Annex 4 Ecological Impact Assessment

Mey BESS

Ecological Impact Assessment

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Contents

1. Introduction

ITPEnergised was appointed by Simec Atlantis Energy (the 'Client'), to undertake an Ecological Impact Assessment (EcIA) for a proposed battery energy storage system (BESS) the 'Proposed Development' located at Phillips Mains, Caithness, central OS gird reference ND 29621 72440.

This report considers the likely effects on ecology and ornithology from the construction and operation of the Proposed Development, with a particular focus on Important Ecological and Ornithological Features (IEFs and IOFs respectively).

This EcIA report is informed by, and should be read in conjunction with, the following Appendices:

- Appendix 1: Ecology Desk Study (ITPEnergised, 2023a);
- Appendix 2: Preliminary Ecological Appraisal (ITPEnergised, 2023b)
- Appendix 3: Shadow Habitats Regulations Appraisal (ITPEnergised, 2023c); and
- Appendix 4: Outline Biodiversity Enhancement and Management Plan (ITPEnergised, 2023d).

An Indicative Site Layout is presented in **Appendix 4, Annex A.**

2. Legislation, Policy and Guidance

The ecology assessment has been written with reference to relevant legislation, policy and guidance, notably the following:

2.1 Legislation

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (also known as the 'Habitats Directive')[1] (European Commission, 1992);
- Council Directive 2009/147/EC on the conservation of wild birds, codified version, (also known as the 'Birds Directive') (European Commission, 2009);
- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (UK Government, 1994);
- Wildlife and Countryside Act 1981 (as amended) (WCA) (UK Government, 1981);
- The Nature Conservation (Scotland) Act 2004 (as amended) (Scottish Government, 2004);
- The Wildlife and Natural Environment (Scotland) (WANE) Act, 2011 (as amended) (Scottish Government, 2011); and
- The Protection of Badgers Act 1992, as amended by the Wildlife and Natural Environment (Scotland) Act 2011 (UK Government, 1992).

2.2 Planning Policy

- National Planning Framework 4 (Scottish Government, 2023a);
- Planning Advice Note (PAN) 60 Planning for Natural Heritage (Scottish Government, 2000);
- The Highland Council (THC) Highland-wide Local Development Plan (THC, 2012); and
- Caithness and Sutherland Local Development Plan (THC, 2020).

[1] As the UK has now left the European Union, the Habitats and Birds Directives are considered of relevance mainly as having informed national legislation. As such, reference is not made in this chapter to habitats and species listed on the various annexes of the directives, but instead to UK counterparts, e.g. habitats and species listed on the Scottish Biodiversity List.

2.3 Guidance

Further key guidance documents relating to the assessment of the effects of the Proposed Development on terrestrial ecological receptors that have been referenced include the following:

- Planning Advice Note (PAN) 60: Planning for Natural Heritage (Scottish Government, 2000) provides guidance relevant to this assessment and the Proposed Development.
- The Scottish Government Draft Planning Guidance: Biodiversity (Scottish Government, 2023b) and the Biodiversity strategy to 2045: tackling the nature emergency in Scotland guidance (Scottish Government, 2023c) sets out the Scottish Ministers' expectations for implementing NPF4 policies which support the cross-cutting NPF4 outcome 'improving biodiversity'.
- The Scottish Biodiversity List (SBL) (Scottish Government, 2013). The SBL is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in a Scottish context. Scientific and social criteria have been used to define the species and habitats included on the SBL. Scientific criteria include all Priority Species and Priority Habitats included in the now superseded UK Biodiversity Action Plan (BAP) (UK Biodiversity Partnership, 2007 *et seq.*), which occur in Scotland. This chapter only considers those listed using scientific criteria;
- Birds of Conservation Concern 5 (BoCC). The leading government (JNCC) and non-government conservation organisations in the UK jointly reviewed the population status of the 246 bird species that are regularly found within the United Kingdom, using data from national monitoring schemes. This was most recently done in 2021 (Stanbury *et al.*, 2021). On the basis of seven quantitative criteria, each species has been placed on one of three lists, these being:
    - Red – red-listed species are those that are globally threatened, have had an historical population decline in the UK from 1800 -1995, a rapid (> or = 50%) decline in UK breeding population over the past 25 years, or a rapid (> or = 50%) contraction of UK breeding range over the past 25 years;
    - Amber – amber-listed species have had a historical population decline from 1800-1995 but are recovering; population size has more than doubled over the past 25 years, a moderate (25-49%) decline in UK breeding population over the past 25 years, a moderate (25-49%) contraction of UK breeding range over the past 25 years, a moderate (25-49%) decline in UK non-breeding population over the past 25 years, or species with unfavourable conservation status in Europe also known as Species of European Conservation Concern (SPEC); and
    - Green – green-listed species have no identified threat to their population status.
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018);
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (Scottish Environment Protection Agency, 2017); and
- Specific consideration is made within this EcIA with regards to the NatureScot Guidance: Advising on peatland, carbon-rich soils and priority peatland habitat in Development Management (NatureScot, 2023).

3. Consultation

In undertaking the ecological baseline and impact assessment, consideration has been given to the ecological and ornithological specific consultee responses within the pre-application advice provided by THC dated 16.05.2023 (reference 23/00635/PREMAJ) and also the screening opinion from NatureScot dated 27.10.2023

(ref: CEA172833). Table 1 below details those consultation responses that have been provided with regards to terrestrial ecology (including peat issues) and outlines how they have been addressed.

Table 1: Ecological Consultation Responses

Consultee	Responses of Relevance to Ecology	Applicant Comment/Action
The Highland Council (THC)	Pre-application advice received 16.05.2023. **Impacts on Peat** NatureScot highlights that the proposal appears to lie adjacent to an area of Class 1 peat. Where peat is present, specific peat surveys should be carried out in line with the Scottish Government guidance: https://www.gov.scot/publications/peatland-survey-guidance Where proposals are on peatland or carbon rich soils the following should be submitted and we would welcome the opportunity to comment on draft submissions: a. Layout plans showing all temporary and permanent infrastructure, with extent of excavation required, which clearly demonstrates how the mitigation hierarchy outlined in NPF4 policy 5d has been applied. These plans should be overlaid on: i. Peat depth survey (showing peat probe locations, colour coded using distinct colours for each depth category and annotated at a useable scale; ii. Peat depth survey showing interpolated peat depths; iii. Peatland condition mapping; and iv. NVC habitat mapping. b. An outline Peat Management Plan. c. An outline Habitat Management Plan. **Peat Management Plan:** In order to protect peatland and limit carbon emissions from carbon rich soils, the outline Peat Management Plan should demonstrate that development design in line with the mitigation hierarchy (NPF4 Policy 5d) has been achieved and that proposals: • Include enough peat probing information to inform the site layout. As a minimum this should follow the requirements of the Peatland Survey – Guidance on Developments on Peatland (2017). • Use peatland condition mapping to identify and avoid peatland in near natural condition, as this has the lowest greenhouse gas emissions of all peatland condition categories, and to identify areas where peatland restoration could be carried out. The Peatland Condition Assessment photographic guide lists the criteria for each condition category and illustrates how to identify each condition category. • Demonstrate avoidance and minimise the total area and volume of peat disturbance in the infrastructure layout design by avoiding peat > 1m depth and targeting areas where carbon rich soils are absent or the shallowest peat reasonably practicable. • Detail excavation volumes of acrotelmic, catotelmic and amorphous peat. These should include a contingency factor to consider variables such as bulking and uncertainties in the estimation of peat volumes.	Extended UKhab survey and report has been included (see **Appendix 2 and Drawings 2 and 3**). Class 5 peat (defined as peat soil > 50cm but currently without peatland habitats) is shown as underlying part of the Site as well as an area outside the Site boundary to the north. Class 1 peat is defined on the Peatland Maps (Scottish Natural Heritage, 2016) as present under the plantation woodland adjacent to the western boundary of the Site. No priority peatland habitats were identified within the Site or wider study area and the area of "Class 5" peat is defined on the Peatland Map as "Improved Pasture" and "Recent Ploughing". The habitat survey has confirmed that these areas consist entirely of modified grassland and arable stubble field, as described in Section 5.2 of this EcIA report. Due to the conditions onsite (i.e. stubble field and modified grassland) a peat depth survey and full NVC survey have not been completed as the heavily modified nature of the habitats and

Consultee	Responses of Relevance to Ecology	Applicant Comment/Action
	• Demonstrate, including reuse volumes in different elements, that all peat disturbed by the development can be used in site reinstatement or peatland restoration (which may include locations outwith the development boundary). Disposal of peat is not acceptable. Catotelmic peat is not suitable for use in verge reinstatement, re-profiling/ landscaping, spreading, mixing with mineral soils or use in bunds. • Minimise handling and temporary storage of peat. Catotelmic peat should be re-used in its final location immediately after excavation and kept wet and covered by vegetated turves. • Minimise impact on local hydrology and reduce water loss from the surrounding peat habitats e.g. The faces of cut batters, especially in peat over 1m, should be sealed to reduce water loss which would lead to indirect loss of habitat and release of greenhouse gases. This may be achieved by compression of the peat to create an impermeable subsurface barrier, or where slope angle is sufficiently low, by revegetation of the cut surface. **Habitat Management**: The Outline Habitat Management Plan should include: • Proposals for reuse of disturbed peat in habitat restoration, if relevant. • Details of restoration to compensate for the area of peatland habitat directly and indirectly impacted by the development. • Outline proposals for peatland enhancement in other areas of the site. • Monitoring proposals. To support the principle of peat reuse in restoration the applicant should demonstrate that they have identified locations where the addition of excavated peat will enhance the wider site into a functional peatland system capable of achieving carbon sequestration. The following information is required: • Location plan of the proposed peatland re-use restoration area(s), clearly showing the size of individual areas and the total area to be restored. • Photographs, aerial imagery, or surveys to demonstrate that the area identified is appropriate for peat re-use and can support carbon sequestration. This should include consideration of an appropriate hydrological setting and baseline peatland condition. • In addition, if any proposed re-use restoration areas are outwith the ownership of the applicant, information should be provided to demonstrate that the restored areas can be safeguarded in perpetuity as a peatland.	indicative poor condition (as peatland or mire habitat) would typically indicate that it is of a questionable quality in terms peatland and of very little ecological value in its current state but also beyond any reasonable consideration for enhancement or restoration. An outline Biodiversity Enhancement and Management Plan (OBEMP) including BNG assessment has been produced and is included with this EcIA report as **Appendix 4.**
	Impact on Protected Species The potential for impacts to protected species will need to be fully assessed as part of any future planning application and the Applicant should refer to NatureScot standing advice for the relevant species: https://www.nature.scot/professional-advice/planning-and-development/planning-and-developmentadvice/planning-and-development-protected-species	A summary of the surveys undertaken in order to fully inform and assess the baseline conditions of the Site are presented in Section 4.2, Table 3.

Consultee	Responses of Relevance to Ecology	Applicant Comment/Action
	Any mitigation proposed for protected species should be outlined in appropriate Species Protection Plans (SPPs) and be included as part of the future planning application. More information is available from: https://www.nature.scot/professional-advice/protected-areas-and-species/licensing/species-protectionplan The Applicant will also need to consider if any species licenses are required as part of any development and contact NatureScot Licensing Team (licensing@nature.scot) regarding licence applications.	These included targeted surveys for bats, badger, otter and water vole (see **Appendix 2**). A breeding bird walkover survey was also completed in the 2023 breeding season.
	Designated Sites NatureScot advises that the proposal has connectivity with the Caithness Lochs Special Protection Area (SPA) and lies close to Phillips Mains Mire Site of Special Scientific Interest (SSSI). **Caithness Lochs SPA** The proposal lies within foraging range of this SPA, protected for its wintering populations of Greenland white-fronted geese, greylag geese and whooper swans. Both whooper swans and Greenland white-fronted geese are known to feed in this area. In particular, Greenland white-fronted geese are site faithful, meaning they return to the same roosting and feeding sites each year. Given their small population size and restricted feeding regime, any impacts to this species could be significant. NatureScot therefore advises that any future planning application should consider the potential for disturbance and/or displacement to feeding SPA geese and swans. Such an assessment could be informed by currently available information, including information gathered for nearby developments (such as the adjacent switching station that this proposal will connect to and the adjacent Hollandmey Wind Farm). The Applicant may also wish to consider the following sources of information to inform their assessment: ➢ NatureScot Commissioned Report 523b – Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13; ➢ Greenland white-fronted geese: Land use and conservation at small wintering sites in Scotland; and ➢ Available information held by RSPB. Based on the available information, it is NatureScot's initial view that any impacts to the SPA could be mitigated. However, this will need to be assessed as part of a Habitats Regulations Appraisal and any future planning application should provide sufficient detail to inform such an assessment. **Additional advice relating to protected sites** NatureScot highlights that the comments provided are given without prejudice to a full and detailed consideration of the impacts of the proposal, should it be submitted as a formal application. Furthermore, should the proposed location or nature of the proposal significantly change, NatureScot advises that connectivity with other protected sites may need to be considered within the future planning application (e.g.	An ecological Desk Study (**Appendix 1**) and Habitat Regulations Appraisal (HRA) have both been completed (**Appendix 3**) and are included along with this EcIA Report.

Consultee	Responses of Relevance to Ecology	Applicant Comment/Action
	with the Caithness & Sutherland Peatlands Special Area of Conservation (SAC) and SPA).	
	Ecology Assessment A full assessment of the ecology of the site and a suitable buffer around the site needs to be undertaken to determine if there are any ecological/environmental constraints associated with the proposed development. The assessment should include (but not be limited to): • Desk study records, from NatureScot Sitelink, the NBN atlas and local biodiversity record groups; • Specific surveys of the site to identify any protected species, priority habitats and priority species, including those listed within the Highland Nature Biodiversity Action Plan to fulfil Policies 57-60 of the Highland Wide Local Development Plan; • Assessment of ecological effects; and, • Relevant mitigation and compensation measures. NatureScot will lead on advice regarding the protected areas in close proximity to the site. Surveys should be undertaken by a suitably qualified and experienced Ecologist. NatureScot's guidance on surveying protected species should be followed https://www.nature.scot/professional-advice/planning-and-development/planning-and-developmentadvice/planning-and-development-protected-species Policies 57-60 of the Highland Wide Local Development Plan (HwLDP) pertain to the protection of certain species and habitats within the Highland region that must be considered for any developments. https://www.highland.gov.uk/info/178/development_plans/199/highlandwide_local_development_plan The Highland Nature biodiversity Action Plan (HNBAP) lists priority species and habitats that are considered to be important within the Highland region. These priority species and habitats must be given consideration for any developments. https://www.highlandenvironmentforum.info/biodiversity/action-plan	An ecology desk study (**Appendix 1**) and a Preliminary Ecological Appraisal (PEA) including targeted surveys for bats, badger, otter and water vole (**Appendix 2**) have been completed in order to fully assess the baseline conditions of the Site. These have been referred to inform this EcIA Report. A summary of the surveys undertaken in order to fully inform and assess the baseline conditions of the Site are presented in Section 4.2, Table 3.
	Biodiversity There is now greater policy emphasis on biodiversity for proposals in comparison to the now superseded Scottish Planning Policy and to the current adopted Council development plans. Proposals for major development, will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. No information on potential biodiversity enhancement methods was provided as part of the information provided. It is important this biodiversity enhancement is provided as part of any future and further advice can be sought from the Council's Ecology Officer and NatureScot. Guidance has also been prepared by NatureScot for achieving biodiversity enhancement in recently published NatureScot Developing with Nature Guidance (2023). **Biodiversity Enhancement and Management**	An OBEMP, including BNG assessment, has been produced and is included as **Appendix 4** of this EcIA Report. The OBEMP will inform a detailed BEMP, including the BNG metric, which is to be produced post consent in consultation and agreement with THC.

Consultee	Responses of Relevance to Ecology	Applicant Comment/Action
	In order to satisfy Policy 3b a Biodiversity Enhancement and Management Plan that details how criteria i to v will be met, will be required in addition to the Ecology/Environmental Assessment. This will demonstrate that the development will significantly enhance the biodiversity of the site, from its pre-development state. Where the Biodiversity Enhancement and Management Plan is unable to demonstrate to the satisfaction of the planning authority that the development will conserve, restore and enhance biodiversity, the proposal will not be supported. The Biodiversity Enhancement and Management Plan must demonstrate to the satisfaction of the planning authority that the development will accord with Policies 57-60 of the HwLDP. The Biodiversity Enhancement and Management Plan will be carried out by a suitably qualified and experienced consultant and will include the Natural England Biodiversity Net Gain Metric (BNG) and demonstrates a minimum of a 10% increase of the biodiversity of the site post construction. In rare cases where site constraints result in the applicant being unable to deliver one or more of the above criteria, consideration may be given to developer contributions as to enable biodiversity enhancements to be implemented elsewhere in line with the mitigation hierarchy to allow offset, off site measures.	
NatureScot	1. Summary We advise the proposal could have a significant effect on the environment due to potential connectivity with the nearby Caithness Lochs Special Protection Area (SPA). Should the Highland Council determine that an EIA is required, we believe this information can be provided in a focussed EIA Report, concentrating on our interests below. Alternatively, if it is determined that an EIA is not required, this information could be provided in the form of a targeted environmental report. 2. Background We provided pre-application advice on this proposal in April 2023 as part of the Major Pre-Application Advice service. 3. Appraisal of the impacts and our advice **a) Caithness Lochs Special Protection Area (SPA)** The proposal lies approximately 2km south east from this SPA, protected for its wintering populations of Greenland white-fronted geese, greylag geese and whooper swans. Although the proposal is located away from the SPA roost sites, it will lie within foraging range and suitable foraging habitat for all three SPA species. We therefore advise further assessment will be required in relation to this SPA, as part of any future planning application. We are aware that SPA species feed in this area. In particular, Greenland white-fronted geese are 'site faithful' meaning they return to the same roosting and feeding areas each year. Given their restricted	An ecological Desk Study (**Appendix 1**) and Habitat Regulations Appraisal (HRA) have both been completed (**Appendix 3**) and are included along with this EcIA Report.

Consultee	Responses of Relevance to Ecology	Applicant Comment/Action
	feeding regime and small population, any impacts to this species could be significant. In our previous pre-application advice, we advised the Applicant should gather current information on the use of the proposal site and surrounding fields by these species. This information could then be used to inform their assessment of disturbance and displacement impacts to feeding geese and swans. We acknowledge from the screening request that the Applicant has taken this advice on board and plans to provide such an assessment as part of the future planning application. We further advise that this assessment should also consider how impacts could be mitigated. Current information is available from existing sources (including other nearby development proposals) and we would be happy to provide further advice to the Applicant on the suitability of such information. **b) Phillips Mains Mire Site of Special Scientific Interest (SSSI)** We note from the screening request that the proposal boundary has refined and the proposal will now lie 1km from this SSSI, protected for its blanket bog habitat. Based on the information provided, it appears unlikely that the proposal will affect this SSSI. However, this advice should be reviewed if the proposal is likely to change (e.g. in scale or location) or if any associated works are likely to affect the SSSI (e.g. nearby tree planting, habitat restoration or enhancements etc.). **c) Further advice** As the Applicant has outlined in their screening request, there are other impacts to the natural heritage that will need to be considered during the EIA or planning process (e.g. protected species, landscape, habitats etc.). To help inform any future assessment, we refer the Applicant to our standing advice for protected species and our pre-application guidance for onshore wind farms. Although this document is written for wind farm developments, its advice on natural heritage interests will also be relevant for this case. <u>4. Concluding remarks</u> Please note, the advice provided above is given without prejudice to a full and detailed consideration of the impacts of the proposal if submitted for formal consultation as part of the EIA or planning process.	

4. Assessment Methodology and Significance Criteria

4.1 Ecological Desk Study

4.1.1 Nature Conservation Designations

An ecology desk study was carried out in 2023 (ITPEnergised, 2023a, Appendix 1) to identify statutory nature conservation designations within the local area. This included all national designations (i.e. any Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR) or Marine Protection Area (MPA)) and international designations (i.e. any Special Protection Area (SPA), Special Area of Conservation (SAC) or Ramsar wetland) within 5 km. Only ecological (biological) features were considered relevant to the present study. Any non-statutory designations, such as Environmentally Sensitive Areas (ESA), Local Biodiversity Sites (LBS), Sites of Interest for Nature Conservation (SINCs), RSPB Important Bird Areas, Scottish Wildlife Trust Reserves (SWTR) or woodland areas included on the Ancient Woodland Inventory (AWI), were also identified within 2 km of the Site boundary.

4.1.2 Protected Species Records

Existing records for protected or otherwise notable species were identified with a 2 km distance of the centre point of the Site (ND 29660 72350).

The desk study contains data from the local biological records centre (Highland Biological Recording Group) and the following online databases and resources:

- NBN Atlas (NBN Atlas, 2023);
- Highland Nature: Biodiversity Action Plan 2021 - 2026 (Highland Environment Forum, 2021)
- NatureScot SiteLink (NatureScot, 2023);
- Scotland's Environment Web (SEPA, 2023);
- Ancient Woodland Inventory (Scotland) (NatureScot, 2018); and
- Highland Council Planning Application Ref: 15/03392/FUL.

4.1.3 Ornithological Data

Ornithological data, including wintering data for Greenland white-fronted goose, greylag goose and whooper swan were identified with 2 km of the Site boundary.

4.1.3.1 Ornithological Data Sources

The following data sources were consulted:

- NBN Atlas (NBN Atlas, 2023);
- RSPB Conservation Data Unit (RSPB, 2023); and
- British Trust for Ornithology (BTO, 2023).

4.1.3.2 Local Planning Portal

The planning applications detailed in Table 2, whose study areas overlap the Site, were consulted for ornithological data relevant to the Site and a 2 km buffer.

Table 2: Planning Applications

Planning Application Reference	Development	Decision Date
15/04103/S37	Erect a 132kV AC overhead, double circuit, steel lattice tower, transmission line between the proposed Sealing End Tower at Weydale and the proposed Sealing End Tower at Reaster, Caithness | Land 500M West Of Philips Mains Mey	21 February 2017
15/03392/FUL	Formation of development platform and erection of 132/33kV Gas Insulated Switchgear (GIS) substation and associated development consisting of transformer buildings, site access, SUDS and foul drainage infrastructure, temporary compounds, security fencing and landscaping.	27 January 2015
21/05591/S36	Hollandmey Renewable Energy Development - Erection and Operation of Renewable Energy Development in perpetuity comprising 10 wind turbines with a ground to blade tip height of 149.9m, ground mounted solar arrays, battery energy storage system, access tracks, permanent met mast and LiDAR, two temporary met masts, up borrow pits and associated infrastructure.	28 November 2022

4.1.3.3 Research Publications

As per the NatureScot pre-application response the following documents were consulted:

- SNH (now NatureScot) Commissioned Report 523b - Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13.
- Francis *et al*. (2011). Greenland White-fronted Geese: Land use and conservation at small wintering sites in Scotland.

4.2 Field Studies

A summary of the field surveys undertaken to inform the ecological impact assessment is outlined in Table 3 below.

An extended UK Habitat Classification survey, Preliminary Roost Assessment and targeted surveys for bats, badger, otter and water vole were undertaken on 18th May 2023 by Principal Ecologist Jenny Diack MCIEEM of ITPEnergised (see Appendix 2). A breeding bird walkover survey was carried out by Eric Donnelly (A9 Consulting), a suitably qualified ornithologist, on 28th April 2023. The intention was to carry out four survey visits following the Common Bird Census (CBC) methods. However, in consultation with NatureScot, it was agreed that a full breeding bird survey (comprising four survey visits) was not required (email S Wheatley, NatureScot to J Diack, ITPEnergised dated 20.06.2023) due to the nature of the development and habitats within the Site being likely to support common farmland bird species. The results and methods relating to the first survey visit are included within this assessment.

For the purposes of this assessment, habitats within the Site Boundary and 100 m buffer have been mapped. The badger survey included the Site and a 100 m buffer. The preliminary bat roost assessment of the trees included the Site and a 50 m buffer. When considering potential impacts on protected otter and water vole, the assessment considers features present within the footprint of the Proposed Development and up to a 250 m buffer. The red line boundary of the Proposed Development and study areas for each of these features of interest are shown on Figure 1, Appendix 2. The breeding bird survey considered the Site and a 500 m buffer (as shown on Figure 4, Appendix 2).

Table 3: Summary of Field Surveys

Study	Extent of Survey	Overview of Survey	Best Practice Guidance	Survey Contractor	Date	Reference to further information
Extended UK Habitat Classification Survey	Site and 100 m buffer	Detailed assessment of habitats and assessment of the likely or potential presence of protected or otherwise notable species.	Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines and survey methods, notably the standard methods developed for Preliminary Ecological Appraisals (CIEEM, 2017) and Ecological Impact Assessment (CIEEM, 2018). UK Habitat Classification (UKHab, 2023).	ITPEnergised	May 2023	PEA, **Appendix 2**.
Preliminary Roost Assessment	Site and 50 m buffer.	A daytime ground-based external inspection of any individual trees, where any potential bat access points were noted and a preliminary assessment of the potential of the tree to support roosting bats was made.	Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016)	ITPEnergised	May 2023	PEA, **Appendix 2**.
Badger Survey	Site and up to a 100 m buffer.	Survey of wider survey area for evidence of badger (e.g. setts and field signs) to confirm presence or likely absence.	Competencies for Species Survey: Badger (CIEEM, 2013a); and Surveying for Badgers: Good Practice Guidelines (Scottish Badgers, 2018	ITPEnergised	May 2023	PEA, **Appendix 2.**
Otter and Water Vole Survey	Site and up to a 250 m buffer.	Survey of watercourses for evidence of water vole and otter (e.g. burrows, holts and field signs) to confirm presence or likely absence.	Competencies for Species Survey: Otter (CIEEM, 2013b); Competencies for Species Survey: Water vole (CIEEM, 2013c); Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10 (Chann, 2003). The water vole mitigation handbook (the Mammal Society Mitigation Guidance Series). (Dean *et al*. 2016).	ITPEnergised	May 2023	PEA, **Appendix 2.**
Breeding Bird Survey	Site and 500 m buffer	The Common Bird Census (CBC) method of census was used for the survey.	Bird monitoring methods, a manual of techniques for key UK species (Gilbert *et al.,* 2011).	A9 Ecology	April 2023	PEA, **Appendix 2**.

4.3 Evaluation Methods for Ecological Features

Table 4 below, lists the criteria used to determine the value of ecological features in a geographical context.

Table 4: Geographical evaluation criteria

Value	Criteria	Examples
International	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of international importance. For any Special Area of Conservation (SAC) or Special Protection Area (SPA), this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	International nature conservation areas: - any SAC or SPA; - any candidate SAC (cSAC) or potential SPA (pSPA); and - any Ramsar wetland. Significant numbers of a designated population outside the designated area. A site supporting more than 1% of the EU population of a species.
National (i.e. Scotland)	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of national importance. N.B. For designations, such as a Site of Special Scientific Interest (SSSI) or a National Nature Reserve (NNR), this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	National nature conservation areas: - any SSSI or NNR designated for biological feature(s). A site supporting more than 1% of the UK population of a species. Nationally important population/assemblage of a European Protected Species (EPS) or species listed on Schedule 5 of the WCA. Nationally important population / assemblage of a species listed on Schedule 1 of the WCA.
Council area	Nature conservation resource, i.e. nature conservation designation, habitat or species, of importance on a regional scale.	Statutory and non-statutory nature conservation designations: - any Local Nature Reserve (LNR); - any Sites of Importance for Nature Conservation (SINC); - any Wildlife Trust reserve; - any Local Biodiversity Site (LBS); and - Ancient Woodland listed on MAGIC (2023). A regional-scale important population/area of a species or habitat listed on the local Biodiversity Action Plan (local BAP). A regional-scale important population / assemblage of an EPS or species listed on Schedule 5 of the WCA. A county-scale important population / assemblage of species listed on Schedule 1 of the WCA.
Local (i.e. within 2km of the Site)	Nature conservation resource, e.g. a habitat or species of	A breeding population of a species or a viable area of a habitat that is listed in a Local BAP because of its rarity in the locality.

Value	Criteria	Examples
	importance in the context of the local district.	An area supporting 0.05%-0.5% of the UK population of a species. Any council-scale population breeding species included on the Birds of Conservation Concern (BoCC) Red List (Stanbury *et al*., 2021). A breeding population of a species on the SBL. All breeding populations of Schedule 1 species not captured in higher scale categories.
Less than local	Unremarkable, common and widespread habitats and species of little/no intrinsic nature conservation value.	Common, widespread, agricultural and/or exotic species (such as escapees).

Where a feature qualifies under two or more criteria, the higher value is applied to the feature.

Within this chapter, any ecological feature of local or higher value is considered an Important Ecological Feature (IEF).

4.4 Impact Assessment Methods

The approach to the EcIA follows the Chartered Institute of Ecology and Environmental Management guidelines (CIEEM, 2018), which prescribe an industry-standard method to define, predict and assess potential ecological effects to a given Proposed Development. Starting with establishing the baseline through a mix of desk study and field surveys, important ecological features (the IEFs) are identified and those requiring assessment established through a reasoned process of valuation and consideration of factors, such as statutory requirements, policy objectives for biodiversity, conservation status of the IEF (habitat or species), habitat connectivity and spatial separation from the Proposed Development. From this stage, these features are assessed for impacts with the assumption of this being in the presence of construction industry-standard mitigations to ameliorate impacts as far as practicably possible. Additional mitigation strategies can then be determined to minimise any residual impacts that would otherwise be experienced by the IEF and any opportunities for enhancement identified.

In summary, the impact assessment process (CIEEM, 2018) involves:

- Identifying and characterising impacts and their effects;
- Incorporating measures to avoid and mitigate negative effects;
- Assessing the significance of any residual effects after mitigation;
- Identifying the appropriate compensation methods to offset significant residual effects; and
- Identifying opportunities for ecological enhancement.

4.5 Ecological Zone of Influence

The Ecological Zone of Influence (EZoI) is defined as the area within which there may be ecological features subject to effects from the Proposed Development. Such effects could be direct (e.g. habitat loss resulting from land-take or removal of a building occupied by bats) or indirect (e.g. noise or visual disturbance causing a species to move out of the EZoI. The EZoI was determined through:

- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by the consultees;

- Identification of sensitivities of ecological features, where known;
- The outline design of the Proposed Development and approach to construction; and
- Through liaison with other technical specialists involved in the assessment (e.g. hydrologists and noise specialists).

4.6 Characterising Ecological Impacts and Effects

In accordance with the CIEEM guidelines, the following definitions are used for the term's 'impact' and 'effect':

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow; and
- Effect – Outcome to an ecological feature from an impact. For example, the effects on a species population from the loss of a hedgerow.

In accordance with the CIEEM guidelines, when determining impacts on IEFs, reference is made to the following:

- Beneficial or adverse – i.e. whether the impact has a beneficial or adverse effect in terms of nature conservation objectives and policy;
- Magnitude – i.e. the size of an impact, in quantitative terms where possible;
- Extent – i.e. the area over which an impact occurs;
- Duration – i.e. the time for which an impact is expected to last;
- Timing and frequency – i.e. whether impacts occur during critical life stages or seasons; and
- Reversibility – i.e. a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A temporary impact is one from which a spontaneous recovery is possible.

Both direct and indirect impacts are considered. Direct ecological impacts are changes that are directly attributable to a defined action (e.g. the physical loss of habitat occupied by a species during the construction process). Indirect ecological impacts are attributable to an action but affect ecological resources through effects on an intermediary ecosystem, process or feature (e.g. fencing of a development site may cause scrub to invade marshy grassland).

The CIEEM guidelines state that impacts should be quantified, if possible, and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population). That approach has been followed here, where possible. However, following in the language of other chapters in the EIA Report, impact magnitude has also been characterised with reference to the definitions in Table 5 below.

Table 5: Level of Impact

Level of Impact	Definition
No impact	No detectable impacts on the ecological resource, even in the immediate term.
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration.
Low	Detectable impacts, and may be irreversible, but either of sufficiently small-scale or of short-term duration to have no material impact on the conservation status of the nature conservation designation, habitat or species population.
Medium	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible /

Level of Impact	Definition
	replaceable given time, and not a threat to the long-term integrity of the feature.
High	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term.
The following definitions have been applied in respect to timescales: Immediate: Within approximately 12 months; Short term: Within approximately 1-5 years; Medium term: Within approximately 6-15 years; and Long term: More than 15 years.	

4.7 Determining Ecologically Significant Effects

An EcIA is undertaken in relation to the baseline conditions that would be expected to occur in the absence of a Proposed Development and, therefore, may include possible predictions of future changes to the baseline conditions, such as environmental trends and other completed or planned development. Both adverse and beneficial impacts/effects are possible.

A significant effect, in ecological terms, is defined as an effect (whether adverse or beneficial) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, including cumulative and in-combination impacts.

In accordance with the CIEEM guidelines, the approach in this report aims to determine if the effect of an impact is significant or not based on a discussion of the factors that characterise it (i.e. the ecological significance of an effect is not dependent on the value of the feature in question). Rather, the value of a feature that will be significantly affected is used to determine the geographical scale at which the effect is significant.

In accordance with the current CIEEM guidelines, effects of impacts are assessed in the presence of standard mitigation measures. Additional mitigation may be identified where it is required to reduce a significant effect.

Any significant effect remaining post-mitigation (the residual effect); together with an assessment of the likelihood of success of the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.

In addition to determining the significance of effects on valued ecological features, this chapter also identifies any legal requirements in relation to wildlife.

For the purposes of this assessment:

- A level of residual effect of **moderate** or more will be considered a 'significant' effect in terms of the EIA Regulations; and
- A level of residual effect of **low** or less will be considered 'not significant' in terms of the EIA Regulations.

5. Baseline Conditions

5.1 Overview

This section of the report details the results of the desk study and field surveys conducted across the Site and respective study areas, which provides the baseline conditions from which the impact assessment is based. This includes:

- Designated sites and desk study/external data;
- Habitats and vegetative communities; and
- Protected or otherwise notable species.

5.2 Current Ecological Baseline

5.2.1 Desk Study

The full desk study results including designated sites and protected species records are detailed in the Ecological Desk Study (Appendix 1) and are outlined in the following sections.

5.2.2 Nature Conservation Designations

Ten statutory nature conservation designations are present within 5 km of the Site. These are detailed in Table 6 below and shown on Figure 1, Appendix 1. Any non-biological features have been excluded from the table and are not considered in this chapter of the EIA report.

Table 6: Statutory Nature Conservation Designations

Name	Designation	Distance to Site	Designated Features
Phillips Main Mire	SSSI	1.48 km south-east	Phillips Mains Mire Site of Special Scientific Interest (SSSI) is located approximately 19 km northeast of Thurso. The site is designated for its nationally important blanket bog habitat. The site is an area of blanket bog and contains an extensive system of dubh lochans. The site lies at a comparatively low altitude and closer to the sea than the major expanses of peatland in west Caithness and Sutherland. These differences are reflected in the vegetation found at Phillips Mains Mire, making it a nationally important example within the range of blanket bog types found in Caithness. The well-developed lowland blanket bog vegetation has a range of species typical of this habitat, including bogbean *Menyanthes trifoliata*, common cottongrass *Eriophorum angustifolium*, crowberry *Empetrum nigrum* and bog-myrtle *Myrica gale*. The site supports a good cover and variety of Sphagnum bog mosses, with abundant *Sphagnum capillifolium* and frequent *S. cuspidatum* and *S. papillosum*. There are also extensive areas of *Cladonia* lichens.
Caithness Lochs	SPA	2.2 km north-west	The Caithness Lochs Special Protection Area (SPA) qualifies under Article 4.1 by regularly supporting, in winter, populations of European importance of the Annex 1 species whooper swan *Cygnus cygnus* (1993/94-1997/98 winter peak mean of 240 representing 4% of Great Britain (GB) and 1% of Icelandic population) and Greenland white-fronted goose *Anser albifrons*

Name	Designation	Distance to Site	Designated Features
			flavirostris (1993/94-97/98 winter peak mean of 440 representing 3% of GB and 1% of Greenlandic population). The site lies at the northern limit of these species' wintering distributions and is important to the maintenance of the species' wintering ranges. The site also qualifies under Article 4.2 by regularly supporting, in winter, a population of European importance of the greylag goose *Anser anser* (1993/94-1997/98 winter peak mean of 7,190 representing 7% of the GB and Icelandic populations). The site lies towards the northern limit of this species' wintering distribution and is important to the maintenance of the species' wintering range.
	Ramsar		Caithness Lochs Ramsar site qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds (1993/94 to 1997/98): • Whooper swan (winter peak mean of 240 individuals, 1% of the Iceland/UK & Ireland biogeographic population). • Greenland white-fronted goose (winter peak mean of 440 individuals, 1% of the total biogeographic population), and • Greylag goose (winter peak mean of 7,190 individuals, 7% of the Iceland/UK/Ireland biogeographic population).
Loch of Mey	SSSI	2.2 km north-west	Loch of Mey Site of Special Scientific Interest (SSSI) is designated for the nationally important grassland habitat surrounding the loch, as well as the populations of breeding birds and wintering Greenland white-fronted goose. **Transition grassland** The loch is bordered by species-rich fen and wet meadow vegetation that is seasonally flooded. This is one of the largest areas of this type of habitat in Caithness. The vegetation is dominated by species such as meadowsweet *Filipendula ulmaria*, marsh marigold *Caltha palustris* and silverweed *Potentilla anserina*. Wetter areas have extensive patches dominated by marsh cinquefoil *Potentilla palustris*, water horsetail *Equisetum fluviatile* or bottle sedge *Carex rostrata*. The shallower areas of the loch have stands of common spike rush *Eleocharis palustris*. The nationally scarce narrow small-reed *Calamagrostis stricta* grows near the north end of the loch and there are large stands of yellow flag iris *Iris pseudacorus* near the northern and western margins. **Breeding bird assemblage** This site is important for breeding birds, and it is at the northerly limit of the breeding distribution of some species. A particularly wide range of species breed around this loch when compared with other nearby lochs in Caithness. A wide variety of birds have nested at this site including; gadwall *Anas strepera*; shoveler

Name	Designation	Distance to Site	Designated Features
			Anas clypeata; little grebe *Tachybaptus ruficollis*; sedge warbler *Acrocephalus schoenobaenus*; reed bunting *Emberiza schoeniclus* and mute swan *Cygnus olor*. It is also an important area for breeding waders including; redshank *Tringa tetanus*; snipe *Gallinago gallinago*; curlew *Numenius arquata* and lapwing *Vanellus vanellus*. **<u>Greenland white-fronted goose</u>** Loch of Mey is an important roosting site for wintering Greenland white-fronted goose which are present between late September and late April each year. The site is used regularly by around half of the Caithness population of this species. Over 1% of the national population of Greenland white-fronted geese roost here, making it important for maintaining the distribution and range of this species within Caithness. The majority of Greenland white-fronted geese overwinter in the west of Scotland and Ireland, so the population that winters in Caithness is close to the northerly limit of the winter range for this species.
North Caithness Cliffs	SPA	3.2 km north-east	North Caithness Cliffs SPA is of special nature conservation and scientific importance within Britain and the European Community for supporting very large populations of breeding seabirds. North Caithness Cliffs SPA qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species: • Peregrine *Falco peregrinus* (an estimated 6 pairs, 0.5% of the GB population and selected as one of the most suitable sites for peregrine in GB). North Caithness Cliffs SPA further qualifies under Article 4.2 by regularly supporting a population of European importance of the migratory species: • Common guillemot *Uria aalge* (1985 to 1987, 38,300 individuals, 1% of the North Atlantic biogeographic population). North Caithness Cliffs SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds. The site regularly supports in the period 1985 to 1987 110,000 seabirds including nationally important populations of the following species: • Northern fulmar *Fulmarus glacialis* (14,700 pairs; 3% of the GB population); • Black-legged kittiwake *Rissa tridactyla* (13,100 pairs, 3% of the GB population);

Name	Designation	Distance to Site	Designated Features
			• Common guillemot (38,300 individuals, 4% of the GB population); • Razorbill *Alca torda* (4,000 individuals, 3% of the GB population); and • Atlantic puffin *Fratercula arctica* (2,080 pairs, 0.4% of the GB population and greater than 2,000 individuals).
Caithness and Sutherland Peatlands	SPA	3.6 km south-east	The Caithness and Sutherland Peatlands SPA contains a large proportion of the Caithness and Sutherland peatlands which form the largest and most intact area of blanket bog in Britain. The Caithness and Sutherland Peatlands SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species: • Red-throated diver *Gavia stellata* (2006, 46 pairs, 3.5% of the GB population); • Black-throated diver *Gavia arctica* (1994, 26 pairs, 15% of the GB population); • Hen harrier *Circus cyaneus* (1993 to 1997, mean of at least 14 pairs, at least 2.8% of the GB population); • Golden eagle *Aquila chrysaetos* (1992, 5 pairs, 1% of the GB population); • Merlin *Falco columbarius* (1993 and 1994, an estimated 54 pairs, 4% of the GB population); • Golden plover *Pluvialis apricaria* (1993 and 1994, 1,064 pairs, 5% of the GB population); • Wood sandpiper *Tringa glareola* (up to 5 pairs, up to 40% of the GB population); • Short-eared owl *Asio flammeus* (30 pairs, 2% of the GB population); and • Dunlin *Calidris alpina schinzii* (1993 and 1994, 1,860 pairs, 20% of the GB population). The Caithness and Sutherland Peatlands SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: • Common scoter *Melanitta nigra* (2007, at least 21 pairs, at least <0.1% of the Western Siberia/Western & Northern Europe/Northwestern Africa biogeographic population and at least 40.4% of the GB population);

Name	Designation	Distance to Site	Designated Features
			• Greenshank *Tringa nebularia* (2009, at least 653 pairs, at least 0.9% of the Europe/Western Africa biogeographic population and at least 59.4% of the GB population); and • Wigeon *Anas penelope* (1993/94, at least 43 pairs, at least <0.1% of the Western Siberia / Northwestern / Northeastern Europe biogeographic population and at least 10.8% of the GB population).
	SAC		Caithness and Sutherland Peatlands Special Area of Conservation (SAC) qualifying interest features are: • Blanket bogs; • Depressions on peat substrates of the *Rhynchosporion;* • Otter *(Lutra lutra);* • Natural dystrophic lakes and ponds; • Northern Atlantic wet heaths with *Erica tetralix;* • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *IsoëtoNanojuncetea;* • Marsh saxifrage (*Saxifraga hirculus*); and • Transition mires and quaking bogs.
	Ramsar		Caithness and Sutherland Peatlands Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types: • Blanket bog, encompassing an exceptionally wide range of vegetation and surface pattern types (pool systems), some of which are unknown elsewhere. The suite of bog types ranges from those of the Caithness plain in the east, with their continental affinities, through to those of the much more oceanic west and includes both upland and lowland areas. Extensive areas of ombrotrophic (rain-fed) bog are present, where Sphagnum and other bog species ensure active peat accumulation. • Mire communities, including very wet mires where the surface is unstable. • Oligotrophic lochs in addition to dystrophic lochs, lochans and pools, fen communities (surrounding the lochs, lochans and pools), as well as wet heath, grassland and rivers occur in a mosaic with the blanket bog and mire communities. These provide the diversity of habitats necessary to support a wide range of wetland species.

Name	Designation	Distance to Site	Designated Features
			Caithness and Sutherland Peatlands Ramsar site qualifies under Ramsar Criterion 2 by supporting: • Two nationally scarce moss species, *Sphagnum lindbergii* (occurring only in Scotland in Great Britain) and *Sphagnum majus*. • A nationally scarce higher plant the bog orchid *Hammarbya paludosa*. • The invertebrate fauna includes the nationally rare water beetle *Oreodytes alpinus*, the entire British population of which is found in only a small number of lochs in the Caithness and Sutherland area. These lochs include Loch Gaineimh and Loch More both within the Ramsar site. • Mammals of importance include otter, which are wide ranging throughout the site. • Freshwater pearl mussel *Margaritifera margaritifera* occur in the River Naver SAC and the River Borgie SAC, these rivers are an integral part of the Ramsar site's blanket bog, mire and moorland system. *Sphagnum lindbergii*, *Shagnum majus* and bog orchid are all associated with the blanket bog and mire habitats and those habitats occurring in close association with them and are protected and managed as part of them. Caithness and Sutherland Peatlands Ramsar site further qualifies under Ramsar Criterion 2 by supporting: • Red-throated diver (2006, 46 pairs, 3.5% of the GB population). • Black-throated diver (1994, 26 pairs, 15% of the GB population). • Golden plover (1993 and 1994, 1,064 pairs, 5% of the GB population). • Wood sandpiper (up to 5 pairs, up to 40% of the GB population), and • Dunlin (1993 and 1994, 1,860 pairs, 20% of the GB population). Caithness and Sutherland Peatlands Ramsar site also qualifies under Ramsar Criterion 4 by supporting the following waterbird species at a critical stage in their life cycles: • Wigeon (1993/94, at least 43 pairs, at least 10.8% of the GB population). • Common scoter (2007, at least 21 pairs, at least 40.4% of the GB population).

Name	Designation	Distance to Site	Designated Features
			• Greenshank (2009, at least 653 pairs, at least 59.4% of the GB population).
Stroupster Peatlands	SSSI	3.6 km south-east	Stroupster Peatlands Site of Special Scientific Interest (SSSI) is located in the north-east corner of Caithness, 12 km north of Wick. The site is formed of two parts and is nationally important for: **Blanket bog** Two different types of blanket bog occur on the site. Eastern blanket bog has abundant hare's-tail cotton grass *Eriophorum vaginatum* and deergrass Trichophorum cespitosum. **Oligotrophic loch (low-nutrient loch)** The site includes two oligotrophic lochs, the Lochs of Auckengill, which are fringed with swamp and fen vegetation and connected by a broad channel.
Loch Heilen	SSSI	4.8 km south-west	Loch Heilen Site of Special Scientific Interest (SSSI) is designated for: **Mesotrophic loch (loch with a moderate level of nutrients)** Loch Heilen is one of the two best examples of a mesotrophic loch in Caithness. This is a shallow, mineral-rich loch with abundant, submerged vegetation and areas of fen and wet grassland around the margins. **Nationally important flocks of wintering:** • Greenland white-fronted geese; • Greylag geese; and • Whooper swan.

As shown on Figure 1, Appendix 1 and detailed below in Table 7, three areas of ancient woodland have also been identified within 2 km of the Site boundary.

Table 7: Ancient Woodland within 2 km of the Site

Name	Distance to Site	Size (ha)	Type
Unnamed	440 m north	7.35 ha	Long-Established (of plantation origin)
Unnamed	1.1 km north	3.82 ha	Long-Established (of plantation origin)
Unnamed	1.3 km north	1.38 ha	Long-Established (of plantation origin)

5.2.3 Protected or Otherwise Notable Species Records – External Data

5.2.3.1 Terrestrial Mammals

As stated in Appendix 1, and summarised in Table 8 below, there is one recent (≤10 years) record of protected or otherwise notable mammal species from the local area.

Table 8: Records of Protected or Otherwise Notable Species within 2 km of the Site

Common Name	Scientific Name	Legal/Conservation Status	Description
Mammals			
West European hedgehog	*Erinaceus europaeus*	Partially protected under the Wildlife and Countryside Act 1981 (as amended). Listed on the SBL (watching brief only). LBAP Priority Species.	Two records within 2 km of the Site within the last ten years. The closest record was within 935 m north-west of the Site in 2019 (records provided by HBRG, 2023).

5.2.3.2 Reptiles and amphibians

There are no recent records (i.e. within the last 10 years) of reptiles or amphibians, within 2 km of the Site.

