The estimated on-site construction period for the Proposed Development is approximately 12 months and includes a programme to reinstate all temporary working areas. Normal construction hours will be between 07:00 and 19:00 Monday to Friday and 09:00 and 13:00 on Saturdays. These times have been chosen to minimise disturbance to local residents.
- 7.1.4 Table 1 below shows the indicative construction programme.

Table 1 – Indicative Construction Programme

Task	Month Number											
	1	2	3	4	5	6	7	8	9	10	11	12
Mobilisation												
Access & Site Tracks												
Foundations												
On-Site Cabling												
Substation Construction												
Crane Hardstanding												
Turbine Erection												
Site Reinstatement & Commissioning												

7.2 Operation

7.2.1 The Applicant is applying for an operational lifespan of 40 years.

8 Design Solution

8.1.1 The Proposed Development comprises four wind turbines of up to a maximum 180 m height from ground to blade tip when vertical. The indicative capacity of the Proposed Development is 26.4 MW. A number of ancillary elements are also proposed, including access tracks, crane hardstandings, underground cabling, on-site substation, two temporary construction compounds and a borrow pit. Further details of the site infrastructure are provided within Chapter 3 (Proposed Development) of the EIA Report.

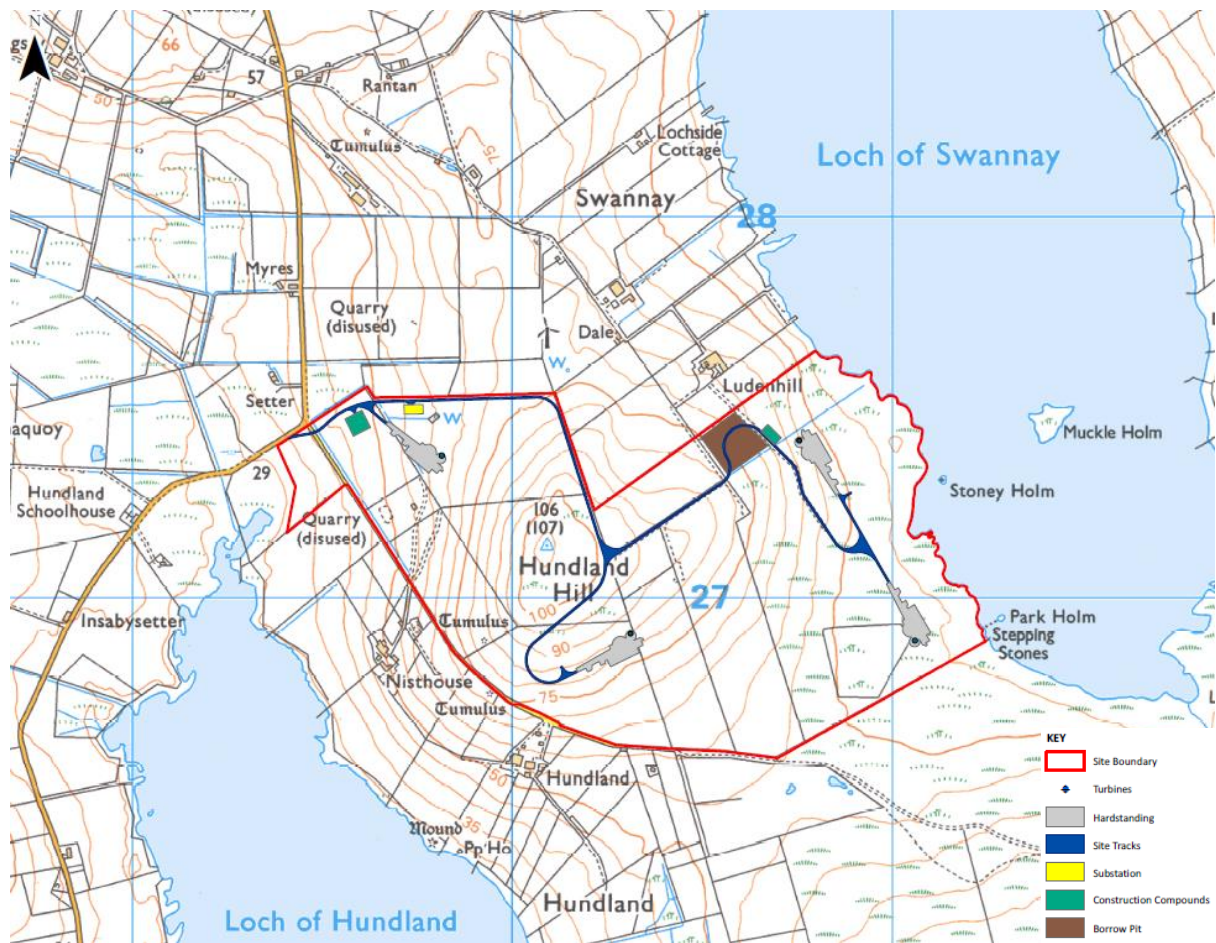


Figure 3 Site Layout

9 Conclusion

- 9.1.1 The final layout has been informed by a robust environmental assessment and design iteration process, taking into account physical constraints, potential environmental, landscape and visual impacts and their effects. The information used to inform the design iteration process included consultation responses received, baseline data and the impact assessment undertaken.
- 9.1.2 The final layout comprises four turbines, and their associated infrastructure, including hardstanding, access tracks, substation, temporary construction compounds and borrow pit as shown in Figure 3.
- 9.1.3 The Proposed Development layout is considered to represent the most appropriate design, taking into account potential environmental impacts and physical constraints, while maximising the renewable energy generating capability of the site.
- 9.1.4 Overall, the Proposed Development is an appropriately designed, sensibly located, and completely sustainable development which is in line with policies in the local and strategic development plans and conforms to national policy. It will also provide valuable contribution towards economic growth on Orkney and in Scotland as a whole.