5.2.3.3 Ornithological Records

As detailed within Appendix 1, of the 136 bird species identified within 2 km of the Site boundary, 22 are listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), 45 are listed in the SBL and 19 are listed on the Highland Nature BAP. Additionally, of the bird species records returned by the desk study, 35 are BoCC Red-listed and 58 birds are Amber-listed; see Table 9.

Table 9: Notable Bird Species Identified within 2 km of the Site Boundary

Common name	Scientific name	Schedule 1	SBL			BoCC 5	LBAP
			Conservation action needed	Avoid negative impacts	Watching brief only		
Arctic tern	*Sterna paradisaea*			x		Amber	x
Barnacle goose	*Branta leucopsis*			x		Amber	
Black guillemot	*Cepphus grylle*					Amber	
Black-headed gull	*Chroicocephalus ridibundus*		x	x		Amber	
Black-tailed godwit	*Limosa limosa*	x	x	x		Red	
Brent goose	*Branta bernicla*					Amber	
Common guillemot	*Uria aalge*					Amber	
Common gull	*Larus canus*					Amber	
Common sandpiper	*Actitis hypoleucos*					Amber	
Common scoter	*Melanitta nigra*	x	x	x		Red	x
Common tern	*Sterna hirundo*			x		Amber	x
Corncrake	*Crex crex*	x	x	x		Red	x
Cuckoo	*Cuculus canorus*			x		Red	

Common name	Scientific name	Schedule 1	SBL			BoCC 5	LBAP
			Conservation action needed	Avoid negative impacts	Watching brief only		
Curlew	*Numenius arquata*		x	x		Red	x
Dunlin	*Calidris alpina*			x		Red	x
Dunnock	*Prunella modularis*					Amber	
Eider	*Somateria mollissima*					Amber	
Fieldfare	*Turdus pilaris*	x				Red	
Fulmar	*Fulmarus glacialis*					Amber	
Gadwall	*Mareca strepera*					Amber	
Gannet	*Morus bassanus*					Amber	
Glaucous gull	*Larus hyperboreus*					Amber	
Golden plover	*Pluvialis apricaria*			x			x
Goldeneye	*Bucephala clangula*					Red	
Grasshopper warbler	*Locustella naevia*					Red	
Great black-backed gull	*Larus marinus*					Amber	
Great northern diver	*Gavia immer*	x		x		Amber	
Great Skua	*Stercorarius skua*					Amber	
Greenfinch	*Chloris chloris*					Red	
Greenland white-fronted goose	*Anser albifrons flavirostris*		x	x		Red	x
Greenshank	*Tringa nebularia*	x				Amber	x
Greylag goose	*Anser anser*	x				Amber	
Grey plover	*Pluvialis squatarola*					Amber	
Grey wagtail	*Motacilla cinerea*					Amber	
Hen harrier	*Circus cyaneus*	x		x		Red	x
Herring gull	*Larus argentatus*		x	x		Red	
Hooded crow	*Corvus cornix*		x				
House martin	*Delichon urbicum*					Amber	
House sparrow	*Passer domesticus*				x	Red	

Common name	Scientific name	Schedule 1	SBL			BoCC 5	LBAP
			Conservation action needed	Avoid negative impacts	Watching brief only		
Iceland gull	*Larus glaucoides*					Amber	
Kestrel	*Falco tinnunculus*		x	x		Amber	
Kittiwake	*Rissa tridactyla*					Red	
Knot	*Calidris calidris*					Amber	
Lapwing	*Vanellus vanellus*		x	x		Red	x
Lesser black-backed gull	*Larus fuscus*					Amber	
Lesser redpoll	*Acanthis cabaret*					Red	
Linnet	*Linaria cannabina*			x		Red	
Little ringed plover	*Charadrius dubius*	x					
Long-tailed duck	*Clangula hyemalis*	x				Red	
Mallard	*Anas platyrhynchos*					Amber	
Manx shearwater	*Puffinus puffinus*		x	x		Amber	
Meadow pipit	*Anthus pratensis*					Amber	
Merlin	*Falco columbarius*	x		x		Red	x
Mistle thrush	*Turdus viscivorus*					Red	
Oystercatcher	*Haematopus ostralegus*					Amber	x
Pink-footed goose	*Anser brachyrhynchus*					Amber	
Pintail	*Anas acuta*					Amber	
Puffin	*Fratercula arctica*					Red	
Purple sandpiper	*Calidris maritima*	x	x	x		Red	
Razorbill	*Alca torda*					Amber	
Red-breasted merganser	*Mergus serrator*					Amber	
Red grouse	*Lagopus lagopus*		x				
Red kite	*Milvus milvus*	x		x			x
Redshank	*Tringa totanus*					Amber	x

Common name	Scientific name	Schedule 1	SBL			BoCC 5	LBAP
			Conservation action needed	Avoid negative impacts	Watching brief only		
Red-throated diver	*Gavia stellata*	x		x			x
Redwing	*Turdus iliacus*	x	x	x		Amber	
Reed bunting	*Emberzia schoeniclus*				x	Amber	
Ringed plover	*Charadrius hiaticula*					Red	
Ruff	*Calidris pugnax*	x		x		Red	
Sandwich tern	*Sterna sandvicensis*		x	x		Amber	
Sanderling	*Calidris alba*					Amber	
Scaup	*Aythya marila*	x	x	x		Red	
Shag	*Phalacrocorax aristotelis*					Red	
Shelduck	*Tadorna tadorna*					Amber	
Short-eared owl	*Asio flammeus*			x		Amber	
Shoveler	*Spatula clypeata*					Amber	
Siskin	*Carduelis spinus*		x	x			
Skylark	*Alauda arvensis*			x		Red	
Snipe	*Gallinago gallinago*					Amber	x
Snow bunting	*Plectrophenax nivalis*	x	x	x		Amber	
Song thrush	*Turdus philomelos*			x		Amber	
Spoonbill	*Platalea leucorodia*	x				Amber	
Spotted flycatcher	*Muscicapa striata*		x	x		Red	
Starling	*Sturnus vulgaris*			x		Red	
Swift	*Apus apus*		x	x		Amber	x
Tawny owl	*Strix aluco*					Amber	
Teal	*Anas crecca*					Amber	
Turnstone	*Arenaria interpres*					Amber	
Twite	*Linaria flavirostris*		x			Red	
Wheatear	*Oenanthe oenanthe*					Amber	
Whimbrel	*Numenius phaeopus*	x				Red	

Common name	Scientific name	Schedule 1	SBL			BoCC 5	LBAP
			Conservation action needed	Avoid negative impacts	Watching brief only		
White-tailed eagle	*Haliaeetus albicilla*	x	x	x		Amber	x
White-fronted goose	*Anser albifrons*		x	x		Red	
Whooper swan	*Cygnus cygnus*	x	x	x		Amber	
Wigeon	*Maeca penelope*					Amber	
Willow warbler	*Phylloscopus trochilus*					Amber	
Woodcock	*Scolopax rusticola*		x	x		Red	
Woodpigeon	*Columba palumbus*					Amber	
Wren	*Troglodytes troglodytes*					Amber	
Yellowhammer	*Emberiza citrinella*				x	Red	

5.2.3.4 Invasive Non-native Species

Japanese knotweed (*Fallopia japonica*) has been recorded within 1.2 km north-east of the Site (NBN Atlas, 2023 and HBRG, 2023).

5.2.4 Field Surveys

An extended UK habitat classification survey, targeted protected species surveys and a breeding bird survey visit were completed in April/May 2023. Specific details relating to these field surveys undertaken by ITPEnergised and A9 Consulting are located in **Appendix 2**. The following sections summarise the baseline conditions following these surveys.

5.2.4.1 Survey Limitations

The extended UK Habitat survey was carried out in May, which is within the recommended botanical survey season (May to September inclusive). Although, due to the location of the Site (i.e. in northern Scotland), the flowering season was noted to be slightly delayed with many early flowering species not yet emerged at the time of the survey. Although UK Habitat classification surveys can be completed year-round by an experienced botanist, evidence of later flowering species and identification of the grasses to species level was limited. Given the agricultural management of the Proposed Development site, this limitation was not considered to impact identification of general habitat types.

5.2.4.2 Habitats

The Site and 100 m buffer consist of arable (winter stubble), modified grassland, other neutral grassland, other acid grassland, degraded blanket bog, woodland (other coniferous woodland), scrub and drainage ditches.

The majority of the Site comprises habitats of limited ecological value including arable farmland, modified grassland and are species poor and are not protected or Priority Habitats in Scotland. All habitats are summarised in Table 10 below.

Table 10: Habitats recorded within the Study Area

UK Habitat Classification		Corresponding Phase 1 Habitat	% of Study Area	Area within Site (ha)	% of Site	Description
Primary Habitat	Secondary Codes					
Winter stubble (c1c5)	Grazed by sheep (102)	Arable (J1.1)	20.68	4.18	39.25	Within the eastern reaches of the Site the field has been managed for cereal crop production and is currently stubble.
Degraded blanket bog (f1a6)	Peat (57)	Wet modified bog (E1.7)	1.32	-	-	To the north of the road habitats are a mosaic of degraded blanket bog and other acid grassland. Heavy grazing and drainage have resulted in a loss of *Sphagnum* mosses. Within the mire, hare's-tail cotton grass (*Eriphorum vaginatum*) is dominant, with heather (*Calluna vulgaris*), deergrass (*Trichophorum cespitosum*), tormentil (*Potentilla erecta*), carnation sedge (*Carex panicea*), common lousewort (*Pedicularis sylvaticus*) and purple moor-grass (*Molinia caerulea*) also recorded. This habitat transitions to acid grassland with soft-rush (*Juncus effusus*) dominant in areas. The sward is tussocky and includes creeping bent (*Agrostis stolonifera*), tufted hair-grass (*Deschampsia cespitosa*), sweet vernal-grass (*Anthoxanthum odoratum*), Yorkshire-fog (*Holcus lanatus*), red fescue (*Festuca rubra*), tormentil, heath woodrush (*Luzula multiflora*) and dog-violet (*Viola riviniana*). The presence of common daisy (*Belis perennis*) and white clover (*Trifolium repens*) indicate improved conditions.
Other acid grassland (g1d)	Rushes dominant (15) Grazed by sheep (102) Tall or tussock sward (128)	Improved acid grassland (B1.2)	9.52	-	-	
Other neutral grassland (g3c)	Scattered scrub (10) Scattered rushes (14) Tall forbs (16) Tall or tussocky sward (128)	Semi-improved neutral grassland (B2.2)	0.77	0.008	0.07	To the north of the road the verges comprise other netural grassland bordering the road and also the roadside ditches. Grass species recorded included Yorkshire-fog, false oat-grass (*Arrhenatherum elatius)* and cock's-foot (*Dactylis glomerata)*. Other species within the verge vegetation were red campion (*Silene dioica*), silverweed (*Potentilla anserina*), soft-rush, ground elder (*Aegopodium podagraria*), common hogweed (*Heracleum sphondylium*), ribwort plantain (*Plantago lanceolata*), tormentil, white clover, cuckooflower (*Cardamine pratensis*), lady's mantle (*Alchemilla sp.*) and cow parsley (*Anthriscus sylvestris*). Scattered bramble (*Rubus fruticosus* agg.), gorse (*Ulex europaeus*) and raspberry (*Rubus idaeus*) scrub was also present. Meadowsweet (*Filipendula ulmaria*) and marsh marigold (*Caltha palustris*) were recorded within the ditches.

UK Habitat Classification		Corresponding Phase 1 Habitat	% of Study Area	Area within Site (ha)	% of Site	Description
Primary Habitat	Secondary Codes					
Modified grassland (g4)	Rushes dominant (15) Grazed by cattle (101) Grazed by sheep (102) Tall or tussock sward (128) Active management (516)	Improved grassland (B4) Marshy grassland (B5) Fence (J2.3.4)	49.73	6.04	56.64	Within the western and south-western reaches of the Site, and the field to the east of the Site, the habitat is modified grassland used for grazing. This is the dominant habitat within the Site, covering approximately 55%. Towards the south-western edge of the Site, to the south of the plantation, the ground is waterlogged and dominated by soft-rush, Yorkshire-fog and tufted hair-grass. This area of the Study Area would be described as marshy grassland under the Phase 1 methodology (JNCC, 2010). Other species recorded in the sward were spear thistle (*Cirsium vulgare*), creeping buttercup (*Ranunculus repens*) and cuckooflower.
Gorse scrub (h3e)	Semi-natural (30)	Dense scrub (A2.1)	5.70	0.43	4.04	Bordering the plantation woodland, ditches and field boundaries are areas of dense gorse scrub.
Other standing water (r1g)	Ditch (50)	Standing water (G1) Dry ditch (J2.6)	2.07 km*	406 m	-	A drainage ditch is present within the Site, associated with a patch of dense gorse. This ditch is culverted at either end, running under the field before connecting to further drainage ditches to the east and west.
Built linear features (u1e)	Road (800)	Other (including hardstanding) (J5)	1.01	-	-	A road borders the north of the Site and a dry-stone wall forms the northern field boundary.
	Dry stone wall (114)	Wall (J2.5)	387 m*	18.2 m	-	

UK Habitat Classification		Corresponding Phase 1 Habitat	% of Study Area	Area within Site (ha)	% of Site	Description
Primary Habitat	Secondary Codes					
w2c - other coniferous woodland	Plantation (29) Peat (57)	Coniferous, plantation woodland (A1.2.2)	11.27	-	-	Bordering the west of the Site is an area of Sitka (*Picea sitchensis*) plantation woodland. The woodland has been planted on peatland with exposed peat evident and some remnant areas of *Sphagnum* along the northern edge. A number of drainage ditches run through the woodland, which were holding water at the time of the survey.
		Total	**100%**	**10.66 ha**	**100%**	
* The length of linear features such as ditches and stone walls are provided but excluded from the % area calculations.						

5.2.4.3 Ground-water dependent terrestrial ecosystems (GWDTE)

No habitats indicative of potential GWDTEs were identified during the surveys. As such, GWDTEs are therefore considered absent from the Site and Study Area and will be given no further consideration in this report.

5.2.4.4 Peat

NatureScot's spatial dataset of 'carbon-rich soil, deep peat and priority peatland habitats in Scotland' (Scottish Natural Heritage, 2016) was reviewed. This map is noted as being a:

"*high-level planning tool to promote consistency and clarity in the preparation of spatial frameworks by planning authorities.*

The map is a predictive tool which provides an indication of the likely presence of peat on each individually-mapped area, at a coarse scale. The types of peat shown on the map are:

- *Carbon-rich soils*
- *Deep peat*
- *Priority peatland habitat.*"

As shown on **Figure 3, Appendix 2**, "improved pasture" is identified, according to the Carbon and Peatland 2016 mapping, as underlying much of the Site. This area of improved pasture is defined as 'Class 5' peatland (with a composite soil (defined in the Peatland Map as 1:250,000 scale data only) of dystrophic blanket peat) indicating a presence of peaty soils but an absence of peatland habitats. This is demonstrated by both fields within the Site consisting of either arable stubble field or modified grassland as well as the presence of drainage ditches.

These habitats are so heavily modified from priority peatland, or any peatland, habitat with an anthropomorphic history of management prescriptions to make suitable for growing crops and developing suitable grazing pasture, that they are considered wholly unsuitable for consideration in terms of peat management, condition or to revert to priority peatland through management/restoration efforts (i.e. to Class 2 or 3 peat).

The adjacent plantation woodland (to the west of the Site) is defined as 'Class 1' peat indicating presence of peat and/or peatland habitats although located under a commercial forest plantation coupe.

5.2.4.5 Protected or Otherwise Notable Species

The survey methods and results are described in **Appendix 2**, with a brief summary provided in Table 11 below. Wintering bird data within **Appendix 1** is also included within Table 11.

Table 11: Results of protected species surveys/assessment

Species	Presence in Study Area	Summary of Results
Invasive non-native species (INNS)	Absent	No invasive non-native species were recorded within the Study Area.
Badger (*Meles meles*)	Likely absent	Suitable foraging habitat is present within the Site and surrounding fields. However the desk study identified no records of badger within 2km of the Site and no evidence of badger was identified during the survey.
Otter (*Lutra lutra*) and	Presence not confirmed though some limited suitable foraging and commuting habitat exists	The desk study identified no records of otter within 2 km of the Site from within the last ten years and no evidence of otter presence was found within the Study Area. The drainage ditches within and surrounding the Site are fragmented and likely to provide limited foraging habitat for otter. No suitable otter resting site features were identified within the Study Area.

Species	Presence in Study Area	Summary of Results
	within the Site and surrounding area. No resting sites identified that will be impacted by the development.	
Water vole (*Arvicola amphibius*)	Likely absent	The desk study identified no records of water vole within 2 km of the Site from within the last ten years and no evidence of water vole presence was found within the Study Area. The ditches to the east and north of the Site were dry in sections, with the most suitable water vole habitat present within the drainage ditch that runs perpendicular to the road to the north of the Site. In this section the ditch held water and had steep vegetated banks. However, no evidence of water vole was found and so they are considered likely absent.
Bats - Roosts	Absent	No suitable roost features present within the Site or 50 m buffer.
Bats – Foraging and Commuting	Presence not confirmed but suitable foraging and commuting habitat present within the Site and surrounding area.	The habitats within the Site provide Low to Moderate quality foraging and commuting habitat for bats. The modified grassland and arable fields, within and surrounding the Site, are unlikely to be used by large numbers of bats due to the associated low insect abundance and diversity. Linear features which bats may use to commute and forage along include the plantation edge, stone wall and ditches. However, these features were not strongly connected to suitable habitat within the wider landscape and activity is likely to be focused on the plantation edge, avoiding the eastern edge of the Site as it is exposed.
Red squirrel (*Sciurus vulgaris*)	Likely absent	The desk study identified no records of red squirrel within 2 km of the Site from within the last ten years and red squirrel are not known to be present within this part of northern Scotland. No evidence of red squirrel was found during the PEA survey and they are considered likely absent.
Pine marten (*Martes martes*)	Presence not confirmed though suitable foraging and commuting habitat present. No dens identified within Study Area.	The desk study returned no records of pine martin within 2 km of the Site in the last ten years. Two scats were found within the woodland plantation to the west. Both were similar in morphology to pine marten scats, however may also have been fox which was confirmed to be active in the area. No potential den sites were identified within the Study Area. Habitats were generally suboptimal for denning due to the wet ground conditions and lack of suitable habitat features. However, pine marten may use the woodland for foraging and commuting.
Breeding birds	No active nests found; however, suitable nesting habitat present within the Site.	The Site and surrounding area provides suitable nesting habitat for a range of bird species; particularly the woodland, scrub, large open arable and grassland fields and degraded blanket bog within the Study Area. The open fields are relatively undisturbed, with limited public access and are considered to provide opportunities for ground nesting birds including skylark (*Alauda arvensis)*, lapwing (*Vanellus vanellus)* and curlew (*Numenius arquata)*.

Species	Presence in Study Area	Summary of Results
		Notable observations during the breeding bird survey in April and extended habitat survey in May were meadow pipit (*Anthus pratensis*) which is associated with rough grassland and peatland habitats and was recorded throughout the Study area; skylark which was recorded within the Site and surrounding fields; curlew which was recorded within the Site and to the north; snipe (*Gallinago gallinago*); and yellowhammer (*Emberiza citrinella*) which was associating with the gorse scrub.
Wintering birds	The Site and surrounding area provide suitable foraging and roosting habitat for wintering birds.	The Site and surround area provide suitable foraging and roosting habitat for wintering birds. Due to the proximity of the Site to Caithness Lochs SPA, and potential connectivity due to the foraging range of its qualifying interest species (Greenland white-fronted geese (*Anser albifrons flavirostris)*, whooper swan (*Cygnus cygnus*) and greylag geese (*Anser anser*)), an HRA informed by the Ecological Desk Study (Appendix 1) was completed (see Appendix 3). This confirmed that all three qualifying interest species have been recorded within the Site and/or surrounding area.
Amphibians and reptiles	Presence not confirmed, though some limited suitable habitat present.	The desk study returned no records of other amphibians or reptiles within 2km of the Site within the last ten years. The drainage ditches within the Site and surrounding area provide suitable habitat for common frog (*Rana temporaria*) and common toad (*Bufo bufo*). Terrestrial habitat surrounding these features includes woodland, scrub, grassland, dry stone wall and rock piles which provide good terrestrial habitat for amphibians including foraging and refugia opportunities. Reptiles such as common-lizard (*Zootoca viviparus*) and slow-worm (*Anguis fragilis*) would also utilise these habitat features. However, areas of arable land and modified grassland are suboptimal for reptiles and, if present, their distribution would be limited to the field margins and tussocky grassland associated with the drainage ditches.

5.2.4.6 Evaluation of Baseline Features

An evaluation of the baseline ecological features is presented in Table 12, below. Features of local or higher value (council, national and international) are considered IEFs.

Table 12: Evaluation of ecological features

Feature	Evaluation Reasoning	Level of Importance
Phillips Mains Mire SSSI	The level of value follows the level of designation.	National
Caithness Lochs SPA and Ramsar		International
Loch of Mey SSSI		National
North Caithness Cliffs SPA		International

Feature	Evaluation Reasoning	Level of Importance
Caithness and Sutherland Peatlands SPA, SAC and Ramsar		International
Stroupster Peatlands SSSI		National
Loch Heilen SSSI		National
AWI-listed woodlands (x3)	Non-statutory designation and a conservation focus at the council area scale.	Council Area
Winter stubble	Does not align with habitats of principle importance.	Less than local
Degraded blanket bog	Does not align with habitats of principle importance.	Less than local
Other acid grassland	Does not align with habitats of principle importance.	Less than local
Other neutral grassland	Does not align with habitats of principle importance.	Less than local
Modified grassland	Does not align with habitats of principle importance.	Less than local
Other coniferous woodland	Does not align with habitats of principle importance.	Less than local
Gorse scrub	Does not align with habitats of principle importance.	Less than local
Built linear features	Does not align with habitats of principle importance.	Less than local
Other standing water (ditch)	Does not align with habitats of principle importance.	Less than local
Bats	Bats are EPS and an SBL priority. The Site was assessed as providing Low to Moderate quality foraging and commuting habitat for bats. Linear features which bats may use to commute and forage along include the plantation edge, stone wall and ditches. However these features are not strongly connected to suitable habitat within the wider landscape. No suitable roost features were present within the Site or 50 m buffer. Bats are therefore given a less than local value in this assessment however mitigation is presented to minimise potential negative of temporary and permanent lighting during and post construction.	Less than local
Badger	Badgers and their setts are strictly protected under the Protection of Badgers Act 1992. The area was assessed, and no badger setts were located within the Study Area. It is therefore considered highly unlikely that badgers or their setts will be directly impacted by the development, unless a badger sett is established in the future. Mitigation is presented to minimise potential disturbance during works.	Less than local

Feature	Evaluation Reasoning	Level of Importance
Otter	Otter is an EPS and SBL priority. No evidence of otter was identified within the Study Area though drainage ditches provide some limited foraging and commuting opportunities. Mitigation is presented to minimise potential disturbance during works.	Less than local
Water vole	Water vole is an SBL priority and protected through its inclusion within the WCA 1981. No evidence of water vole was identified during the survey and water vole are considered likely absent.	Less than local
Red squirrel	Red squirrel is an SBL priority and fully protected through their inclusion on Schedules 5 and 6 of the WCA 1981. Suitable habitat is present adjacent to the Site however no evidence of red squirrel was found during the survey and they are considered likely absent.	Less than local
Pine marten	Pine marten is an SBL priority and fully protected under Schedule 5 of the WCA 1981. No suitable denning habitat was identified within the Study Area though pine marten may use the adjacent woodland for foraging and commuting. It is therefore considered highly unlikely pine marten will be directly impacted by the development but mitigation is presented to prevent an offence being committed.	Less than local
Breeding waders including curlew, dunlin, lapwing and snipe.	The habitat within the footprint of the Proposed Development, being largely arable and modified grassland, provides limited nesting opportunities for waders. The 500 m buffer around the Site is made up in part of improved and wet grassland fields and a small number of waders were recorded during surveys and during the desk study. The surveys in April 2023 identified curlew, dunlin, lapwing and snipe but only curlew were recorded as displaying breeding activity although habitats were assessed as suitable for breeding lapwing and curlew. Curlew, lapwing and dunlin are BoCC Red list species and snipe are a BoCC Amber list species and it is considered a possibility that construction of Proposed Development if completed in the breeding season may cause disturbance to breeding waders. A small number of BoCC Red and Amber list breeding wader species are assessed to typical of the area and are of local level of importance.	Local
Breeding bird assemblage.	The Site and wider area were noted to contain a typical assemblage of farmland species including skylark, meadow pipit and yellowhammer. As the habitat within the footprint of the Proposed Development, is largely arable and modified grassland, it provides limited nesting opportunities. Scrub within the Site may require removal however the landscape design is to include creation of woodland and hedgerow habitat (as detailed within the outline BEMP, Appendix 4). As such, birds are assigned a less than local value in the assessment and mitigation is to be implemented to prevent a legal offence associated with harm to breeding birds.	Less than Local

Feature	Evaluation Reasoning	Level of Importance
Wintering birds (excluding those species covered by designations above)	The Site is used by a small number of common and widespread species which are typical of the local area. Due to the small scale of the development, permanent loss of foraging habitat within the footprint of the proposed development is unlikely to significantly impact the wintering bird population.	Less than Local
Amphibians (common frog and common toad) and reptiles (common lizard and slow-worm)	Limited protection under the WCA, SBL listed and HBAP listed. Due to the agricultural nature of the Site, limited and localised potential in areas of rough grassland and along drainage ditches. Reptiles and amphibians are therefore assigned a less than local value in the assessment but mitigation is presented to prevent an offence being committed.	Less than Local

5.2.4.7 Future Baseline

The Site is currently under agricultural management and, in the absence of any development, this would continue. Therefore, the future baseline of the majority of the Site is considered likely to remain as it is currently.

The baseline conditions within the locality are subject to change in the near future based on the introduction of the consented Gills Bay 132kV Switching Station. This development will be located 150 m to the west of the Site (to the south of the existing forestry). It will comprise a main building measuring 27.55 x 38.62m footprint, x 16.25m height, which will be located within a fenced compound. Its close geographic relationship to the Site is a reflection of the Proposed Development being contingent on the development of the Switching Station (whilst forming separate applications, the end-uses of the two developments are closely related).

Other changes over time may occur as a result of climatic change; these are difficult to predict but are likely to involve increased precipitation and risk of severe weather events as well as gradual increases in average temperatures. Some change in the vegetation assemblage is likely to occur as a result of these changes.

5.3 Embedded Mitigation

5.3.1 Design Mitigation

The ecological baseline has been considered throughout the design process for the Proposed Development with an aim to either eliminate or reduce the potential for any significant effects on receptors and following the “mitigation hierarchy” as described in CIEEM guidance (CIEEM 2018). The mitigation hierarchy follows a sequence of avoidance, mitigation, compensation and enhancement measures to be identified as part of any EcIA project. Ecological factors taken into account throughout the design process for the Proposed Development have included the following:

- The Proposed Development has been positioned within areas of modified grassland and arable, minimising the loss of habitats of higher ecological value (e.g. woodland and scrub).
- Infrastructure has been placed at least 3 m from any drainage ditches and woodland, and 3 m from any areas of retained scrub.

5.3.2 Good Practice Mitigation

In line with the current CIEEM guidelines, the assessment of likely effects is carried out in the presence of standard mitigation measures. The following good practice and mitigation measures will be applied to the project during construction to ensure that effects on IEFs are reduced:

- Preconstruction protected species surveys (for otter, water vole, badger, pine marten and bats) will be undertaken in advance of works commencing on Site. The Ecological Clerk of Works (ECoW) will survey the footprint of works and an appropriate buffer to update the baseline survey results and identify any new ecological constraints. The bat pre-construction surveys must be undertaken within 6 months of construction starting so as to ascertain if there any potential roost features and determine if roosting bats are present.
- If evidence or a high likelihood of protected species presence is identified following the preconstruction surveys, additional mitigation may be identified and implemented to prevent impacts on individuals. This will be secured through Species Protection Plan(s) (SPPs).
- The SPPs will be produced and agreed prior to construction commences and then implemented during the construction period. The SPP will detail measures to safeguard protected species known to be in the area and will include for pre-construction surveys for protected species (complimenting the seasonality of the construction start date) as well as ensuring the use of Best Practice measures during all construction activities (such as sensitive lighting, ramps exiting open excavations, etc.). The SPP will describe the process to be followed in the case that new protected species are recorded on Site that will therefore also need to be protected during construction works, as well ensuring the implementation of effective toolbox talks to raise awareness of Site personnel to sensitive ecological receptors on Site.
- The Applicant will appoint a suitably qualified ECoW prior to the commencement of any construction activities. The ECoW will be present on a regular basis to oversee Site clearance and construction activities, provide toolbox talks to Site personnel with regards to protected/ priority species and habitats, and undertake monitoring works, as appropriate.
- Protection of breeding bird nests from damage and/or destruction during the breeding season will need to be ensured. Wherever possible, all vegetation clearance will occur outside the bird breeding season (i.e. between September – March, inclusive), to ensure that no active nests are damaged or destroyed by the proposed works. If work is required after March 31st, the ECoW will search areas of clearance in advance of works and buffer active nests as appropriate. This would include any areas of clearance and vegetation removal for access tracks, compounds or laydown areas due to the populations of ground nesting birds on and around the Site.
- In order to prevent pollution of watercourses within the Site (with particulate matter or other pollutants such as fuel), best practice techniques will be employed and will include:
    - For any water crossings: buffer strips around sections of workings adjacent to watercourse crossing and bund and embankment features to be implemented;
    - For any temporary tracks, parking areas, and compounds: camber in track or ground design; drains, e.g. infiltration trenches with check dams;
    - 3 m buffer to be maintained around all drainage channels, within which there is to be no works or storage of plant and materials; and
    - General drainage: no direct discharges of water from works areas to existing drainage channels; drainage will be directed to infiltration trenches or settlement swales.
- To protect woodland habitats bordering the Site and other areas of scrub to be retained within the Site, working methods will proceed in line 'BS 5837 (2012) – Trees in relation to Design, Demolition and Construction'.
- Excavations will be covered at the end of each working day or a wooden plank placed inside to allow protected faunal species to escape, should they become trapped. Any temporarily exposed open pipe system will be capped in such a way as to prevent wildlife gaining access.

- Where appropriate and safe to do so, all construction working areas with potentially suitable open habitats for herptiles will initially be cut during the active season for herptiles (April to October), under the guidance of the ECoW (e.g., using a brush cutter), to reduce the height of vegetation and make it less attractive for herptiles habitation. The ECoW would move any potential refugia or hibernacula from working areas by hand. Working areas would then be kept unsuitable for herptiles through regular cutting until construction in that location commences.
- Full details of construction mitigation measures will be provided in a detailed Construction Environmental Management Plan (CEMP) to be agreed with the Planning Authority, in consultation with NatureScot and SEPA, post-consent but prior to the construction phase of the Proposed Development commencing.
- A sensitive lighting scheme must be adopted. To reduce obtrusive light and light spill, the following measures will be incorporated into the design of temporary lighting during the construction phase, and the permanent Site lighting:
    - The design of temporary site lighting must ensure that boundary features are not illuminated as bats (and other mammals) will often avoid lit areas.
    - During construction, task lighting must be switched off when not in use.
    - LED Luminaires must be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
    - A warm white spectrum (ideally <2700 Kelvin, max 4000 Kelvin) must be adopted to reduce the blue light component.
    - Column heights must be designed to minimise light spill.
    - Only luminaires with an upward light ratio of 0% and with good optical control are to be used.
    - Luminaires must be mounted on the horizontal (i.e. no upward tilt).
    - Any lighting will be directional (using fittings such as hoods, cowls or shields to direct light downwards wherever possible and avoid unnecessary light spill).

5.4 Receptors Brought Forward for Assessment

This section details which ecological receptors are being taken forwards for assessment and those which are not being taken forward following the application of the standard mitigation above. Only those with potential to experience significant effects following the implementation of the standard mitigation have been taken forward for detailed assessment.

For transparency, all predicted habitat losses from the Proposed Development are presented in Table 13, all of which will affect non-IEFs.

Table 13: Estimated Loss of Habitat within Site Boundary from Proposed Development Infrastructure

UK Habitat Classification	Total survey extent (ha)	Extent on Site (ha)	Direct Habitat Loss Permanent Works (PW) Area (ha)	Direct Habitat Impact - Temporary Works Area (5 m buffer of PW) (ha)	Total Direct Permanent and Temporary Habitat Loss (% of total survey extent)
Winter stubble (c1c5)	6.05	4.26	2.11	0.30	2.41 (39.83%)
Degraded blanket bog (f1a6)	0.37	-	-	-	-
Other acid grassland (g1d)	2.78	-	-	-	-

UK Habitat Classification	Total survey extent (ha)	Extent on Site (ha)	Direct Habitat Loss Permanent Works (PW) Area (ha)	Direct Habitat Impact - Temporary Works Area (5 m buffer of PW) (ha)	Total Direct Permanent and Temporary Habitat Loss (% of total survey extent)
Other neutral grassland (g3c)	0.23	-	0.002	0.01	0.012 (5.22%)
Modified grassland (g4)	14.55	5.8	3.92	0.87	4.79 (32.92%)
Gorse scrub (h3e)	1.67	0.39	0.23	0.05	0.28 (16.77%)
Other coniferous woodland (w2c)	3.29	-	-	-	-
Built linear features (roads) (u1e)	0.29	-	-	0.01	-
Total	**29.26**	**10.67**	**6.26**	**1.23**	**7.49 (25.59%)**
Line Habitats					
Other standing water (ditch) (r1g)	2.07 km	0.4 km	4.09 m	13.25 m	17.34 m (0.83%)
Built linear features (dry stone wall) (u1e)	387 m	18.2 m	4.13 m	12.7 m	16.83 m (4.34%)
Total	**2457 m**	**418.2 m**	**8.22 m**	**25.95 m**	**34.17 m (1.39%)**
Note: Please account for a ± 0.05 ha/0.05 m margin of error on all habitat measurements.					

Following evaluation of the baseline data, including desk study and field survey data, and considering the embedded mitigation measures described above, some potential effects on IEFs (e.g. a receptor of local level value or higher) can be scoped out of the assessment, as described in Table 14 below. This is based on professional judgement and experience from other relevant projects in the region.

Table 14: Important Ecological Features scoped in or out of the assessment

IEF	Rationale for Scoping In/Out	Scoped In/Out
Phillips Main Mire SSSI	Phillips Mains Mire SSSI is situated 1.48 km south-east from the Site with no functional connectivity between the designated qualifying features and the Proposed Development, and significant effects on the designated area are very unlikely.	Out
Caithness Lochs SPA and Ramsar	Caithness Lochs SPA and Ramsar (which includes Loch of Mey SSSI and Loch Heilen SSSI) is located within 2.2 km of the Site. Habitats within the Proposed Development and immediate surrounds which will be lost to the footprint of the scheme are not considered to be suitable for Greenland white-fronted geese or whooper swan both species preferring lush improved grassland fields or wetlands to forage or roost. The results of the detailed desk study (see Appendix 1) show the locations used by both species and are noted to be faithful foraging locations. The lack of records close to the Site (i.e. none within 500 m) mean habitat loss for Greenland-white fronted goose and whooper swan are scoped out of the assessment.	**In:** Disturbance and Displacement; Greenland white-fronted goose, greylag goose and whooper swan. Habitat loss; greylag goose **Out:** Habitat loss; Greenland white-fronted goose and whooper swan.
Loch of Mey SSSI	Loch of Mey SSSI is located within 2.2 km north-west of the Site. All species are covered by the higher SPA and Ramsar designation above.	Out
North Caithness Cliffs SPA	North Caithness Cliffs SPA is located 3.2 km north of the Site with no functional connectivity between the designated qualifying features and the Proposed Development, and significant effects on the designated area are very unlikely.	Out
Caithness and Sutherland Peatlands SPA, SAC and Ramsar	Caithness and Sutherlands Peatlands SPA, SAC and Ramsar is located 3.6 km south-east of the Site with no functional connectivity between the designated qualifying features and the Proposed Development, and significant effects on the designated area are very unlikely.	Out
Stroupster Peatlands SSSI	Stroupster Peatlands SSSI is located 3.6km south-east of the Site with no functional connectivity between the designated qualifying features and the Proposed Development, and significant effects on the designated area are very unlikely.	Out
Loch Heilen SSSI	Loch of Mey SSSI is located within 2.2 km north-west of the Site. All species are covered by the higher SPA and Ramsar designation above.	Out
AWI-listed woodlands (x3)	The three AWI-listed woodlands are located approximately 0.4 km, 1.1 km and 1.3 km from the Proposed Development with no functional connectivity between the designated	Out

IEF	Rationale for Scoping In/Out	Scoped In/Out
	qualifying features and the Proposed Development, and significant effects on the designated areas are very unlikely.	
Breeding waders	Presence of breeding BoCC Red and Amber list waders within local fields and within disturbance distances. With no breeding habitat lost due the Proposed Development, habitat loss is scoped out of the assessment.	**In:** Disturbance and displacement. **Out:** Habitat loss
Breeding bird assemblage (non-SPA qualifying species)	With very few or no breeding species within typical disturbance of the Proposed Development, any significant impacts on these common and widespread species is very unlikely.	Out
Wintering bird assemblage (non-SPA qualifying species)	The Proposed Development may be used by a small number of wintering bird species but any significant impacts on these common and widespread species is very unlikely.	Out

6. Potential Effects

6.1 Habitats Regulations Appraisal (HRA)

Given the Proposed Development's proximity to the Caithness Lochs SPA and Ramsar, a HRA will be required to ensure that the integrity of the Natura sites will be maintained in the event that the Proposed Development were to proceed. Consideration of HRA implications and the potential for adverse effects on qualifying features, and the conservation objectives of the designation, are considered to be necessary to identify the nature, extent and significance of any adverse effects and, if found, whether these are likely to impact the integrity of a Natura designated site.

A shadow HRA is therefore presented in full in **Appendix 3** where the Stages of the HRA process are mirrored to help inform the competent authority; Stage 1: screening for Likely Significant Effects (LSE), and Stage 2: Appropriate Assessment (AA) where it is assessed whether there are to be adverse impacts on the integrity of a Natura site.

In summary, the Shadow HRA was taken through Stage 1 of the HRA process and no pressure pathways considered to present likely significant effects to the qualifying features of the SPA were identified.

Please refer to **Appendix 3**, as a standalone document for the shadow HRA.

6.2 Potential Construction Effects

This section provides an assessment of the likely effects of construction of the proposed Development upon the scoped-in IEFs.

6.2.1 Caithness Lochs SPA and Ramsar

6.2.1.1 Disturbance and Displacement

Greenland white-fronted goose

Greenland white-fronted goose is a designated feature (with a winter peak population estimate of 440 individuals) of the Caithness Lochs SPA and Ramsar which lies 2.2 km to the north-west of the Site and will travel distances of up to 8 km from roost sites to forage in fields during the day (SNH, 2018).

A detailed, targeted ornithological desk study (**Appendix 1**) was completed to support the shadow HRA (**Appendix 3**) which investigated the use of the Site and wider area by Greenland white-fronted geese. The desk study did not identify any records for Greenland white-fronted goose within the Site but did identify a number of records within 2 km of the Site (**see Appendix 3, Figure 6**). The nearest record to the Site was 580 m to the west, with 160 individuals recorded at one time. Given the proximity of the Site to the SPA it is assumed that birds recorded within the 2 km buffer belong to the SPA population.

During the autumn, winter and spring Greenland white-fronted geese are most commonly found foraging on stubble fields, improved grassland and loch margins (Patterson *et al.*, 2013). This statement is backed up by the desk study results with the remainder of the records clustered in two locations linked with larger waterbodies, one area of records to the east of Loch of Mey lies between 580 m and 2.5 km west of the Site boundary. The second area lies north-east of Loch Heilen between 3 to 5 km south-west of the Site.

The recommended minimum disturbance buffer required from heavy construction activities for wintering Greenland white-fronted geese is between 200 m and 600 m (Goodship & Furness, 2022). The location of the closest fields where Greenland white-fronted geese were recorded are, at 580 m, on the limit of the maximum disturbance distance as outlined in Goodship & Furness, 2022. The nearest record is also separated further from the Site by a block of plantation woodland. As this means there is not a direct line of sight, this will further reduce any disturbance both through noise and visual disturbance during construction of the Site.

As outlined in Section 3 (Table 1), Greenland white-fronted geese are known to feed in the local area and are known to be site faithful, meaning they return to the same roosting and feeding sites each year (NatureScot, 2023). Given the desk study did not record any records closer than 580 m from the Proposed Development; the fact there is no direct line of sight between known goose fields and the Proposed Development; and the fact that Greenland white-fronted geese are known to be faithful to their foraging and roosting locations, it is considered unlikely that the Proposed Development will disturb roosting or foraging Greenland white-fronted geese during construction.

Despite the fact that it is considered unlikely that that Greenland white-fronted geese will be disturbed due to the Proposed Development during construction, given the sensitivity of the receptor, the mitigation measures detailed in the HRA (**Appendix 3**) must be adhered to. This is to include the production of a Wintering Bird Species Protection Plan, in consultation with NatureScot, should works be required during the wintering bird season (October to March inclusive).

The overall effects on wintering Greenland white-fronted geese during construction are considered to be temporary and of **negligible** adverse impact and therefore **not significant** under the EIA Regulations.

Greylag goose

Greylag goose is a designated feature of the Caithness Lochs SPA and Ramsar which lies 2.2 km to the north-west of the Site and this species will travel distances of up to 20 km from roost sites to forage in fields during the day (SNH, 2018). A detailed ecology desk study (**Appendix 1**) was completed to support the shadow Habitat Regulations Appraisal (**Appendix 3**) which investigated the use of the Site and wider area by greylag geese. Given the proximity of the Site to the SPA it is assumed that any birds recorded within the 2 km buffer belong to the SPA population.

The Caithness Lochs SPA and Ramsar is designated for an average figure of 7,190 individuals (JNCC, 2018). The desk study data outlined that greylag geese have been recorded foraging within the field the Site is located (max count 110 individuals), within the adjacent field to the east (max count 400 individuals) and within a field to the north of the road (max count 530 individuals) (see **Appendix 3, Figure 4**). This represents between 1.5 % and 7.37 % and of the designated SPA population.

Greylag geese are susceptible to disturbance from human activity and will react to dog walkers, vehicles and are likely to be impacted by construction activities although over the winter birds are often found foraging closer to roads as the birds become normalised to vehicular activity. Greylag geese will forage on improved grassland fields, newly planted crops or cut grain fields where the grain remains undamaged in post harvesting. The habitats within the Site and surrounding area along the coast both west and east provide optimal habitat for greylag geese, and even if all the greylag geese, as noted in the desk study, were disturbed by works at the site, there is widespread and abundant foraging habitat available to the geese both west and east of the Site.

The overall effects on wintering greylag geese during construction are considered to be temporary and of **negligible** adverse impact and therefore **not significant** under the EIA Regulations.

Whooper swan

Whooper swan is a designated feature (with a winter peak population estimate of 240 individuals) of the Caithness Lochs SPA and Ramsar which lies 2.2 km to the north-west of the Site and will travel distances of up to 5 km from roost sites to forage in fields during the day (SNH, 2018).

A detailed ecology desk study (**Appendix 1**) was completed to support the shadow HRA (**Appendix 3**) which investigated the use of the Site and wider area by whooper swan. The desk study did not identify any records for whooper swan within the Site but did identify a number of records within 2 km (see **Appendix 3, Figure 5**). Given the proximity of the Site to the SPA it is assumed that birds recorded within the 2 km survey buffer belong to the Loch Mey SPA population. Forester *et al.*, 2007 estimated the Loch Mey whooper swan population to be 10% of the total Caithness Lochs SPA whooper swan population with the larger proportion residing at Loch Heilen (25%) and Loch of Wester (65%). As Loch Heilen and Loch of Wester lie over 5 km from the Proposed Development site, outwith the foraging range of this species, any potential impacts of

the Proposed Development are considered to apply only to the Loch Mey population. The majority of whooper swan records are to the north-west and west of the Site close to Loch Mey and Loch Heilen (see **Appendix 3, Figure 5**). There were no records within 600 m of the Site, the nearest being just over 600 m south-west, recorded in the autumn of 2011.

The recommended minimum disturbance buffer required from heavy construction activities for wintering whooper swan is between 200 m and 600 m (Goodship & Furness, 2022). The location of the closest field where whooper swans were recorded is over 600 m which is beyond the limits for disturbance both through noise and visual disturbance during construction of the Site.

As outlined in the scoping section (Table 1: Ecological Consultation Responses) whooper swan are known to feed in the local area and are site faithful, meaning they return to the same roosting and feeding sites each year (NatureScot, 2023). Given the results of the desk study did not record any records closer than 600 m from the Proposed Development, and the fact that whooper swans are known to be faithful to their foraging and roosting locations it is considered unlikely that the Proposed Development will disturb roosting or foraging whooper swan during construction.

The overall effects on wintering whooper swan during construction are considered to be temporary and of **negligible adverse** impact and therefore **not significant** under the EIA Regulations.

6.2.1.2 Habitat Loss (greylag goose)

Although greylag goose were recorded making use of the habitats within the Site and 2 km buffer, the predominant landscape use within the region consists of the same preferable habitats and so foraging resource is considered to be plentiful.

As part of the HRA (**Appendix 3**) the amount of greylag goose habitat lost due to the Proposed Development was calculated as 10.65 ha (presuming the loss of the whole site). As discussed in the HRA, an area of approximately 1,890 ha of suitable habitat is present within 5 km of the Site, meaning the loss of the site as a resource in the wider area comprises 0.56 % of the available goose habitat within 5 km of the Proposed Development.

Given greylag geese are known to travel over 20 km from roost sites to forage during the day (SNH, 2016), this figure of 0.56 % is likely to be considerably higher than the reality. Presuming a range of 20 km from their roost site each day, and an estimated total of 26,940 ha of suitable habitat within 20 km, in terms of habitat loss of the wider SPA population it is therefore considered that the habitat loss due to the site is 0.04 % of available habitat. For full details of the calculations see **Appendix 3**.

Given the potential for habitat loss to foraging greylag geese during the construction period, the impact on wintering greylag geese are assessed to be of short-term, temporary duration, non-reversible and will affect the receptor directly. The magnitude is considered to be **negligible** and therefore **not significant** under the EIA Regulations.

6.2.2 Breeding waders

6.2.2.1 Disturbance and Displacement

The Proposed Development site is considered to be of local area importance for breeding waders. Curlew were recorded using the Survey Area for breeding, and lapwing and snipe were also recorded using fields in the Survey Area and it is considered habitat is suitable for breeding. Dunlin were recorded but it is not considered likely dunlin would breed within the survey area as they prefer more upland habitats dominated by wet heath and blanket bog habitats.

The latest guidance which assesses disturbance distances in a selected number of species in both the breeding season and non-breeding season includes disturbance distances for curlew (200-300 m) and dunlin (100-200 m) during the breeding season (Goodship & Furness, 2022). Although lapwing and snipe are not included in the guidance it is considered that as similar species the disturbances distances are likely to be similar.

It is considered unlikely that breeding waders will be recorded within the Proposed Development however disturbance during construction may result in displacement from areas surrounding the Site. During the breeding season, in order to avoid the abandonment of nests or breeding territories as a result of disturbance, the standard mitigation outlined in Section 5.3.2, including pre-construction checks and the appointed ECoW will identify active nesting locations prior to any works taking place. If nest sites are identified, then appropriate mitigation measures to protect nest sites will be implemented.

The overall effects on breeding waders during construction are considered to be temporary and **negligible** adverse impact and therefore **not significant** under the EIA Regulations.

6.3 Potential Operational Effects

This section provides an assessment of the likely effects of operational phase of the Proposed Development upon the scoped-in IEFs.

6.3.1 Caithness Lochs SPA and Ramsar

Qualifying Species – Greylag goose, whooper swan, Greenland white-fronted, Breeding and Wintering Bird Assemblage: There may be a need for occasional operational and maintenance activities to take place which would create some disturbance. This could lead to impacts on the species in the vicinity. However, given that all construction mitigation and good practice measures would be followed for any operational and management (O&M) works, including the need for pre-works breeding bird checks, this would be anticipated to be of negligible magnitude, highly localised and of a short-term duration and therefore of no significance.

As such, operational impacts on both the breeding and wintering bird assemblages is considered to be **negligible** and **not significant** under the EIA Regulations.

6.4 Decommissioning

Impacts of decommissioning are also identified and are of a similar nature to construction impacts, but the existing baseline is difficult to define given the 30-year operational lifetime of the Proposed Development. Any impact would likely be as a result of the demolition of the substation and BESS compound. The substation and BESS compound is located in what is considered to be low value habitat.

As protected species may have established within the enhanced habitats (as a result of the proposed BEMP measures) surrounding the substation and BESS compound, prior to any demolition taking place all mitigation proposed for the construction phase would be adhered to (as per Section 5.3.2). This would include pre-demolition surveys (for protected species, and both wintering and breeding birds) as well as the good practice works measures. Licencing requirements would need to be informed by the pre-demolition surveys in advance of any works commencing.

In the event that the baseline is similar to the one described here for construction impacts, then the impacts would be of a similar nature, but of a highly reduced, scope and scale, as such **negligible adverse** and **not significant**.

6.5 Additional Mitigation and Enhancement

6.5.1 Construction and Operation

The OBEMP has been prepared and is presented in **Appendix 4**. It sets out measures for enhancing the biodiversity of the Proposed Development site through actions including landscape planting (species-rich grassland, hedgerows, and woodland) and provision of bat, pine marten, barn owl, bird boxes and habitat boxes. The OBEMP aims to enhance plant and invertebrate species diversity, which will provide benefits to various species known to be present at the site. The OBEMP also aims to create and enhance wildlife corridors within and beyond the Proposed Development site. A summary of the proposed measures included within the OBEMP are presented here, for full details please refer to **Appendix 4**.

6.5.1.1 Landscape Planting and Management

The whole site will be subject to a landscaping plan which includes a variety of planting. The planting includes species-rich grassland, a sustainable drainage system (SuDS), hedgerows, and native woodland. Further information, including recommendations for management and monitoring of the landscape planting, is provided in **Appendix 4.** This planting regime will increase the diversity of plants and invertebrates within the site which will benefit a number of protected species.

The increase in plant species diversity, including wildflowers, will increase the diversity of pollinators and invertebrates within the site. Invertebrates are an essential food source for species such as hedgehogs, birds, bats, amphibians and reptiles. The increase in invertebrates across the site would encourage more of these species to utilise the site.

The planting of hedgerows and tree species will create additional nesting habitat for a number of species recorded during the breeding bird survey such as yellowhammer as well as providing additional foraging resource during both breeding and with fruiting species such as hawthorn during the winter season. The reseeding of the open areas of the site will create improved breeding habitat for ground nesting species such as skylark although it is understood the areas available are reduced in size.

6.5.1.2 Mammal Passage

The fencing around the site will be an effective security measure, however it has the potential to restrict animals from accessing the foraging resource contained within the site as well as passage as part of active commuting corridors. Therefore, it is recommended that a gap of 20 cm at the base of the fenceline is maintained. If this is not possible, then mammal gates should be installed with guidance from an SQE to allow continued passage of mammals across the Site.

6.5.1.3 Wildlife Friendly Features

The OBEMP presented in **Appendix 4** provides information on proposed barn owl, pine marten, bat, bird and habitat boxes to be installed at the site.

6.6 Residual Effects

Given that no likely significant effects are anticipated as a result of the construction, operational or decommissioning phases of the Proposed Development the residual effect is expected to be negligible adverse and not significant under EIA Regulations.

Through the delivery of the OBEMP the Proposed development is expected to deliver a significantly enhanced level of biodiversity from the baseline conditions (as detailed in Appendix 4), which represents a moderate beneficial and significant effect under the EIA Regulations.

7. Cumulative Assessment

7.1 Caithness Lochs SPA and Ramsar

The cumulative effect on greylag geese, whooper swan and Greenland white-fronted geese is considered to be limited to habitat loss and is discussed in detail in the shadow HRA in **Appendix 3**. As part of the in-combination study in the HRA, a total of four further developments (see **Appendix 3, Figure 7**), comprising the consented Gills Bay switching station, the proposed Hollandmey Energy Development, Lochend Wind Farm Extension and Slickly Overhead Line route.

The combined area of the four in combination developments is 1,479 ha (of which 180.8 ha is considered to be potential goose or swan habitat. If all four developments are constructed the in-combination habitat loss including the Site totals 191.45 ha. Should all of this habitat be lost it would comprise 10.13 % of the 1,890 ha of habitats identified within 5 km of the Site (as shown in **Appendix 3, Figure 7**). Greylag geese will travel distances up to 20 km from their roost sites each day meaning they have a foraging range that covers

approximately 1,250 km^2. The foraging range for Greenland white-fronted geese is 8 km covering approximately 200 km^2. The foraging range for whooper swan is 5 km covering c. 75 km^2.

Assuming habitats within the 5 km buffer are representative of those found within the foraging range of each species, the following is concluded:

- The 20 km buffer contains c. 26,940 ha of suitable goose habitat. Therefore in terms of in-combination effects to the SPA population the habitat loss is estimated to be **0.71 %.** On this basis it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding greylag geese feature of the Caithness Lochs SPA from any pressure associated with displacement due to cumulative effects.
- The 8 km buffer contains c. 4,310 ha of suitable goose habitat. Therefore in terms of in-combination effects to the SPA Greenland white-fronted goose population the habitat loss is estimated to be **4.44 %.** On this basis it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding Greenland white-fronted geese feature of the Caithness Lochs SPA from any pressure associated with displacement due to cumulative effects.
- Assuming that the area of suitable swan habitat within 5 km of the Loch Mey roost is similar to the area within 5 km of the Site (e.g. 1,890 ha), it is estimated that in terms of in-combination effects to the SPA whooper swan population, the potential habitat loss is estimated to be **10.13** %. This is a higher figure than for the other species considered, however, the cumulative impact of this habitat loss is considered to impact the Loch Mey population only, estimated to be approximately 10% of the SPA whooper swan population (Forrester *et al.*, 2007), as this lies within foraging range of the Site. The remaining population at Loch Heilen (25%) and Loch of Wester (65%) may be impacted by the other planning applications, but as the Proposed Development lies outwith the 5 km foraging range of the Loch of Wester and Loch Heilen populations no cumulative effect on the majority (90%) of the SPA population is anticipated. On this basis it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding whooper swan feature of the Caithness Lochs SPA from any pressure associated with displacement due to cumulative effects.

8. Summary

The Proposed Development area was surveyed in 2023. Baseline surveys included an extended UKHab survey extended to record evidence of protected or otherwise notable species such as badger, otter and water vole, and a breeding bird survey were completed in April and May. The baseline data was supported by an Ecology Desk Study which reviewed recent records of priority species within a defined search area beyond the site boundary. Habitats within the Site and surrounding area include arable land used for crop production, modified grassland used for grazing sheep and cattle, with degraded blanket bog and coniferous plantation also noted in the wider survey buffer outwith the Site boundary. Due to their highly managed nature and low associated species diversity, habitats within the footprint of works are considered to be of low ecological value. No evidence of protected species was found during the baseline surveys.

A total of three designated sites (five designations) of international importance (Caithness Loch SPA /Ramsar, Caithness and Sutherland Peatlands SPA / Ramsar and North Caithness Cliffs SPA) and their constituent SSSIs (Loch Mey SSSI, Loch Heilen SSSI and Stoupster Peatlands SSSI) and Phillips Mains Mire SSSI lie within 5 km of the Site. Three areas of AWI woodland lie within 2 km of the Site boundary. Due to the separation distance and nature of the Proposed Development significant effects on Phillips Mains Mire SSSI and the AWI woodlands are considered unlikely.

Given the proximity of the Caithness Lochs SPA and Ramsar, Caithness and Sutherland Peatlands SPA, SAC and Ramsar and the North Caithness Lochs SPA, a shadow HRA, screening stage and AA, has been completed informed by the Ecology Desk Study and in consultation with NatureScot. Through this process, the Caithness and Sutherland Peatlands SPA, SAC and Ramsar and the North Caithness Lochs SPA designations were screened out of further assessment as no impact pathways were identified due to the separation distance

and nature of the Proposed Development. Caithness Lochs SPA and Ramsar were screened in to be take forward for AA as the Ecology Desk Study indicated that greylag geese have been recorded within the Site and Greenland white-fronted geese and whooper swan have been recorded within the surrounding area (all qualifying interest species). It is considered that greylag geese will lose a small amount of foraging habitat due to the Proposed Development therefore potential effects on greylag geese considered within the assessment were loss of foraging habitat and temporary disturbance and displacement during the construction phase. As whooper swan and Greenland white-fronted geese have not been recording foraging within the Site potential effects were limited to temporary disturbance and displacement. The assessment has concluded that with the application of standard mitigation as detailed within the HRA (**Appendix 4**) the predicted effects, including cumulative, on all three species are considered to be **negligible adverse** and **not significant**.

The breeding bird survey in April 2023 identified curlew, dunlin, lapwing and snipe within the study area though only curlew were recorded as displaying breeding activity in the wider survey buffer. Curlew, lapwing and dunlin are BoCC Red list species and snipe are a BoCC Amber list species and it is considered a possibility that construction of the Proposed Development, if completed in the breeding season, may cause disturbance to breeding waders. Breeding waders were therefore taken forward for assessment. In line with the guidelines the impact assessment assumes the application of standard mitigation. With these in place, predicted effects including cumulative effects, are considered to be **negligible adverse** and therefore **not significant**.

The Site and wider area were noted to contain a typical assemblage of farmland species including skylark (BoCC Red Listed), meadow pipit (BoCC Amber Listed) and yellowhammer (BoCC Red Listed). As the habitat within the footprint of the Proposed Development, is largely arable and modified grassland, it provides limited nesting opportunities. Scrub within the Site may require removal however the landscape design is to include the creation of woodland and hedgerow habitat (as detailed within the outline BEMP, **Appendix 4**). As such, birds are assigned a less than local value in the assessment and mitigation is to be implemented to prevent a legal offence associated with harm to breeding birds.

The OBEMP (**Appendix 4**) includes a biodiversity net gain assessment, which indicates that the Site has potential to deliver a net gain in biodiversity provided the habitat creation and management measures detailed within the OBEMP and accompanying landscape design are adhered to. A detailed BEMP is to be produced post consent and in consultation with the Highland Council.

Residual effects are summarised in

Table 15 and **Table 16** below.

Table 15 – Summary of Residual Effects

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Caithness Lochs SPA / Ramsar – Greylag goose, whooper swan and Greenland white-fronted	Negligible	Adverse	Timing of works. Appointment of ECoW. Wintering bird SPP (if works required between October to March).	Negligible	Adverse
Breeding waders	Negligible	Adverse	Timings of works. Appointment of ECoW.	Negligible	Adverse
Operation					
Caithness Lochs SPA / Ramsar – Greylag goose, whooper swan and Greenland white-fronted	Negligible	Adverse	None.	Negligible	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Breeding waders	Negligible	Adverse	None.	Negligible	Adverse
Habitats - enhancement	NA	NA	OBEMP and Landscape Design	Moderate	Beneficial
Protected Species - refugia	NA	NA	OBEMP	Moderate	Beneficial
Invertebrates – refugia and habitat enhancement	NA	NA	OBEMP and Landscape Design	Moderate	Beneficial
Decommissioning					
Caithness Lochs SPA / Ramsar – Greylag goose, whooper swan and Greenland white-fronted	Negligible	Adverse	None.	Negligible	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Breeding waders	Negligible	Adverse	Timings of works. Appointment of ECoW.	Negligible	Adverse

Table 16 – Summary of Cumulative Effects

Receptor	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
Caithness Lochs SPA / Ramsar – Greylag goose, whooper swan and Greenland white-fronted	Habitat loss	Lochend Wind Farm Extension	Negligible	Adverse
		Gills Bay Switching Station	Negligible	Adverse
		Hollandmey Wind Energy Development	Negligible	Adverse
		Slickly Wind Farm OHL	Negligible	Adverse

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Appendix 1 – Ecological Desk Study

Mey BESS

Ecology Desk Study

Client:	Simec Atlantis Energy
Project/Proposal No:	6377
Version:	2.0
Date:	2023-10-31

Document Information

Project Name:	Mey BESS
Document Title:	Ecology Desk Study
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Revision History

Version	Date	Authored	Reviewed	Approved	Notes
1.0	2023-09-19	JD	AT	AH	First client issue
2.0	2023-10-31	JD	AT	AH	Second client issue. Updated with final red line boundary.

Contents

1. Introduction

ITPEnergised were commissioned by Simec Atlantis Energy to undertake an Ecological Desk Study for an area of land (the 'Site') for a proposed battery energy storage system (BESS) the 'Proposed Development' located at Phillips Mains, Caithness, central OS gird reference ND 29621 72440. Figure 1 shows the 'Developable Area' and the chosen final red line boundary for the Proposed Development.

The ecological desk study was carried out using a range of publicly available information sources to provide an understanding of the ecological context of the Site and surrounding area.

The Site lies within 5 km of the Caithness Lochs Special Protection Area (SPA), protected for its wintering populations of Greenland white-fronted goose (*Anser albifrons flavirostris*), greylag goose (*Anser anser*) and whooper swan (*Cygnus cygnus).* Due to the foraging range of these species there is potential connectivity between the Site and the SPA. NatureScot have requested a desk-based Habitats Regulations Assessment (HRA) screening exercise be completed to consider the potential for disturbance to and/or displacement of foraging SPA geese and swans. This desk study has therefore been extended to include wintering records of these qualifying interest species within the Site and surrounding area. Data sources consulted have included the local planning portal, Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and relevant research publications.

2. Proposed Development

The Proposed Development is located within an arable field to the north of Phillips Mains farm, approximately 600 m south-east of Mey. The development is anticipated to comprise the following:

- Laying out of containerised battery units (around 2.6 metres high) along with associated inverters, switchgear units, closed loop cooling units, control units and associated electrical infrastructure mounted on concrete piers;
- Laying out of containerised substation units and associated electrical infrastructure mounted on concrete piers;
- Transformers within bunded compounds;
- Auxiliary power supplies for the batteries, control systems mounted on concrete piers;
- Security palisade fence around the BESS substation and battery compound with access gates to the compound entrance from the road network;
- Erection of CCTV cameras;
- Laying out of a hard surfaced site access into the BESS substation and battery compound from the local road network. Car parking bays. Uncompacted gravel as a surface cover between the containerised units and equipment. Construction laydown area;
- An attenuation pond; and
- Landscaping (including Biodiversity Net Gain).

3. NatureScot Consultation Response

In their pre-application response dated 16.05.2023 (ref: 23/00635/PREMAJ), NatureScot have advised the following:

Designated Sites

NatureScot advises that the proposal has connectivity with the Caithness Lochs Special Protection Area (SPA) and lies close to Phillips Mains Mire Site of Special Scientific Interest (SSSI).

Caithness Lochs SPA

The proposal lies within foraging range of this SPA, protected for its wintering populations of Greenland white-fronted geese, greylag geese and whooper swans. Both whooper swans and Greenland white-fronted geese are known to feed in this area. In particular, Greenland white-fronted geese are site faithful, meaning they return to the same roosting and feeding sites each year. Given their small population size and restricted feeding regime, any impacts to this species could be significant. NatureScot therefore advises that any future planning application should consider the potential for disturbance and/or displacement to feeding SPA geese and swans. Such an assessment could be informed by currently available information, including information gathered for nearby developments (such as the adjacent switching station that this proposal will connect to and the adjacent Hollandmey Wind Farm). The Applicant may also wish to consider the following sources of information to inform their assessment:

- *NatureScot Commissioned Report 523b – Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13;*
- *Greenland white-fronted geese: Land use and conservation at small wintering sites in Scotland; and*
- *Available information held by RSPB.*

Based on the available information, it is NatureScot's initial view that any impacts to the SPA could be mitigated. However, this will need to be assessed as part of a Habitats Regulations Appraisal and any future planning application should provide sufficient detail to inform such an assessment.

Additional advice relating to protected sites

NatureScot highlights that the comments provided are given without prejudice to a full and detailed consideration of the impacts of the proposal, should it be submitted as a formal application. Furthermore, should the proposed location or nature of the proposal significantly change, NatureScot advises that connectivity with other protected sites may need to be considered within the future planning application (e.g. with the Caithness & Sutherland Peatlands Special Area of Conservation (SAC) and SPA).

4. Biodiversity Priorities

4.1 Scottish Biodiversity List

Scottish Ministers created the Scottish Biodiversity List (SBL) in 2005 to satisfy the requirements under Section 2(4) of the Nature Conservation (Scotland) Act 2004 and assist public bodies in carrying out conservation of biodiversity, as well as to provide the general public with information regarding conservation within Scotland. The SBL comprises species and habitats listed using both scientific and social criteria (NatureScot, 2020a). Only scientific criteria are considered relevant to this report. They include the following:

- All UK Priority Species present in Scotland;
- Species which Scotland has an international obligation to safeguard;
- All species defined as nationally rare at a UK level that are present in Scotland;
- Species with populations present (resident, wintering or breeding) in 5 or fewer 10km squares or sites in Scotland;
- All species that are endemic to Scotland;
- Any sub-species or race that is widely recognised and accepted by the scientific (or other relevant) community and that is endemic to Scotland, if it also meets one of the other criteria; and
- Natural and semi-natural habitats that are known to be particularly important for supporting assemblages of plant or animal groups that are data deficient, such as fungi, bryophytes, lichens, algae and invertebrates.

Nine species of bat are included on the SBL for avoidance of negative impacts: Brandt's bat (*Myotis brandtii*), Daubenton's bat (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*), Natterer's bat (*Myotis nattereri*), noctule (*Nyctalus noctule*), Nathusius' pipistrelle (*Pipistrellus nathusii*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bat (*Plecotus auritus*).

4.2 Local Biodiversity Reporting

The Highland Nature Biodiversity Action Plan (BAP) was published in 2021 and covers the time period 2021-2026. The plan is the fourth BAP for the Highland since 2006 and focuses on where positive biodiversity action can be taken to conserve and enhance important habitats and species. The plan contains the following nine key actions for Highland Nature:

- Action 1: Planning and development decisions provide biodiversity protection;
- Action 2: Landscape-scale nature conservation and restoration work;
- Action 3: Identify and conserve priority species;
- Action 4: Invasive non-native species are controlled;
- Action 5: Wildlife crime is deterred and prosecuted;
- Action 6: Increased participation in green and blue activities to benefit health;
- Action 7: Public engagement using knowledge, skills sharing and training continued and expanded;
- Action 8: Biodiversity data gathering and sharing is improved; and
- Action 9: Long-term research into environmental change continues to expand.

The plan contains the following habitat action plans and associated commitments relevant to the Site and surrounding area:

- Upland and moorland
    - Restoration of peatlands, wetlands, bogs, mires, wet grasslands; and
    - Prevent the loss of peatlands, wetlands, bogs, mires, wet grasslands.
- Woodland and Forestry
    - Highland Environment Forum (HEF) to establish a working group to identify additional biodiversity actions that Highland Nature partners can take forward;
    - Protect, regenerate and restore native woodlands, including the control of INNS, conservation of veteran trees and retention of deadwood;
    - Partnership working to work at a landscape scale to create woodland networks that improve forest diversity and biodiversity;
    - Identify where woodland can be expanded without negative impact on other climate change and biodiversity resources and ensure that new woodlands follow these principles;
    - Support incorporation of trees and woods into agricultural systems; and
    - Identify, conserve and expand from isolated trees and tiny woodland fragments.
- Agricultural land
    - Agricultural practices move to more natural systems and nature-based solutions, reducing CO^2 emissions and the need for artificial fertilisers, pesticides and herbicides;

- Integrate trees and agriculture; and
- Survey, protect and expand suitable agricultural habitat for vulnerable species.

4.3 Birds of Conservation Concern 5 (BoCC)

The leading government (JNCC) and non-government conservation organisations in the UK jointly reviewed the population status of the 246 bird species that are regularly found within the United Kingdom, using data from national monitoring schemes. This was most recently done in 2021 (Stanbury *et al.*, 2021). On the basis of seven quantitative criteria, each species has been placed on one of three lists, these being:

- Red – red-listed species are those that are globally threatened, have had an historical population decline in the UK from 1800 -1995, a rapid (> or = 50%) decline in UK breeding population over the past 25 years, or a rapid (> or = 50%) contraction of UK breeding range over the past 25 years;
- Amber – amber-listed species have had a historical population decline from 1800-1995 but are recovering; population size has more than doubled over the past 25 years, a moderate (25-49%) decline in UK breeding population over the past 25 years, a moderate (25-49%) contraction of UK breeding range over the past 25 years, a moderate (25-49%) decline in UK non-breeding population over the past 25 years, or species with unfavourable conservation status in Europe also known as Species of European Conservation Concern (SPEC); and
- Green – green-listed species have no identified threat to their population status.

5. Desk Study Methodology

5.1 General

5.1.1 Nature Conservation Designations

In terms of statutory nature conservation designations, the desk study identified any international and national designations, such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) within 5 km of the Site boundary. Only ecological (biological) features were considered relevant to the present study. Any non-statutory designations, such as Environmentally Sensitive Areas (ESA), Local Biodiversity Sites (LBS), Sites of Interest for Nature Conservation (SINCs), RSPB Important Bird Areas, Scottish Wildlife Trust Reserves (SWTR) or woodland areas included on the Ancient Woodland Inventory (AWI), were also identified within 2 km of the Site boundary.

5.1.2 Species

Existing records for protected or otherwise notable species (e.g. SBL/LBAP priority species) were identified with 2 km of the centre point of the Site (ND 29660 72350). Only records from the last 10 years were considered relevant to the study.

This desk study contains data from the local biological records centre (Highland Biological Recording Group) and the following online databases and resources have been consulted:

- NBN Atlas (NBN Atlas, 2023);
- Highland Nature: Biodiversity Action Plan 2021 - 2026 (Highland Environment Forum, 2021)
- NatureScot SiteLink (NatureScot, 2023);
- Scotland's Environment Web (SEPA, 2023);
- Ancient Woodland Inventory (Scotland) (NatureScot, 2018); and
- Highland Council Planning Application Ref: 15/03392/FUL.

5.2 Ornithological Data

Ornithological data, including wintering data for the target species Greenland white-fronted goose, greylag goose and whooper swan were identified with 2 km of the Site boundary.

5.2.1 Ornithological Data Sources

The following data sources were consulted:

- NBN Atlas (NBN Atlas, 2023);
- RSPB Conservation Data Unit (RSPB, 2023); and
- British Trust for Ornithology (BTO, 2023).

5.2.2 Local Planning Portal

The planning applications detailed in Table 1, whose study areas overlap the Site, have been consulted for ornithological data relevant to the Site and a 2 km buffer.

Table 1: Planning Applications

Planning Application Reference	Development	Decision Date
15/04103/S37	Erect a 132kV AC overhead, double circuit, steel lattice tower, transmission line between the proposed Sealing End Tower at Weydale and the proposed Sealing End Tower at Reaster, Caithness | Land 500M West Of Philips Mains Mey	21 February 2017
15/03392/FUL	Formation of development platform and erection of 132/33kV Gas Insulated Switchgear (GIS) substation and associated development consisting of transformer buildings, site access, SUDS and foul drainage infrastructure, temporary compounds, security fencing and landscaping.	27 January 2015
21/05591/S36	Hollandmey Renewable Energy Development - Erection and Operation of Renewable Energy Development in perpetuity comprising 10 wind turbines with a ground to blade tip height of 149.9m, ground mounted solar arrays, battery energy storage system, access tracks, permanent met mast and LiDAR, two temporary met masts, up borrow pits and associated infrastructure.	28 November 2022

5.2.3 Research Publications

As per the NatureScot pre-application response the following documents have been consulted:

- SNH (now NatureScot) Commissioned Report 523b - Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13.
- Francis *et al*. (2011). Greenland White-fronted Geese: Land use and conservation at small wintering sites in Scotland.

6. Statutory and Non-Statutory Nature Conservation Designations

Ten statutory nature conservation designations are present within 5 km of the Site. These designations are detailed in Table 2 below and shown on Figure 1.

Table 2: Statutory Nature Conservation Designations

Name	Designation	Distance to Site	Designated Features
Phillips Main Mire	SSSI	1.48 km south-east	Phillips Mains Mire Site of Special Scientific Interest (SSSI) is located approximately 19 km northeast of Thurso. The site is designated for its nationally important blanket bog habitat. The site is an area of blanket bog and contains an extensive system of dubh lochans. The site lies at a comparatively low altitude and closer to the sea than the major expanses of peatland in west Caithness and Sutherland. These differences are reflected in the vegetation found at Phillips Mains Mire, making it a nationally important example within the range of blanket bog types found in Caithness. The well-developed lowland blanket bog vegetation has a range of species typical of this habitat, including bogbean *Menyanthes trifoliata*, common cottongrass *Eriophorum angustifolium*, crowberry *Empetrum nigrum* and bog-myrtle *Myrica gale*. The site supports a good cover and variety of Sphagnum bog mosses, with abundant *Sphagnum capillifolium* and frequent *S. cuspidatum* and *S. papillosum*. There are also extensive areas of *Cladonia* lichens.
Caithness Lochs	SPA	2.2 km north-west	The Caithness Lochs Special Protection Area (SPA) qualifies under Article 4.1 by regularly supporting, in winter, populations of European importance of the Annex 1 species whooper swan *Cygnus cygnus* (1993/94-1997/98 winter peak mean of 240 representing 4% of Great Britain (GB) and 1% of Icelandic population) and Greenland white-fronted goose *Anser albifrons flavirostris* (1993/94-97/98 winter peak mean of 440 representing 3% of GB and 1% of Greenlandic population). The site lies at the northern limit of these species' wintering distributions and is important to the maintenance of the species' wintering ranges. The site also qualifies under Article 4.2 by regularly supporting, in winter, a population of European importance of the greylag goose *Anser anser* (1993/94-1997/98 winter peak mean of 7,190 representing 7% of the GB and Icelandic populations). The site lies towards the northern limit of this species' wintering distribution and is important to the maintenance of the species' wintering range.

Name	Designation	Distance to Site	Designated Features
	Ramsar		Caithness Lochs Ramsar site qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds (1993/94 to 1997/98): • Whooper swan (winter peak mean of 240 individuals, 1% of the Iceland/UK & Ireland biogeographic population). • Greenland white-fronted goose (winter peak mean of 440 individuals, 1% of the total biogeographic population), and • Greylag goose (winter peak mean of 7,190 individuals, 7% of the Iceland/UK/Ireland biogeographic population).
Loch of Mey	SSSI	2.2 km north-west	Loch of Mey Site of Special Scientific Interest (SSSI) is designated for the nationally important grassland habitat surrounding the loch, as well as the populations of breeding birds and wintering Greenland white-fronted goose. **Transition grassland** The loch is bordered by species-rich fen and wet meadow vegetation that is seasonally flooded. This is one of the largest areas of this type of habitat in Caithness. The vegetation is dominated by species such as meadowsweet *Filipendula ulmaria*, marsh marigold *Caltha palustris* and silverweed *Potentilla anserina*. Wetter areas have extensive patches dominated by marsh cinquefoil *Potentilla palustris*, water horsetail *Equisetum fluviatile* or bottle sedge *Carex rostrata*. The shallower areas of the loch have stands of common spike rush *Eleocharis palustris*. The nationally scarce narrow small-reed *Calamagrostis stricta* grows near the north end of the loch and there are large stands of yellow flag iris *Iris pseudacorus* near the northern and western margins. **Breeding bird assemblage** This site is important for breeding birds, and it is at the northerly limit of the breeding distribution of some species. A particularly wide range of species breed around this loch when compared with other nearby lochs in Caithness. A wide variety of birds have nested at this site including: • Gadwall *Anas strepera;* • Shoveler *Anas clypeata;* • Little grebe *Tachybaptus ruficollis;* • Sedge warbler *Acrocephalus schoenobaenus;* • Reed bunting *Emberiza schoeniclus;* and • Mute swan *Cygnus olor*.

Name	Designation	Distance to Site	Designated Features
			It is also an important area for breeding waders including: • Redshank Tringa tetanus; • Snipe *Gallinago gallinago;* • Curlew *Numenius arquata;* and • Lapwing *Vanellus vanellus*. **<u>Greenland white-fronted goose</u>** Loch of Mey is an important roosting site for wintering Greenland white-fronted goose which are present between late September and late April each year. The site is used regularly by around half of the Caithness population of this species. Over 1% of the national population of Greenland white-fronted geese roost here, making it important for maintaining the distribution and range of this species within Caithness. The majority of Greenland white-fronted geese overwinter in the west of Scotland and Ireland, so the population that winters in Caithness is close to the northerly limit of the winter range for this species.
North Caithness Cliffs	SPA	3.2 km north-east	North Caithness Cliffs SPA is of special nature conservation and scientific importance within Britain and the European Community for supporting very large populations of breeding seabirds. North Caithness Cliffs SPA qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species: • Peregrine *Falco peregrinus* (an estimated 6 pairs, 0.5% of the GB population and selected as one of the most suitable sites for peregrine in GB). North Caithness Cliffs SPA further qualifies under Article 4.2 by regularly supporting a population of European importance of the migratory species: • Common guillemot *Uria aalge* (1985 to 1987, 38,300 individuals, 1% of the North Atlantic biogeographic population). North Caithness Cliffs SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds. The site regularly supports in the period 1985 to 1987 110,000 seabirds including nationally important populations of the following species: • Northern fulmar *Fulmarus glacialis* (14,700 pairs; 3% of the GB population);

Name	Designation	Distance to Site	Designated Features
			• Black-legged kittiwake *Rissa tridactyla* (13,100 pairs, 3% of the GB population); • Common guillemot (38,300 individuals, 4% of the GB population); • Razorbill *Alca torda* (4,000 individuals, 3% of the GB population); and • Atlantic puffin *Fratercula arctica* (2,080 pairs, 0.4% of the GB population and greater than 2,000 individuals).
Caithness and Sutherland Peatlands	SPA	3.6 km south-east	The Caithness and Sutherland Peatlands SPA contains a large proportion of the Caithness and Sutherland peatlands which form the largest and most intact area of blanket bog in Britain. The Caithness and Sutherland Peatlands SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species: • Red-throated diver *Gavia stellata* (2006, 46 pairs, 3.5% of the GB population); • Black-throated diver *Gavia arctica* (1994, 26 pairs, 15% of the GB population); • Hen harrier *Circus cyaneus* (1993 to 1997, mean of at least 14 pairs, at least 2.8% of the GB population); • Golden eagle *Aquila chrysaetos* (1992, 5 pairs, 1% of the GB population); • Merlin *Falco columbarius* (1993 and 1994, an estimated 54 pairs, 4% of the GB population); • Golden plover *Pluvialis apricaria* (1993 and 1994, 1,064 pairs, 5% of the GB population); • Wood sandpiper *Tringa glareola* (up to 5 pairs, up to 40% of the GB population); • Short-eared owl *Asio flammeus* (30 pairs, 2% of the GB population); and • Dunlin *Calidris alpina schinzii* (1993 and 1994, 1,860 pairs, 20% of the GB population). The Caithness and Sutherland Peatlands SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: • Common scoter *Melanitta nigra* (2007, at least 21 pairs, at least <0.1% of the Western Siberia/Western & Northern Europe/Northwestern Africa biogeographic

Name	Designation	Distance to Site	Designated Features
			population and at least 40.4% of the GB population); • Greenshank *Tringa nebularia* (2009, at least 653 pairs, at least 0.9% of the Europe/Western Africa biogeographic population and at least 59.4% of the GB population); and • Wigeon *Anas penelope* (1993/94, at least 43 pairs, at least <0.1% of the Western Siberia / Northwestern / Northeastern Europe biogeographic population and at least 10.8% of the GB population).
	SAC		Caithness and Sutherland Peatlands Special Area of Conservation (SAC) qualifying interest features are: • Blanket bogs; • Depressions on peat substrates of the *Rhynchosporion;* • Otter *(Lutra lutra);* • Natural dystrophic lakes and ponds; • Northern Atlantic wet heaths with *Erica tetralix;* • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *IsoëtoNanojuncetea;* • Marsh saxifrage (*Saxifraga hirculus*); and • Transition mires and quaking bogs.
	Ramsar		Caithness and Sutherland Peatlands Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types: • Blanket bog, encompassing an exceptionally wide range of vegetation and surface pattern types (pool systems), some of which are unknown elsewhere. The suite of bog types ranges from those of the Caithness plain in the east, with their continental affinities, through to those of the much more oceanic west and includes both upland and lowland areas. Extensive areas of ombrotrophic (rain-fed) bog are present, where Sphagnum and other bog species ensure active peat accumulation. • Mire communities, including very wet mires where the surface is unstable. • Oligotrophic lochs in addition to dystrophic lochs, lochans and pools, fen communities (surrounding the lochs, lochans and pools), as

Name	Designation	Distance to Site	Designated Features
			well as wet heath, grassland and rivers occur in a mosaic with the blanket bog and mire communities. These provide the diversity of habitats necessary to support a wide range of wetland species. Caithness and Sutherland Peatlands Ramsar site qualifies under Ramsar Criterion 2 by supporting: • Two nationally scarce moss species, *Sphagnum lindbergii* (occurring only in Scotland in Great Britain) and *Sphagnum majus*. • A nationally scarce higher plant the bog orchid *Hammarbya paludosa*. • The invertebrate fauna includes the nationally rare water beetle *Oreodytes alpinus*, the entire British population of which is found in only a small number of lochs in the Caithness and Sutherland area. These lochs include Loch Gaineimh and Loch More both within the Ramsar site. • Mammals of importance include otter, which are wide ranging throughout the site. • Freshwater pearl mussel *Margaritifera margaritifera* occur in the River Naver SAC and the River Borgie SAC, these rivers are an integral part of the Ramsar site's blanket bog, mire and moorland system. *Sphagnum lindbergii*, *Shagnum majus* and bog orchid are all associated with the blanket bog and mire habitats and those habitats occurring in close association with them and are protected and managed as part of them. Caithness and Sutherland Peatlands Ramsar site further qualifies under Ramsar Criterion 2 by supporting: • Red-throated diver (2006, 46 pairs, 3.5% of the GB population). • Black-throated diver (1994, 26 pairs, 15% of the GB population). • Golden plover (1993 and 1994, 1,064 pairs, 5% of the GB population). • Wood sandpiper (up to 5 pairs, up to 40% of the GB population), and • Dunlin (1993 and 1994, 1,860 pairs, 20% of the GB population).

Name	Designation	Distance to Site	Designated Features
			Caithness and Sutherland Peatlands Ramsar site also qualifies under Ramsar Criterion 4 by supporting the following waterbird species at a critical stage in their life cycles: • Wigeon (1993/94, at least 43 pairs, at least 10.8% of the GB population). • Common scoter (2007, at least 21 pairs, at least 40.4% of the GB population). • Greenshank (2009, at least 653 pairs, at least 59.4% of the GB population).
Stroupster Peatlands	SSSI	3.6 km south-east	Stroupster Peatlands Site of Special Scientific Interest (SSSI) is located in the north-east corner of Caithness, 12 km north of Wick. The site is in two parts. This site is nationally important for its blanket bog habitat and oligotrophic (low-nutrient) lochs. **Blanket bog** Two different types of blanket bog occur on the site. Eastern blanket bog has abundant hare's-tail cotton grass *Eriophorum vaginatum* and deergrass Trichophorum cespitosum. Low relief northern blanket bog is characterised by extremely soft quaking ground dominated by *Sphagnum* mosses. This is a rare blanket bog type in Britain and is similar to the bogs of continental Europe. The vegetation over most of the mire surface is dominated by heather *Calluna vulgaris*, common cotton grass *E. angustifolium* and deergrass. Sphagnum mosses are locally abundant. Most notable amongst these are *S. fuscum* and the nationally scarce *S. austinii* which grow in hummocks. The numerous peat mounds on this site are of particular interest. These features have a very restricted distribution and tend to occur in exposed areas. Comparable structures are recorded from only Orkney, Shetland and Lewis. The vegetation they support is characterised by mosses such as *Hylocomium splendens* and *Pleurozium schreberi*, together with the frequent occurrence of crowberry *Empetrum nigrum*. **Oligotrophic loch (low-nutrient loch)** The site includes two oligotrophic lochs, the Lochs of Auckengill, which are fringed with swamp and fen vegetation and connected by a broad channel. The lochs contain submerged and floating species that are typical of low-nutrient lochs, including broad-leaved pond weed *Potamogeton natans*, bulbous rush *Juncus bulbosus*, alternate water-milfoil *Myriophyllum alterniflorum* and delicate stonewort *Chara virgata*. The upper loch is fringed by common reed *Phragmites australis* bottle sedge *Carex rostrata* and bogbean *Menyanthes trifoliata*. The lower loch is more nutrient-rich and is dominated by water horsetail *Equisetum fluviatile*.
Loch Heilen	SSSI	4.8 km south-west	Loch Heilen Site of Special Scientific Interest (SSSI) is designated for the nationally important loch habitat

Name	Designation	Distance to Site	Designated Features
			and overwintering populations of greylag goose, whooper swan and Greenland white-fronted goose. **Mesotrophic loch (loch with a moderate level of nutrients)** Loch Heilen is one of the two best examples of a mesotrophic loch in Caithness. This is a shallow, mineral-rich loch with abundant, submerged vegetation and areas of fen and wet grassland around the margins. The aquatic vegetation includes slender leaved pondweed *Potamogeton filiformis*, perfoliate pondweed *P. perfoliatus*, alternate watermilfoil *Myriophyllum alterniflorum* and shoreweed *Littorella uniflora*. The loch has a marginal fen which is enriched by the blown shell sand from nearby Dunnet Bay. This fen is species-rich and contains the nationally rare narrow small-reed *Calamagrostis stricta*. **Greenland white-fronted goose, greylag goose and whooper swan** Nationally important flocks of Greenland white-fronted geese, greylag geese and whooper swans are present on the loch between September and April. Loch Heilen, together with Loch of Mey SSSI, supports one of the main populations of Greenland white-fronted geese in the area, with over 2% of the national population. Loch Heilen also supports over 3% of the national population of wintering whooper swans and contributes to the nationally important population of greylag geese within Caithness. This site lies close to the northern-most limit of these species' wintering distribution and is therefore important for the maintenance of the wintering population and range. The loch is often used as an overnight roost site so the birds usually disperse at dawn to feed and return at dusk. The rough grassland near the loch is an important feeding site for Greenland white-fronted geese so this species can often use the site during the day, as well as for roosting.

As shown on Figure 1 and detailed below in Table 3, three areas of ancient woodland have also been identified within 2 km of the Site boundary.

Table 3: Ancient Woodland within 2 km of the Site

Name	Distance to Site	Size (ha)	Type
Unnamed	440 m north	7.35 ha	Long-Established (of plantation origin)
Unnamed	1.1 km north	3.82 ha	Long-Established (of plantation origin)
Unnamed	1.3 km north	1.38 ha	Long-Established (of plantation origin)

7. Record Search Results

7.1 Invasive Non-native Species

Japanese knotweed (*Fallopia japonica*) has been recorded within 1.2 km north-east of the Site (NBN Atlas, 2023 and HBRG, 2023).

7.2 Terrestrial Fauna

Data obtained from and NBN Atlas (NBN Atlas, 2023) and HBRG (HBRG, 2023) included records of one protected or otherwise notable species within 2 km of the Site boundary within the last ten years; see Table 4.

Table 4: Protected or Otherwise Notable Species

Common Name	Scientific Name	Legal/Conservation Status	Description
Mammals			
West European hedgehog	*Erinaceus europaeus*	Partially protected under the Wildlife and Countryside Act 1981 (as amended). Listed on the SBL (watching brief only). LBAP Priority Species.	Two records within 2 km of the Site within the last ten years. The closest record was within 935 m north-west of the Site in 2019 (records provided by HBRG, 2023).

7.3 Ornithological Records within 2 km of the Site

Of the 136 bird species identified within 2 km of the Site boundary, 22 are listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), 45 are listed in the SBL and 19 are listed on the Highland Nature BAP. Additionally, of the bird species records returned by the desk study, 35 are BoCC Red-listed and 58 birds are Amber-listed; see Table 4.

Table 4: Desk Study Bird Records

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Arctic tern	*Sterna paradisaea*	*x*		*x*			x		Amber	x
Barnacle goose	*Branta leucopsis*			*x*			x		Amber	
Black guillemot	*Cepphus grylle*			*x*					Amber	
Blackbird	*Turdus merula*	*x*	*x*	*x*						
Blackcap	*Sylvia atricapilla*	*x*		*x*						
Black-headed gull	*Chroicocephalus ridibundus*	*x*	*x*	*x*		x	x		Amber	
Black-tailed godwit	*Limosa limosa*			*x*	x	x	x		Red	
Blue tit	*Cyanistes caeruleus*			*x*						
Brent goose	*Branta bernicla*	*x*		*x*					Amber	
Buzzard	*Buteo buteo*			*x*						
Carrion crow	*Corvus corone*	*x*		*x*						
Chaffinch	*Fringilla coelebs*	*x*		*x*						
Chiffchaff	*Phylloscopus collybita*	*x*								
Collared dove	*Streptopelia decaocto*			*x*						
Common guillemot	*Uria aalge*	*x*		*x*					Amber	
Common gull	*Larus canus*			*x*					Amber	

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Common sandpiper	*Actitis hypoleucos*			*x*					Amber	
Common scoter	*Melanitta nigra*			*x*	x	x	x		Red	x
Common tern	*Sterna hirundo*			*x*			x		Amber	x
Coot	*Fulica atra*			*x*						
Cormorant	*Phalacrocorax carbo*	*x*		*x*						
Corncrake	*Crex crex*			*x*	x	x	x		Red	x
Cuckoo	*Cuculus canorus*	*x*		*x*			x		Red	
Curlew	*Numenius arquata*	*x*	*x*	*x*		x	x		Red	x
Dunlin	*Calidris alpina*	*x*		*x*			x		Red	x
Dunnock	*Prunella modularis*			*x*					Amber	
Eider	*Somateria mollissima*	*x*		*x*					Amber	
European white-fronted goose	*Anser a. albifrons*	*x*								
Fieldfare	*Turdus pilaris*			*x*	x				Red	
Fulmar	*Fulmarus glacialis*			*x*					Amber	
Gadwall	*Mareca strepera*			*x*					Amber	
Gannet	*Morus bassanus*	*x*		*x*					Amber	
Glaucous gull	*Larus hyperboreus*			*x*					Amber	
Golden plover	*Pluvialis apricaria*	*x*		*x*			x			x

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Goldeneye	*Bucephala clangula*		*x*	*x*					Red	
Goldfinch	*Carduelis carduelis*	*x*		*x*						
Goosander	*Mergus merganser*			*x*						
Grasshopper warbler	*Locustella naevia*			*x*					Red	
Great black-backed gull	*Larus marinus*		*x*	*x*					Amber	
Great crested grebe	*Podiceps cristatus*			*x*						
Great northern diver	*Gavia immer*			*x*	x		x		Amber	
Great Skua	*Stercorarius skua*	*x*		*x*					Amber	
Great tit				*x*						
Greenfinch	*Chloris chloris*			*x*					Red	
Greenland white-fronted goose	*Anser albifrons flavirostris*	*x*	*x*			x	x		Red	x
Greenshank	*Tringa nebularia*			*x*	x				Amber	x
Grey heron	*Ardea cinerea*			*x*						
Greylag goose	*Anser anser*	*x*	*x*	*x*	x				Amber	
Grey plover	*Pluvialis squatarola*			*x*					Amber	
Grey wagtail	*Motacilla cinerea*			*x*					Amber	
Hen harrier	*Circus cyaneus*			*x*	x		x		Red	x

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Herring gull	*Larus argentatus*	x	x	x		x	x		Red	
Hooded crow	*Corvus cornix*	x	x	x		x				
House martin	*Delichon urbicum*	x		x					Amber	
House sparrow	*Passer domesticus*			x				x	Red	
Iceland gull	*Larus glaucoides*	x		x					Amber	
Jackdaw	*Coloeus mondula*	x		x						
Kestrel	*Falco tinnunculus*			x		x	x		Amber	
Kittiwake	*Rissa tridactyla*	x		x					Red	
Knot	*Calidris calidris*			x					Amber	
Lapwing	*Vanellus vanellus*	x		x		x	x		Red	x
Lesser black-backed gull	*Larus fuscus*			x					Amber	
Lesser redpoll	*Acanthis cabaret*			x					Red	
Linnet	*Linaria cannabina*	x		x			x		Red	
Little auk	*Alle alle*			x						
Little egret	*Egretta garzetta*			x						
Little grebe	*Tachybaptus ruficollis*			x						
Little ringed plover	*Charadrius dubius*			x	x					
Long-tailed duck	*Clangula hyemalis*				x				Red	
Mallard	*Anas platyrhynchos*	x		x					Amber	

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Manx shearwater	*Puffinus puffinus*			*x*		x	x		Amber	
Meadow pipit	*Anthus pratensis*	*x*		*x*					Amber	
Merlin	*Falco columbarius*	*x*		*x*	x		x		Red	x
Mistle thrush	*Turdus viscivorus*			*x*					Red	
Mute swan	*Cygnus olor*	*x*	*x*	*x*						
Oystercatcher	*Haematopus ostralegus*	*x*	*x*	*x*					Amber	x
Pheasant	*Phasianus colchicus*	*x*		*x*						
Pied wagtail	*Motacilla alba*			*x*						
Pink-footed goose	*Anser brachyrhynchus*	*x*	*x*	*x*					Amber	
Pintail	*Anas acuta*			*x*					Amber	
Puffin	*Fratercula arctica*			*x*					Red	
Purple sandpiper	*Calidris maritima*			*x*	x	x	x		Red	
Raven	*Corvus corax*		*x*	*x*						
Razorbill	*Alca torda*			*x*					Amber	
Red-breasted merganser	*Mergus serrator*			*x*					Amber	
Red grouse	*Lagopus lagopus*			*x*		x				
Red kite	*Milvus milvus*			*x*	x		x			x
Redshank	*Tringa totanus*	*x*	*x*	*x*					Amber	x

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Red-throated diver	*Gavia stellata*	*x*		*x*	x		x			x
Redwing	*Turdus iliacus*			*x*	x	x	x		Amber	
Reed bunting	*Emberzia schoeniclus*	*x*		*x*				x	Amber	
Ringed plover	*Charadrius hiaticula*	*x*		*x*					Red	
Robin	*Erithacus rubecula*			*x*						
Rock dove	*Columba livia*	*x*		*x*						
Rock pipit	*Anthus petrosus*	*x*		*x*						
Rook	*Corvus frugilegus*	*x*		*x*						
Ruff	*Calidris pugnax*			*x*	x		x		Red	
Sand martin	*Riparia riparia*	*x*		*x*						
Sandwich tern	*Sterna sandvicensis*			*x*		x	x		Amber	
Sanderling	*Calidris alba*	*x*							Amber	
Sedge warbler	*Acrocephalus schoenobaenus*	*x*		*x*						
Scaup	*Aythya marila*				x	x	x		Red	
Shag	*Phalacrocorax aristotelis*			*x*					Red	
Shelduck	*Tadorna tadorna*			*x*					Amber	
Short-eared owl	*Asio flammeus*			*x*			x		Amber	
Shoveler	*Spatula clypeata*			*x*					Amber	

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
Siskin	*Carduelis spinus*	*x*		*x*		x	x			
Skylark	*Alauda arvensis*	*x*		*x*			x		Red	
Snipe	*Gallinago gallinago*			*x*					Amber	x
Snow bunting	*Plectrophenax nivalis*			*x*	x	x	x		Amber	
Song thrush	*Turdus philomelos*			*x*			x		Amber	
Sparrowhawk	*Accipiter nisus*	*x*		*x*						
Spoonbill	*Platalea leucorodia*			*x*	x				Amber	
Spotted flycatcher	*Muscicapa striata*			*x*		x	x		Red	
Starling	*Sturnus vulgaris*	*x*	*x*	*x*			x		Red	
Stonechat	*Saxicola rubicola*	*x*		*x*						
Swallow	*Hirundo rustica*	*x*		*x*						
Swift	*Apus apus*			*x*		x	x		Amber	x
Tawny owl	*Strix aluco*	*x*		*x*					Amber	
Teal	*Anas crecca*	*x*		*x*					Amber	
Tufted duck	*Aythya fuligula*		*x*	*x*						
Turnstone	*Arenaria interpres*	*x*		*x*					Amber	
Twite	*Linaria flavirostris*	*x*		*x*		x			Red	
Water rail	*Rallus aquaticus*			*x*						
Wheatear	*Oenanthe oenanthe*	*x*		*x*					Amber	
Whimbrel	*Numenius phaeopus*		*x*		x				Red	

Common name	Scientific name	Data Source			Schedule 1	SBL			BoCC 5	LBAP
		NBN	RSPB	BTO		Conservation action needed	Avoid negative impacts	Watching brief only		
White-tailed eagle	*Haliaeetus albicilla*			*x*	x	x	x		Amber	x
White wagtail	*Motacilla alba alba*	*x*								
White-fronted goose	*Anser albifrons*	*x*				x	x		Red	
Whooper swan	*Cygnus cygnus*		*x*	*x*	x	x	x		Amber	
Wigeon	*Maeca penelope*	*x*		*x*					Amber	
Willow warbler	*Phylloscopus trochilus*			*x*					Amber	
Woodcock	*Scolopax rusticola*			*x*		x	x		Red	
Woodpigeon	*Columba palumbus*			*x*					Amber	
Wren	*Troglodytes troglodytes*	*x*		*x*					Amber	
Yellowhammer	*Emberiza citrinella*	*x*		*x*				x	Red	

7.4 RSPB Bird Data

The RSPB provided records on all bird species within 2 km of the Site within the last ten years. All records discussed within this section, relating to the three SPA species, are shown on Figure 2.

7.4.1 Greenland white-fronted

Greenland white-fronted geese were recorded on thirteen occasions foraging within 2km of the Site within the last ten years. The closest record is within 800 m north-west of the Site, with 121 individuals recorded on 12.02.2016, within a field to the north of the road.

7.4.2 Greylag geese

Greylag geese foraging were recorded on fourteen occasions foraging within 2km of the Site within the last ten years. The closest record is within the developable area, to the south of the preferred location, with 110 geese recorded on 05.02.2017. Greylag geese are also recorded foraging in the field immediately to the east of the Site and within fields to the north-west.

7.4.3 Whooper swan

A single bird was recorded 1.6 km north-west of the Site on 01.03.2014 and 14 individuals were recorded on 06.12.2016 at Loch Mey, over 2.3 km from the Site.

7.4.4 Other species of interest

There were three records of curlew within 2km of the Site in the last ten years. All three records are located c. 1.9 km east of the Site, with three records of displaying curlew on 23.05.2016 and 18.06.2016.

7.5 Planning Portal Records

7.5.1 Hollandmey Renewable Energy Development (Planning ref: 21/05591/S36)

Ornithological studies for this planning application were undertaken between June 2017 and August 2021 (Natural Research Projects Ltd, 2021). Surveys including vantage points, migratory period watches and breeding bird surveys were completed to inform the EIA for this development. Wintering bird data from within the Site and a 2km buffer were reviewed. All wintering bird records discussed in this section are shown on Figure 3.

7.5.1.1 Greenland White-fronted Goose

A total of six records of Greenland white-fronted goose were identified within 2km of the Site. The closest record is within 580m west of the Site, with 160 individuals foraging in a field to the west of the plantation. The remaining records are within fields to the north-west of the road.

7.5.1.2 Greylag Goose

A total of 19 records of greylag goose were identified within 2 km of the Site. This includes records of flocks of up to 50 individuals foraging within the Site and within the field immediately to the east in 2017 and 2018. A flock of c. 580 individuals was recorded foraging in a field within 300 m north of the Site in 2017. The remaining records are of geese foraging within fields c. 1km north-west of the Site.

7.5.1.3 Whooper swan

A total of four records of whooper swan were identified within 2km of the Site. The closest record from the Proposed Development area was 1.4 km north-west with 11 individuals recorded foraging in a field on 15.01.2019. There was also a record of four individuals foraging in the field 520 m south-west of the developable area (1.4 km from the preferred location) on 15.01.2019.

7.5.1.4 Breeding Bird Survey Data

The breeding bird study area for Hollandmey did not overlap with the Proposed Development. Golden plover, a qualifying interest species of the Caithness and Sutherland SPA, was recorded approximately 3.5 km south of the Site.

7.5.2 Gills Bay 132 kV Transmission Line (Planning Application Ref: 15/04103/S37)

Ornithological studies for this planning application were undertaken between September 2011 and April/May 2012. Surveys including vantage point surveys, roaming bird surveys and breeding bird surveys and additional winter vantage surveys in 2014/2015 were completed. Though some of the data is over 10 years old, it is still considered relevant to this desk study as the findings overlap with more recent records obtained from other data sources.

Flightline data for the qualifying interest species of Caithness and Sutherland Peatlands SPA indicated that hen harrier, short-eared owl, merlin, wigeon and golden plover were recorded within 2 km of the Site, with wigeon and golden plover recorded flying over the Proposed Development site. The breeding bird surveys recorded no records of these species within the Site or within 500 m of the Site boundary.

Wintering bird data included within the Environmental Statement (ES) (Scottish Hydro Electric Transmission Plc, 2015) was reviewed for records of Greenland white-fronted geese, greylag geese and whooper swan within the Site and surrounding area. All three species were recorded flying over the Site as shown on the extracted Figures 1 to 3 below.

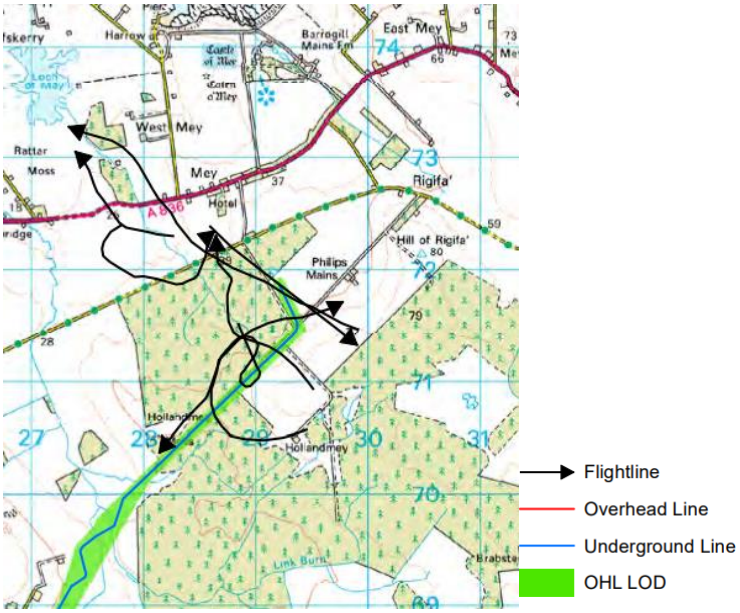

Figure 1: Extract from ES, Technical Appendix 8, Figure 8.3: White-fronted goose flights

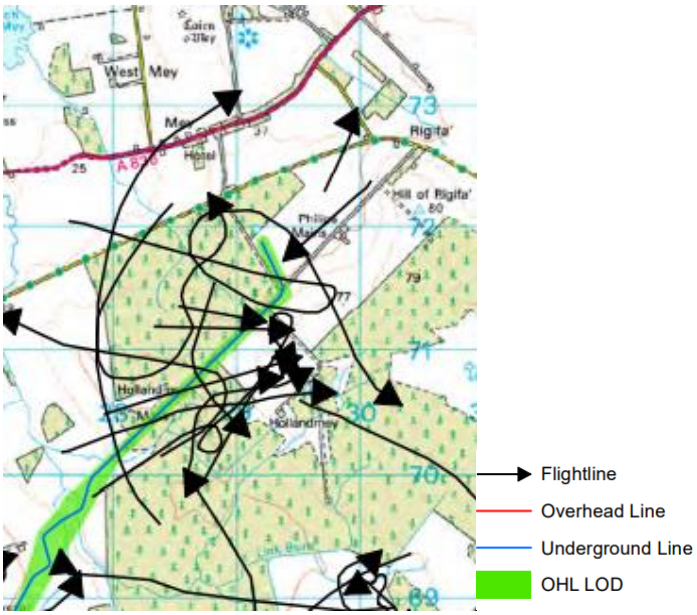

Figure 2: Extract from ES, Technical Appendix 8, Figure 8.6: Greylag goose flights

Figure 3: Extract from ES, Technical Appendix 8, Figure 8.10: Whooper swan flights

7.5.3 132/33kV Gas Insulated Switchgear (GIS) substation and associated development (Planning application ref: 15/03392/FUL)

Ornithological studies which informed the Environmental Appraisal (EA) for this planning application (Ramboll, 2021) were reviewed for records of Greenland white-fronted goose, greylag goose and whooper swan within the Site and surrounding area. The surveys used to inform the EA were undertaken in 2015 and November 2020. The surveys indicated presence of all three species within the fields to the west of the West Lodge, approximately 780 m north-west of the Site.

The redline boundary for the Gills Bay development overlaps the south-western reaches of the Proposed Development Site. The breeding bird survey did not record any breeding bird activity within the Proposed Development Site, with the nearest activity recorded 350 m to the west. No qualifying interest species of Caithness and Sutherland Peatlands SPA were recorded during the surveys.

7.6 Research Publications

7.6.1 Greenland white-fronted geese: Land use and conservation at small wintering sites in Scotland (Francis *et al.*, 2011)

This research publication reviewed data collected in the winters of 2009-2010 and 2010 and 2011 to identify factors that could improve the status of Greenland white-fronted geese and prevent flock extinction. The study included the area around Loch Mey which lies within 2 km of the Site. Though the data is over 10 years old, it is still considered relevant to this desk study as the findings overlap with more recent records obtained from other data sources.

Figure 4 shows the fields confirmed to be used by the geese during the study period. All fields lie to the north-west of the Site, with the closest approximately 800 m north-west, described as being one of the fields used most frequently (>10% of records). The paper notes that since the mid 1980's this flock has consistently numbered 100 – 250 birds, a very gradual increase to a peak of over 600 birds in 2001, with signs of recent declines.

7.6.2 NatureScot Commissioned Report No. 523b: Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13.

This research publication was produced due to a large increase in applications for small-medium scale wind energy developments and increasing afforestation in areas which are heavily used by foraging geese and swans from the Caithness Lochs SPA. The study aimed to provide up to date information on the key species. The following data refers to figures contained within the paper, extracts of which are provided. Note this paper also included pink-footed geese data.

7.6.2.1 Greylag Goose

Foraging

Greylag geese were widely distributed throughout the survey area, with concentrations in the west, around Broubster and Calder, and in several fairly discrete patches across the central part of the area and along the north-east coast (see Figure 1 for data near the Site). The distributions in 2011/12 and 2012/13 were very similar.

Habitats and crop types

In autumn, most flocks of greylag geese were found on stubble. A lower percentage of flocks and geese were recorded on stubble in winter and by spring, the majority of the greylag geese seen in the transect surveys were on grassland, mostly improved grassland.

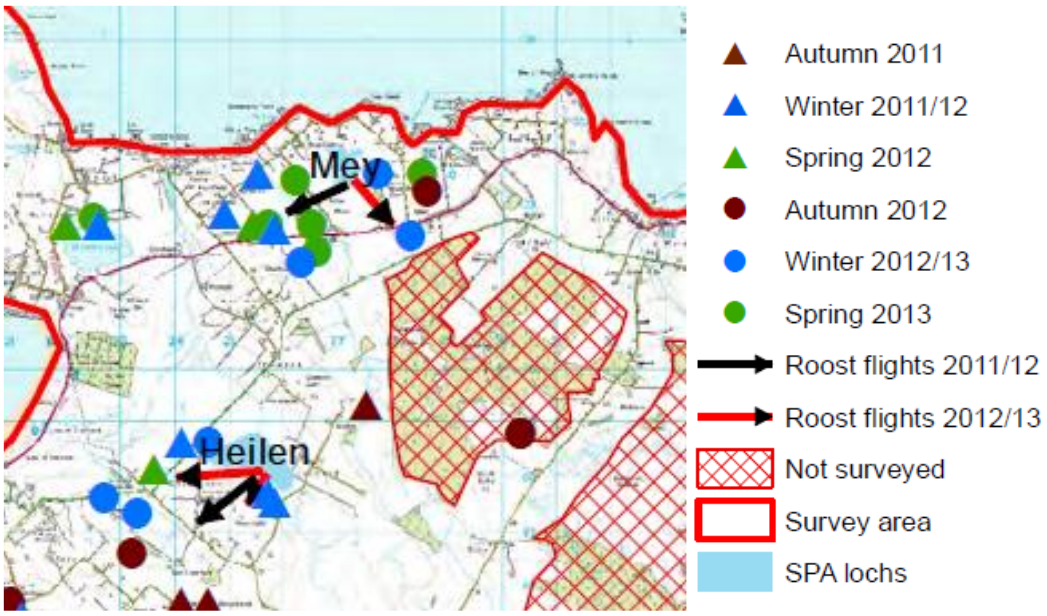

Figure 4: Distribution of sites used by greylag geese near the Proposed Development.

7.6.2.2 Greenland White-fronted Goose

Foraging

Greenland white-fronted geese were found in only two parts of the survey area; near Broubster and Calder and around Mey (see Figure 2 for data near the Site). In autumn and winter 2011/12, there were two records of flocks to the south-east of Calder, but all other sightings around Broubster and Calder in both years were to the north of the lochs.

Habitat and crop preferences

Most flocks of geese were found on improved grassland and on stubble fields, with a few birds on other habitats, which were mainly loch margins.

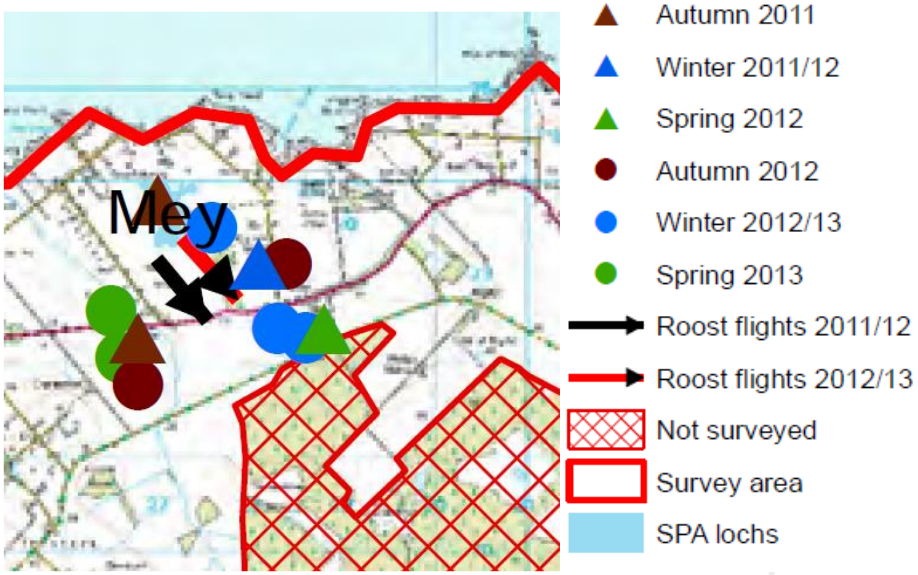

Figure 5: Distribution of sites used by Greenland white-fronted geese near the Proposed Development.

7.6.2.3 Whooper swan

Foraging

Whooper swans were recorded mainly in a triangular area bounded by a line between Broubster, Heilen and Wester, with other concentrations around Mey (see Figure 3) and to the south of Wester. The swans were absent from an area around Thurso, from an area south of Scarmclate and from most of the higher ground in the north-east of the survey area. In autumn and winter 2011/12, whooper swans were found further to the north of Broubster and Calder, more frequently north-west of Wick and more frequently around Mey than in 2012/13.

Habitats and crop types

In autumn in both years, the majority of whooper swans recorded on the transect surveys were found on stubble fields, with most of the remainder feeding on lochs. In winter and spring, most of the swans were found on improved grassland and stubble, with almost all of the birds on the former in spring 2013.

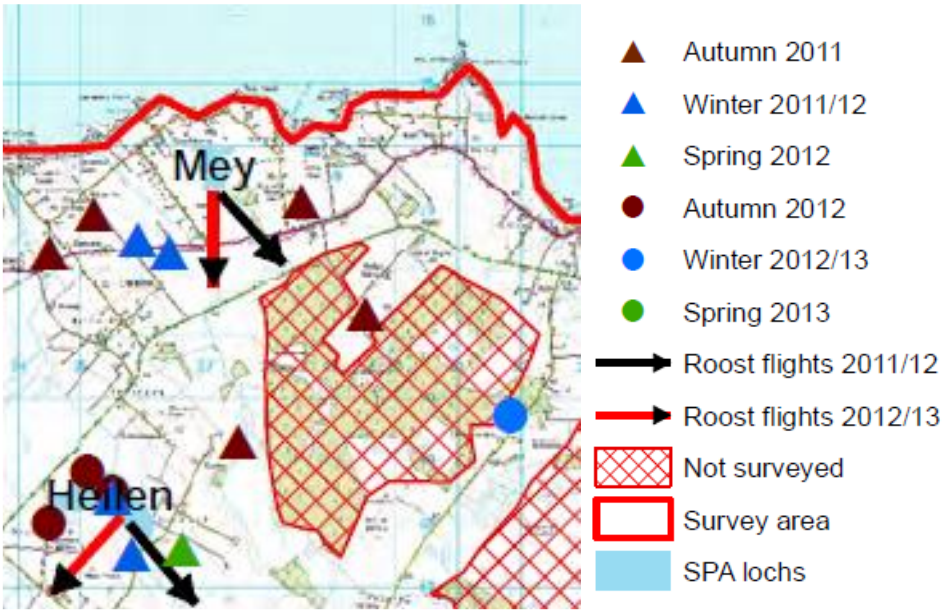

Figure 6: Distribution of sites used by whooper swan near the Proposed Development

7.6.2.4 Roosts – Loch of Mey

All three species were recorded roosting at Loch of Mey. Very few whooper swans were recorded at the loch in 2012/13. The peak number of greylag geese was higher in 2012/13 than in 2011/12, but the reverse was the case for the other two species.

7.6.2.5 Flight data (all species)

Figures 4 and 5 show flight records of all three species within the vicinity of the Proposed Development in 2011/12 and 2012/2013. The data shows flights within the surrounding area, but no confirmed flights across the Proposed Development.

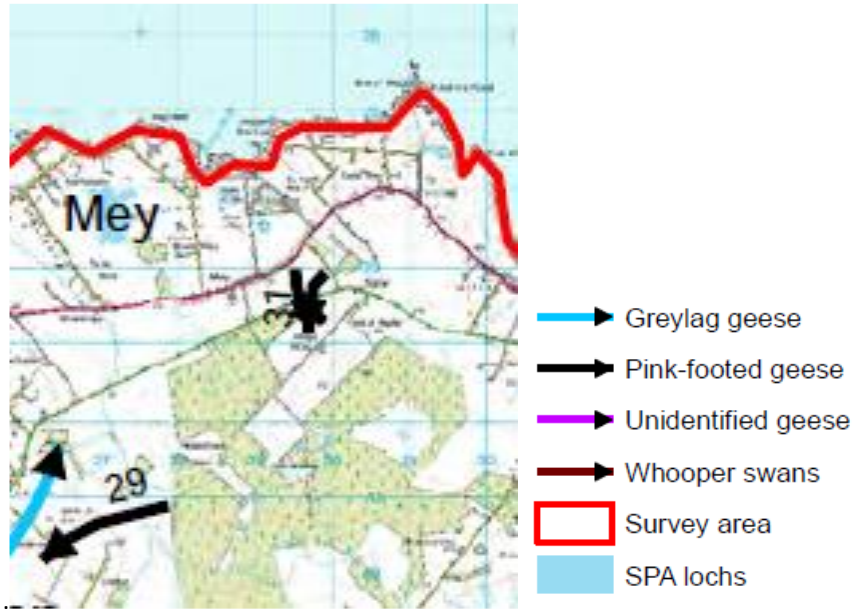

Figure 7: Flight data near the Site 2011/2012

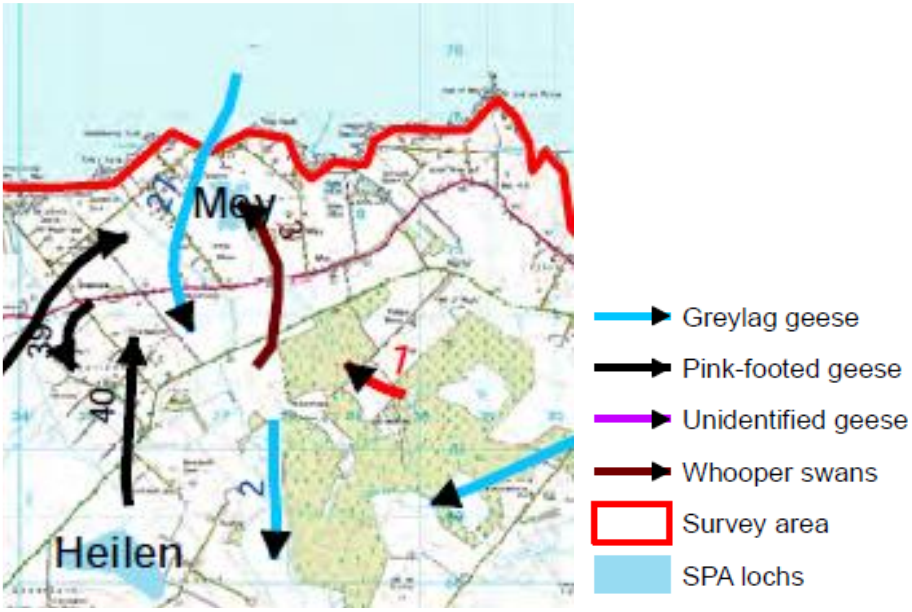

Figure 8: Flight data near the Site 2012/2013

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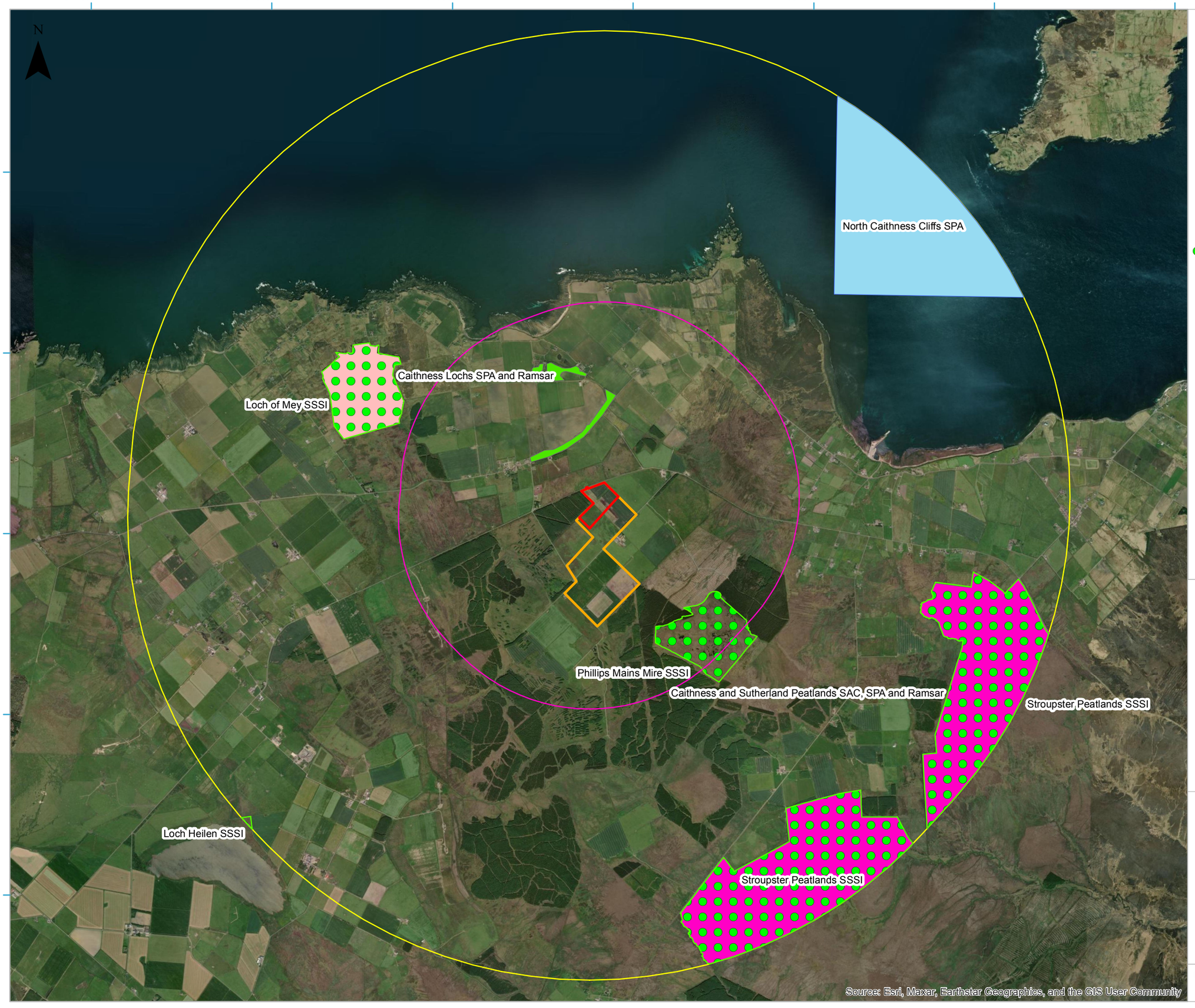
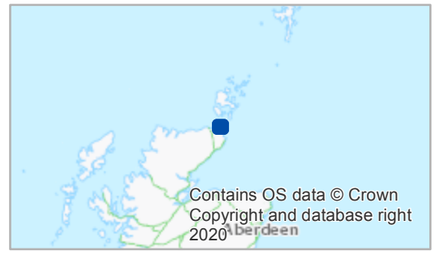
Figure 1 - Nature Conservation Designations



KEY

- Developable Area
- Red Line Boundary
- 2 km buffer
- 5km buffer
- North Caithness Cliffs SPA
- Caithness and Sutherland Peatlands SPA, SAC and Ramsar
- Caithness Lochs SPA and Ramsar
- Site of Special Scientific Interest (SSSI)
- Ancient Woodland Inventory (AWI)



Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions go here>

0 0.275 0.55 1.1 1.65 2.2 Kilometers

1:40,000

ITPENERGISED

Mey BESS
Desk Study

Figure 1
Nature Conservation Designations

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 2 - RSPB Records

328000 330000 332000

974000 972000 970000

N

14 133 18 1 60 600 45 70 60 115 58 95 30 135 120 4 220 66 750 10 400 148 10 30 30 79 9 110 138 121 129 1 1

KEY

- Developable Area
- 2km buffer
- Red Line Boundary
- Curlew (breeding, displaying)
- Whooper swan
- Greylag goose
- Greenland white-fronted goose

Coordinate System: British National Grid
Projection: Transverse Mercator

Service Layer Credits: Contains OS data © Crown Copyright and database right 2020
Source: Esri, Maxar, Earthstar Geographics, and the GIS

0 0.125 0.25 0.5 0.75 1
Kilometers

1:20,000

ITPENERGISED

Mey BESS
Ecology Desk Study

Figure 2
RSPB bird records

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 3 - Hollandmey Records

328000 330000 332000

974000 972000 970000

N

KEY

- Developable Area
- 2km buffer
- Red Line Boundary
- Greenland white-fronted goose
- Greylag goose
- Whooper swan

Coordinate System: British National Grid
Projection: Transverse Mercator

Service Layer Credits: Contains OS data © Crown Copyright and database right 2020
Source: Esri, Maxar, Earthstar Geographics, and the GIS

0 0.125 0.25 0.5 0.75 1
Kilometers

1:20,000

ITPENERGISED

Mey BESS
Ecology Desk Study

Figure 3
Hollandmey wintering bird records

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 4 - GWFG Small Sites Project Records (Francis *et al*., 2011)

320000 322000 324000 326000 328000 330000 332000

976000 974000 972000 970000 968000

N

KEY

- Developable Area
- Red Line Boundary
- 2km buffer

Fields used by Greenland white-fronted geese

- Used by geese most frequently >10%
- Used by geese but less frequently
- Anecdotal record

Coordinate System: British National Grid
Projection: Transverse Mercator

0 0.275 0.55 1.1 1.65 2.2
Kilometers

1:40,000

ITPENERGISED

Mey BESS
Ecology Desk Study

Figure 4
Greenland White-fronted Geese
Small Sites Project Data

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

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Appendix 2 – Preliminary Ecological Appraisal

Mey BESS

Preliminary Ecological Appraisal

Client:	Simec Atlantis Energy
Project/Proposal No:	6377
Version:	2.0
Date:	2023-10-31

Document Information

Project Name:	Mey BESS
Document Title:	Preliminary Ecological Appraisal
Client Name:	Simec Atlantis Energy
Client Contact:	David Taaffe
Client Address:	4th Floor, Edinburgh Quay 2, 139 Fountainbridge, Edinburgh, EH3 9QG
Document Status:	Final for Issue
Author:	J Diack
Reviewed:	A Hood
Approved:	A Hood
Date:	2023-10-31
Version:	2.0
Project/Proposal Number:	6377
ITPEnergised Office:	4th Floor, Centrum House, 108-114 Dundas Street, Edinburgh, EH3 5DQ

Revision History

Version	Date	Authored	Reviewed	Approved	Notes
1.0	2023-09-29	JD	AH	AH	First client issue
2.0	2023-10-31	JD	AH	AH	Second client issue. Updates following issue of final red line boundary.

Contents

Executive Summary

ITPEnergised was appointed by Simec Atlantis Energy (the 'Client'), to undertake a Preliminary Ecological Appraisal, comprising an ecological desk study and extended UK Habitat (UKHab) Classification survey, for a proposed battery energy storage system (BESS) the 'Proposed Development' located at Phillips Mains, Caithness. Targeted surveys for bats, badger, otter and water vole were also undertaken.

A summary of the key findings is as follows:

- Habitats recorded within the Site include modified grassland and an arable stubble field previously used for crop production. At the time of the survey the Site was grazed by sheep. A drainage ditch which is culverted at both ends bisects the eastern reaches of the Site from east to west. Gorse scrub is associated with the ditch and western field boundaries. A Sitka spruce plantation borders the western side of the Site. To the north of the Site is an unnamed road, and beyond this a mosaic of acid grassland and degraded blanket bog habitats used for grazing sheep. Other habitats recorded within the Study Area included further areas of modified grassland used for grazing cattle and sheep, neutral grassland, drainage ditches and a stone wall along the northern boundary of the Site.
- Within the plantation drainage ditches hold water and there are areas of exposed peat evident and small patches of *Sphagnum* moss towards the northern boundary of the plantation. The Carbon and Peatland data provided by NatureScot (2016), indicates the presence of peat soil (Class 5) underlying part of the Site, though the agricultural management of the Site including drainage and grazing have resulted in the loss of peatland habitats. SEPA must be consulted to determine if a Peat Management Plan is required.
- No habitats within the Site or a 250 m buffer are concluded to be groundwater dependent.
- Habitats within the Site are considered to be of low ecological value with limited species diversity. To protect scrub and woodland habitats within and adjacent to the Site working methods should proceed in line 'BS 5837 (2012) – Trees in relation to Design, Demolition and Construction'.
- The fourth National Planning Framework (NPF4) Policy 3 (c) requires that new developments secure positive effects for biodiversity. A biodiversity enhancement plan should be produced for the Site detailing measures to enhance habitats and increase biodiversity within the Site. Examples of suitable biodiversity enhancement measures are included within this report.
- The Caithness Lochs SPA and Ramsar lies within 2.2 km north-west of the Site. Following consultation with NatureScot the potential impact of the Proposed Development on the qualifying interest species of the Caithness Lochs SPA and Ramsar is to be assessed as part of a Habitats Regulation Appraisal.
- Phillips Mains Mire SSSI, Stoupster Peatlands SSSI, Loch of Mey SSSI, Loch Heilen SSSI and Caithness and Sutherland Peatlands SPA, SAC and Ramsar all lie within 5 km of the Site. In addition, three areas of ancient woodland lie within 2 km of the Site, with the closest 400 m to the north. Due to the nature and small scale of the Proposed Development, no significant adverse impacts on these designated sites are anticipated.
- No invasive non-native species (INNS) listed on Schedule 9 of the WCA 1981 (as amended) were identified within the Study Area during the survey. Biosecurity measures must be adopted to prevent the introduction of invasive non-native species to the Site. This must include the cleaning of all plant, machinery and tools, as well as personal equipment (e.g. footwear), prior to accessing the Site. These measures must be detailed within any work permits and/or Risk Assessments for the works.
- Habitats within and surrounding the Site are of Low to Moderate suitability for use by foraging and commuting bats, with activity likely to be focused on the plantation woodland edge. Within the 50 m PRA Study Area no features suitable for use by roosting bats were identified. Overall, the development will not reduce the availability of foraging or commuting habitat during or post works.

However, without appropriate mitigation, artificial lightning can negatively impact bats behaviour with some species avoiding areas that are illuminated. Measures to reduce the potential negative impacts of artificial lighting on bat behaviour are detailed within this report.

- A badger survey of the Site and 100 m Study Area was completed and no evidence of badger was found within the Study Area.
- No evidence of otter or water vole was found during the survey. Drainage ditches were considered to provide limited suitable foraging and commuting habitat for otter, though were largely suboptimal for water vole.
- The desk study found no records of red squirrel within 2 km of the Site within the last ten years and this species are not known to be present within this part of northern Scotland.
- Hedgehogs have been recorded within 2 km of the Site. Working measures must be adopted to prevent hedgehogs being killed or injured during works (e.g. check through areas of dense gorse prior to ground clearance works).
- Habitats within the Site and wider Study Area provide numerous nesting opportunities for a variety of bird species. All wild birds and their nests are protected under the WCA 1981 (as amended). Further bird mitigation and recommendations are outlined within this report.

1. Introduction

1.1 Overview

ITPEnergised was appointed by Simec Atlantis Energy (the 'Client'), to undertake a Preliminary Ecological Appraisal (PEA) for a proposed battery energy storage system (BESS) the 'Proposed Development' located at Phillips Mains, Caithness, central OS gird reference ND 29621 72440. Figure 1 shows the site location (hereafter referred to as 'the Site').

The survey purpose was to document the habitats present within the Site and a 100 m survey buffer but extended to up to 250 m when considering impacts on potential Ground Water Dependent Terrestrial Ecosystems (GWDTEs) (the 'Study Area') and determine the likely or potential presence of protected or otherwise notable species. A Preliminary (bat) Roost Assessment (PRA) and a targeted survey for badger (*Meles meles*) were also undertaken. The Study Area was also searched for evidence of, and potential for, otter (*Lutra lutra*) and water vole (*Arvicola amphibius*), as well as for any other protected or otherwise notable species, to inform any further survey requirements.

A breeding bird survey visit was undertaken in April 2023 and the results of the survey are included within this report.

The survey results are intended to facilitate the identification of potential constraints to development and where mitigation and/or further survey work may be required, as appropriate.

This report describes the methods used to gather and record habitat and protected species baseline information for the Site and wider Study Area and summarises the findings of the survey. Where appropriate, further recommendations are outlined.

1.2 Site Description

The Site extends to approximately 10.65 ha and lies to the north of Phillips Mains Farm, near Mey, Caithness. The habitats within the Site are arable and improved grassland used for crop production and grazing. A coniferous woodland plantation borders the western boundary of the Site. An unnamed road borders the northern boundary of the Site and beyond this is a mosaic of acid grassland and degraded blanket bog used for grazing sheep.

1.3 Development Proposal

The survey was undertaken to inform a planning application for a BESS development located within an arable field to the north of Phillips Mains farm, approximately 600 m south-east of Mey. The development is anticipated to comprise the following:

- Laying out of containerised battery units (around 2.6 metres high) along with associated inverters, switchgear units, closed loop cooling units, control units and associated electrical infrastructure mounted on concrete piers;
- Laying out of containerised substation units and associated electrical infrastructure mounted on concrete piers;
- Transformers within bunded compounds;
- Auxiliary power supplies for the batteries, control systems mounted on concrete piers;
- Security palisade fence around the BESS substation and battery compound with access gates to the compound entrance from the road network;
- Erection of CCTV cameras;

- Laying out of a hard surfaced site access into the BESS substation and battery compound from the local road network. Car parking bays. Uncompacted gravel as a surface cover between the containerised units and equipment. Construction laydown area;
- An attenuation pond; and
- Landscaping (including Biodiversity Net Gain).

The survey has been undertaken to identify any ecological constraints to the proposed works and to highlight any further survey and/or mitigation requirements.

2. Legislation, Policy and Guidelines

An overview of relevant legislation, policy and guidance is provided below.

2.1 Legislation

Full consideration has been given to all relevant nature conservation legislation when carrying out this assessment. This includes the following:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Nature Conservation (Scotland) Act 2004 (as amended);
- The Wildlife and Natural Environment (Scotland) (WANE) Act, 2011 (as amended); and
- The Protection of Badgers Act 1992, as amended by the Wildlife and Natural Environment (Scotland) Act 2011.

Relevant species-specific legislation, including details of all actions which would constitute an offence, is detailed fully within Annex A.

2.2 Planning Policy

The policies set out below are those relevant to nature conservation and include those from the National Planning Framework (NPF) 4 (Scottish Government, 2023), Planning Advice Note (PAN) 60 Planning for Natural Heritage (Scottish Government, 2000), The Highland Council (THC) Highland-wide Local development Plan (THC, 2012) and the Caithness and Sutherland Local Development Plan (THC, 2020).

2.2.1 National Planning Framework 4 (NPF4)

National Planning Framework 4 (NPF4) (Scottish Government, 2023) replaces National Planning Framework 3 (Scottish Government, 2014a) and Scottish Planning Policy (Scottish Government, 2014b). NPF4 outlines the duty of planning authorities to further the conservation of biodiversity as defined in the Nature Conservation (Scotland) Act 2004.

The planning system has an important role to play in improving the environment, for example by strengthening green and blue infrastructure, safeguarding, and enhancing urban and rural biodiversity, and contributing to the improvement of water, air and soil quality. Development plans should also seek to achieve a net enhancement of landscape quality and biodiversity. Policies relevant to nature conservation include:

- Policy 1: Tackling the climate and nature crisis;
- Policy 3: Biodiversity;
- Policy 4: Natural places;
- Policy 5: Soils;

- Policy 6: Forestry, woodland and trees;
- Policy 8: Green belts;
- Policy 11: Energy; and
- Policy 20: Blue and green infrastructure.

2.2.2 Planning Advice Note (PAN) 60

National planning policy on landscape and natural heritage is supported by Planning Advice Note (PAN) 60 Planning for Natural Heritage, the key elements include:

- Taking a broader approach to landscape and natural heritage than just conserving designated or protected sites and species, taking into account ecosystems and natural processes.
- Facilitating positive landscape change whilst maintaining and enhancing distinctive character.
- Seeking benefits for species and habitats from new development including the restoration of degraded habitats.
- Siting and design of development should be informed by local landscape character.
- Encouraging connectivity between habitats, through green networks.
- Protecting internationally and nationally designated habitats and species.
- Protecting and enhancing woodland and trees of high nature conservation value.

2.2.3 The Highland-wide Local Development Plan (HwLDP)

The Highland-wide Local Development Plan (HwLDP) was adopted on 5th in April 2012 (THC, 2012). A review process commenced in 2016 which is on hold awaiting updates following the adoption of NPF4. Policies and related supplementary guidance under the HwLDP related to nature conservation and biodiversity are:

- Policy 28 - Sustainable Design;
- Policy 51 - Trees and Development;
- Supplementary Guidance 'Trees, woodland and Development (THC, 2013a);
- Policy 55 - Peat and Soils
- Policy 57 - Built, Natural and Cultural Heritage;
- Policy 58 - Protected Species;
- Supplementary Guidance 'Highland's Statutorily Protected Species' (THC, 2013b);
- Policy 59 - Other Important Species;
- Policy 60 - Other Important Habitats;
- Policy 74 - Green Networks; and
- Supplementary Guidance 'Green Networks' (THC, 2013c).

2.2.4 Caithness and Sutherland Local Development Plan (CaSPlan)

The Caithness and Sutherland Local Development Plan (CaSPlan) was adopted on 18 August 2020 and together with the HwLDP and Supplementary Guidance forms the Highland Council's Development Plan that guides future development in Highland (THC, 2020). The CaSPlan aims to deliver key outcomes for growing communities; employment; connectivity and transport; and environment and heritage. The environment and heritage strategy includes:

- Green Networks and Green Space; and
- Climate Change.

2.3 Best Practice Ecological Guidance

In preparing this work, cognisance has been taken of the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines and survey methods. The extended UK Habitat Classification survey is based on the standard UK Habitat (UKHab) Classification methodology (UKHab Ltd., 2023). In addition, cognisance has been taken of the following best practice guidelines and survey method publications in relation to bats, badger, otter, water vole and breeding birds:

- Preliminary Roost Assessment (for bats):
  - Competencies for Species Survey: Bats (CIEEM, 2013a); and
  - Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016).
- Badger survey:
  - Competencies for Species Survey: Badger (CIEEM, 2013b); and
  - Surveying for Badgers: Good Practice Guidelines (Scottish Badgers, 2018).
- Otter survey:
  - Competencies for Species Survey: Otter (CIEEM, 2013c); and
  - Monitoring the Otter Lutra lutra (Chanin, 2003).
- Water vole survey:
  - Competencies for Species Survey: Water vole (CIEEM, 2013d); and
  - Water Vole Mitigation Handbook (Dean *et al*., 2016).
- Breeding bird survey:
  - Bird monitoring methods, a manual of techniques for key UK species (Gilbert *et al*., 2011).

3. Methods

3.1 Ecology Desk Study

A separate Ecology Desk Study has been and must be read in conjunction with this report (ITPEnergised, 2023a). The ecology desk study details:

- Biodiversity Priorities;
- Statutory and non-statutory designations within the local area;
- Records of protected species and habitats within the local area; and
- Wintering bird data for qualifying species of the Caithness Lochs SPA.

3.2 Extended UK Habitat Classification Survey

An extended UK Habitat Classification survey was carried out on the Study Area (access permitting) on the 18th May 2023 by Principal Ecologist Jenny Diack MCIEEM and was based on the UK Habitat (UKHab) Classification methodology (UKHab Ltd, 2023), which is due to replace the Joint Nature Conservation Committee (JNCC) Phase 1 habitat survey methodology (JNCC, 2010). Each of the habitats present within the Study Area was mapped. The surveyor recorded all habitat features (areas, lines and/or points) within the Study Area with each feature assigned a Primary Habitat based on the UK Habitat Key and Secondary Code(s) as appropriate. The vegetation was described in a series of georeferenced target notes (TNs), with plant nomenclature following Stace (2010). Target notes were also produced to describe notable habitats too small to be mapped (i.e. <0.1 ha).

It should be noted that, as we are currently transitioning from the JNCC habitat survey method to the UKHab method, this report provides both the UKHab and Phase 1 habitat classifications for completeness.

The survey also recorded incidental evidence of protected or otherwise notable species, as well as habitats or features with the potential to support such species within the Study Area. Birds and other fauna were identified and recorded on an *ad hoc* basis.

Whilst not a full botanical or protected species survey, the field walkover survey enables experienced ecologists to obtain an understanding of the ecology of a site, such that it is possible to:

- Confirm the nature conservation significance of a site and assess whether the potential for impacts on habitats/species is likely to represent a material consideration in planning terms; or
- Establish the scope and extent of any additional specialist ecological surveys that may be required, before such a confirmation can be made.

Targeted surveys were also undertaken for bats, otter, water vole and badger within the Site and up to a 250 m survey buffer (dependent on species and access permitting). Survey methods are outlined below.

3.3 Preliminary Roost Assessment

The Site and a 50 m buffer (access permitting) were surveyed to identify potentially valuable roosting features for bats, following current BCT guidelines (Collins, 2016).

All trees and structures within the Site and 50 m buffer were inspected from ground level (using binoculars, where appropriate) for evidence of bats (e.g. bat corpses, droppings, feeding remains, scratch marks, and urine and grease staining around potential roost features). In addition, the survey also recorded features with potential suitability to support roosting bats, for example, woodpecker holes, rot holes, hazard beams, cankers and knot holes.

The potential for the trees or structures to support roosting bats was ranked in accordance with the criteria set out in the BCT guidelines.

Guidelines for assessing the potential suitability of the Proposed Development site for bats, based on the presence of habitat features, are given in the categories below:

- Negligible: Negligible habitat features on Site likely to be used by roosting bats.
- Low:
    - A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by large numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
    - A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
- Moderate: A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat bat unlikely to support a roost of high conservation status (with respect to roost type only – the assessments are made irrespective of species conservation status, which is established after presence is confirmed).
- High: A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

The need for further survey work was determined following the iterative process outlined in the BCT guidelines (Collins, 2016).

3.4 Otter Survey

The Site and 250 m survey buffer contains a number of drainage ditches. A search was undertaken of the riparian zone and up to 20 m away from the water's edge (where suitable habitat was found to be present) of all waterbodies within the Site and within 250 m of the Site boundary (where accessible). Throughout the survey, overhanging banks, cavities, bankside vegetation and riparian features, such as boulders and mud, were searched for the following signs of otter use:

- Resting-up places – comprising couches (areas of flattened vegetation) or hovers (lay-up areas, including ledges under rocks or hollows under fallen trees or roots);
- Potential holt sites – holes or dens;
- Spraints – used for marking territories, and often located on prominent features within the channel or on the embankment (including weirs, bridges, rocks, tree roots, watercourse confluences, etc.);
- Footprints – located in soft mud, silt or sand banks;
- Runs and trails – pathways from the water into dense cover or around bankside trees;
- Slides – present on banks as an entry to waterbodies; and
- Feeding remains – e.g. remains of fish and amphibians.

It should be noted that that features, such as resting-up places, holts, runs, trails or slides, require presence of either a spraint or footprint to confirm use by otter. These features cannot be used in isolation to definitively indicate otter presence.

3.5 Water Vole Survey

The field survey was undertaken in tandem with the otter survey and involved a search for evidence of water voles in the riparian zone and up to 2 m away from the water's edge, within the Site and within 50 m upstream and downstream of the Site boundary.

Potential evidence of water vole searched for included the following:

- Latrines – water vole droppings are often concentrated in discrete latrine sites near the burrow, at range boundaries and places where they regularly enter and exit the water;
- Feeding stations and feeding remains – feeding remains in the form of neat piles of chewed lengths of vegetation are often found in runways and at haul-out platforms;
- Tunnel/burrow entrances – these are typically found along the water's edge on top of the bank up to 5 m from the water's edge. Holes on top of the banks often have grazed 'lawns' around them;
- Paths and runs at the water's edge;
- Footprints – these may be identified in soft mud or silt;
- Sightings and/or sounds of water voles entering the water; and
- Droppings – while most droppings will be deposited in latrines, some may also be found scattered along runways in vegetation.

Specifically for watercourses, the approximate depth and speed of water flow, the waterway width, bankside vegetation and surrounding land use, was also recorded, as these factors may determine the suitability of habitat for supporting water voles.

It should be noted that any single field sign recorded in isolation, especially when ambiguous (e.g. a burrow or footprints) would not be definitive in confirming presence.

3.6 Badger

As part of the survey, field signs including setts, day beds, latrines, evidence of foraging, badger paths, scratching posts, hair and footprints, were actively searched for within the Site and a 100 m buffer. The survey was based on the methods described by Scottish Badgers (2018). The survey included all hedgerows, field boundaries, watercourses, paths and other linear features within the Study Area.

On identification of a badger sett, the observer noted the number of entrances, in addition to a description of the activity level and status of the sett wherever possible. The status of a sett was evaluated and determined, wherever possible, based on descriptions presented in Scottish Badgers Good Practice Guidelines (2018), which assigns setts into one of four categories:

- Main sett (used throughout the year and constitutes the main breeding sett);
- Annexe sett (forms part of the main sett area, but is not directly linked by an underground passage to the main sett, either due to a barrier (e.g. separated by a watercourse or ditch) or by distance);
- Subsidiary sett (offers an alternative large sett complex to the main sett but is usually although not always at least 50m away and are not always obviously linked by a well-used path); and
- Outlier sett (often comprising just one or two holes and is infrequently used by badgers).

Each sett entrance is classified according to its degree of usage:

- Well-used: are clear of vegetation and debris, sides worn smooth but not necessarily excavated recently;
- Partially used: not in regular use and have debris in the entrance; and
- Disused: not in use for some time, are partially blocked and could not be used without considerable effort.

It should be noted that the status of a badger sett can change over a relatively short period of time. For example, some badger social groups will move the location of the main sett to other less used setts within their territory in response to external factors, such as disturbance.

3.7 Breeding Bird Survey

A breeding bird walkover survey was carried out in spring 2023. The intention was to carry out four survey visits following the Common Bird Census (CBC) methods. However, in consultation with NatureScot, it was agreed that a full breeding bird survey (comprising four survey visits) was not required (email S Wheatley, NatureScot to J Diack, ITPEnergised dated 20.06.2023). The results and methods relating to the first survey visit are included within this report.

Owing to the low-lying nature of the Site and the presence of farmland and woodland habitats within the Site and wider study area, the Common Bird Census (CBC) method of census was used for the survey and was carried out in line with the methods detailed in Gilbert *et al*. (2011). The survey visit was carried out by a suitably qualified ornithologist on 28th April 2023.

The survey was undertaken at a slow, consistent and measured pace, with all habitats suitable for breeding birds within the Study Area approached to at least 100 m. All field boundaries were also surveyed. The survey commenced within one hour of sunrise.

When individuals or pairs of birds were encountered, the ornithologist determined whether the bird(s) were different from any previously encountered. This involved careful attention to the whereabouts and movements of birds, together with birds' sex and plumage characteristics. To minimise the risk of double-counting, behaviour and location of birds were carefully observed so that previously encountered birds were not recorded twice. Surveys were not conducted in winds greater than Beaufort Force 5, in persistent rain, or when visibility was poor (less than 500m).

The following behaviour or signs were considered to represent evidence of breeding:

- Displaying or singing;
- Territorial dispute;
- Repeated alarm calling or distraction displays;
- Occupied nests;
- Adult(s) carrying food;
- Adult(s) carrying nest material; and
- Newly fledged young with parent(s).

Other records were considered to be of non-breeding birds, failed breeders, or birds loafing, feeding, or on passage to other areas.

All bird activity was identified and mapped onto 1:25,000 OS maps of the Site, using BTO two-letter codes and appropriate symbols as outlined in Annex 1 of Gilbert *et al*. (2011). Due care and attention was taken using appropriate symbols, to ensure that multiple registrations of the same bird were not recorded on the survey maps.

4. Results

4.1 Survey Limitations

4.1.1 Extended UK Habitat Classification Survey

The extended UK Habitat survey was carried out in May within the recommended botanical survey season (May to September inclusive). Due to the location of the Site in northern Scotland, the flowering season was noted to be slightly delayed with many early flowering species not yet emerged at the time of the survey. Although UK Habitat classification surveys can be completed year-round by an experienced botanist, evidence of later flowering species and identification of the grasses to species level was limited. Given the agricultural management of the Proposed Development site, this limitation was not considered to impact identification of general habitat types.

4.1.2 Preliminary Roost Assessment / Badger Survey / Otter and Water Vole Survey

No survey limitations noted.

4.2 Extended UK Habitat Classification Survey

4.2.1 Habitats

The habitats recorded within the Study Area are detailed below and shown in Figure 2 and Target Notes (TNs) are detailed in Annex B, Table B.1, and shown on Figure 2. Scientific names of plant species are provided in Annex C. The nine primary habitats and associated secondary codes recorded during the survey, as well as their corresponding Phase 1 Habitat survey codes, are listed in Table 1 below.

Table 1: Habitats recorded within the Site and 100 m buffer

UK Habitat Classification		Corresponding Phase 1 Habitat	% of Study Area	Area within Site (ha)	% of Site
Primary Habitat	Secondary Codes				
Winter stubble (c1c5)	Grazed by sheep (102)	Arable (J1.1)	20.68	4.18	39.25
Degraded blanket bog (f1a6)	Peat (57)	Wet modified bog (E1.7)	1.32	-	-

UK Habitat Classification		Corresponding Phase 1 Habitat	% of Study Area	Area within Site (ha)	% of Site
Primary Habitat	Secondary Codes				
Other acid grassland (g1d)	Rushes dominant (15) Grazed by sheep (102) Tall or tussock sward (128)	Improved acid grassland (B1.2)	9.52	-	-
Other neutral grassland (g3c)	Scattered scrub (10) Scattered rushes (14) Tall forbs (16) Tall or tussocky sward (128)	Semi-improved neutral grassland (B2.2)	0.77	0.008	0.07
Modified grassland (g4)	Grazed by cattle (101) Grazed by sheep (102) Active management (516)	Improved grassland (B4) Fence (J2.3.4)	49.73	6.04	56.64
Gorse scrub (h3e)	Semi-natural (30)	Dense scrub (A2.1)	5.70	0.43	4.04
Other standing water (r1g)	Ditch (50)	Standing water (G1) Dry ditch (J2.6)	2.07 km*	406 m	-
Built linear features (u1e)	Road (800)	Other (including hardstanding) (J5)	1.01 %	-	-
	Dry stone wall (114)	Wall (J2.5)	387 m*	18.2 m	-
w2c - other coniferous woodland	Plantation (29) Peat (57)	Coniferous, plantation woodland (A1.2.2)	11.27	-	-
		Total	**100%**	**10.66 ha**	**100%**
* The length of linear features such as ditches and stone walls are provided but excluded from the % area calculations.					

4.2.1.1 Winter stubble (c1c5)

Within the eastern reaches of the Site the field has been managed for cereal crop production and is currently stubble (TN1), this habitat covers c. 40% of the Site.

4.2.1.2 Degraded blanket bog (f1a6) / Other acid grassland (g1d)

To the north of the road habitats are a mosaic of degraded blanket bog and other acid grassland (TN2). Heavy grazing and drainage have resulted in a loss of *Sphagnum* mosses. Within the mire, hare's-tail cotton grass is dominant, with heather, deergrass, tormentil, carnation sedge, common lousewort and purple moor grass also recorded. This habitat transitions to acid grassland with soft-rush dominant in areas. The sward is tussocky and includes creeping bent, tufted hair-grass, sweet vernal, Yorkshire-fog, red fescue, tormentil, heath woodrush and dog-violet. The presence of common daisy and white clover indicate improved conditions.

4.2.1.3 Other neutral grassland (g3c)

To the north of the road the verges comprise other netural grassland bordering the road and also the roadside ditches (TN3). Grass species recorded included Yorkshire-fog, false oat-grass, cock's-foot. Other species within the verge vegetation were red campion, silverweed, soft-rush, ground elder, common hogweed, ribwort plantain, tormentil, white clover, cuckooflower, lady's mantle and cow parsley. Scattered bramble, gorse and raspberry scrub was also present. Meadowsweet and marsh marigold were recorded within the ditches.

4.2.1.4 Modified grassland (g4)

Within the western (TN4) and south-western (TN5) reaches of the Site, and the field to the east of the Site (TN6), the habitat is modified grassland used for grazing. This is the dominant habitat within the Site, covering approximately 55%. Towards the south-western edge of the Site, to the south of the plantation (TN5), the ground is waterlogged and dominated by soft-rush, Yorkshire-fog and tufted hair-grass. This area of the Study Area would be described as marshy grassland under the Phase 1 methodology (JNCC, 2010). Other species recorded in the sward were spear thistle, creeping buttercup and cuckooflower.

4.2.1.5 Gorse scrub (h3e)

Bordering the plantation woodland (TN7), ditches and field boundaries are areas of dense gorse scrub.

4.2.1.6 Ditch (r1g)

A drainage ditch is present within the Site (TN8), associated with a patch of dense gorse. This ditch is culverted at either end, running under the field before connecting to further drainage ditches to the east (TN9) and west (TN10).

4.2.1.7 Built linear features (u1e)

A road borders the north of the Site (TN3) and a dry-stone wall forms the northern field boundary (TN11).

4.2.1.8 Other coniferous woodland (w2c)

Bordering the west of the Site is an area of Sitka plantation woodland (TN12). The woodland has been planted on peatland with exposed peat evident and some remnant areas of *Sphagnum* along the northern edge. A number of drainage ditches run through the woodland, which were holding water at the time of the survey.

4.2.2 Invasive Non-Native and Non-Native Plant Species

The desk study recorded Japanese knotweed within 1.2 km north-east of the Site. There were no records of invasive non-native species within the Site and none were recorded during the survey.

4.2.3 Peat

NatureScot's spatial dataset of 'carbon-rich soil, deep peat and priority peatland habitats in Scotland' (Scottish Natural Heritage, 2016) was reviewed. As shown on Figure 3, dystrophic blanket peat underlies the Site; the field to the north of the road; and the adjacent plantation woodland to the west. Due to agricultural management including drainage, crop production and grazing, peat within the Site and field to the north of the road is defined as 'Class 5' which indicates presence of peat soil but absence of peatland habitats. The peat that underlies the woodland plantation is defined as 'Class 1' indicating presence of peat and peatland habitats.

4.2.4 Groundwater-dependent Terrestrial Ecosystems (GWDTEs)

No wetland habitat with the potential to be a GWDTE was identified within the Study Area.

4.2.5 Bats

4.2.5.1 Foraging and Commuting Habitat

The habitats within the Site provide Low to Moderate quality foraging and commuting habitat for bats. The modified grassland and arable fields, within and surrounding the Site, are unlikely to be used by large numbers of bats due to the associated low insect abundance and diversity. Linear features which bats may use to commute and forage along include the plantation edge, stone wall and ditches. However, these features were not strongly connected to suitable habitat within the wider landscape and activity is likely to be focused on the plantation edge, avoiding the eastern edge of the Site as it is exposed.

4.2.5.2 Roosting Habitat – Trees, Buildings and Structures

The PRA identified no features suitable for use by bats within trees, buildings or structures within the Site or 50 m buffer. The trees assessed within the Study Area had no features suitable for use by roosting bats, mainly due to the tree species present, or younger age structure. Within the surrounding landscape, Phillips Mains farm (TN13), located approximately 350 m south of the Site has Moderate to High bat roost suitability. If bats are present roosting here, they are likely to commute into the Site to forage. Best practice working measures, particularly in relation to artificial lighting, are provided in Section 5.6 and 5.7 of this report to minimise any potential disturbance effects both during and post construction.

4.2.6 Birds

4.2.6.1 Breeding Bird Survey Results (April 2023)

The BBS survey results are provided in Figure 4. A total of four BoCC Red Listed and four BoCC Amber Listed species were recorded within the Study Area as described in Table 2 below.

Table 2 - Breeding bird survey results

Common name	Scientific Name	BTO Code	LBAP / SBL / Sch 1	No. recorded during visit
Red Listed				
Curlew	*Numenius arquata*	CU	SBL / LBAP	8
Lapwing	*Vanellus vanellus*	L.	SBL / LBAP	1
Skylark	*Alauda arvensis*	S.	SBL	20
Yellowhammer	*Emberiza citrinella*	Y.	SBL	4
Amber Listed				
Dunnock	*Prunella modularis*	D.	SBL	1
Mallard	*Anas platyrhynchos*	MA		1
Meadow pipit	*Anthus pratensis*	MP		24
Snipe	*Gallinago gallinago*	SN	LBAP	5

The most commonly recorded species was meadow pipit which is associated with rough grassland and peatland habitats and was recorded throughout the Study Area. In numerical order, meadow pipit were followed by skylark, curlew, snipe and yellowhammer. Yellowhammer are often found within areas of gorse scrub, a habitat which is found within the Site and surrounding area.

A further three common species were also recorded within the Study Area: chaffinch (*Fringilla coelebs*), robin (*Erithacus rubecula*) and pied wagtail (*Moticilla alba*).

4.2.6.2 Extended UKHab Survey (May 2023)

The following bird species were recorded within the Study Area during the habitat survey:

- Cuckoo (*Cuculus canorus*, Bird of Conservation Concern (Stanbury *et al.*, 2021) red-listed) - heard within plantation woodland;
- Curlew (Numenius arquata, BoCC red-listed) - recorded within the Site and within the field to the north of the Site;
- Skylark (*Alauda arvenis,* BoCC red-listed) - recorded singing and displaying over the Site;
- Hooded crow (*Corvus cornix*) - recorded passing over the Site;
- Pheasant (*Phasianus colchicus*) - recorded to the south-west of the Site;
- Starlings (*Sturnus vulgaris,* BoCC red-listed) - recorded nesting within various locations at Phillips Mains farm steading;
- Swallow (*Hirundo rustica*) - foraging over the field and nesting at Phillips Mains;
- Jackdaw (*Corvus monedula*) - foraging over fields and nesting at Phillips Mains;
- Barn owl (*Tyto alba*) - evidence of nesting or roosting at Phillips Mains, pellets also found under tree at north of plantation (TN20);
- Lapwing (*Vanellus vanellus,* BoCC red-listed) - recorded flying to the south of the access track to Phillips Mains;
- Meadow pipit (*Anthus pratensis*, BoCC amber-listed) - recorded within field to the north of the Site;
- Buzzard (*Buteo buteo*) - recorded passing over the Site;
- Woodpigeon (*Columba palumbus,* BoCC amber-listed) - recorded foraging in field to the south-west of the Site; and
- Stonechat (*Saxicola rubicola*) - pair recorded alarm calling within gorse scrub to the north of the road.

Scrub, woodland, tussocky grassland and mire habitats within and surrounding the Site, provide suitable nesting habitat for a variety of common bird species. Cracks and crevices in the stone wall also provide good nesting opportunities.

4.2.7 Other Terrestrial Fauna

4.2.7.1 Badger

The desk study identified no records of badger within 2 km of the Site and no evidence of badger presence was found during the survey. Suitable foraging habitat is present within the Site and surrounding fields.

4.2.7.2 Otter and Water Vole

The desk study identified no records of otter or water vole within 2 km of the Site from within the last ten years and no evidence of otter or water vole presence was found within the Study Area. The drainage ditches within and surrounding the Site are fragmented and likely to provide limited foraging habitat for otter. No suitable otter resting site features were identified within the Study Area.

The ditches to the east and north of the Site were dry in sections, with the most suitable water vole habitat present within the drainage ditch that runs perpendicular to the road to the north of the Site (TN14). In this section the ditch held water and had steep vegetated banks. However, no evidence of water vole was found and so they are considered likely absent.

4.2.7.3 Red squirrel

The desk study identified no records of red squirrel within 2 km of the Site from within the last ten years and distribution maps suggest this species are not known to occur within this part of Scotland (Harris & Yalden,

2008). A pile of stripped Sitka cones was found within the woodland (TN15) but this is likely the result of wood mouse (*Apodemus sylvaticus*) or other small mammal activity. The woodland plantation is approximately 17 ha in size and partially isolated from surrounding areas of woodland. Red squirrel are considered likely absent.

4.2.7.4 Pine marten

The desk study returned no records of pine martin (*Martes martes*) within 2 km of the Site in the last ten years. Two scats were found within the woodland plantation (TN16 and TN17). Both were similar in morphology to pine marten scats, however may also have been fox which was confirmed to be active in the area. A series of burrows were also found along the woodland rides but these were determined to be likely rabbit (*Oryctolagus cuniculus*) (TN18). Habitats were generally suboptimal for denning due to the wet ground conditions and lack of suitable habitat features. However, pine marten may use the woodland for foraging and commuting and the general working measures outlined in Sections 5.6 and 5.7 must be adhered to.

4.2.7.5 Other mammal species

A fox (*Vuples vulpes*) earth is present within the plantation woodland (TN19) and prey remains were found throughout the plantation and gorse scrub bordering the Site. Hedgehog have been recorded within 2km of the Site, habitats within the Site are largely suboptimal for hedgehog with suitable habitat limited to areas of scrub adjacent to, and within, the Site.

4.2.7.6 Amphibians and Reptiles

The desk study returned no records of other amphibians or reptiles within 2km of the Site within the last ten years.

The drainage ditches within the Site and surrounding area provide suitable habitat for common frog and common toad. Terrestrial habitat surrounding these features includes woodland, scrub, grassland, dry stone wall and rock piles which provide good terrestrial habitat for amphibians including foraging and refugia opportunities.

Reptiles such as common-lizard and slow-worm would also utilise these habitat features. However, areas of arable land and modified grassland are suboptimal for reptiles and, if present, their distribution would be limited to the field margins and tussocky grassland associated with the drainage ditches.

5. Discussion and Recommendations

5.1 Nature Conservation Designations

5.1.1 Assessment

Caithness Lochs SPA and Ramsar lies 2.2 km north-west of the Site. This SPA and Ramsar qualifies under Article 4.1/Ramsar Criterion 6 by regularly supporting wintering populations of European importance of the Annex 1 species whooper swan, Greenland white-fronted geese and greylag geese. The Proposed Development lies within foraging range of these three species and the ecology desk study (ITPEnergised, 2023a) has shown that greylag and whooper swan are known to feed and loaf in the fields surrounding Phillips Mains, and Greenland white-fronted have been recorded within fields 580 m north-west of the Proposed Development.

Loch of Mey SSSI is located 2.2 km north-west of the Site and is designated for its nationally important grassland habitats and associated breeding bird population (including curlew, snipe, lapwing and redshank) and wintering Greenland white-fronted goose population. Loch of Mey forms part of the Caithness Lochs SPA and potential impacts of on the Greenland white-fronted geese population are assessed under the Caithness Lochs SPA/Ramsar.

The field surveys indicated presence of curlew, snipe and lapwing within the Study Area. Due to the modified and managed nature of the habitats within the Site these species are unlikely to nest within the footprint of

the Proposed Development however habitats to the north of the road may be used. Due to the risk of disturbance during the breeding season mitigation is proposed in Section 5.5.6 to minimise the potential impact of the Proposed Development on these species.

North Caithness Cliffs SPA lies within 3.2 km of the Site and is designated for it breeding peregrine and breeding seabird assemblage. Peregrine can nest inland, however there is no suitable nesting habitat within the Site or within 750 m of the Site, which is the recommended disturbance buffer for this species during the nesting season (NatureScot, 2020a). The remaining qualifying interest species are not known to travel inland and are generally considered coastal species. On this basis it is considered there will be no significant impacts on this SPA due to the Proposed Development.

Phillips Main Mire SSSI lies 1.48 km south-east of the Proposed Development and Caithness and Sutherland Peatlands SPA, SAC and Ramsar and Stroupster Peatlands SSSI lie 3.6 km south-east of the Proposed Development. These Sites are designated for their habitats and/or breeding bird assemblage. Due to the separation distance, nature and the small-scale of the Proposed Development, these designated Sites will not be directly impacted and no adverse effects are anticipated.

Loch Heilen SSSI lies approximately 4.8 km south-west of the Proposed Development and is designated for it nationally important mesotrophic loch habitat and wintering populations of greylag goose, whooper swan and Greenland white-fronted goose. Due to the separation distance, nature and the small-scale of the Proposed Development, no impact on the mesotrophic loch habitat is predicted. Loch Heilen forms part of the Caithness Lochs SPA and potential impacts of the Proposed Development on the Greenland white-fronted geese, whooper swan and greylag geese population are assessed under the Caithness Lochs SPA/Ramsar.

In addition, three areas of woodland listed on the Ancient Woodland Inventory (AWI) (NatureScot, 2018) lie within 2 km of the Site, with the closest 400 m north of the Site. None of these AWI woodlands will be directly impacted, and due to the nature and the small-scale of the Proposed Development, no adverse effects are anticipated.

5.1.2 Recommendations

Following consultation with NatureScot (as detailed in the ecology desk study) the potential impact of the Proposed Development on the qualifying interest species of the Caithness Lochs SPA and Ramsar is to be assessed as part of a Habitats Regulation Appraisal (ITPEnergised, 2023b).

Mitigation in relation to breeding birds, including qualifying interest species of the Loch of Mey SSSI, is provided in Section 5.5.6.

As no significant impacts are anticipated, there are no recommendations in relation to Phillips Mains Mire SSSI, Caithness and Sutherland Peatlands SPA/SAC/Ramsar, Stroupster Peatlands SSSI and areas of AWI woodland.

5.2 Habitats

5.2.1 Assessment

The dominant habitat types recorded within the Site were modified grassland used for grazing and arable land used for growing cereal crops. Other habitats recorded within the Site include a small area of gorse scrub and a drainage ditch which contained areas of standing water at the time of the survey. Due to the low species diversity the habitats within the Site are generally considered to be of low ecological value. The areas of gorse scrub habitat within and adjacent to the Site will provide good nesting habitat for yellowhammer and other passerines.

Degraded blanket bog habitat was recorded within the wider Study Area, to the north of the road. Blanket bog (Annex 1: H7310 Blanket bog) is a priority habitat listed on the SBL. Due to agricultural management including drainage and grazing, the bog habitat within the Study Area does not align with this priority habitat type. Other habitats recorded within the wider Study Area included further areas of modified grassland used for grazing, acid grassland, drainage ditches and coniferous woodland plantation.

The plant species recorded within the Site and 100 m buffer were considered to consist of common and widespread species found within sites of this nature in this part of Scotland.

5.2.2 Recommendations

The HwLDP Policy 55: Peat and Soils requires developments to '*demonstrate how they have avoided unnecessary disturbance, degradation or erosion of peat and soils*' (THC, 2012). Though no peatland habitats lie within the Site, it has been demonstrated that peat soils underlie the Site and surrounding area. It is recommended that SEPA is consulted to determine if a Peat Management Plan is required.

A biodiversity enhancement plan should be produced for the Site detailing measures to enhance habitats and increase biodiversity within the Site. Suitable biodiversity enhancement measures are included within Section 5.8.

The landscape design should incorporate the biodiversity enhancement measures, to include (but not limited to) the creation of species-rich grassland within the Site. Scrub removal should be minimised, and the landscape design should aim to protect trees adjacent to the Site. New hedgerow and tree planting must form part of the landscape design to enhance the local green infrastructure network.

Working methods should proceed in line '*BS 5837 (2012) – Trees in relation to Design, Demolition and Construction*' to protect woodland adjacent to the Site that is to be retained. This must include the demarcation of a suitable root protection area in advance of any works commencing within the Site. The Root Protection Area is calculated by multiplying the diameter of a tree at breast height (dbh) by 12, up to a maximum of 12 metres, and aims to avoid impaction of soil around the trees root system which can damage the tree.

Working measures must be adopted to prevent silt run-off into the drainage ditches within and adjacent to the Site.

5.3 Invasive Non-native Species

5.3.1 Assessment

No invasive non-native species (INNS) listed on Schedule 9 of the WCA 1981 (as amended) were recorded within the Study Area.

5.3.2 Recommendations

Biosecurity measures must be adopted to prevent the introduction of INNS to the Site. This must include the cleaning of all plant, machinery and tools, as well as personal equipment (e.g. footwear), prior to accessing the Site. These measures must be detailed within any work permits and/or Risk Assessments for the works.

5.4 Bats

5.4.1 Assessment

5.4.1.1 Overview

All native bat species are fully protected as European Protected Species (EPS) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), and the nine species found in Scotland are all listed on the SBL as species on which negative impacts should be avoided.

5.4.1.2 Habitats - Foraging/commuting

Habitats within and surrounding the Site are of **Low to Moderate** suitability for use by foraging and commuting bats, with activity likely to be focused on the plantation woodland edge.

Overall, the development will not significantly reduce the availability of foraging or commuting habitat during or post work as the habitats within the Site are largely modified grassland and arable fields which are

low value foraging and commuting habitat. However, without appropriate mitigation, artificial lightning can negatively impact bats behaviour with some species avoiding areas that are illuminated.

5.4.1.3 Habitats - Roosting

No potential roost features were identified within the Study Area and so no impacts to roosting bats are anticipated.

5.4.2 Recommendations

To mitigate potential impacts to foraging/commuting bats around Site boundaries, a sensitive lighting scheme must be adopted (discussed fully within Section 5.6) to minimise illumination of edge habitat both during works and post-construction. Temporary and permanent lighting should be directed to where it is needed and light spillage (whether direct and/or in-direct) should be avoided as far as practicable. Also, the times during which lighting is on should be limited to provide dark periods.

5.5 Other Terrestrial Fauna

5.5.1 Otter and Water Vole

5.5.1.1 Assessment

Otter is fully protected as an EPS and is listed on the SBL as a species on which negative impacts should be avoided. In Scotland, water voles are partially protected under the Wildlife and Countryside Act 1981 (as amended) which protects the water vole's place of shelter (i.e. burrow) but not the animal itself. Water vole are also listed as a priority species on the SBL as a species on which negative impacts should be avoided and conservation action is needed.

No evidence otter or water vole was found within the Study Area and habitats within the Study Area were largely suboptimal for these species.

5.5.1.2 Recommendations

No further consideration of otter or water vole is required.

5.5.2 Badger

5.5.2.1 Assessment

Badger are fully protected under the Protection of Badgers Act 1992, as amended by the Wildlife and Natural Environment (Scotland) Act 2011. No evidence of badger was found within the Study Area.

5.5.2.2 Recommendations

No further consideration of badger is required.

5.5.3 Pine marten

5.5.3.1 Assessment

Pine marten is fully protected as an EPS and is listed on the SBL as a species on which negative impacts should be avoided.

No evidence of pine marten was found within the Study Area and habitats within the Study Area were largely suboptimal for denning. There is some potential for pine marten to use the woodland habitat to the west of the Site for foraging and commuting.

5.5.3.2 Recommendations

The general working measures in Section 5.6 and 5.7 should be adhered to.

5.5.4 Red squirrel

5.5.4.1 Assessment

Red squirrels and their dreys (resting places) receive full protection under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended) and are listed as a priority species on the SBL as a species on which negative impacts should be avoided and conservation action is needed. Though the adjacent coniferous woodland provides suitable habitat for commuting, foraging and drey building red squirrel are not known to be present within this area of northern Scotland and are considered likely absent.

5.5.4.2 Recommendations

No further consideration of red squirrel is required.

5.5.5 Reptiles and Amphibians

5.5.5.1 Assessment

Reptiles and amphibians are partially protected under the Wildlife and Countryside Act 1981, with reptiles given additional protection from killing or injury. Common toad, slow-worm, common lizard and adder (*Vipera berus*) are listed on the SBL as species on which negative impacts should be avoided.

The desk study returned no records of amphibians or reptile species within 2 km of the Site in the last ten years.

The ditches within the Site and surrounding area provide suitable breeding habitat for amphibians including common frog and common toad. The arable and modified grassland is largely suboptimal for amphibians and reptiles however tussocky grassland, scrub and woodland habitat within and surrounding the Site may provide suitable foraging and refugia habitat for reptiles and amphibians. There is potential for killing/injury of herpetofauna if works take place within these habitats (e.g. removal of tussocky grassland, scrub and rock piles) which would result in a breach of legislation.

5.5.5.2 Recommendations

Working measures to minimise the chance of reptiles being killed or injured during works must be adopted. These should include presence of a Suitably Qualified Ecologist (SQE) or Ecological Clerk of Works (ECoW) when clearing vegetation along the ditch within the Site, removal of the stone piles or dismantlement of stone walls.

If any herptiles are found during the Site works these should be lifted and placed within suitable habitat a safe distance from the works.

5.5.6 Hedgehog

5.5.6.1 Assessment

Hedgehog is partially protected under the Wildlife and Countryside Act 1981 (as amended) and is listed with a watching brief on the SBL. Hedgehogs have been recorded within 2 km of the Site and undergrowth habitats within areas of scrub would provide areas for hedgehog to rest and hibernate.

5.5.6.2 Recommendations

Prior to site clearance works commencing, the site team should check for presence of hedgehogs within areas of scrub habitat. If any hedgehogs are encountered these should be carefully lifted and moved into suitable areas of habitat, outwith the footprint of works.

5.5.7 Nesting Birds

5.5.7.1 Assessment

A number of bird species were recorded during the survey, and habitats within the Study Area provide numerous opportunities for nesting birds.

During the field surveys, curlew, lapwing and snipe were active within the Site and surrounding area. The areas of wet grassland habitat within the south-western reaches of the Site and habitats to the north of the road provide suitable nesting habitat for these species. NatureScot guidance states that curlew are highly sensitive to disturbance and a 200 – 300 m disturbance buffer during the breeding season is recommended (NatureScot, 2020a). Though specific guidance is not provided, a similar disturbance buffer of 200 m is recommended for snipe and lapwing which are both sensitive to disturbance. Other species recorded during the surveys which may nest within the Site were skylark and yellowhammer.

5.5.7.2 Recommendations

All wild birds and their nests are protected under the WCA 1981 (as amended) (with Annex 1/Schedule 1 species afforded additional protection). It is recommended that any site preparation including vegetation clearance works are undertaken outwith the nesting bird season (the nesting season runs from March to August, inclusive). If this time period cannot be avoided, then an SQE must complete a nest survey within 48 hours prior to works commencing which covers the Site and 300 m buffer. If an active nest is identified then the appropriate protection zone must be installed, within which there can be no works until the nest has fledged.

5.5.8 Wintering Geese

The ecology desk study (ITPEnergised, 2023a) has confirmed that greylag and whooper swan use the fields around Phillips Mains for foraging and loafing and Greenland white-fronted geese have been recorded foraging in fields within 580m north-west of the Proposed Development. A Habitats Regulations Appraisal is to be completed to assess the likely impacts of the Proposed Development on these species and inform any mitigation recommendations.

5.6 Artificial Lighting

Research has indicated that artificial lighting can have an adverse effect on the behaviour of nocturnal mammals including bats (ILP, 2020; ILP&BCT, 2023). A sensitive lighting scheme that aims to avoid disruption to mammal foraging and commuting behaviour and nesting bird activity will be adopted. The following measures are to be incorporated into the design and installation of temporary lighting during works and within the permanent lighting scheme:

- Any lighting will be directional (using fittings such as hoods, cowls or shields to direct light downwards wherever possible and avoid unnecessary light spill);
- LED Luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- A warm white spectrum (ideally <2700 Kelvin, max 4000 Kelvin) should be adopted to reduce the blue light component;
- Lighting will be positioned to avoid illuminating suitable foraging, commuting and nesting habitat within edge habitat adjacent to the Site and the ponds; and
- The times during which lighting is on should be limited to provide dark periods (e.g. between 23.00 and 05.00).

5.7 General Good Practice

During the works the following good practice measures, endorsed by NatureScot are recommended (NatureScot, 2020b):

- Wherever possible works should be undertaken during daylight hours, but avoiding the two hours from sunrise and the two hours before sunset (this can be reduced to one hour from November to February, inclusive, when daylight hours are limited);

- Cover/fence-off any excavations, or provide escape ramps at the end of the working day to avoid animals becoming trapped (if an animal does become trapped, advice should be sought immediately from NatureScot);
- Cap any temporarily exposed pipe systems out of work hours;
- Clean fuel/chemical spillages immediately with spill kits and dispose of waste materials correctly; and
- Avoid unnecessary disturbance to habitats by minimising the extent of ground clearance, as far as possible.

5.8 Biodiversity Enhancement Measures

A Biodiversity Enhancement Plan (BEP) will be produced for the development in consultation with the local authority ecologist, secured under an appropriately worded planning condition. The following guidance document should be consulted:

- Developing with Nature Guidance: Guidance on securing positive effects for biodiversity from local development to support NPF4 policy 3(c) (NatureScot, 2023).

Examples of suitable biodiversity enhancement measures to maximise plant and species diversity within the Site are detailed below.

5.8.1 Boundary Features

It is recommended that, where practicable, species-rich hedgerows and / or hedgerows with trees are planted as boundary features within the Site, to provide suitable breeding habitat for birds. This could be achieved by planting native and beneficial plant species and restricting maintenance within the breeding season (March – August, inclusive).

The following recommendations apply to areas of new hedgerow and tree planting:

- The mix should include a minimum of five locally native species;
- Suitable hedgerow species would include gorse (*Ulex europeaus*), guelder rose (*Viburnum opulus*), hazel (*Corylus avellana*) and hawthorn (*Crataegus monogyna*);
- Suitable tree species would include silver birch (*Betula pendula*), pedunculate oak (*Quercus robur*), Scots pine (*Pinus sylvestris*), wild cherry (*Prunus avium*) and rowan (*Sorbus aucuparia*);
- If possible, planting will be undertaken between November and March when plants are dormant and avoiding heavy frost;
- To enable newly planted areas of hedgerow and tree planting to become established, a management regime for this habitat type must be detailed within a Landscape and Habitat Management Plan (LHMP); and
- Whips must be of local or regional provenance.

5.8.2 Species-rich grassland

Species-rich neutral grassland areas should be incorporated within the landscape design to support pollinator species. The following measures should be taken to maintain and increase species diversity within wildflower grassland and amenity grassland areas:

- Seeds must be of local or regional provenance;
- Suitable seed mixes for wildflower meadow creation (depending on the ground conditions) would be the Highland Grassland mix and Wet Meadow mix from Scotia Seeds (www.scotiaseeds.co.uk);
- Within areas of amenity grassland a seed mix should be used which contains low growing wildflower species that are tolerant to being regularly cut. A suitable mix for this purpose is the Flowering Lawn Mix available from Scotia Seeds (www.scotiaseeds.co.uk);

- The grassland management should aim to encourage a range of plant species with different flowering seasons, to increase the abundance and diversity of invertebrates within the Site;
- To enable newly seeded areas of wildflower grassland to become established, a management regime for this habitat type must be detailed within a LHMP; and
- Use of artificial pesticides and herbicides should be limited. If necessary, aggressively spreading weeds should be spot-treated or hand-pulled.

5.8.3 Bat and Bird Boxes

Bat and bird boxes are to be installed within the plantation to the west of the Site to provide roosting and nesting opportunities. These should be sited within mature trees and where possible incorporated within the substation building. The type of boxes chosen should aim to encourage locally important bird species. The type of bat boxes chosen should be suitable for bat species likely to be active within and adjacent to the Site, including common pipistrelle and soprano pipistrelle.

5.8.4 Bee boxes

Bee boxes are to be installed within the Site adjacent to areas of existing grassland and any areas of species-rich grassland within the landscape design. The boxes will support tunnel nesting insects including solitary bees, hunting wasps and large number of invertebrate species which will use the boxes for shelter and hibernation.

5.8.5 Fencing

Fencing is to be designed to allow continued passage of mammals, such as hedgehog, through provision of gaps or tunnels in the base of fencing.

5.9 Repeat Surveys

The survey data in the present report are considered valid for 18 months. Should works not commence before November 2024, it is recommended that an update survey is undertaken, as per the methods section of this report, to ensure there has been no significant change to the baseline outlined within this report.

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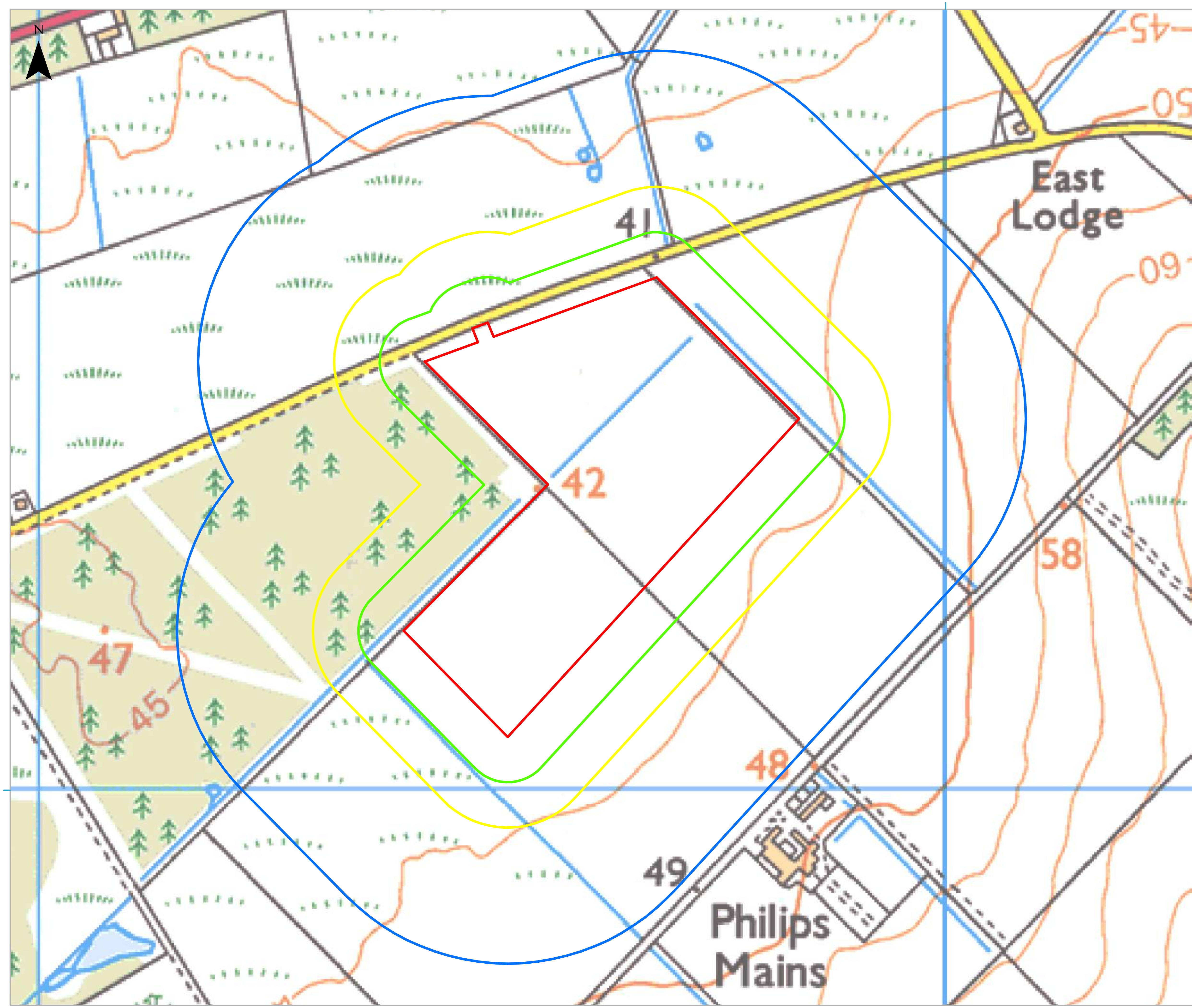
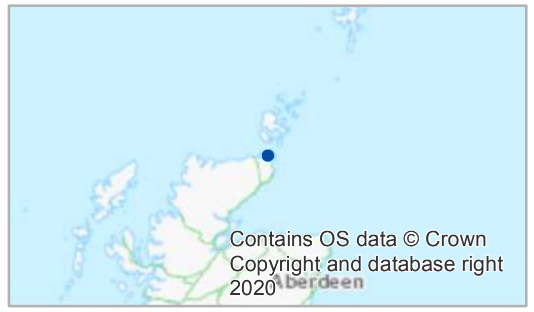
Figures

Figure 1: Location Plan and Survey Buffers



KEY

- Red Line Boundary
- 50 m buffer (Bat PRA)
- 100m buffer (UKHab and Badger)
- 250 m buffer (otter and GWDTE)



Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions go here>

0 30 60 120 180 240 Meters

1:4,000

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Mey BESS
Preliminary Ecological Appraisal

Figure 1
Site Location and Study Areas

Date:	Lead:	Review:	Version:
30/10/2023	JD	AH	1.0

Figure 2: Extended UKHab Survey Results

330000

N

15, 102, 128
30
r19 - 50
30
14
r19 - 50
10, 14, 16, 801
10, 14, 16, 801
15, 102, 128
2
r19 - 50
u1e - 114
801
11
800
10, 14, 16, 801
102
r19 - 50
30
20
12
102
8
30
101, 102, 114
15
r19 - 50
9
6
18
7
4
r19 - 50
16
30
15
102, 114
1
14, 102, 114
15
r19 - 50
29, 57
17
10
5
30
r19 - 50
r19 - 50
15, 102, 128
19
13

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

972000

KEY

- Target Note
- Red Line Boundary
- 100m buffer
- Stock Fence
- Dry Stone Wall
- Ditch
- c1c5 - winter stubble
- f1a6 - degraded blanket bog
- g1d - other acid grassland
- g3c - other neutral grassland
- g4 - modified grassland
- h3e - gorse scrub
- u1e - built linear features
- w2c - other coniferous woodland

Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions go here>

0 15 30 60 90 120 150
Meters

1:3,000

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Preliminary Ecological Appraisal

Figure 2
Extended UKHab Results

Date:	Lead:	Review:	Version:
30/10/2023	JD	AH	1.0

Figure 3: Peat Soils

330000.000000

East Lodge

Philips Mains

972000.000000

KEY

- Red Line Boundary
- 250 m buffer (GWDTE)

Carbon and Peatland (Scottish Natural Heritage, 2016)

- Dystrophic blanket peat
- Noncalcareous gleys

Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions go here>

0 20 40 80 120 160 200
Meters

1:4,000

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Preliminary Ecological Appraisal

Figure 3
Peat

Date:	Lead:	Review:	Version:
30/10/2023	JD	AH	1.0

Figure 4: April Breeding Bird Survey Results

KEY

- Red Line Boundary
- 500 m buffer
- CH Chaffinch singing
- CU Curlew calling
- CU Curlew in flight
- (CU) Curlew singing
- D. Dunnock
- L. Lapwing
- MA Mallard in flight
- MP Meadow pipit calling
- (MP) Meadow pipit singing
- PW Pied wagtail calling
- R. Robin
- (R) Robin singing
- (S) Skylark singing
- SN Snipe calling
- SN Snipe in flight
- (Y) Yellowhammer singing

Coordinate System: British National Grid
Projection: Transverse Mercator

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; Historic Environment Scotland and Ordnance Survey data ©

0 37.5 75 150 225 300
Meters

1:8,000

ITPENERGISED

Mey BESS
Preliminary Ecological Appraisal

Figure 4
April BBS Results

Date:	Lead:	Review:	Version:
30/10/2023	JD	AH	1.0

Annexes

Annex A: Species Specific Legislation

Bats

Bats are protected as European Protected Species under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). For any wild bat species, it is an offence to deliberately or recklessly:

- Capture, injure or kill a bat;
- Harass a bat or group of bats;
- Disturb a bat in a roost (any structure or place it uses for shelter or protection);
- Disturb a bat while it is rearing or otherwise caring for its young;
- Obstruct access to a bat roost or otherwise deny an animal use of a roost;
- Disturb a bat in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- Disturb a bat in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; and
- Disturb a bat while it is migrating or hibernating.

It is also an offence to:

- Damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly); and
- Keep, transport, sell or exchange, or offer for sale or exchange any wild bat (or any part or derivative of one) obtained after 10 June 1994.

It is a strict liability offence to damage or destroy a bat roost. A bat roost is protected at all times irrespective as to whether any bats are using the roost at a given time. If the work proposed is to affect bats or their roosts, an EPS licence, issued by the licensing authority NatureScot under Regulation 44 of the Habitats Regulations will be required in order to permit an otherwise illegal activity.

Badger

Badgers and their setts are protected under the Protection of Badgers Act 1992, as amended by the Wildlife and Natural Environment (Scotland) Act 2011. Under this legislation it is an offence to intentionally or recklessly:

- Kill, injure, take, possess or cruelly ill-treat a badger or attempt to do so;
- Interfere with a sett by damaging or destroying it;
- Obstruct access to a badger sett;
- Disturb a badger whilst it is occupying a sett;
- Cause or allow a dog to enter a sett;
- Sell a live badger, or offer one for sale, or possess a live badger; and
- Be in the possession, or control of, a dead badger or anything derived from a dead badger.

Under the Protection of Badgers Act 1992, a badger sett is defined as 'any structure or place which displays signs indicating current use by a badger'. Following NatureScot guidance, in the absence of any case law to define current use, the presence of field signs such as bedding, fresh spoil heaps, signs of recent digging, hair, latrines, or footprints in or around the potential sett or evidence of badgers entering or exiting the structure or place in question would indicate current use of the structure / place by a badger (SNH, 2018). Where a

possible sett has no immediate evidence of current use, and is to be impacted by works, the structure should be actively monitored for a minimum of two weeks.

This legislation means that badgers are fully protected in Scotland, and that any planned activity, which may affect them, requires prior consultation with the appropriate statutory nature conservation organisation (i.e. NatureScot). Under Section 10 (1) of The Protection of Badgers Act 1992, licences may be granted by NatureScot for certain purposes that would otherwise be illegal.

Red squirrel

Red squirrels and their dreys (resting places) receive full protection under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally or recklessly:

- Kill, injure or take a red squirrel;
- Damage, destroy or obstruct access to a drey or any other structure or place which a red squirrel uses for shelter or protection; and
- Disturb a red squirrel when it is occupying a structure or place for shelter or protection.

It is also an offence to possess or control, sell or offer for sale, or possess or transport for the purpose of sale any living or dead red squirrel or any derivative of such an animal.

It is an offence to release a grey squirrel into the wild.

Knowingly causing or permitting any of the above acts to be carried out is also an offence.

Reptiles (common lizard, slow-worm and adder)

Under the Wildlife and Countryside Act 1981 (as amended), these species are protected against:

- Intentional or reckless killing and injury; and
- Trade – i.e. sale, barter, exchange, transport for sale, or advertise for sale or to buy.

It is not an offence to possess these species.

Nesting birds

All breeding wild birds are protected by the Wildlife and Countryside Act (WCA) 1981 (as amended) and the Nature Conservation (Scotland) Act 2004 (as amended), whereby it is illegal to:

- Intentionally or recklessly kill, injure or take any wild bird;
- Damage or destroy or otherwise interfere with the nest of any wild bird; and
- To take or destroy an egg of any wild bird.

Certain species are listed on Schedule 1 of the WCA 1981 (as amended) and these species are additionally protected against intentional or reckless disturbance on or near an active nest. The Wildlife and Natural Environment (Scotland) (WANE) Act 2011 (as amended) affords further protection to particular Schedule 1 species by protecting their nests out with the breeding season.

Annex B: Target Notes

Table B1: Plants and habitats

Target Note (TN)	Grid Reference	Description and Photograph
1	ND 29771 72328	  Eastern area of the site is an arable stubble field, that is currently set aside and used for grazing sheep.
2	ND 29494 72568	  The habitat to the north of the road, within the wider Study Area, is a mosaic of acid grassland and degraded blanket bog. Species recorded in the grassland included sweet-vernal grass, tufted hair-grass, mat grass, yorkshire-fog, creeping bent, ribwort

Target Note (TN)	Grid Reference	Description and Photograph
		plantain, common dog-violet, common daisy and white clover. In areas soft-rush was dominant. As the grassland transitions to blanket bog, heather and hare's-tail cotton grass became common. Other species recorded included deergrass, carnation sedge, tormentil, heath woodrush and common lousewort. There was a lack of *Sphagnum* mosses, likely due to grazing pressures and drainage, though areas of *Shagnum* were present within the woodland plantation to the south of the road.
3	ND 29627 72564	  Road to the north of the Site. Drainage ditches run on either side of the road, colonised by gorse scrub in sections. Verge vegetation included ground elder, common hogweed, ribwort plantain, cow parsley, tufted hair-grass, cock's-foot, false oat-grass, soft-rush, dandelion, silverweed, *Equisetum* sp., bracken, red campion, cuckooflower, lady's mantle, meadowsweet, lesser celandine and tormentil. Areas of marsh marigold in ditch. Bramble and raspberry also recorded.

Target Note (TN)	Grid Reference	Description and Photograph
4	ND 29548 72398	 Modified grassland within the Site with broad-leaved dock throughout the sward.
5	ND 29531 72270	  Grassland dominated by Yorkshire-fog, soft-rush and tufted hair-grass to the south of the plantation within the south-western reaches of the Site. Grazed by sheep. Other species recorded within the sward were spear thistle, cuckooflower and creeping buttercup.

Target Note (TN)	Grid Reference	Description and Photograph
6	ND 29940 72408	 Modified grassland field to the east of the Site. Grazed by cattle and sheep at the time of the survey.
7	ND 29468 72409	 Sitka spruce plantation bordered by an area of scrub including gorse, scattered rowan. Bracken, wood sorrel and soft-rush recorded in the understorey.
8	ND 29724 72495	

Target Note (TN)	Grid Reference	Description and Photograph
		 Drainage channel within Site culverted at eastern and western ends. Colonised by gorse scrub. Similar species composition to the drainage ditch that borders the eastern site boundary, with some common reed also recorded. Pile of boulders at eastern end would provide suitable refugia habitat for amphibians and reptiles.
9	ND 29849 72397	 

Target Note (TN)	Grid Reference	Description and Photograph
		 Vegetated ditch between fields. At the southern end there are no areas of open channel and the ditch is completely vegetated by species including broad-leaved dock, creeping buttercup, creeping thistle, cock's-foot and soft-rush. Towards the northern end of the ditch there are areas of standing water, species recorded included *Equisetum* sp., cuckooflower, water-cress, sheep's sorrel, Yorkshire-fog, cleavers, spear thistle, pondweed sp., stitchwort sp., soft-rush and scattered gorse.
10	ND 29518 72305	 Drainage channel within plantation.
11	ND 29532 72523	 Northern boundary of the Site including a dry stone wall. Field margins includes broadleaved dock, soft-rush, cleavers, spear thistle and creeping buttercup.

Target Note (TN)	Grid Reference	Description and Photograph
12	ND 29389 72441	 Drainage channels within Sitka plantation woodland. Ground conditions are wet, with exposed peat and areas of *Sphagnum* towards the north of the plantation.
13	ND 29833 71951	

Target Note (TN)	Grid Reference	Description and Photograph
		 Phillips Mains Steading to the south of the Site. Starling, swallow and jackdaw nesting within the barns. Barn owl feather found within the barn indicating barn owl may be nesting or roosting within the barns.
14	ND 29691 72596	 Drainage ditch approximately 40 m to the north-east of the Site. Steep, vegetated banks and slow flowing moving water provide suitable habitat for water vole however no evidence of water vole presence was found.
15	ND 29430 72317	  Series of burrows along woodland ride, some containing squirrel feeding remains. Burrows enter both side of ride.

Target Note (TN)	Grid Reference	Description and Photograph
16	ND 29429 72395	 Scat within woodland, similar in morphology to pine marten or fox.
17	ND 29485 72288	 Scat containing sheep wool, likely fox.
18	ND 29439 72404	 Mammal burrow in woodland with a few entrances. Likely rabbit, potential to be used by pine marten though not a typical den feature and no supporting field sign.

Target Note (TN)	Grid Reference	Description and Photograph
19	ND 29299 72094	 Fox earth at south edge of plantation. Feeding remains including crow and lamb within burrow entrances.
20	ND 29332 72438	  Large number of pellets under tree along northern edge of plantation.

Annex C: Plant Species List

Common Name	Scientific Name
Grasses, sedges and rushes	
Carnation sedge	*Carex panicea*
Cock's-foot	*Dactylis glomerata*
Common reed	*Phragmites australis*
Creeping bent	*Agrostis stolonifera*
Deergrass	*Trichophorum cespitosum*
False oat-grass	*Arrhenatherum elatius*
Mat grass	*Nardus stricta*
Purple moor-grass	*Molinia caerulae*
Soft-rush	*Juncus effusus*
Sweet vernal-grass	*Anthoxanthum odoratum*
Tufted hair-grass	*Deschampsia cespitosa*
Yorkshire-fog	*Holcus lanatus*
Other herbaceous species	
Stitchwort	*Stellaria sp.*
Bracken	*Pteridium aquilinum*
Broad-leaved dock	*Rumex obtusifolius*
Cleavers	*Galium sp.*
Common hogweed	*Heracleum sphondylium*
Common lousewort	*Pedicularis sylvaticus*
Cow parsley	*Anthriscus sylvestris*
Creeping buttercup	*Ranunculus repens*
Creeping thistle	*Cirsium arvense*
Cuckooflower	*Cardamine pratensis*
Daisy	*Bellis perennis*
Dandelion	*Taraxacum agg.*
Dog-violet	*Viola riviniana*
Horsetail	*Equisetum sp.*
Ground elder	*Aegopodium podagraria*
Hare's-tail cotton grass	*Eriphorum vaginatum*
Heather	*Calluna vulgaris*
Heath woodrush	*Luzula multiflora*
Lady's-mantle	*Alchemilla sp.*
Lesser celandine	*Ranunculus ficaria*

Common Name	Scientific Name
Marsh marigold	*Caltha palustris*
Meadowsweet	*Filipendula ulmaria*
Pondweed	Potamogeton sp.
Red campion	*Silene dioica*
Ribwort plantain	*Plantago lanceolata*
Sheep's sorrel	*Rumex acetosa*
Silverweed	*Potentilla anserina*
Spear thistle	*Cirsium vulgare*
Tormentil	*Potentilla erecta*
White clover	*Trifolium repens*
Wood sorrel	*Oxalis acetosella*
Trees and Shrubs	
Bramble	*Rubus fruticosus* agg.
Gorse	*Ulex europaeus*
Raspberry	*Rubus idaeus*
Rowan	*Sorbus acuparia*
Sitka spruce	*Picea sitchensis*

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Appendix 3 – Habitat Regulations Appraisal

Mey BESS

Habitat Regulations Appraisal

Client:	Simec Atlantis Energy
Project/Proposal No:	6377
Version:	1.0
Date:	2023-11-08

Document Information

Project Name:	Mey BESS
Document Title:	Habitat Regulations Appraisal
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Revision History

Version	Date	Authored	Reviewed	Approved	Notes
1.0	2023-11-08	JD	AH	AH	Client issue

Contents

1. Introduction

1.1 Overview

ITPEnergised were commissioned by Simec Atlantis Energy to complete a shadow Habitats Regulations Appraisal (HRA) for a proposed battery energy storage system (BESS) development located at Phillips Mains, Caithness, central OS gird reference ND 29621 72440 (the 'Site'). The Site lies within 5 km of the Caithness Lochs Special Protection Area (SPA), protected for its wintering populations of Greenland white-fronted goose (*Anser albifrons flavirostris*), greylag goose (*Anser anser*) and whooper swan (*Cygnus cygnus).* Due to the foraging range of these species there is potential connectivity between the Site and the SPA. There are three additional European sites that lie within 20km of the Site.

NatureScot have requested (see consultation response in Section 1.4) a desk-based HRA Stage 1 Screening exercise be completed to consider the potential for disturbance to and/or displacement of foraging SPA geese and swans. This has identified the requirement for a Stage 2 Appropriate Assessment, which has been completed within this document.

This report provides information to assist the competent authority in their consideration of whether the proposed works will have likely significant effects on European sites, and in ascertaining any adverse effects on their integrity.

1.2 Site Description

The Site extends to approximately 10.65 ha and lies to the north of Phillips Mains Farm, near Mey, Caithness. The habitats within the Site are arable and improved grassland used for crop production and grazing. A coniferous woodland plantation borders the western boundary of the Site. An unnamed road borders the northern boundary of the Site and beyond this is a mosaic of acid grassland and degraded blanket bog used for grazing sheep. Figure 1 shows the Site location and an indicative site layout is provided in Annex A.

1.3 Proposed Development

The development is anticipated to comprise the following (shown in Annex A):

- Laying out of containerised battery units (around 2.6 metres high) along with associated inverters, switchgear units, closed loop cooling units, control units and associated electrical infrastructure mounted on concrete piers;
- Laying out of containerised substation units and associated electrical infrastructure mounted on concrete piers;
- Transformers within bunded compounds;
- Auxiliary power supplies for the batteries, control systems mounted on concrete piers;
- Security palisade fence around the BESS substation and battery compound with access gates to the compound entrance from the road network;
- Erection of CCTV cameras;
- Laying out of a hard surfaced site access into the BESS substation and battery compound from the local road network. Car parking bays. Uncompacted gravel as a surface cover between the containerised units and equipment. Construction laydown area;
- An attenuation pond; and
- Landscaping (including Biodiversity Net Gain).

1.4 NatureScot Consultation Response

In their pre-application response dated 16.05.2023 (ref: 23/00635/PREMAJ), NatureScot have advised the following:

Designated Sites

NatureScot advises that the proposal has connectivity with the Caithness Lochs Special Protection Area (SPA) and lies close to Phillips Mains Mire Site of Special Scientific Interest (SSSI).

Caithness Lochs SPA

The proposal lies within foraging range of this SPA, protected for its wintering populations of Greenland white-fronted geese, greylag geese and whooper swans. Both whooper swans and Greenland white-fronted geese are known to feed in this area. In particular, Greenland white-fronted geese are site faithful, meaning they return to the same roosting and feeding sites each year. Given their small population size and restricted feeding regime, any impacts to this species could be significant. NatureScot therefore advises that any future planning application should consider the potential for disturbance and/or displacement to feeding SPA geese and swans. Such an assessment could be informed by currently available information, including information gathered for nearby developments (such as the adjacent switching station that this proposal will connect to and the adjacent Hollandmey Wind Farm). The Applicant may also wish to consider the following sources of information to inform their assessment:

- *NatureScot Commissioned Report 523b – Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13;*
- *Greenland white-fronted geese: Land use and conservation at small wintering sites in Scotland; and*
- *Available information held by RSPB.*

Based on the available information, it is NatureScot's initial view that any impacts to the SPA could be mitigated. However, this will need to be assessed as part of a Habitats Regulations Appraisal and any future planning application should provide sufficient detail to inform such an assessment.

Additional advice relating to protected sites

NatureScot highlights that the comments provided are given without prejudice to a full and detailed consideration of the impacts of the proposal, should it be submitted as a formal application. Furthermore, should the proposed location or nature of the proposal significantly change, NatureScot advises that connectivity with other protected sites may need to be considered within the future planning application (e.g. with the Caithness & Sutherland Peatlands Special Area of Conservation (SAC) and SPA).

1.5 Report Purpose

This report presents the Proposed Development HRA and will assess the potential for 'likely significant effects' (LSE) to European sites within the Zone of Influence of the Proposed Development. Where there is credible evidence that there is no risk that the Proposed Development activities are 'likely to have a significant effect' on specific features of a European or Ramsar site by undermining its conservation objective(s), these features have been screened out and will not require further assessment. Where such determination has been concluded, the justification is noted within the relevant receptor chapters of the report.

If a credible impact pathway is identified, or there is reasonable doubt whether the Proposed Development will or will not result in LSE, in view of the conservation objectives, then the respective site and feature has been screened into the HRA to be taken forward to the next stage, Appropriate Assessment (AA).

2. Habitat Regulations Appraisal Process

2.1 Legislation

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ("The Habitats Directive"), provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species through the establishment and conservation of an EU-wide network of sites. This network is known as Natura 2000 and is a European ecological network of special areas of importance for nature conservation, composed of sites hosting rare and vulnerable habitats and species. This network is designed to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.

The UK has designated a number of sites of nature conservation importance which form part of a network of Natura 2000 Sites. Natura 2000 Sites relating to birds as qualifying features comprise Special Protection Areas (SPAs), while other non-avian species and habitats are designated through Special Areas of Conservation (SACs). In addition, as clarified by paragraphs 207 to 211 of the Scottish Planning Policy 2014, wetlands of international importance designated under the Ramsar Convention (Ramsar site wetlands) are also treated as designated Natura 2000 Sites and are therefore also considered in HRAs.

The procedures that must be followed when considering developments affecting Natura 2000 Sites are set out in Article 6 of the Habitats Directive. In Scotland, this process is implemented through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) ("The Habitats Regulations").

Habitats Directive Article 6(3) set out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of European sites (Annex 1.1). Article 6(3) establishes the requirement for AA:

> "Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

Both EU and national guidance exists in relation to Member States fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in this report to inform the Article 6 assessments has had regard to the following guidance and legislation:

- Guidance:
  - Scottish Natural Heritage (now NatureScot) (2018). Natura sites and the Habitats Regulations: How to consider proposals affecting SACs and SPAs in Scotland. The essential quick guide.
- Legislation:
  - Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (also known as the 'Habitats Directive').
  - Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, codified version (also known as the 'Birds Directive').
  - The European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

2.2 Assessment Methodology

2.2.1 Overview

It is incumbent on any public body (referred to as a competent authority within the Habitats Regulations) to carry out a HRA where they are proposing to carry out a project, implement a plan or authorise another party to carry out a plan or project. Competent authorities are required to record the process undertaken, ensuring that there will be no adverse effects on the integrity of any Natura 2000 site (referred to as 'European sites', hereafter) as a result of a plan or project whether alone or in combination with other plans or projects.

2.2.2 Defining the zone of influence

The Habitats Regulations are applicable to the proposal to create a BESS on Site, as European Sites (SPAs and SACs) are present within a wider zone of influence (ZoI). The ZoI has been identified as 5 km from the Site boundary, based on professional judgement and the nature of the project being small scale, with only low-level activities proposed on Site following the construction phase. In addition, any SPAs with goose or chough as qualifying features within 20km and 40km of the Site, respectively, would have been considered for this assessment, as these species are known to fly up to these distances. However, with no chough present in north-east of Scotland, only sites within 20km of the Site have been considered in this assessment (Figure 2).

2.2.3 Assessment Stages

The European Commission has developed guidance in relation to Articles 6(3) and 6(4) of the Habitats Directive. The assessment methodology below has taken this guidance into account to meet the requirements of the Habitats Directive.

2.2.4 Stage 1 - Screening

This stage identifies the likely effects of the Proposed Development on the qualifying features (species and habitats) of any European Site, either alone or in combination with other plans or projects. Specifically, this stage considers whether these effects are likely to be significant with regard to the conservation objectives of the site. The Proposed Development will require 'Appropriate Assessment' (Stage 2) if it is considered likely to have a significant effect on a European site, i.e. where any aspect of the Proposed Development risks an effect on any European site which undermines the site's conservation objectives.

2.2.5 Stage 2 – Appropriate Assessment

If it is considered that a plan or project is likely to have a significant effect on a European site at Stage 1, the requirements of Stage 2 are triggered. This stage considers the effects of the Proposed Development on the integrity of a European site, alone or in combination with other plans or projects. The assessment should consider the implications for the European site in view of the site's conservation objectives, in the absence of mitigation, including embedded mitigation. If adverse effects are identified or may arise, this assessment should consider measures to mitigate the identified effects.

2.2.6 Stage 3 - Assessment of alternative solutions

Where adverse impacts on the European Site cannot be ruled out through mitigation at Stage 2, this next stage examines alternative ways of achieving the objectives of the plan or project that avoid adverse impacts on the integrity of the European Sites.

2.2.7 Stage 4 - Assessment of compensatory measures

Where no alternative solution exists and adverse impacts remain, an assessment of compensatory measures must be undertaken, but only where the plan or project is considered necessary for imperative reasons of overriding public interest (IROPI). Within these various stages the Habitats Directive promotes the adoption of a hierarchy of avoidance followed by mitigation and ultimately compensation.

2.3 Data to inform the assessment

The following sections describe the field surveys undertaken for the Proposed Development, undertaken along with a desk study compiling data from up to a 5 km radius. All surveys were undertaken by a suitably qualified and experienced ecologist.

2.3.1 Ecology Desk Study

As part of a Preliminary Ecological Appraisal (PEA), an ecological desk study was completed using a range of publicly available information sources to provide an understanding of the ecological context of the Site and surrounding area (ITPEnergised, 2023a). The desk study was extended to include wintering records of the qualifying interest species of Caithness Lochs SPA and Ramsar within the Site and surrounding area to inform this HRA. Data sources consulted included the local planning portal, Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and relevant research publications. Relevant desk study data is included and reviewed within this document.

2.3.2 Ecology Surveys

An extended UK Habitat (UKHab) Classification survey was undertaken on 18th May 2023 of the Site and a 100 m buffer (extended to 250 m when considering potential groundwater-dependent terrestrial ecosystems which could be vulnerable to the Proposed Development). The survey included targeted surveys for bats, badger, otter and water vole.

A breeding bird survey (BBS) was completed on 28th April 2023, the results of the survey visit have been included within the PEA survey report. The full details of survey methodologies and results are contained within the Phillips Mains PEA (ITPEnergised, 2023b).

3. European Site Identification

All European sites within 5 km of the Site were identified for further consideration (extended to 20km for site with geese as a designating feature), based on the nature of the project and professional judgment.

A total of four European Sites (with a combined seven European designations) are present within the search area, including four SPAs, two Ramsar's and one SAC (shown in Figure 2). They are the following:

- Caithness Lochs Ramsar / SPA;
- Caithness and Sutherland Peatlands SAC / Ramsar / SPA;
- North Caithness Cliffs SPA; and
- Switha SPA.

The details of these sites are summarised in Tables 1 to 7.

Table 1: Caithness Lochs SPA

Caithness Lochs SPA	
Distance & direction from Site	2.2 km NW
Size	1,378 ha
Grid reference	➢ Broubster Leans ND 035611 ➢ Loch of Mey ND 271735 ➢ Loch Calder ND 072601 ➢ Loch Heilen ND 255684

Caithness Lochs SPA	
	➢ Loch Scarmclate ND189596 ➢ Loch Watten ND 230560 ➢ Loch of Wester ND 325592
Component SSSI	The potential SPA comprises the entire area of the ➢ Broubster Leans SSSI; ➢ Loch of Mey SSSI; ➢ Loch Calder SSSI; ➢ Loch Heilen SSSI; ➢ Loch Scarmclate SSSI; ➢ Loch Watten SSSI; and ➢ Loch of Wester SSSI.
General description	The Caithness Lochs Special Protection Area consists of a suite of six lochs and a mire (Broubster Leans) in Caithness. The lochs cover a range of types from oligotrophic to eutrophic and support a wide diversity of aquatic and wetland vegetation.
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	The site qualifies under Article 4.1 by regularly supporting, in winter, populations of European importance of the Annex 1 species: ➢ Whooper swan (*Cygnus cygnus*) (1993/94-1997/98 winter peak mean of 240 representing 4% of GB and 1% of Icelandic population); and ➢ Greenland white-fronted goose (*Anser albifrons flavirostris*) (1993/94-97/98 winter peak mean of 440 representing 3% of GB and 1% of Greenlandic population). The site lies at the northern limit of these species' wintering distributions and is important to the maintenance of the species' wintering ranges. The site qualifies under Article 4.2 by regularly supporting, in winter, a population of European importance of: ➢ Greylag goose (*Anser anser*) (1993/94-1997/98 winter peak mean of 7,190 representing 7% of the GB and Icelandic populations). The site lies towards the northern limit of this species' wintering distribution and is important to the maintenance of the species' wintering range.
Published Conservation Objectives	To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term:

Caithness Lochs SPA	
	➢ Population of the species as a viable component of the site; ➢ Distribution of the species within site; ➢ Distribution and extent of habitats supporting the species; ➢ Structure, function and supporting processes of habitats supporting the species; and ➢ No significant disturbance of the species.
Negative pressures	Agricultural operations (Greenland white-fronted goose only).

Table 2: Caithness Lochs Ramsar

Caithness Lochs Ramsar	
Distance & direction from Site	2.2 km NW
Size	1381.19 Ha
Grid reference	As Caithness Lochs SPA
Component SSSI	As Caithness Lochs SPA
General description	Caithness Lochs Ramsar site consists of six lochs and a mire, Broubster Leans. The lochs range in type from oligotrophic to eutrophic and support a wide diversity of aquatic and wetland vegetation.
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	Caithness Lochs Ramsar site qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds (1993/94 to 1997/98): ➢ Whooper swan (winter peak mean of 240 individuals, 1% of the Iceland/UK & Ireland biogeographic population). ➢ Greenland white-fronted goose (winter peak mean of 440 individuals, 1% of the total biogeographic population), and ➢ Greylag goose (winter peak mean of 7,190 individuals, 7% of the Iceland/UK/Ireland biogeographic population).
Published Conservation Objectives	Not available.
Negative pressures	As Caithness Lochs SPA.

Table 3: Caithness and Sutherland Peatlands SAC

Caithness and Sutherland Peatlands SAC	
Distance & direction from Site	3.6 km SSE
Size	143561.47 ha

Caithness and Sutherland Peatlands SAC	
Grid reference	Various – across Caithness and Sutherland.
Component SSSI	Caithness and Sutherland Peatlands Special Area of Conservation (SAC) has the same boundary as 36 of the 39 component Sites of Special Scientific Interest (SSSIs) and overlaps a further three. Within 5km of the site are the following:- • West Halladale SSSI • East Halladale SSSI • Lochan Buidhe Mires SSSI For full details of the remaining SSSI component sites please see (https://sitelink.nature.scot/site/8218#overview).
General description	• Inland water bodies (Standing water, Running water) (3%) • Bogs, Marshes, Water fringed vegetation, Fens (78.5%) • Heath, Scrub, *Maquis* and *Garrigue, Phygrana* (18%) • Dry grassland, Steppes (0.5%)
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	Annex I habitats (primary qualifying features): • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojunctetea* • Natural dystrophic lakes and ponds • Blanket bogs Annex I habitats (present but not primary features): • Northern Atlantic wet heaths with *Erica tetralix* • Transition mires and quaking bogs • Depressions on peat substrates of the *Rhynchosporion* Annex II species (primary qualifying features): • Otter • Marsh saxifrage (*Saxifraga hirculus*)
Published Conservation Objectives	Overarching Conservation Objectives for all habitat features of Caithness and Sutherland Peatlands SAC: • To ensure that the qualifying features of Caithness and Sutherland Peatlands SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.

Caithness and Sutherland Peatlands SAC	
	• To ensure that the integrity of Caithness and Sutherland Peatlands SAC is restored by meeting objectives 2a, 2b and 2c for all qualifying features. • 2a. Maintain the extent and distribution of the 'clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels' habitat within the site. • 2b. Restore the structure, function and supporting processes of the 'clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels' habitat. • 2c. Restore the distribution and viability of typical species of the 'clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels' habitat. For reasons of brevity and due to the size and complexity of the protected site further details of the conservation objectives are not displayed in this document. For full details please see (https://sitelink.nature.scot/site/8218#overview).
Negative pressures	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojunctetea • Forestry operations • Water quality Natural dystrophic lakes and ponds • Forestry operations Blanket bogs • Burning • Game / fisheries management • Invasive species • Trampling Northern Atlantic wet heaths with *Erica tetralix* • Burning • Game / fisheries management • Trampling Transition mires and quaking bogs • None. Depressions on peat substrates of the *Rhynchosporion* • Burning

Caithness and Sutherland Peatlands SAC	
	• Game / fisheries management • Trampling Otter • Forestry operations • Natural Events Marsh saxifrage • None.

Table 4: Caithness and Sutherland Peatlands SPA

Caithness and Sutherland Peatlands SPA	
Distance & direction from Site	3.6 km SSE
Size	143561.47 ha
Grid reference	Various – across Caithness and Sutherland.
Component SSSI	Caithness and Sutherland Peatlands Special Area of Conservation (SPA) has the same boundary as 36 of the 39 component Sites of Special Scientific Interest (SSSIs) and overlaps a further three. Within 5km of the site are the following: • West Halladale SSSI; • East Halladale SSSI; and • Lochan Buidhe Mires SSSI. For full details of the remaining SSSI component sites please see (https://sitelink.nature.scot/site/8218#overview).
General description	The Caithness and Sutherland Peatlands SPA contains a large proportion of the Caithness and Sutherland peatlands which form the largest and most intact area of blanket bog in Britain. Blanket bog is rare in world terms and Britain has a significant proportion of the total world resource. These peatlands, and the surrounding moorland and open water, are of international importance for conservation because they support a diverse range of rare and unusual breeding birds.
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive during the breeding season: • Black-throated diver (*Gavia arctica*) - 26 pairs representing at least 16.3% of the breeding population in Great Britain (11 year mean, 1986-1996);

Caithness and Sutherland Peatlands SPA	
	• Golden eagle (*Aquila chrysaetos*) - 5 pairs representing at least 1.3% of the breeding population in Great Britain (Count, as at 1992); • Golden plover *(Pluvialis apricaria*) - 1,064 pairs representing at least 4.7% of the breeding population in Great Britain (Count, as at mid-1990s); • Hen harrier (*Circus cyaneus*) - 14 pairs representing at least 2.8% of the breeding population in Great Britain (5 year mean, 1993-1997); • Merlin (*Falco columbarius*) - 54 pairs representing at least 4.2% of the breeding population in Great Britain (Count, as at early 1990s); • Red-throated diver (*Gavia stellata*) - 89 pairs representing at least 9.5% of the breeding population in Great Britain (Two year mean, 1993-1994); • Short-eared owl (*Asio flammeus*) - 30 pairs representing at least 3.0% of the breeding population in Great Britain (Count, as at mid-1990s); and • Wood sandpiper (*Tringa glareola*) - 5 pairs representing up to 50.0% of the breeding population in Great Britain (Two year mean, 1994-1995). This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species during the breeding season: • Common scoter - 27 pairs representing <0.1% of the breeding Western Siberia/Western & Northern Europe/Northwestern Africa population (1996); • Dunlin (*Calidris alpina schinzii*) - 1,860 pairs representing at least 16.9% of the breeding Baltic/UK/Ireland population (Count, as at 1994); • Greenshank (*Tringa nebularia*) - 256 pairs representing at least 0.4% of the breeding Europe/Western Africa population (1994/95); and • Wigeon (*Anas penelope*) - 43 pairs representing <0.1% of the breeding Western Siberia/Northwestern/Northeastern Europe population (1994).
Published Conservation Objectives	To avoid deterioration of the habitats of the qualifying species (listed above) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term:

Caithness and Sutherland Peatlands SPA	
	• Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Negative pressures	To be identified: • Common scoter No negative pressure: • Black-throated diver Forestry operations: • Golden plover Recreation / disturbance: • Merlin Burning: • Hen harrier, • merlin, • red-throated diver, • short-eared owl, • wigeon, • wood sandpiper. Water management: • Golden plover, • greenshank Over grazing: • Hen harrier, red-throated diver

Table 5: Caithness and Sutherland Peatlands Ramsar

Caithness and Sutherland Peatlands Ramsar	
Distance & direction from Site	3.6 km SSE
Size	143561.28 ha

Caithness and Sutherland Peatlands Ramsar	
Grid reference	Various – across Caithness and Sutherland.
Component SSSI	See Caithness and Sutherland Peatlands SAC
General description	The Caithness and Sutherland Peatlands Ramsar site is located in the north of mainland Scotland. The site comprises an extensive area of deep blanket bog and mire communities interspersed with wet heath, bog pools and lochs. Blanket bog is rare in world terms and Britain has a significant proportion of the total world resource. The Caithness and Sutherland peatlands form the largest and most intact area of this habitat in Scotland and represent the extreme northern Atlantic part of the range of variation. Associated with these peatlands, and the surrounding moorland and open water, is a diverse assemblage of breeding birds that is of international importance.
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	Caithness and Sutherland Peatlands Ramsar site qualifies under Ramsar Criterion 1by virtue of it containing a variety of wetland types: • Blanket bog, encompassing an exceptionally wide range of vegetation and surface pattern types (pool systems), some of which are unknown elsewhere. The suite of bog types ranges from those of the Caithness plain in the east, with their continental affinities, through to those of the much more oceanic west and includes both upland and lowland areas. Extensive areas of ombrotrophic (rain-fed) bog are present, where *Sphagnum* and other bog species ensure active peat accumulation. • Mire communities, including very wet mires where the surface is unstable. • Oligotrophic lochs in addition to dystrophic lochs, lochans and pools, fen communities (surrounding the lochs, lochans and pools), as well as wet heath, grassland and rivers occur in a mosaic with the blanket bog and mire communities. These provide the diversity of habitats necessary to support a wide range of wetland species. Caithness and Sutherland Peatlands Ramsar site qualifies under Ramsar Criterion 2 by supporting: • Two nationally scarce moss species, *Sphagnum lindbergii* (occurring only in Scotland in Great Britain) and S. majus. • A nationally scarce higher plant the bog orchid *Hammarbya paludosa.* • The invertebrate fauna includes the nationally rare water beetle *Oreodytes alpinus*, the entire British population of which is found in only a small number of lochs in the

Caithness and Sutherland Peatlands Ramsar	
	Caithness and Sutherland area. These lochs include Loch Gaineimh and Loch More both within the Ramsar site. • Mammals of importance include the otter (*Lutra lutra)*, which are wide ranging throughout the site. • Freshwater pearl mussel (*Margaritifera margaritifera*) occur in the River Naver SAC and the River Borgie SAC, these rivers are an integral part of the Ramsar site's blanket bog, mire and moorland system. Caithness and Sutherland Peatlands Ramsar site further qualifies under Ramsar Criterion 2 by supporting: • Red-throated diver (2006, 46 pairs, 3.5% of the GB population). • Black-throated diver (1994, 26 pairs, 15% of the GB population). • Golden plover (1993 and 1994, 1,064 pairs, 5% of the GB population). • Wood sandpiper (*Tringa glareola*) (up to 5 pairs, up to 40% of the GB population), and • Dunlin (*Calidris alpina schinzii*) (1993 and 1994, 1,860 pairs, 20% of the GB population). Caithness and Sutherland Peatlands Ramsar site also qualifies under Ramsar Criterion 4 by supporting the following waterbird species at a critical stage in their life cycles: • Wigeon (*Anas penelope*) (1993/94, at least 43 pairs, at least 10.8% of the GB population). • Common scoter (*Melanitta nigra*) (2007, at least 21 pairs, at least 40.4% of the GB population), and • Greenshank (*T. nebularia*) (2009, at least 653 pairs, at least 59.4% of the GB population).
Published Conservation Objectives	Not available.
Negative pressures	For negative pressures see SAC and SPA designations shown in Table 3 and Table 4 above.

Table 6: North Caithness Cliff SPA

North Caithness Cliff SPA	
Distance & direction from Site	3.2 km NE
Size	14628.79 Ha

North Caithness Cliff SPA	
Grid reference	ND223761
Component SSSI	The site overlaps either partly or wholly with: • Duncansby Head Site of Special Scientific Interest (SSSI); • Stroma SSSI; • Dunnet Head SSSI; Holborn Head SSSI; and • Red Point Coast SSSI. The seaward extension extends approximately 2km into the marine environment to include the seabed, water column and surface.
General description	North Caithness Cliffs SPA is of special nature conservation and scientific importance within Britain and the European Community for supporting very large populations of breeding seabirds.
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	The site qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species: • Peregrine (*Falco peregrinus*) (an estimated 6 pairs, 0.5% of the GB population and selected as one of the most suitable sites for peregrine in GB). North Caithness Cliffs SPA further qualifies under Article 4.2 by regularly supporting a population of European importance of the migratory species: • Common guillemot (*Uria aalge*) (1985 to 1987, 38,300 individuals, 1% of the North Atlantic biogeographic population). North Caithness Cliffs SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds. The site regularly supports in the period 1985 to 1987 110,000 seabirds including nationally important populations of the following species: northern fulmar (*Fulmarus glacialis*) (14,700 pairs; 3% of the GB population); black-legged kittiwake (*Rissa tridactyla*) (13,100 pairs, 3% of theGB population); common guillemot (38,300 individuals, 4% of the GB population); razorbill (*Alca torda*) (4,000 individuals, 3% of the GB population) and Atlantic puffin *(Fratercula arctica*) (2,080 pairs, 0.4% of the GB population and greater than 2,000 individuals).
Published Conservation Objectives	To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; • Distribution and extent of habitats supporting the species;

North Caithness Cliff SPA	
	• Structure, function and supporting processes of habitats supporting the species; and • No significant disturbance of the species.
Negative pressures	• Invasive species, over grazing, recreation/disturbance, water management, undergrazing, agricultural operations, trampling, burning, wildlife crime.

Table 7: Switha SPA

Switha SAC	
Distance & direction from Site	19.2 km NE
Size	57.39 Ha
Grid reference	ND 363907
Component SSSI	Switha SSSI.
General description	This is a small grassy island east of South Walls in the Orkney archipelago. The boundaries of the site follow those of the proposed Switha SSSI which includes the whole island.
Qualifying features (Article 4.1 and 4.2 Directive 79/409/EEC and Ramsar Criteria)	Switha SPA qualifies under Article 4.1 by regularly supporting an internationally important wintering population of Greenland barnacle goose (*Branta leucopsis*). Peak counts from the winters of 1993/94 to 1997/98 indicate that an average of 1,120 individuals were present annually, representing 4% of the British and world populations of this species.
Published Conservation Objectives	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; • Distribution and extent of habitats supporting the species; • Structure, function and supporting processes of habitats supporting the species; • No significant disturbance of the species.
Negative pressures	Agricultural operations.

3.1 Stage 1 - Screening for likely significant effects

In the context of the above information, the below tables present a review of the potential impact pathways between the Site and the European sites subject to screening.

Pathways are considered based on the development as proposed, including any aspects which may, in addition to their primary purpose, act to mitigate potential effects on European sites (such as standard pollution prevention controls). However, in accordance with the 'People Over Wind' ruling of the Court of Justice for the European Union Case 323/17, screening for LSEs takes place in the absence of measures specifically adopted to avoid or reduce effects on European Sites.

3.1.1 Caithness Lochs SPA

3.1.1.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 8, below.

Table 8: Caithness Lochs SPA

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside SPA boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside SPA boundary.
Increased mortality of key species	None – the small scale and nature of the development means risk of mortality of qualifying bird species is considered to be negligible.
Disturbance and displacement to key species/deterioration of habitats	During construction the noise disturbance has the potential to disturb and displace qualifying species from the Site and immediate surrounds. Once completed, the BESS will cover much of the land area of the Site meaning the majority of habitats within the Site are no longer available for use for foraging and roosting birds leading to displacement. The desk study recorded greylag geese foraging within the Site and the field to the east. It is therefore considered possible that there will be some disturbance or displacement of greylag goose. The desk study recorded records of whooper swan foraging within the Site and fields to the south-west. It is therefore considered possible that there will be some disturbance or displacement of whooper swan. Greenland white-fronted geese were recorded within fields to the north of the Site with the closest record 580 m north-east of the Site. It is therefore considered possible that there will be some disturbance of Greenland white-fronted goose though displacement is unlikely.
Damage or deterioration of supporting habitats, outside European site	None – at over 2 km distant there are not considered to be any impact of supporting lochan habitats.
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the SPA due to the relatively small scale of the project and distance to the off-site SPA, along with the nature of the Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the SPA due to the relatively small scale of the project and no overlap with the SPA.

Screening for likely significant effects:	
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the SPA due to the relatively small scale of the project and distance to the off-site SPA, with no direct water courses linking the Site to the SPA.
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the SPA due to the relatively small scale of the project and distance to the off-site SPA, with the majority of water courses flowing north through the Site away from the SPA.

3.1.1.2 Outcome of screening (Proposed Development alone)

It is considered that there is potential for likely significant effects to Caithness Lochs SPA as a result of potential displacement and/or disturbance of the qualifying interest species. These impacts have the potential to affect the conservation objectives of the SPA and so this European site is therefore screened in to be taken forward for Appropriate Assessment.

3.1.2 Caithness Lochs Ramsar

3.1.2.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 9, below.

Table 9: Caithness Lochs Ramsar

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside SPA boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside SPA boundary.
Increased mortality of key species	See Caithness Lochs SPA above
Disturbance and displacement to key species/deterioration of habitats	See Caithness Lochs SPA above
Damage or deterioration of supporting habitats, outside European site	None – at over 2 km distance no impacts of supporting lochan habitats are likely.
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the Ramsar due to the relatively small scale of the project and distance to the off-site Ramsar, along with the nature of the Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the Ramsar due to the relatively small scale of the project and no overlap with the Ramsar.
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the Ramsar due to the relatively small scale of the project and distance to the off-site Ramsar, with no direct water courses linking the Site to the Ramsar.

Screening for likely significant effects:	
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the Ramsar due to the scale of the project and distance to the off-site Ramsar, with the majority of water courses flowing north through the Site away from the Ramsar.

3.1.2.2 Outcome of screening (Proposed Development alone)

It is considered that there is potential for likely significant effects to Caithness Lochs Ramsar as a result of potential displacement and/or disturbance of the qualifying interest species. These impacts have the potential to affect the conservation objectives of the Ramsar and so this European site is therefore screened in to be taken forward for Appropriate Assessment.

3.1.3 Caithness and Sutherland Peatlands SAC

3.1.3.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 10, below

Table 10: Caithness and Sutherland Peatlands SAC

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside SAC boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside SAC boundary.
Increased mortality of key species	None. With no overlap of the Proposed Development within the SAC there is not considered to be any impacts on plant species including qualifying species marsh saxifrage. The protected species survey found no evidence of otter within the Site or 250 m buffer and drainage ditches were considered to provide limited foraging and commuting habitat. Therefore it is considered unlikely that the Proposed Development would result in increased mortality of these SAC species.
Disturbance and displacement to key species/deterioration of habitats	No evidence of otter was recorded within the Site or 250 m buffer. It is therefore considered unlikely that the construction of the BESS could affect the SPA population. There is no overlap between the SAC habitats and the habitats within the Site and there will be no direct land take within the SAC. It is therefore considered that there will be no impact of key habitats due to the Proposed Development.
Damage or deterioration of supporting habitats, outside European site	None – There is no overlap between the SAC habitats and the habitats within the Site and there will be impact of supporting habitats.
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the SAC due to the relatively small scale of the project and distance to the off-site SAC, along with the nature of the Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.

Screening for likely significant effects:	
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the SAC due to the relatively small scale of the project and distance to the off-site SAC.
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the SAC due to the relatively small scale of the project and distance to the off-site SAC, with no direct water courses linking the Site to the SAC.
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the SAC due to the relatively small scale of the project and distance to the off-site SAC, with the majority of water courses flowing north through the Site away from the SAC.

3.1.3.2 Outcome of screening (Proposed Development alone)

No likely significant effects on Caithness and Sutherland Peatlands SAC have been identified through the screening stage. This European site is therefore screened out of the assessment and will not be considered further in this report.

3.1.4 Caithness and Sutherland Peatlands SPA

3.1.4.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 11, below.

Table 11: Caithness and Sutherland Peatlands SPA

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside SPA boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside SPA boundary.
Increased mortality of key species	None – the small scale and nature of the development means risk of mortality of qualifying bird species is considered to be negligible.
Disturbance and displacement to key species/deterioration of habitats	None – due to the small scale and nature of the development, nature of the habitats within and surrounding the Site, and separation distance (3.6 km), risk of disturbance and displacement of qualifying bird species over the breeding season is considered to be negligible. This is supported by the desk study data which indicated that there were no records of the qualifying interest species breeding within a potential disturbance buffer of the proposed development. Flightlines of hen harrier, merlin, wigeon and golden plover were recorded within 2 km of the Site, however the Site provides suboptimal foraging habitat for these species, and the potential impact of displacement from within the footprint of works is considered to be negligible.
Damage or deterioration of supporting habitats, outside European site	None – There is no overlap between the SPA habitats and the habitats within the Site and there will be impact of supporting habitats.

Screening for likely significant effects:	
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the SPA due to the small scale of the project and distance to the off-site SPA, along with the nature of the Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the SPA due to the relatively small scale of the project and no overlap with the SPA.
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the SPA due to the relatively small scale of the project and distance to the off-site SPA, with no direct water courses linking the Site to the SPA.
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the SPA due to the relatively small scale of the project and distance to the off-site SPA, with the majority of water courses flowing north through the Site away from the SPA.

3.1.4.2 Outcome of screening (Proposed Development alone)

No likely significant effects on Caithness and Sutherland Peatlands SPA have been identified through the screening stage. This European site is therefore screened out of the assessment and will not be considered further in this report.

3.1.5 Caithness and Sutherland Peatlands Ramsar

3.1.5.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 12, below.

Table 12: Caithness and Sutherland Peatlands Ramsar

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside Ramsar boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside Ramsar boundary.
Increased mortality of key species	See Caithness and Sutherland SPA above.
Disturbance and displacement to key species/deterioration of habitats	See Caithness and Sutherland SPA above.
Damage or deterioration of supporting habitats, outside European site	None – There is no overlap between the Ramsar habitats and the habitats within the Site and there will be impact of supporting habitats.
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the Ramsar due to the relatively small scale of the project and distance to the off-site Ramsar, along with the nature of the

Screening for likely significant effects:	
	Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the Ramsar due to the relatively small scale of the project and no overlap with the Ramsar.
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the Ramsar due to the relatively small scale of the project and distance to the off-site Ramsar, with no direct water courses linking the Site to the Ramsar.
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the Ramsar due to the relatively small scale of the project and distance to the off-site Ramsar, with the majority of water courses flowing north through the Site away from the Ramsar.

3.1.5.2 Outcome of screening (Proposed Development alone)

No likely significant effects on Caithness and Sutherland Peatlands Ramsar have been identified through the screening stage. This European site is therefore screened out of the assessment and will not be considered further in this report.

3.1.6 North Caithness Cliff SPA

3.1.6.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 13, below.

Table 13: North Caithness Cliff SPA

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside SPA boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside SPA boundary.
Increased mortality of key species	None – the small scale and nature of the development means risk of mortality of qualifying bird species is considered to be negligible.
Disturbance and displacement to key species/deterioration of habitats	None – at over 3 km in distance it is considered there will be no disturbance or displacement of key species or habitats.
Damage or deterioration of supporting habitats, outside European site	None – at over 3 km in distance there are not considered to be any impact of supporting cliff habitats.
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the SPA due to the relatively small scale of the project and distance to the off-site SPA, along with the nature of the Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.

Screening for likely significant effects:	
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the SPA due to the relatively small scale of the project and no overlap with the SPA.
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the SPA due to the relatively small scale of the project and distance to the off-site SPA, with no direct water courses linking the Site to the SPA.
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the SPA due to the relatively small scale of the project and distance to the off-site SPA.

3.1.6.2 Outcome of screening (Proposed Development alone)

No likely significant effects on North Caithness Cliffs SPA have been identified through the screening stage. This European site is therefore screened out of the assessment and will not be considered further in this report.

3.1.7 Switha SPA

3.1.7.1 Screening for likely significant effects

The screening assessment for this site is provided in Table 14, below.

Table 14: Switha SPA

Screening for likely significant effects:	
Land take within European site	None – the Proposed Development lies outside SPA boundary.
Fragmentation of European site habitat	None – the Proposed Development lies outside SPA boundary.
Increased mortality of key species	None – the small scale and nature of the development means risk of mortality of qualifying bird species is considered to be negligible.
Disturbance and displacement to key species/deterioration of habitats	None - Switha SPA lies 19.8 km north-east of the Site and is designated for its Greenland barnacle goose population. The foraging distance for this species is noted to be 7 km during the winter (Doyle *et al*., 2023) and therefore there is no risk of disturbance or displacement.
Damage or deterioration of supporting habitats, outside European site	None – at over 19 km in distance there are not considered to be any impacts on the supporting habitats.
Atmospheric pollution/air quality	None – the Proposed Development is unlikely to result in significant increases in atmospheric pollution to the SPA due to the relatively small scale of the project and distance to the off-site SPA, along with the nature of the Proposed Development which will result in no long-term emissions and only short-term generation of construction dust which is likely to be localised.

Screening for likely significant effects:	
Changes to soil chemistry	None – the Proposed Development is unlikely to result in significant changes to the soil chemistry of the SPA due to the relatively small scale of the project and distance to the off-site SPA.
Hydrological regime change	None – the Proposed Development is unlikely to result in significant changes to the hydrology of the SPA due to the relatively small scale of the project and distance to the off-site SPA, with no direct water courses linking the Site to the SPA.
Pollution of surface/ground water	None – the development is unlikely to result in significant pollution of surface/ground water of the SPA due to the relatively small scale of the project and distance to the off-site SPA.

3.1.7.2 Outcome of screening (Proposed Development alone)

No likely significant effects on Switha SPA have been identified through the screening stage. This European site is therefore screened out of the assessment and will not be considered further in this report.

3.2 Potential for in-combination effects

A review of current applications through the Highland Council planning portal identified a number of large-scale projects which have potential to impact goose and swan foraging habitat. As the potential for likely significant effects on greylag geese, whooper swan and Greenland white-fronted geese have been screened in, then it is considered that there is potential for these other projects to act in-combination with the Proposed Development on Site to result in effects on the integrity of the European Site.

3.3 Stage 2 - Appropriate Assessment

3.3.1 Caithness Lochs SPA / Ramsar

The screening stage identified potential to result in likely significant effects on the SPA and Ramsar, namely disturbance and displacement to key species and so the Caithness Lochs SPA/ Ramsar was screened in for further assessment. The further assessment is detailed in the sections below.

Disturbance or displacement of key species

The screening stage has identified the potential for disturbance and displacement to key species, through increased noise and vibration during the construction phase. The development will result in an increase in noise levels above baseline conditions during the construction phase and to a lesser extent, the operational phase.

There is potential for disturbance to any SPA/Ramsar birds that may be roosting and foraging, within the surrounding area mostly arable and grassland fields. As the construction period is likely to extend across 12 months, there is potential for disturbance throughout the full year. It is, however, acknowledged that potentially significant disturbance is likely to be limited to the construction phase activities, specifically only certain short-term phases of construction, with the operational phase less likely to result in significant noise increases; thus, reducing long-term impacts.

During construction and operation of the BESS the land take required for the site infrastructure will lead to areas of roosting and foraging habitat to be permanently lost to qualifying species of the SPA meaning species will be displaced from the Site.

The potential for disturbance and displacement to key species is discussed below.

3.3.1.1 Greylag goose

Long-term loss of foraging habitat

During the autumn, winter and spring greylag geese are most commonly found within stubble and improved grassland fields (Patterson *et al*., 2013). Although greylag goose is found to make use of habitats within the Study Area, the predominant landscape use within the region consists of the same preferable habitats and so foraging resource is considered to be plentiful. In order to assess the impacts across the local area, all fields considered to be suitable for foraging geese (improved grassland or arable) were plotted within 5 km of the Site. A total of 496 fields were plotted, totalling 1,890 hectares (as shown on Figure 3). The area of suitable habitat within the development footprint is 10.65 ha (presuming the loss of the whole site). Therefore the development will result in a net loss of suitable habitat, equating to 0.56% of the available suitable habitat. Given greylag geese are known to travel over 20 km from roost sites to forage during the day (SNH, 2016), this figure of 0.56 % is likely to be considerably higher than the reality.

Temporary Displacement

The recommended minimum disturbance buffer required from heavy construction activities for wintering greylag geese is between 200 m and 600 m (Goodship & Furness, 2022). It is therefore considered that the construction phase could cause disturbance to greylag geese within the Site and up to 600 m surrounding the Site. The desk study data from the RSPB and ornithological studies for the Hollandmey windfarm planning application indicated that greylag geese have been recorded foraging within the field the Site is located (max count 110 individuals), within the adjacent field to the east (max count 400 individuals) and within a field to the north of the road (max count 530 individuals) (see Figure 4). This represents between 1.5 % and 7.37 % of the SPA population (7,190 individuals, see Table 1).

Overall assessment

Given the low proportion of the SPA/Ramsar population which may be disturbed and a figure of 0.56% of goose habitat lost it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding greylag goose feature of the Caithness Lochs SPA from any pressure associated with disturbance / displacement.

3.3.1.2 Whooper swan

Long-term loss of foraging habitat

During the autumn whooper swan are most commonly found foraging on stubble fields and lochs, in the spring and winter the majority are found foraging on stubble and improved grassland fields (Patterson *et al*., 2013). Whooper swan have a smaller foraging range than greylag geese of up to 5 km (SNH, 2016). Forester *et al*, 2007 estimated the Loch Mey whooper swan population to be 10% of the total Caithness Lochs SPA whooper swan population with the larger proportion residing at Loch Heilen (25%) and Loch of Wester (65%). As Loch Heilen and Loch of Wester lie over 5 km from the Proposed Development site, outwith the foraging range of this species, any potential impacts of the Proposed Development are considered to apply only to the Loch Mey population. As discussed above in relation to greylag geese, the development will result in a net loss of suitable habitat, equating to 0.56% of the available suitable habitat within 5 km of the Site. Due to the relatively small footprint of the development and small proportion of the whooper swan population that may be impacted the loss of this area of foraging habitat is unlikely to have a significant impact on the whooper swan population.

Temporary Displacement

The recommended minimum disturbance buffer required from heavy construction activities for wintering whooper swan is between 200 m and 600 m (Goodship & Furness, 2022). As the European site lies within 2.2km of the Site, it is therefore considered that the construction phase could cause disturbance to whooper swan within the Site and up to 600 m surrounding the Site. The desk study data from Scottish Natural

Heritage (now NatureScot) (Patterson *et al.*, 2013), RSPB and ornithological studies for the Hollandmey windfarm planning application indicated that the majority of whooper swan records are to the north-west and west of the Site close to Loch Mey and Loch Heilen (see Figure 5). There were no records within 600 m of the Site, though there was a record just outside this, to the south-west, recorded in the autumn of 2011.

Overall assessment

The desk study data suggests that it is unlikely that the whooper swan population will be negatively impacted by the development. However, as suitable habitat is present within the Site and this species are known to forage within the wider landholding of Phillips Mains Farm, the potential for disturbance cannot be ruled out. Given the low proportion of the SPA population which may be disturbed and a figure of 0.56% of whooper swan habitat lost it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding whooper swan feature of the Caithness Lochs SPA from any pressure associated with displacement.

3.3.1.3 Greenland white-fronted goose

Long-term loss of foraging habitat

During the autumn, winter and spring Greenland white-fronted geese are most commonly found foraging on stubble fields, improved grassland and loch margins (Patterson *et al.*, 2013). Greenland white-fronted geese have a core foraging range of 5 – 8 km (SNH, 2016). As discussed above, the development will result in a net loss of suitable habitat, equating to 0.56% of the available suitable habitat within 5 km of the Site. Due to the relatively small footprint of the development, loss of this foraging habitat is unlikely to have a significant impact on the Greenland white-fronted goose population.

Temporary Displacement

The recommended minimum disturbance buffer required from heavy construction activities for wintering Greenland white-fronted geese is between 200 m and 600 m (Goodship & Furness, 2022). It is therefore considered that the construction phase could cause disturbance to Greenland white-fronted geese within the Site and up to 600 m surrounding the Site. The desk study data from the RSPB and ornithological studies for the Hollandmey windfarm planning application indicated that Greenland white-fronted geese are not known to forage within the Site, however they have been recorded foraging within fields to the north-west and west of the Site and close to Loch Mey and Loch Heilen (see Figure 6). There are two records within the 600 m disturbance buffer. The closest record lies 580 m to the west, with 160 individuals recorded at one time. This represents 36% of the SPA population (440 individuals, see Table 1). The majority of records are outwith the 600 m buffer, and the closest fields within which individuals have been recorded is separated visually by the woodland plantation which is likely to reduce the potential effects of disturbance during the construction phase.

Overall assessment

As Greenland white-fronted geese are not known to forage within the development footprint the impact of the long-term loss of foraging habitat is considered to be negligible. However, the development has the potential to result in the temporary disturbance of 36% of the SPA population of Greenland white-fronted geese. In reality these birds will not be lost to the SPA population and due to disturbance they will simply relocate to other fields which are present in all directions in the local area of the Site. Provided appropriate mitigation measures are adopted (as detailed below), it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding Greenland white-fronted goose feature of the Caithness Lochs SPA from any pressure associated with disturbance / displacement.

3.3.2 Mitigation measures

The following mitigation measures have been proposed to reduce the potential for impacts to qualifying species of the Caithness Lochs SPA and Ramsar.

- Wherever possible the construction phase should be timed to avoid the wintering bird season (October to March inclusive).
- Where this time period cannot be avoided a Wintering Bird Species Protection Plan will be produced in consultation with NatureScot.
- A suitably qualified Ecological Clerk of Works (ECoW) will be appointed prior to the commencement of any construction activities. The ECoW will be present to oversee construction activities as well as providing toolbox talks to all site personnel with regards to potential presence of greylag geese, whooper swan and Greenland white-fronted geese.
- Temporary boundary fencing/hoarding to be installed along the northern, eastern and southern boundaries of the Site to provide a visual barrier to disturbance.
- Construction activities including movement of vehicles carried out in day time hours only, between 07.00 and 19.00, avoiding any night-time working when birds will be roosting.
- A Construction Environment Management Plan (CEMP) will be produced and approved by NatureScot and implemented ahead of construction.

3.3.3 In-Combination Effects

The Appropriate Assessment has identified the potential for significant effects of the Proposed Development on qualifying interests of European sites (in the absence of mitigation measures) and will be considered in-combination with other similar large-scale projects.

All projects as shown on the Highland council planning portal map (The Highland Council, 2023) within 5 km of the Site were digitised and include any large-scale developments such as windfarms and overhead lines. Given the long-term impact on the qualifying interest species is likely to be limited to loss of habitat, the goose and swan fields as identified earlier, were overlaid over all the projects within the study area and the combined area of goose and swan habitat lost was calculated.

The following four developments lie within 5 km of the Site (as shown on Figure 7):

- Lochend Wind Farm Extension (23/04748/PAN) - Extension of existing wind farm at Lochend to encompass a further 21 MW of wind generation capacity through 5 wind turbines each of up to 149.9 m to tip height, plus battery energy storage. Related infrastructure including circa 1.5 km of access track and turbine foundations (21/05707/PREMAJ) - Land 600M NE Of 10 Lochend Holding Barrock Caithness. Application received 29 September 2023, status – under consideration.
- Gills Bay Switching Station (21/05536/FUL) - Construction and operation of a 132 kilovolt (kV) switching station and associated infrastructure - Land 500M West of Philips Mains Mey. Application consented on 26 July 2022.
- Hollandmey Energy Development (21/05591/S36) - Erection and Operation of Renewable Energy Development in perpetuity comprising 10 wind turbines with a ground to blade tip height of 149.9m, ground mounted solar arrays, battery energy storage system, access tracks, permanent met mast and LiDAR, two temporary met masts, up borrow pits and associated infrastructure - Land At Hollandmey Farm And Philips Mains Mey. Application received 30 November 2021. Application decision – S36 Raise Objection, 28 November 2022. The application was appealed to the Planning and Environment Appeals Division (DPEA) on 3rd March 2023 and is awaiting decision.
- Slickly Wind Farm OHL (23/03802/SCRE) - Slickly Windfarm Screening request. The Applicant is seeking section 37 consent for the construction and operation of a 132 kV OHL supported by trident wood poles, in Caithness, Scotland (Figure 1.2, Appendix A). The length of the OHL is approximately 8.5km - Land 550M NW Of Brabster Farm Cottage Canisbay. Application received 4 August 2023. Decision notice – Screening Application EIA Required.

The combined area of the four developments is 1,479 ha. Of the 1,479 ha covered by the in-combination developments a total of 180.8 ha is considered to be goose habitat. Therefore, if all four developments are

constructed the in-combination habitat loss including the Site totals 191.45 ha. Should all of this habitat be lost it would comprise 10.13 % of the 1,890 ha of habitat within 5 km of the Site (as shown in Figure 7).

Greylag geese will travel distances up to 20 km from their roost sites each day meaning they have a foraging range that covers approximately 1,250 km^2. The 5km buffer used to calculate the habitat loss within 5 km of the Site measures 87.70 km^2 which equates to 6.28 % of the area of a 20 km range for the SPA population of greylag goose. Assuming habitats within the 5 km buffer are representative of those found within the 20 km buffer, it is estimated that the 20 km buffer contains c. 26,940 ha of suitable goose habitat. Therefore in terms of in-combination effects to the SPA population the habitat loss is estimated to be **0.71 %.** On this basis it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding greylag geese feature of the Caithness Lochs SPA from any pressure associated with displacement due to cumulative effects.

Greenland white-fronted geese will travel distances up to 8 km from their roost sites each day meaning they have a foraging range that covers approximately 200 km^2. The 5 km buffer used to calculate the habitat loss within 5km of the Site measures 87.70 km^2 which equates to 43.85 % of the area of an 8 km range for the SPA population of Greenland white-fronted goose. Assuming habitats within the 5 km buffer are representative of those found within the 8 km buffer, it is estimated that the 8 km buffer contains c. 4,310 ha of suitable goose habitat. Therefore in terms of in-combination effects to the SPA Greenland white-fronted goose population the habitat loss is estimated to be **4.44 %.** On this basis it is considered that there is **no likely significant effect** on integrity, having regard to the conservation objectives of the non-breeding Greenland white-fronted geese feature of the Caithness Lochs SPA from any pressure associated with displacement due to cumulative effects.

Whooper swan will travel distances up to 5 km. Assuming that the area of suitable swan habitat within 5 km of the Loch Mey roost is similar to the area within 5 km of the Site (e.g. 1,890 ha), it is estimated that in terms of in-combination effects to the SPA whooper swan population, the potential habitat loss is estimated to be **10.13 %.** The cumulative impact of this habitat loss is considered to impact the Loch Mey population only, estimated to be approximately 10% of the SPA whooper swan population (Forrester et al, 2007), as this lies within foraging range of the Site. The remaining population at Loch Heilen (25%) and Loch of Wester (65%) may be impacted by the other planning applications but as the Proposed Development lies outwith the 5 km foraging range of the Loch of Wester and Loch Heilen populations no cumulative effect on the majority (90%) of the SPA population is anticipated.

3.3.4 Outcome of Appropriate Assessment

With the mitigation implemented, it is concluded that the proposed works are unlikely to have a significant adverse effect to Caithness Lochs SPA / Ramsar, along with their qualifying species and supporting habitats. The zone of influence of the project is limited, and an in-combination effect is unlikely to occur. Thus, the conservation objectives of the European sites are concluded to be maintained throughout this project and the project is not likely to constitute a threat to the integrity of these European sites.

4. Conclusion

Based on the information provided in this report, it is anticipated that the competent authority, under Regulation 63 of the Conservation of Habitats and Species Regulations 2017, will conclude that the Proposed Development has the potential to result in likely significant effects on these European sites, in the absence of mitigation.

The competent authority must therefore undertake an Appropriate Assessment of the implications of the Proposed Development on the qualifying features of these European sites, in light of their published conservation objectives.

Subject to implementation of mitigation measures detailed herein, it is anticipated that the Appropriate Assessment will conclude the proposed works will have no likely adverse effect on the integrity of these European sites, alone or in combination with other plans or projects.

Through submission of this report, it is considered that Simec Atlantis Energy Ltd have discharged their duty under Regulation 63(2) to, "provide such information as the competent authority may reasonably require for the purposes of the assessment".

5. References

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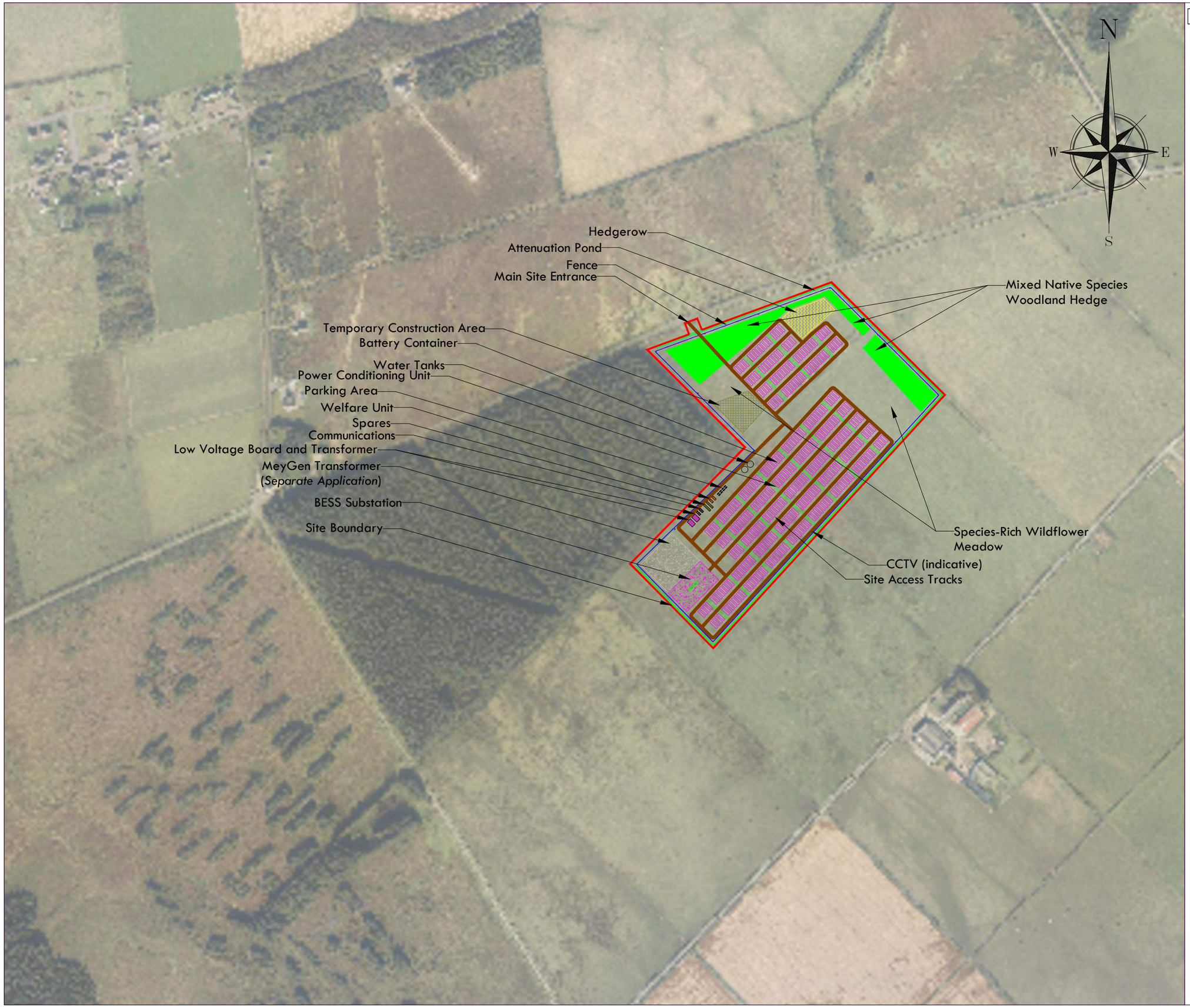
Annex A – Indicative Site Layout



NOTES

DO NOT SCALE. Use annotated measurements only

SITE STATS

Development Area	10.65 Ha
BESS System Size	300 MW
Total No. of PCU Units	88
Total No. of Battery	352
Discharge Hrs	4

LEGEND

Issue	Date	Comments
09	28/10/23	Layout Revised
08	23/10/23	Layout Revised
07	28/09/23	Layout Revised
06	12/06/23	Layout Revised
05	06/06/23	Layout Revised
04	30/05/23	Layout Revised
03	19/05/23	Layout note updated
02	18/05/23	Layout revised, hedgerow screening added
01	18/05/23	Initial issue

Drawn AA Approve DF Date 28/07/23

Drawing Status

Planning

Project: Mey BESS

Address: Phillips Mains farm, KW14 8XH

Client: Simec Atlantis Energy

Title

BESS Site Layout

Issue : 07

Scale 1:2000 @A3

SImec Atlantis Energy

SIMEC ATLANTIS ENERGY

ITPEnergised Offices
Bristol
33 Colston Avenue
BS1 4UA

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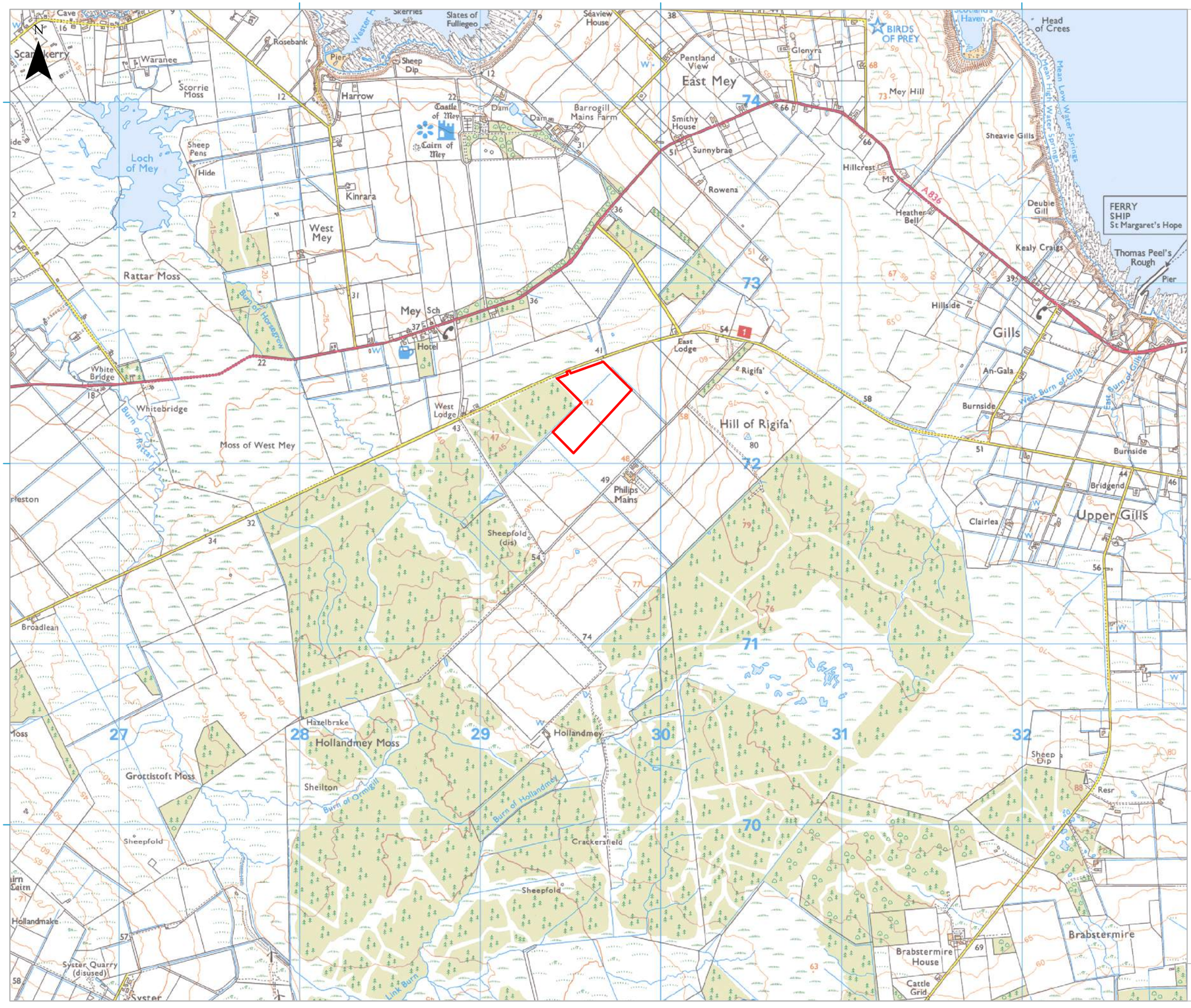
Figures

Figure 1 – Site Location



KEY

Red Line Boundary

Coordinate System: British National Grid
Projection: Transverse Mercator

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0 0.125 0.25 0.5 0.75 1 Kilometers

1:20,000

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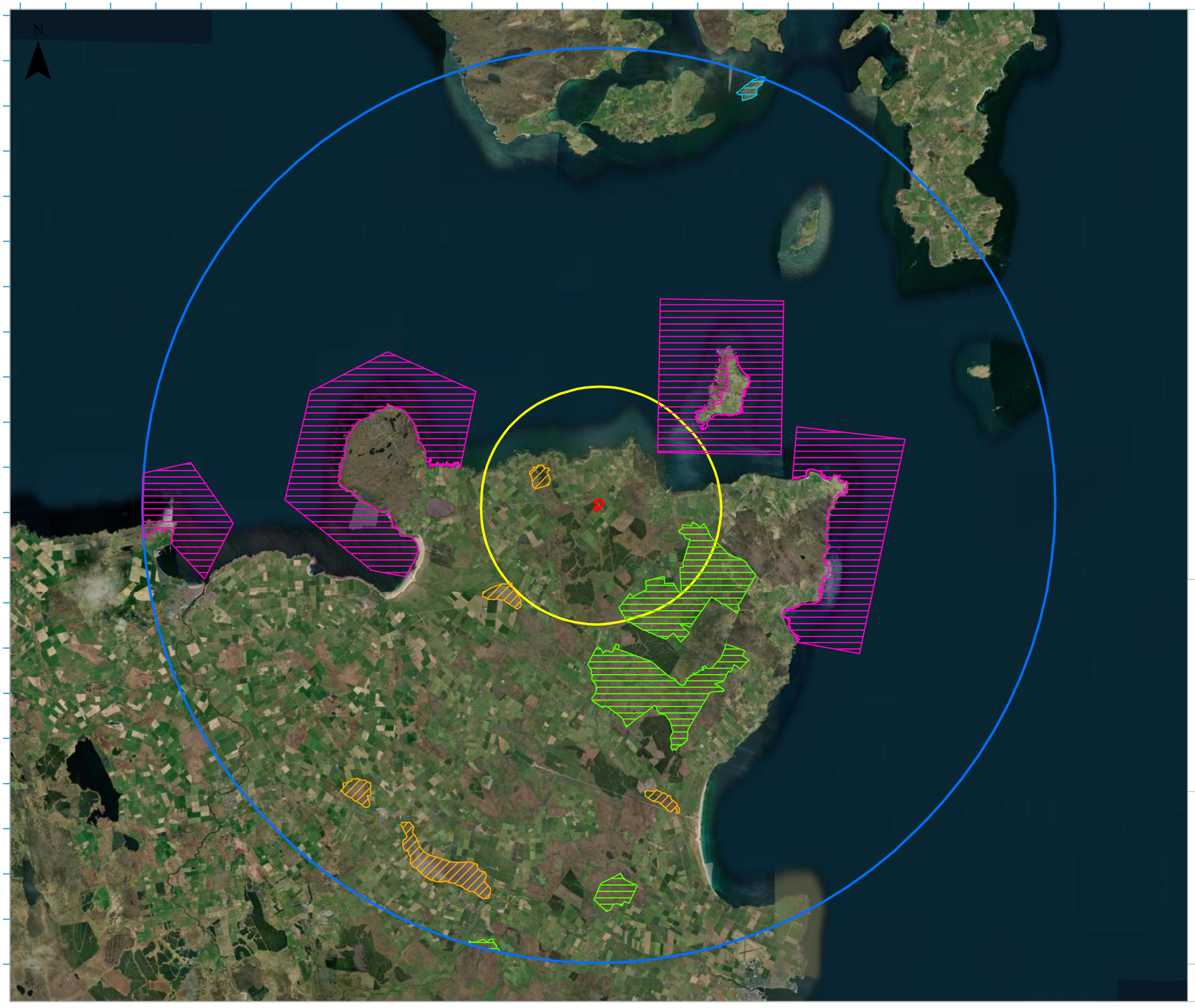
Figure 1
Site Location

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 2 – Nature Conservation Designations



KEY

- Red Line Boundary
- 5 km buffer
- 20 km buffer
- Caithness Lochs SPA and Ramsar
- Caithness and Sutherland Peatlands SPA, SAC and Ramsar
- North Caithness Cliffs SPA
- Switha SPA

Coordinate System: British National Grid
Projection: Transverse Mercator

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Source: Esri, Maxar, Earthstar Geographics, and the GIS

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Kilometers

1:160,000

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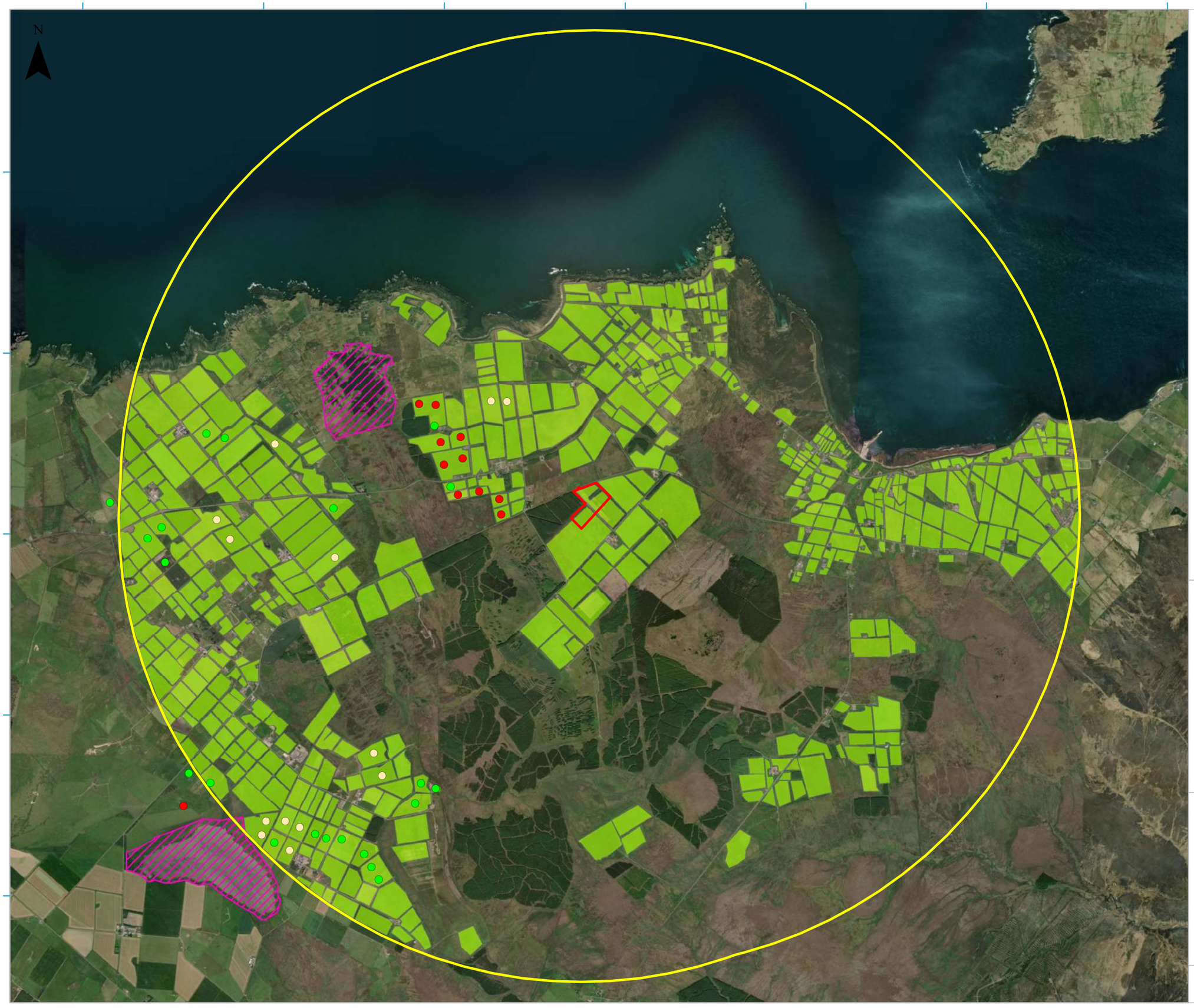
Habitat Regulations Appraisal

Figure 2
Nature Conservation Designations

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 3 – Goose and swan habitat



KEY

- Red Line Boundary
- 5 km buffer
- Caithness Lochs SPA and Ramsar
- Suitable Goose and Swan Habitat

Fields known to be used by Greenland WF Goose

- Used by geese most frequently >10%
- Used by geese but less frequently
- Anecdotal record

Coordinate System: British National Grid
Projection: Transverse Mercator

0 0.275 0.55 1.1 1.65 2.2
Kilometers

1:40,000

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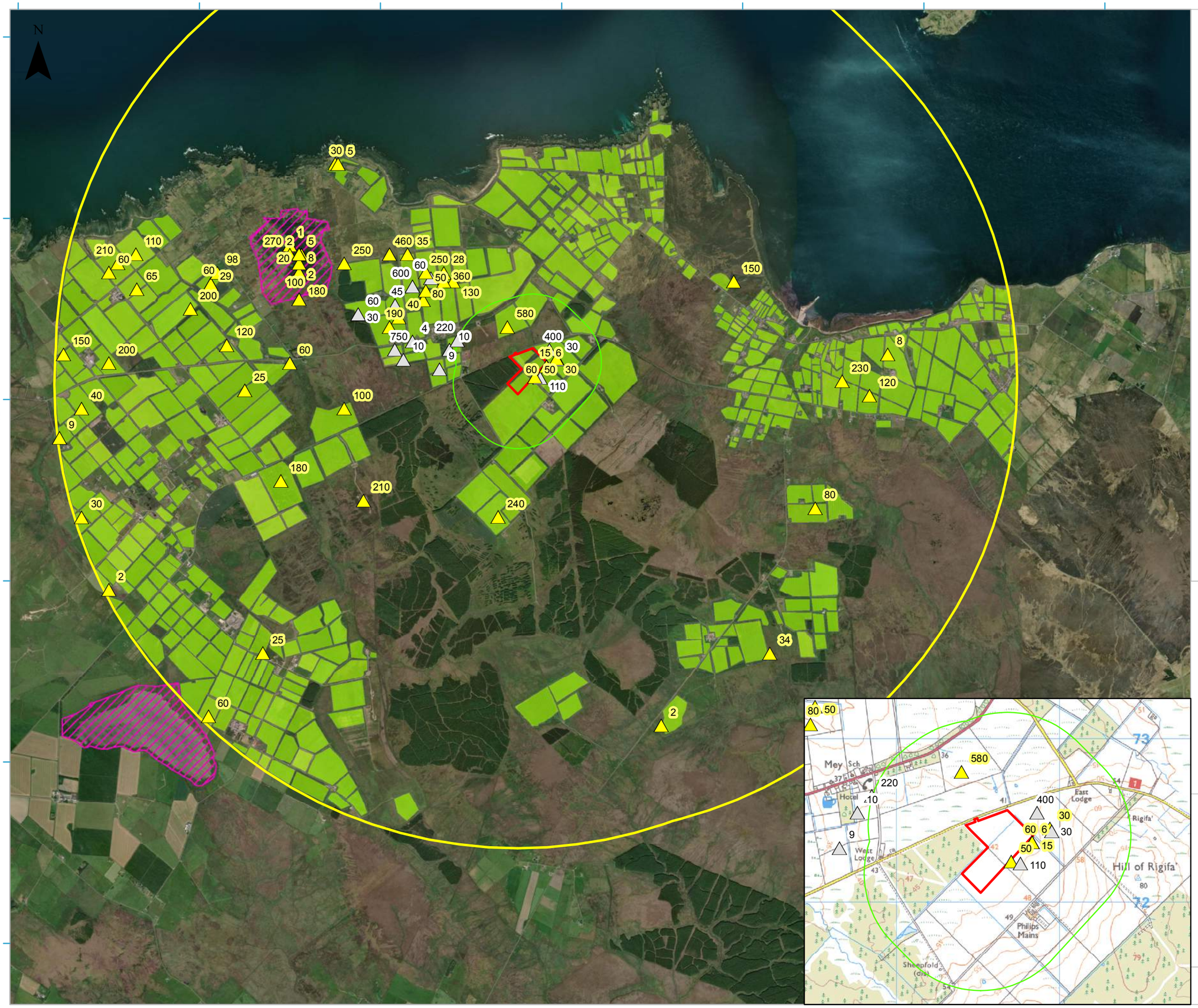
Habitat Regulations Appraisal

Figure 3
Goose and Swan Habitat

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 4 – Greylag goose data



Coordinate System: British National Grid
Projection: Transverse Mercator

Service Layer Credits: Contains OS data © Crown Copyright and database right 2020
Source: Esri, Maxar, Earthstar Geographics, and the GIS

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Kilometers

1:40,000

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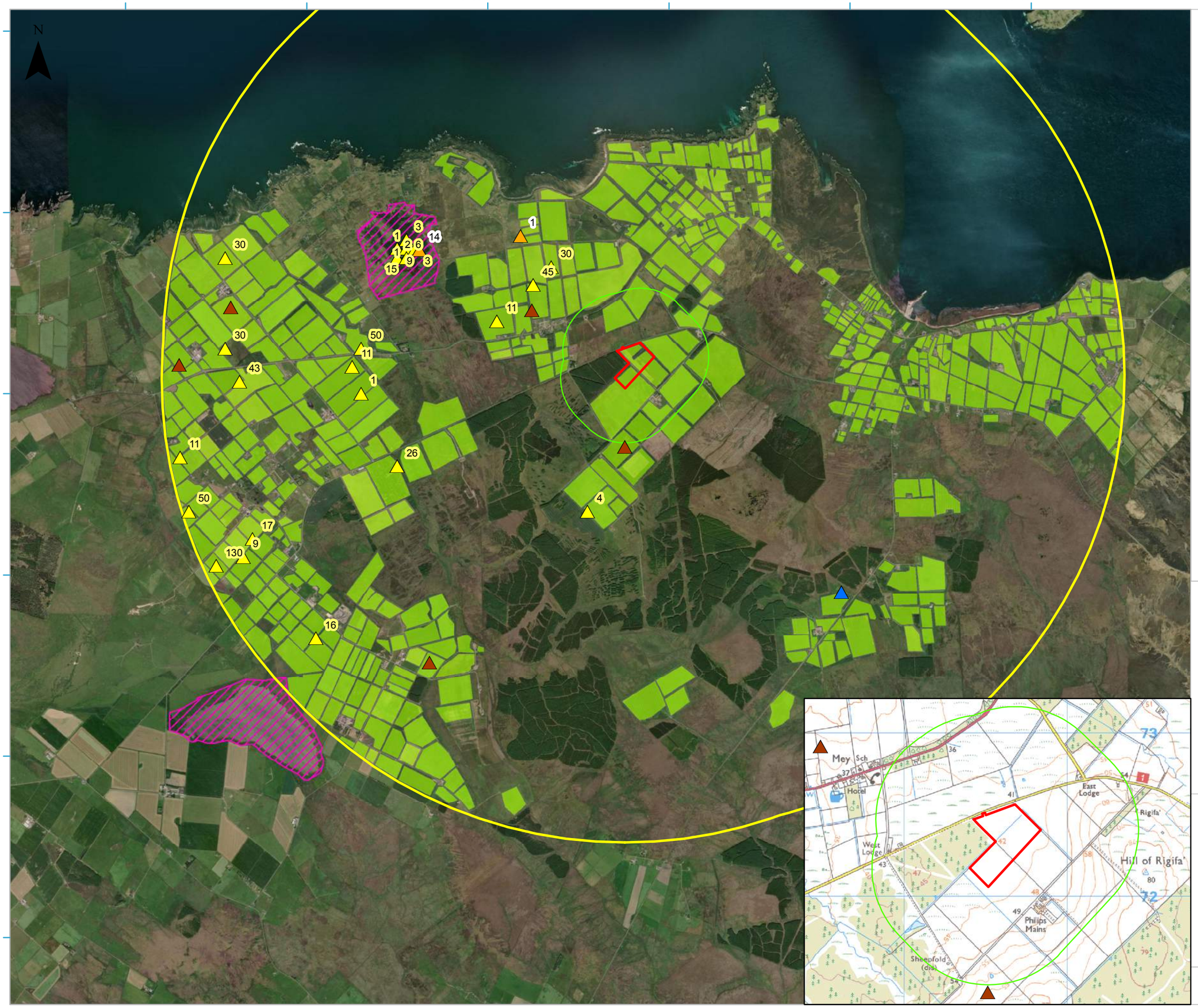
Habitat Regulations Appraisal

Figure 4
Greylag goose data

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 5 – Whooper swan data



KEY

- Red Line Boundary
- 5 km buffer
- 600 m disturbance buffer
- Caithness Lochs SPA and Ramsar
- Suitable Goose and Swan Habitat

NatureScot Whooper Swan Data within 5 km

Date

- Autumn 2011
- Winter 2012/2013
- Hollandmey Whooper Swan Data within 5 km
- RSPB Whooper swan data within 2 km

Coordinate System: British National Grid
Projection: Transverse Mercator

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Source: Esri, Maxar, Earthstar Geographics, and the GIS

0 0.275 0.55 1.1 1.65 2.2
Kilometers

1:40,000

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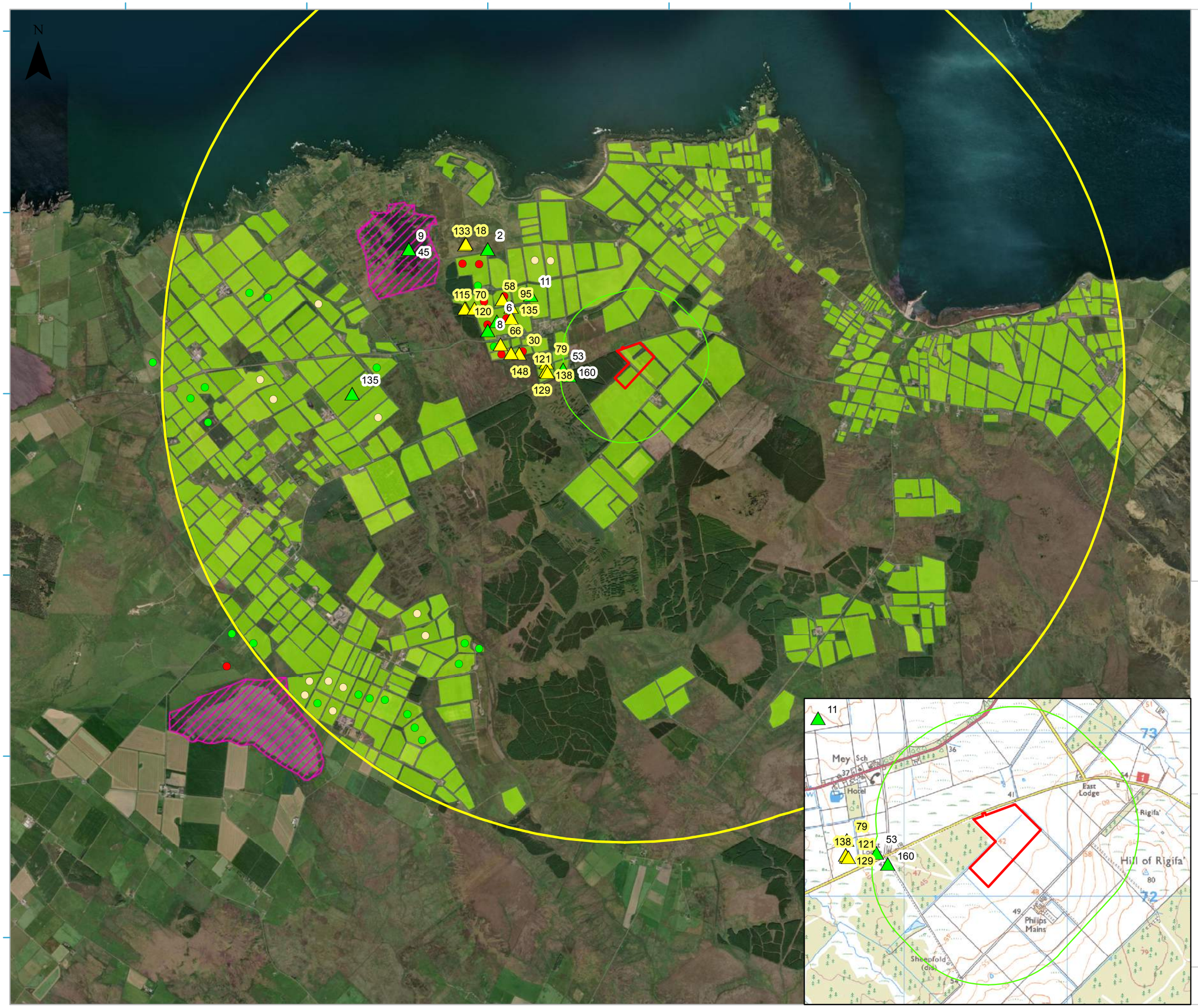
Habitat Regulations Appraisal

Figure 5
Whooper swan data

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 6 – Greenland white-fronted goose data



KEY

- Red Line Boundary
- 5 km buffer
- 600 m disturbance buffer
- Caithness Lochs SPA and Ramsar
- Suitable Goose and Swan Habitat

Fields known to be used by Greenland WF Goose

- Used by geese most frequently >10%
- Used by geese but less frequently
- Anecdotal record
- RSPB Greenland white-fronted geese data within 2 km
- Hollandmey Greenland white-fronted geese data within 5 km

Coordinate System: British National Grid
Projection: Transverse Mercator

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Source: Esri, Maxar, Earthstar Geographics, and the GIS

0 0.275 0.55 1.1 1.65 2.2 Kilometers

1:40,000

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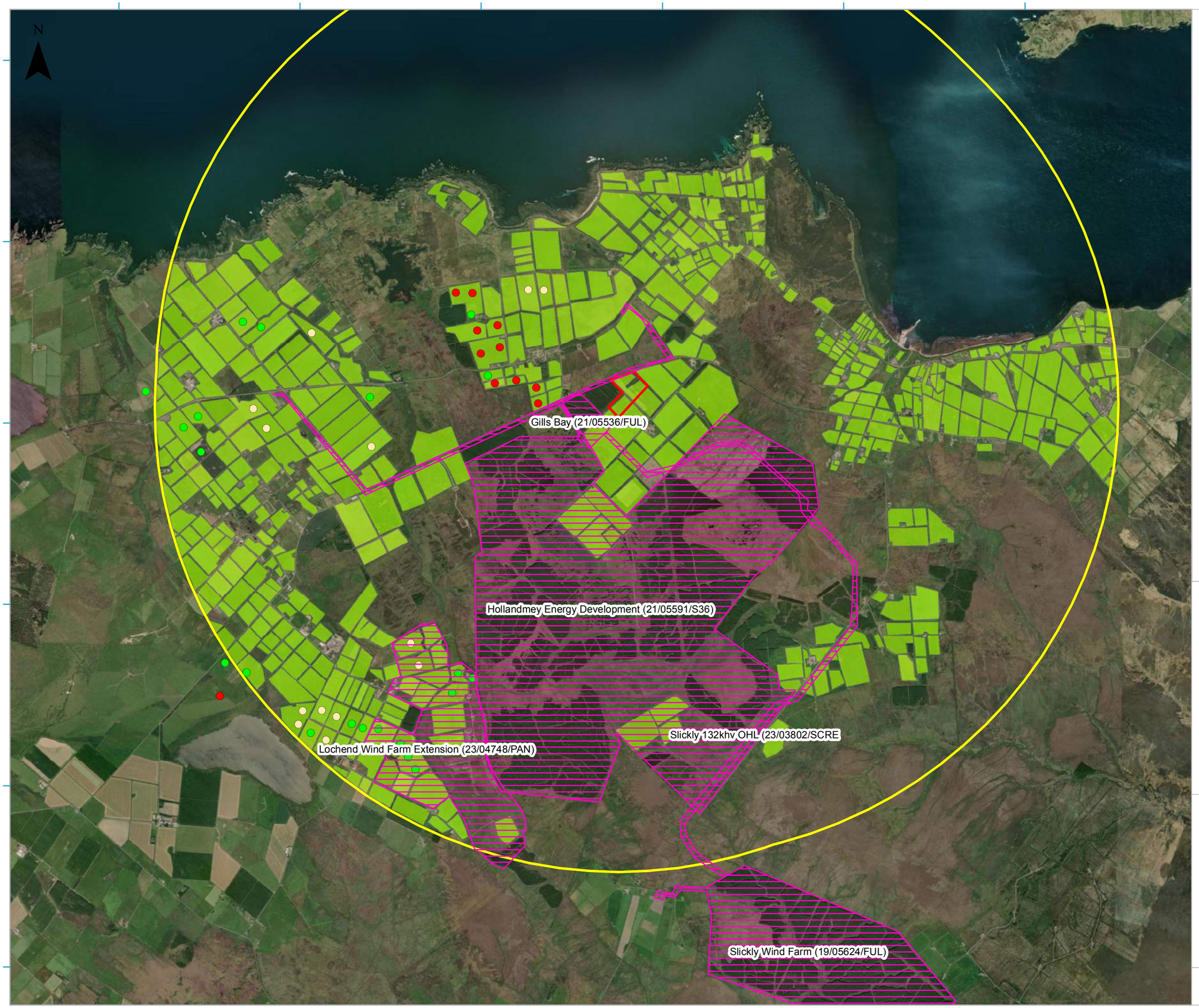
Habitat Regulations Appraisal

Figure 6
Greenland white-fronted goose data

Date:	Lead:	Review:	Version:
31/10/2023	JD	AH	1.0

Figure 7 – Cumulative Assessment



KEY

- Red Line Boundary
- Planning applications
- 5 km buffer
- Suitable Goose and Swan Habitat

Fields known to be used by Greenland WF Goose

- Used by geese most frequently >10%
- Used by geese but less frequently
- Anecdotal record

Coordinate System: British National Grid
Projection: Transverse Mercator

0 0.275 0.55 1.1 1.65 2.2 Kilometers

1:40,000

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Habitat Regulations Appraisal

Figure 7
Cumulative assessment

Date:	Lead:	Review:	Version:
01/11/2023	JD	AH	1.0

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Appendix 4 – Outline Biodiversity Enhancement Plan

Mey BESS

Outline Biodiversity Enhancement and Management Plan

Client:	Simec Atlantis Energy
Project/Proposal No:	6377
Version:	1.0
Date:	2023-12-15

Document Information

Project Name:	Mey BESS
Document Title:	Outline Biodiversity Enhancement and Management Plan
Client Name:	Simec Atlantis Energy
Client Contact:	David Taaffe
Client Address:	4th Floor, Edinburgh Quay 2, 139 Fountainbridge, Edinburgh, EH3 9QG
Document Status:	Draft
Author:	J Diack
Reviewed:	R King
Approved:	R King
Date:	2023-12-15
Version:	1.0
Project/Proposal Number:	6377
ITPEnergised Office:	4th Floor, Centrum House, 108-114 Dundas Street, Edinburgh, EH3 5DQ

Revision History

Version	Date	Authored	Reviewed	Approved	Notes
1.0	2023-12-15	JD	RK	RK	Client issue

Contents

1. Introduction

1.1 Overview

ITPEnergised (ITPE) was appointed by Simec Atlantis Energy, to provide an Outline Biodiversity Enhancement and Management Plan (OBEMP) for a proposed battery energy storage system (BESS) the 'Proposed Development' located at Phillips Mains Farm, Mey, Caithness, central OS grid reference ND 29621 72440. Figure 1 shows the site location (hereafter referred to as 'the Site').

Located within an area of farmland, the Site is approximately 10.65 hectares (ha) in size. The habitats within the Site are currently arable and improved grassland used for crop production and grazing. A coniferous woodland plantation borders the western boundary of the Site. An unnamed road borders the northern boundary of the Site and beyond this is a mosaic of acid grassland and degraded blanket bog used for grazing sheep.

1.2 Proposed Development

The development is a grid-scale battery energy storage system (BESS) facility which will comprise battery storage units, transformers and a substation ('the Proposed Development'). An indicative site layout is provided in Annex A.

1.3 Consultation Responses

As part of their pre-application response dated 16.05.2023 (ref: 23/00635/PREMAJ), Highland Council requested the following:

'***Biodiversity***

There is now greater policy emphasis on biodiversity for proposals in comparison to the now superseded Scottish Planning Policy and to the current adopted Council development plans. Proposals for major development, will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. No information on potential biodiversity enhancement methods was provided as part of the information provided. It is important this biodiversity enhancement is provided as part of any future application and further advice can be sought from the Council's Ecology Officer and NatureScot. Guidance has also been prepared by NatureScot for achieving biodiversity enhancement in recently published NatureScot Developing with Nature Guidance (2023).

In order to satisfy NPF4 Policy 3b a Biodiversity Enhancement and Management Plan that details how criteria i to v will be met, will be required in addition to the Ecology/Environmental Assessment. This will demonstrate that the development will significantly enhance the biodiversity of the site, from its pre-development state. Where the Biodiversity Enhancement and Management Plan is unable to demonstrate to the satisfaction of the planning authority that the development will conserve, restore and enhance biodiversity, the proposal will not be supported. The Biodiversity Enhancement and Management Plan must demonstrate to the satisfaction of the planning authority that the development will accord with Policies 57-60 of the HwLDP.

The Biodiversity Enhancement and Management Plan will be carried out by a suitably qualified and experienced consultant and will include the Natural England Biodiversity Net Gain Metric (BNG) and demonstrates a minimum of a 10% increase of the biodiversity of the site post construction.

In rare cases where site constraints result in the applicant being unable to deliver one or more of the above criteria, consideration may be given to developer contributions as to enable biodiversity enhancements to be implemented elsewhere in line with the mitigation hierarchy to allow offset, off site measures.'

1.4 Scope of this Document

This present document is an Outline BEMP that will be further refined into a detailed BEMP following grant of planning permission for the Proposed Development and in further consultation with The Highland Council (THC). This OBEMP provides an overview of the proposed biodiversity enhancement measures that are to be implemented on the Site.

The overall purpose of the document is to identify positive land management measures that will be implemented for the benefit of nature conservation. The aim is not merely to compensate for adverse impacts that the Proposed Development may have on habitats and species of conservation interest but to deliver a net gain in biodiversity as part of the Proposed Development. The Biodiversity Net Gain (BNG) concept, in relation to development, is an approach established by the Department of Environment and Rural Affairs (Defra) and Natural England (NE) that leaves biodiversity in a measurably better state than its pre-development baseline. A metric requires development projects to go beyond 'no net loss' and deliver a net gain in biodiversity, on-site wherever possible.

This document should be read in conjunction with the soft landscaping proposals detailed in the **Landscape Design (Figure 5** of the **Landscape and Visual Assessment** produced by **TGP Landscape Architects, 2023)** provided as Annex B to this document. The spatial scope of the OBEMP comprises locations within the Proposed Development site, as shown on Figure 1.

2. Policy and Guidance

2.1 Policy Framework

The policies set out in Annex C are those relevant to nature conservation and include those from the National Planning Framework (NPF) 4 (Scottish Government, 2023a), Planning Advice Note (PAN) 60 Planning for Natural Heritage (Scottish Government, 2000), The Highland Council (THC) Highland-wide Local development Plan (THC, 2012) and the Caithness and Sutherland Local Development Plan (THC, 2020).

2.2 Biodiversity Priorities

2.2.1 Scottish Biodiversity List

Scottish Ministers created the Scottish Biodiversity List (SBL) (Scottish Government, 2013) in 2005 to satisfy the requirements under Section 2(4) of the Nature Conservation (Scotland) Act 2004 and assist public bodies in carrying out conservation of biodiversity, as well as to provide the general public with information regarding conservation within Scotland. The SBL comprises species and habitats listed using both scientific and social criteria. Only scientific criteria are considered relevant to this report. They include the following:

- All UK Priority Species present in Scotland;
- Species which Scotland has an international obligation to safeguard;
- All species defined as nationally rare at a UK level that are present in Scotland;
- Species with populations present (resident, wintering or breeding) in 5 or fewer 10km squares or sites in Scotland;
- All species that are endemic to Scotland;
- Any sub-species or race that is widely recognised and accepted by the scientific (or other relevant) community and that is endemic to Scotland, if it also meets one of the other criteria; and
- Natural and semi-natural habitats that are known to be particularly important for supporting assemblages of plant or animal groups that are data deficient, such as fungi, bryophytes, lichens, algae and invertebrates.

2.2.2 Birds of Conservation Concern 5 (BoCC)

The leading government (Joint Nature Conservation Committee (JNCC)) and non-government conservation organisations in the UK jointly review the population status of the 246 bird species that are regularly found within the United Kingdom, using data from national monitoring schemes. This was most recently done in 2021 (Stanbury *et al*., 2021) and will be adopted as the standard against which avian studies are assessed in the next year. On the basis of seven quantitative criteria, each species has been placed on one of three lists, these being:

- Red – red-listed species are those that are globally threatened, have had an historical population decline in the UK from 1800 -1995, a rapid (> or = 50%) decline in UK breeding population over the past 25 years, or a rapid (> or = 50%) contraction of UK breeding range over the past 25 years;
- Amber – amber-listed species have had a historical population decline from 1800-1995 but are recovering; population size has more than doubled over the past 25 years, a moderate (25-49%) decline in UK breeding population over the past 25 years, a moderate (25-49%) contraction of UK breeding range over the past 25 years, a moderate (25-49%) decline in UK non-breeding population over the past 25 years, or species with unfavourable conservation status in Europe also known as Species of European Conservation Concern (SPEC); and
- Green - green-listed species have no identified threat to their population status.

2.2.3 Local Biodiversity Action Plan

The Highland Nature Biodiversity Action Plan (BAP) was published in 2021 and covers the time period 2021-2026 (THC, 2021). The plan is the fourth BAP for the Highlands since 2006 and focuses on where positive biodiversity action can be taken to conserve and enhance important habitats and species. The plan contains the following nine key actions for Highland Nature:

- Action 1: Planning and development decisions provide biodiversity protection;
- Action 2: Landscape-scale nature conservation and restoration work;
- Action 3: Identify and conserve priority species;
- Action 4: Invasive non-native species are controlled;
- Action 5: Wildlife crime is deterred and prosecuted;
- Action 6: Increased participation in green and blue activities to benefit health;
- Action 7: Public engagement using knowledge, skills sharing and training continued and expanded;
- Action 8: Biodiversity data gathering and sharing is improved; and
- Action 9: Long-term research into environmental change continues to expand.

The plan contains the following habitat action plans and associated commitments relevant to the Site and surrounding area:

- Upland and moorland
    - Restoration of peatlands, wetlands, bogs, mires, wet grasslands; and
    - Prevent the loss of peatlands, wetlands, bogs, mires, wet grasslands.
- Woodland and Forestry
    - Highland Environment Forum (HEF) to establish a working group to identify additional biodiversity actions that Highland Nature partners can take forward;

- Protect, regenerate and restore native woodlands, including the control of INNS, conservation of veteran trees and retention of deadwood;
- Partnership working to work at a landscape scale to create woodland networks that improve forest diversity and biodiversity;
- Identify where woodland can be expanded without negative impact on other climate change and biodiversity resources and ensure that new woodlands follow these principles;
- Support incorporation of trees and woods into agricultural systems; and
- Identify, conserve and expand from isolated trees and tiny woodland fragments.

- Agricultural land
  - Agricultural practices move to more natural systems and nature-based solutions, reducing CO^2 emissions and the need for artificial fertilisers, pesticides and herbicides;
  - Integrate trees and agriculture; and
  - Survey, protect and expand suitable agricultural habitat for vulnerable species.

2.3 Guidance Documents

The following guidance document was consulted in the production of this document:

- Developing with Nature Guidance: Guidance on securing positive effects for biodiversity from local development to support National Planning Framework (NPF) 4 policy 3(c) (NatureScot, 2023); and
- The Scottish Government Draft Planning Guidance: Biodiversity (2023) sets out the Scottish Ministers' expectations for implementing NPF4 policies which support the cross-cutting NPF4 outcome 'improving biodiversity'.

3. Ecological Baseline and Receptors

3.1 Summary of Surveys Completed

The following surveys have been completed to inform the existing ecological baseline:

- Extended UK Habitat Classification Survey - completed May 2023;
- Preliminary Bat Roost Assessment - completed May 2023;
- Badger (*Meles meles*) survey - completed May 2023;
- Otter (*Lutra lutra*) survey - completed May 2023;
- Water vole (*Arvicola amphibius*) survey - completed May 2023; and
- Breeding bird survey – completed April 2023.

The following sections summarise the results of the above surveys, please see the following reports for further detail on the ecological context of the Site, habitat and species features including their legal protection and conservation status:

- Ecology Desk Study, October 2023 (ITPEnergised, 2023a); and
- Preliminary Ecological Appraisal, October 2023 (ITPEnergised, 2023b).

This section also outlines which of the ecological receptors present on Site are appropriate for enhancement and are therefore included within this OBEMP.

3.2 Baseline Habitats and Species

3.2.1.1 Habitats

The Site and surrounding area supports a number of different habitat types including arable, grasslands (modified, neutral and acid), coniferous plantation, degraded blanket bog, dense and scattered scrub and drainage ditches.

The habitats within the Site are not considered Priority Habitats, and are generally species-poor in composition, however, offer some value as established semi-natural habitats.

There is, however, potential for enhancement of some of these habitats to improve their condition and create habitats of higher distinctiveness. The focus of the OBEMP will be on the existing areas of modified grassland and arable fields which cover the majority of the Site. The enhancement measures will correspond with any required protected species mitigation and will incorporate the following habitat creation:

- Wildflower meadow;
- Wet meadow (within SuDs);
- Areas of native woodland; and
- Hedgerows around the Site boundaries.

These habitat types are considered to offer suitable foraging, commuting and sheltering habitat for species known to be on Site.

3.2.2 Bats

The Site lies within a highly managed landscape with arable and grassland fields bordered by a coniferous plantation along its western edge. Overall habitats were assessed as being of Low to Moderate suitability for foraging and commuting bats, with habitat features including the woodland edge, stone wall and scrub lined drainage ditches providing some commuting/foraging corridors for bats. These features are limited and not well connected to areas of higher quality bat foraging and commuting habitat within the wider landscape. The strongest potential commuting route lies along the woodland edges at the west of the Site. No potential roost features were identified within the Site or a 50 m buffer (ITPEnergised, 2023b).

To mitigate potential impacts to foraging/commuting bats around Site boundaries, a sensitive lighting scheme is to be adopted (discussed fully within Section 6 of the EcIA) to minimise illumination of edge habitat both during works and post-construction. Temporary and permanent lighting should be directed to where it is needed and light spillage (whether direct and/or in-direct) should be avoided as far as practicable. Also, the times during which lighting is on should be limited to provide dark periods.

Habitat enhancements to benefit the local bat population, including the planting of native woodland and hedgerows and the installation of bat roost boxes, are detailed within this OBEMP.

3.2.3 Pine marten

The ecology desk study found no records of pine marten (*Martes martes*) within the Site or 2km buffer within the last ten years. However, during the PEA survey scats were identified within the coniferous woodland to the west which may have been from either pine marten or fox (*Vulpes vulpes*). As fox were known to be active within the area and no suitable den structures were identified, it was concluded the scat was more likely to be fox, however pine marten presence is still considered a possibility and the coniferous plantation to the west provides good foraging and commuting habitat.

To mitigate potential impacts to foraging/commuting pine marten around Site boundaries, a sensitive lighting scheme must be adopted (as discussed above in relation to bats, and fully Section 6 of the EcIA).

Enhancement measures for this species are included within this OBEMP. There is opportunity to enhance areas of retained grassland to provide floristically diverse habitats which would attract invertebrates as a source of food, create edge habitat to assist movement of pine marten across the Site and also install den boxes.

3.2.4 Barn owl

Evidence of barn owl (*Tyto alba*) presence was found during the PEA within the Phillips Mains farm steading located approximately 400 m south of the Site. The Proposed Development will not directly impact the roost/nest site.

The areas of rough grassland associated with the drainage ditches adjacent to and within the Site, and to the north of the road, will be an important foraging resource for barn owl due to the associated small mammal population. Enhancements for this species have been incorporated into this OBEMP. Enhancement measures are to include the creation of areas of foraging habitat (wildflower meadow) and installation of a nest box.

3.2.5 Other birds

The open fields are relatively undisturbed, with limited public access and are considered to provide opportunities for ground nesting birds including; skylark (*Alauda arvensis*; a BoCC Red Listed species), lapwing (*Vanellus vanellus*; BoCC Red Listed) and curlew (*Numenius arquata*; BoCC Red Listed). Notable observations during the breeding bird survey in April and extended habitat survey in May were; meadow pipit (*Anthus pratensis;* BoCC Amber Listed) which is associated with rough grassland and peatland habitats and was recorded throughout the Study area; skylark which was recorded within the Site and surrounding fields; curlew which was recorded within the Site and to the north; snipe (*Gallinago gallinago*; BoCC Amber Listed); and yellowhammer (*Emberiza citrinella;* BoCC Red Listed) which was associating with the gorse scrub.

As detailed within the ecology desk study, greylag geese (*Anser anser*) are known to use the Site and fields to the east for foraging and roosting during the winter (ITPEnergised, 2023a). Greylag geese are a qualifying interest species of the Caithness Lochs SPA and potential impacts on greylag geese and other qualifying interest species of the SPA have been assessed fully within a shadow Habitat Regulations Appraisal (ITPEnergised, 2023c).

3.2.5.1 Other Species

A number of other species are considered likely to be present on Site or in the surrounding habitats however have not been specifically surveyed and so their status on Site is unknown. These species include invertebrates, small mammals and amphibians. No species-specific enhancements for these species/species groups (with the exception of bird boxes) have been included within the OBEMP, however it is acknowledged that enhancement of retained habitats and proposed creation of new habitats will provide enhancement for these species through improving the available foraging, shelter and hibernation habitat on Site.

4. Outline Biodiversity Enhancement Plan

4.1 Scope of Biodiversity Enhancement Measures

The purpose of the OBEMP is to outlines measures to protect and enhance biodiversity within the Site in accordance with NPF4 (Scottish Government, 2023) and Local Development Plan policies. The measures are to include:

- Protection of existing ecological features;
- Recommendations in relation to habitat creation including native planting schemes; and
- Installation of wildlife friendly features (bat and bird boxes, habitat boxes etc).

The OBEMP is produced with reference to the outline **Landscape Design** (TGP Landscape Architects, 2023) included as **Annex B.** The detailed planting schedule, long-term management and maintenance procedures are outwith the scope of this OBEMP and are to be included within the final soft landscaping proposal which is to be produced post consent and in consultation with The Highland Council.

4.2 Duration of Plan

The OBEMP (superseded by the detailed BEMP once finalised) will be in place for the duration of the operation of the Proposed Development (although some of these measures will commence during the construction period).

4.3 Enhancement Plan Implementation Responsibility

The delivery of this OBEMP, and subsequent detailed BEMP, will be the responsibility of Simec Atlantis Energy.

4.4 Review and Monitoring

Long-term habitat management and maintenance will be fully detailed within the subsequent detailed BEMP and a soft landscaping proposals and will include:

- For the first three years after sowing/planting, and then in years five, seven and ten, a monitoring visit during the peak flowering season (May to August) will be undertaken by a suitably qualified ecologist (SQE) to record plant species diversity with the Site and determine if the management scheme is successful or if additional measures are required.
- Where the requirement for remedial measures is identified, the SQE will communicate this to Simec Atlantis Energy and / or those responsible for the long-term landscape maintenance contract.
- A nominated person will keep a record of enhancement measures undertaken under this plan and the results of monitoring visits by the SQE. Any adjustments or changes to the management plan will be noted.
- On completion of three years monitoring, and again in years five, seven and ten, a monitoring report will be made available to The Highland Council. The report will also detail any changes that are required to the prescribed measures in the event that the monitoring data indicate BEMP objectives are not being met.

4.5 Protection of Existing Ecological Features

4.5.1 Features of Ecological Value within the Site

Habitats within the Site, being predominantly areas of arable and modified grassland, are generally considered to be of low ecological value. The habitats which are considered to be more species rich, and therefore likely to support a wider variety of plant and fauna species, include the drainage ditches, dense scrub and coniferous plantation.

4.5.2 Habitats

Efforts should be made to retain and protect the woodland and scrub habitat to the west and scrub habitats within the Site boundary.

A minimum 3 m buffer zone is to be maintained around all drainage ditches within and adjacent to the Site throughout the construction phase. Pollution prevention measures to prevent run off into the watercourses will be detailed within a Construction Environmental Management Plan (CEMP).

A suitable root protection area should be installed in advance of works commencing to protect the tree root system of all trees to be retained. This is normally calculated by multiplying the diameter of a tree (in metres) at breast height by 12, to a maximum radius of 15m (see also British Standard BS5837: Trees in relation to design, demolition and construction - recommendations).

Temporary fencing will be used to clearly demarcate the edge of work areas as required to protect these habitats.

4.5.3 Nesting Birds

Site clearance works should be timed to avoid the nesting bird season (March to August inclusive).

Should site clearance works be delayed and clearance of vegetation is required between March to August, inclusive, a pre-construction survey will be undertaken by a SQE within 48 hours prior to works commencing. During the survey the SQE must search works areas for evidence of nesting birds. Should a nest be recorded, a suitable working buffer must be put in place until the young have successfully fledged the nest.

4.5.4 Wintering Birds

Site clearance works should be timed to avoid the wintering bird season (October to March inclusive) to avoid disturbance of greylag geese (a qualifying interest species of Caithness Lochs SPA) which are known to forage within the Site and surrounding fields (ITPEnergised, 2023a). These measures will also benefit Greenland white-fronted geese (*Anser albifrons flavirostris*) and whooper swan (*Cygnus cygnus*) (also qualifying interest species of Caithness Lochs SPA), although these species are not known to forage within a potential zone of influence of the Proposed Development (ITPEnergised, 2023a).

If this time period cannot be avoided a preconstruction survey will be undertaken by an SQE immediately prior to works commencing. Should wintering birds be present within the Site or a 600 m disturbance buffer, works must be stopped until the geese have naturally dispersed.

4.5.5 General Good Practice

During the construction phase the following good practice measures endorsed by NatureScot are to be applied (NatureScot, 2020):

- Where practical works will be undertaken during daylight hours, but avoiding the two hours from sunrise and the two hours before sunset (this can be reduced to one hour from November to February, inclusive, when daylight hours are limited);
- Cover/fence-off any excavations, or provide escape ramps at the end of the working day to avoid animals becoming trapped (if an animal does become trapped, advice will be sought immediately from NatureScot);
- Cap any temporarily exposed pipe systems out of work hours;
- Clean fuel/chemical spillages immediately with spill kits and dispose of waste materials correctly;
- Avoid unnecessary disturbance to habitats by minimising the extent of ground clearance, as far as possible; and
- A sensitive lighting scheme is to be adopted as part of the mitigative strategy detailed in Section 6 of the EcIA.

4.6 Biodiversity Enhancement Measures

4.6.1 Overview

The indicative **Landscape Design** provided as **Annex B** includes the creation of the following habitats (to be detailed within the final soft landscaping proposals):

- Native woodland screening planting;
- Hedgerow planting;
- Wildflower meadow planting; and
- Wet meadow planting within the attenuation pond.

Measures and recommendation to maximise plant and invertebrate species diversity within some of the planting schemes are outlined below.

Additional enhancement measures to be incorporated within the Site are the provision of bat, pine marten, barn owl, bird and habitat boxes.

4.6.2 Native woodland planting

The Landscape Design (Annex B) includes areas of native woodland planting (approximately 1.09 ha) along the northern and eastern extents of the Site to provide screening as shown on Figure 1. The woodland should comprise locally native species. A management plan for the woodland is to be detailed within the final soft landscaping proposal. This should specify planting densities, protection measures and short and long-term management. Management activities may include some thinning, coppicing, and crown lifting, along with retention of deadwood, to create different age structures. Trees should also be planted in blocks, instead of rows to create a more natural arrangement. The woodland edges adjacent to areas of grassland should be scalloped to create microclimates within the woodland edge habitat. An 'ecotone' should also be created whereby the woodland edges grade from high canopy, to scrub, and then to tussocky grassland.

The following measures should be taken to ensure the proposed native woodland planting scheme provides a good variety of tree species which are suitable for the site conditions:

- The native woodland mix should include a minimum of five species;
- Suitable species would include silver birch (*Betula pendula*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), Scots pine (*Pinus sylvestris*), pedunculate oak (*Quercus robur*), alder (*Alnus glutinosa*), aspen (*Populus tremulus*) and rowan (*Sorbus aucuparia*); and
- Whips must be of local or regional provenance.

4.6.3 Species-Rich Hedgerows

4.6.3.1 Overview

There are currently no hedgerows within the Site or immediate surrounding habitats. Species-poor hawthorn hedgerows are present along the farm track leading to Phillips Mains, approximately 400 m south of the Site.

4.6.3.2 Definition of "Species-rich" Hedgerow

When referring to 'species-rich' hedgerow, this follows the Defra (2007) definition (for Scotland and northern England) of at least four woody species per 30 m of hedgerow. Woody species in this context include shrubs such as dog-rose but excludes certain others, such a bramble (*Rubus fruticosus*). Species used can include both shrub/scrub species and trees, with the latter allowed to grow to form a hedgerow with trees or cut to the same height (minimum 2 m) and maintained with the other component species as a traditional hedgerow.

4.6.3.3 Objectives

The main objectives are:

- To maximise biodiversity and help create wildlife corridors that connect the Site with hedgerows and treelines within the wider landscape, new sections of species-rich hedgerow are to be planted; and,
- Site screening.

4.6.3.4 New Hedgerow Planting

The Landscape Design (Annex B) includes native hedgerow planting around the perimeter of the Site (approximately 1,530 m in length) to provide screening as shown on Figure 1. The following management measures, to be fully detailed within the detailed BEMP and soft landscaping proposals, are recommended:

- If possible, planting will be undertaken between November and March when plants are dormant and avoiding heavy frost.
- If planting across the summer period, plants must be watered during the establishment period. Unless watering/care is possible, no planting works will be undertaken during the summer.

- Planting will be undertaken during the construction phase and new plants will be protected during works through the installation of barriers as required.
- New plants are to be fertilised with a general-purpose fertiliser and watered during dry times within the establishment period of the first year.
- An initial prune will be undertaken within the first two years of growth to encourage dense bushy growth.
- Thereafter the hedgerow will be cut every other year, or once every three years.

Further information and guidance on hedgerow management is available here: https://hedgelink.org.uk/hedgerows/hedgerow-management-advice/.

The following planting recommendations, to be incorporated within the detailed BEMP and soft landscaping proposals, aim to create a species-rich hedgerow that will provide an excellent source of flowers and fruit and will support a variety of birds, mammals and invertebrates:

- The hedgerow mix should include a minimum of five species;
- Suitable hedgerow species would include gorse (*Ulex europeaus*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*); guelder rose (*Viburnum opulus*), hazel; dog-rose (*Rosa canina*) and common hornbeam (*Carpinus betulus*);
- Honeysuckle (*Lonicera periclymenum*) should be planted within the hedgerow; and
- Whips must be of local or regional provenance.

4.6.4 Species-Rich Grassland

4.6.4.1 Overview

The Landscape Design (Annex B) includes the planting of species-rich grassland within the Site as shown on Figure 1. The following objectives and management measures, to be fully detailed within the detailed BEMP and soft landscaping proposals, are recommended.

4.6.4.2 Objectives

The main objectives are:

- Creation of biodiverse grassland habitats through:
  - Seeding of meadow wildflower and grass species; and
  - Mowing programme to manage the species-rich grasslands for biodiversity.

With reference to the Scottish Pollinator Strategy and construction guidance (SNH, 2017), seeding for invertebrate biodiversity, as described above, is considered sufficient to promote the local insect populations and subsequently increase foraging resources for the wildlife of the area.

4.6.4.3 Wet meadow planting

As shown on the Landscape Design (Annex B) and Figure 1, the attenuation pond (area c. 0.20 ha) is to be seeded with a mix that is tolerant to being occasionally flooded or waterlogged.

A suitable mix for this location would be a Wet Meadow Mix (SCM2) (www.scotiaseeds.co.uk, see Annex D for full details).

Management recommendations to be incorporated within the detailed BEMP and soft landscaping proposals are as follows:

- To reduce potential risk of erosion if soil is left bare it is recommended that soil is prepared and sown in the spring (March to June).
- Ensure ground is free of vegetation, then firm and rake to create a seedbed.

- Aim to let the area settle for four to six weeks to allow any weed seeds to germinate then remove before sowing meadow seeds.
- Seed is to be sown in the spring or autumn at a rate of 3g per square metre using wet meadow mix (SCM2). Bulk up the seed with an inert carrier such as sand to make distribution easier. The seed must be surface sown by machine or broadcast by hand.
- Tread or roll in seed lightly to produce a firm surface.

4.6.4.4 Wildflower meadow planting

The Landscape Design (Annex B) includes an area of wildflower meadow (approximately 2.68 ha) that is to be planted around the areas of infrastructure and hardstanding as shown on Figure 1. The soft landscaping proposals suggest using a hedgerow meadow mix (SCM4) (www.scotiaseeds.co.uk, see Annex D for full details) which is tolerant of light shade and includes yellow rattle (*Rhinanthus minor*).

Seeding

The seed mix must be appropriate for the Site location and of regional provenance. As the Site has been managed for arable use, the soil is currently fertile which is suboptimal for the creation of wildflower meadows as grass growth can outcompete the wildflowers.

To aid the establishment of the wildflower meadow, yellow rattle (*Rhinanthus minor*) is to be used to suppress grass growth and reduce the fertility of the soil over time. This hemiparasitic species supresses the vigour of more dominant species, typically grasses and clovers, and thereby creates opportunities for a range of other species that do not cope well with rank vegetation to become established. This species is particularly useful where meadows are created on fertile soils. Yellow rattle must be sown in late autumn, ideally November, to allow the seeds to germinate over the winter, producing flowers and seed the following year.

A general guide for grass-wildflower seed mixes is to sow at a rate of 3-5g per m^2. In the first weeks following seeding, it may be necessary to remove weed species to prevent them out-competing the sown species (see Management below).

Following the grazing/mowing regime noted below, it may be necessary to reapply seed mixes, over subsequent seasons, until the desired biodiverse meadow has become established (see Section 4.4 Review and Monitoring).

Management

An early cut can be useful in the first season after sowing if annual weed growth reaches 30 cm by June at which point the area can be cut to no lower than 10 cm. The meadow grass seedlings can often be seen at this stage and the aim of cutting would be to remove most of the weed growth without cutting the meadow grasses and wildflower seedlings. Cut material will be removed so it does not smother meadow seedlings. This cut may not be necessary if there is little growth or few weed plants.

Once established, annual management is essential to the maintenance of structure, balance and diversity in a grassland, including encouragement of pollinator species (Humbert *et al*., 2012; Tälle *et al*., 2016; Lerman *et al*., 2018; Smith *et al*., 2018). Without management, grasslands can become coarse and rank, losing diversity and eventually turning into scrub or woodland.

The meadow can be cut once a year at the end of the growing season (late August). If cutting, arisings need to be removed in order to reduce soil fertility, which in turn promotes higher diversity as highly competitive species are more likely to crowd out less competitive species when soil fertility is high. Removing the arisings also exposes the soil surface, thus providing light for seeds to germinate and grow. However, arising will be left *in situ* for a few days to dry and facilitate seeds being shed from capsules.

It is beneficial to leave uncut strips along the edges of the meadow as a foraging resource for insects, enabling late flowering species to set seed and to provide shelter for other wildlife.

Management of yellow rattle

Yellow rattle must be sown at the correct time of year (late autumn) to ensure the seeds germinate. Prior to seeding, the area should be mown, and arisings removed in the autumn (August/September) and then scarified to create areas of bare soil onto which the seeds can be sown.

Fertilisers and pesticides

The management of the habitat areas is intended to promote biodiversity and therefore use of fertilisers and pesticides is contrary to the aims of the OBEMP. No fertilisers or pesticides will be used within the grasslands or within close proximity, to avoid creating nutrient-rich conditions that would result in a loss of less competitive plant species, and to ensure protection of the invertebrate diversity.

Weed control

Control of weed species, such as ragwort (*Senecio jacobaea*), creeping thistle (*Cirsium arvense*) and spear thistle (*C. vulgare*) may be undertaken if they occur at high abundance, but only hand pulling or cutting of weed species will be used.

It should be noted that common nettle (*Urtica dioica*) has high value for some invertebrate species, such as the caterpillar stage of the peacock (*Aglais io*) and small tortoiseshell (*Aglais urticae*) butterflies. While it may be removed where it risks outcompeting other species and reducing species diversity, consideration will be given to retaining areas of nettle, to promote invertebrate populations.

The proposed measures required to create this habitat type are detailed in Table 1 below.

***Table 1:* Example Management Regime for Wildflower Meadow**

Location	Areas surrounding the BESS compound. See Figure 1.
Timing	Autumn recommended but spring (March/April) also suitable.
Constraints	None.
Capital works	1. The ground is to be prepared for sowing by creating gaps either with harrows or by raking (aiming to create around 50% bare soil). This is to be supervised by the ECoW. 2. Seed is to be sown in the autumn using Hedgerow Meadow Mix. Bulk up the seed with an inert carrier such as sand to make distribution easier. The seed must be surface-sown by machine or broadcast by hand. 3. Include additional yellow rattle (*Rhinanthus minor*) within the seed mix as it supresses more dominant grass growth. 4. Tread or roll in seed to produce a firm surface.
Yellow rattle	1. Yellow rattle must be sown in late autumn with November being the optimal time to ensure germination. 2. The ground must be prepared through cutting or heavy grazing and then scarified to create areas of bare earth, aiming for approximately 50% bare earth. 3. Yellow rattle can be combined with the Hedgerow Meadow Mix if this is also being sown in the autumn.
Management	**First year:** Eight weeks after sowing the sward should be assessed and annual weeds spot-treated or hand pulled as required to reduce competition for water and nutrients. If sown in spring, re-sow seeds in autumn (September / October) at a rate of 1g per square metre. This is to increase the success of species (e.g. yellow rattle) that need to be in the soil over the autumn/winter period to trigger germination. **Long-term:** Grassland should not be cut from spring through to late July/August to give sown species an opportunity to flower.

	After flowering in July or August take a 'hay cut': cut back to 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from Site. Mow the re-growth through to late autumn/winter to 50mm and again in spring if needed.
Monitoring	Monitor annually for three years prior to cutting in mid-summer, then again in year five, seven and ten. Monitor using randomised quadrats along a fixed transect to record species presence and relative abundance. Make recommendations as required.

4.6.5 Barn Owl, Bird, Bat, Pine Marten and Habitat Boxes

4.6.5.1 Barn owl boxes

The creation of wildflower meadows and hedgerow habitats should benefit this species due to the associated vole population. To further enhance the Site for this species a barn owl box is to be installed within the Site or wider landholding. Table 2 below details a potential supplier and recommended locations for installation (indicative locations are detailed in **Figure 1**).

Table 2: Barn owl box

Supplier	Recommended number within Site and where to install
Barn Owl Trust (www.barnowltrust.org.uk)	One box to be installed. The box should be situated at least 3 m above ground level on a mature tree with a thick trunk and with few or no low branches. Isolated, mature tree - on a woodland edge. Face the access hole towards open ground but out of the prevailing wind. As an alternative to a tree, the box could be fixed to a pole.

4.6.5.2 Bird boxes

Table 3 below details the recommended nest boxes to be installed within the Site, potential suppliers and recommended locations for installation (indicative locations are detailed in **Figure 1**). The type of boxes chosen will provide suitable nesting opportunities for a wide variety of bird species.

Table 3: Bird boxes

Nest Box Type	Species	Supplier	Recommended number within Site and where to install
Eco small bird box (28mm entrance hole)	Tree sparrow, blue tits, coal tits, marsh tits, great tits, and crested tits.	www.nhbs.com	4 – To be installed on suitable trees within existing woodland and scrub, a minimum of 3 m above ground level (agl) with unobstructed access for birds, avoiding areas exposed to strong sunlight or prevailing winds.
Apex Robin Box	Robin and other species such as flycatchers, wagtails and wrens that prefer open-fronted nest boxes.	www.nhbs.com	4 – To be installed on suitable trees within existing woodland and scrub, between 1.5 m and 4 m agl with unobstructed access for birds, avoiding areas exposed to strong sunlight or prevailing winds.

4.6.5.3 Bat boxes

Table 4 below details the recommended bat boxes to be installed within the Site, potential suppliers and recommended locations for installation (also shown on **Figure 1**). The type of bat boxes detailed, are suitable for bat species likely to be active within the Site including common pipistrelle, soprano pipistrelle, brown long-eared bat and *Myotis* species.

Table 4: Bat boxes

Bat Box Type	Type of roost / Species	Supplier	Recommended number within Site and Where to install
Improved Cavity Bat Box	Summer, non-breeding roost for a variety of bat species including brown long-eared bat, *Myotis* species and pipistrelle species.	www.nhbs.com	4 - To be installed approximately 4 metres above ground level (agl) on south-west or south-east aspects of trees within areas of existing woodland, ensuring unobstructed access for bats.

4.6.5.4 Habitat Boxes

To encourage pollinators within the Site, habitat boxes are to be installed adjacent to the wildflower meadows. Table 5 below details potential suppliers and recommended locations for installation (also shown on **Figure 1**). The type of habitat boxes detailed, are suitable for invertebrate species including solitary bees, ladybirds and lacewings.

Table 5: Habitat boxes

Habitat Box Type	Supplier	Recommended number within Site and Where to install
Insect block	https://www.wildcare.co.uk/insect-block.html	4 (of any type) – to be installed adjacent to newly created wildflower meadows and attenuation pond.
Insect tower	www.nhbs.co.uk	
Gabion basket	Gabion baskets (minimum size 450mm x 450 mm x 450mm) can be filled with bricks, cut lengths of cane, old slate, pinecones etc to create a habitat box. This would need to be completed with SQE assistance.	

4.6.5.5 Pine Marten Boxes

To encourage pine marten (LBAP species) within the Site and surrounding area a den box is to be installed within the woodland. Table 6 below details potential suppliers and a recommended location for installation (also shown on **Figure 1**). The box should be installed under the supervision of an SQE and placed to ensure predation risk of birds is minimised (e.g. not within close proximity to nest boxes).

Table 6: Pine marten den boxes

Supplier	Recommended number within Site and Where to install
https://www.nestbox.co.uk/products/pine-marten-den-box	One to be installed within woodland, on a suitable mature tree.

5. Biodiversity Net Gain Assessment

5.1 Overview

This section describes the approach taken to biodiversity enhancement within the Site. It is envisaged that a detailed BEMP will be agreed post consent in consultation with The Highland Council.

5.2 Legislative Context

From January 2024 developments in England will be required to demonstrate a 10% increase in biodiversity of habitats for wildlife compared with the pre-development baseline. This is required by Local Authorities in line with the new Environmental Bill. To enable this quantitative assessment Natural England have produced a metric (Biodiversity Metric 4.0 (Natural England, 2023)).

In Scotland there is not currently a legal requirement to quantify biodiversity net gain using a metric, however under NPF4 all developments must be able to demonstrate that biodiversity enhancement will be achieved. Further to this, in their pre-application response (detailed in Section 1.3), THC have specified that they want the Defra Biodiversity Metric 4.0 be used to demonstrate that a net gain of at least 10% will be achieved, therefore a BNG assessment is included below.

5.3 Toolkit

This report assesses the biodiversity baseline of the Proposed Development based on the data collated through the field survey and the following:

- Landscape Design (Annex B and Figure 1).
- The Biodiversity Metric 4.0 (Natural England, 2023).

5.4 Biodiversity Metric 4.0

Biodiversity Metric 4.0 has been used to calculate the baseline biodiversity units for the Site. The metric was produced by Natural England to quantify habitats. The metric is compatible with the UK Habitat Classification Hierarchy (UK Habs) which was used to assess the habitats within the Site during the site survey visit in May 2023.

5.5 Metric Assessment for the Site

5.5.1 Baseline

All habitats on Site described in Table 7 below are incorporated in the baseline calculation. The baseline units for the Site are:

- 23.94 habitat units; and
- 1.61 watercourse units.

Table 7: Habitats recorded within the Site

UK Habitat Classification		Corresponding Phase 1 Habitat	Area within Site (ha)	Habitat Condition Assessment
Primary Habitat	Secondary Codes			
Winter stubble (c1c5)	Grazed by sheep (102)	Arable (J1.1)	4.18	N/A
Other neutral grassland (g3c)	Scattered scrub (10) Scattered rushes (14) Tall forbs (16) Tall or Tussocky Sward (128)	Semi-improved neutral grassland (B2.2)	0.008	Moderate (2)

UK Habitat Classification		Corresponding Phase 1 Habitat	Area within Site (ha)	Habitat Condition Assessment
Primary Habitat	**Secondary Codes**			
Modified grassland (g4)	Rushes dominant (15) Grazed by sheep (102) Tall or tussocky sward (128)	Marshy grassland (B5) Fence (J2.3.4)	3.34	Poor (1)
	Grazed by sheep (102) Active management (516)	Improved grassland (B4) Fence (J2.3.4)	2.7	Poor (1)
Gorse scrub (h3e)	Semi-natural (30)	Dense scrub (A2.1)	0.43	Moderate (2)
Other standing water (r1g)	Ditch (50)	Standing water (G1)	18.2 m	Poor (1)
			162.78	
			225.04	
Built linear features (u1e)	Dry stone wall (114)	Wall (J2.5)	18.2 m	N/A Other

5.5.2 Impacts to baseline

The development will result in impacts to the habitats on Site, including loss of dense scrub and grassland communities. There will be construction of developed surface with the construction of the BESS including associated infrastructure. The baseline units lost because of the Proposed Development are:

- 23.94 habitat units; and
- 0 water course units.

5.5.3 Habitat Interventions to achieve net gain

The Biodiversity Metric Assessment demonstrates that net gain can be achieved through enhancing the habitats within the landownership. The interventions are both detailed within Table 8 below and described within the metric (to be provided separately as part of the planning application if requested).

The development will result in a net change of 6.41 habitat units resulting in a positive net gain of **26.78 %.** In addition the creation of 1.53 km of species-rich hedgerow will result in an additional gain of 13.77 habitat units. As hedgerows are not present within the baseline habitats, a percentage net gain cannot be calculated.

Table 8: Summary of On-Site Habitat Creation

On-site habitat creation	Area (ha) or Length (km)	Habitat Units
Habitat Areas		
Other neutral grassland	2.68 ha	24.77
Sustainable drainage system	0.2 ha	0.77
Other woodland; mixed	1.09 ha	4.81
Developed land; sealed surface	6.68 ha	0
	Total Habitat Units	30.36
	% BNG	26.78
Linear Features		
Hedgerow	1.53 km	13.77
	% BNG	Not applicable

5.5.4 Net gain achieved

In total, as demonstrated using the Defra BNG Metric, the above interventions will result in a **26.78% net gain** in habitat units for the Site.

This OBEMP provides an overview of management and monitoring measures to ensure the above outcomes are achieved. These will be described fully within the detailed BEMP and soft landscaping proposals to be produced post-consent and in consultation with the Highland Council. The final documents will include specifications for timings, capital works, management and monitoring to ensure the habitats are well established and maintained.

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Figures

KEY

- Red line boundary
- Existing drainage ditch
- BESS Substation
- Access_Tracks
- Fenceline
- Battery Containers
- Other Infrastructure and hard standing
- Communications
- Low voltage board and transformer
- Parking area
- Spares
- Water tank
- Welfare unit
- Attenuation pond
- Native mixed hedgerow
- Wet meadow mix (SCM2)
- Native woodland
- Hedgerow meadow mix (SCM4)
- Habitat boxes
- Pine marten den box
- Bat box
- Bird box
- Barn owl box

Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions go here>

0 10 20 40 60 80 100
Meters

1:2,029

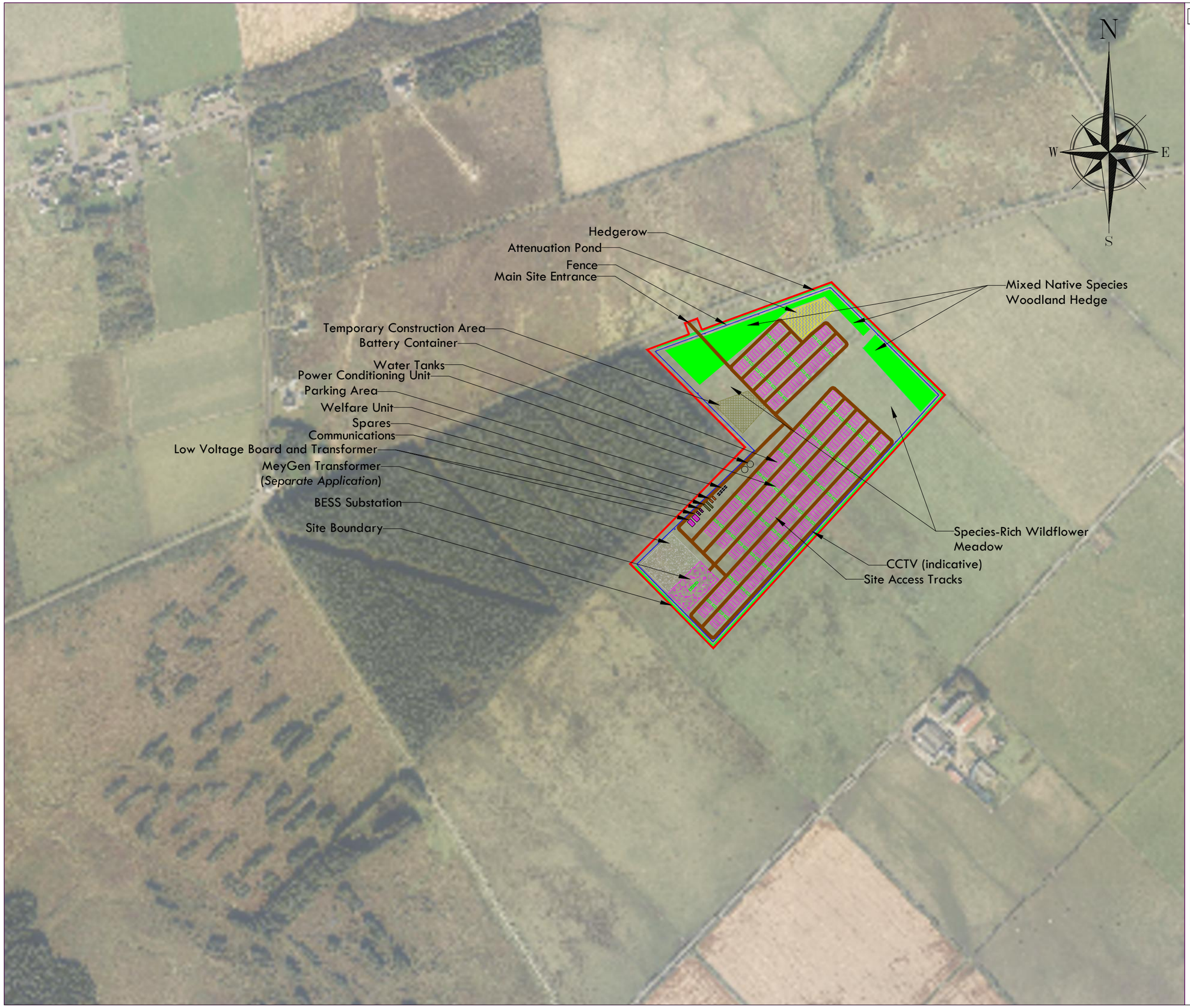
ITPENERGISED

Mey BESS
Outline Biodiversity Enhancement Plan

Figure 1
Enhancement Areas

Date:	Lead:	Review:	Version:
09/11/2023	JD	AH	1.0

Annex A - Indicative Site Plan



NOTES

DO NOT SCALE. Use annotated measurements only

SITE STATS

Development Area	10.65 Ha
BESS System Size	300 MW
Total No. of PCU Units	88
Total No. of Battery	352
Discharge Hrs	4

LEGEND

Issue	Date	Comments
09	28/10/23	Layout Revised
08	23/10/23	Layout Revised
07	28/09/23	Layout Revised
06	12/06/23	Layout Revised
05	06/06/23	Layout Revised
04	30/05/23	Layout Revised
03	19/05/23	Layout note updated
02	18/05/23	Layout revised, hedgerow screening added
01	18/05/23	Initial issue

Drawn AA Approve DF Date 28/07/23

Drawing Status

Planning

Project: Mey BESS

Address: Phillips Mains farm, KW14 8XH

Client: Simec Atlantis Energy

Title

BESS Site Layout

Issue : 07

Scale 1:2000 @A3

SImec Atlantis Energy

SIMEC ATLANTIS ENERGY

ITPEnergised Offices
Bristol
33 Colston Avenue
BS1 4UA

ITPENERGISED

Annex B – Soft landscaping proposals

Legend

- Site Boundary
- Fence
- Proposed Native Tree (Select Standard)
- Proposed Native Tree (Feather)
- Proposed Native Woodland Edge Mix
- Proposed Native Mixed Hedgerow
- Proposed Native Wildflower Meadow
- Proposed Wet Wildflower Mix (SUDS area)

Native Trees (Select Standard)

No.	Code	Species	Form	Height (cm)	Grown	Breaks
4	AC	Acer campestre	Select Standard	300-350	RB	3
3	AG	Alnus glutinosa	Select Standard	300-350	RB	3
8	BP	Betula pendula	Select Standard	300-350	RB	3
5	PS	Pinus sylvestris	Select Standard	300-350	RB	3
6	PT	Populus tremula	Select Standard	300-350	RB	3

Native Trees (Feathers)

No.	Code	Species	Form	Height (cm)	Grown	Breaks
13	Ac	Acer campestre	Feather	150-175	2x: BR	3
3	Ag	Alnus glutinosa	Feather	150-175	2x: BR	3
7	Bp	Betula pendula	Feather	150-175	2x: BR	3
12	Ps	Pinus sylvestris	Feather	150-175	2x: BR	3
6	Pt	Populus tremula	Feather	150-175	2x: BR	3

Native Woodland Edge Mix (planted in groups of 3-7no. same species)

No.	Code	% mix	Species	Form	Height (cm)	Grown	Spacing
361	Ac	10	Acer campestre	Transplant	60-80	1+1: BR	0.3/m2
722	Bp	20	Betula pendula	Transplant	60-80	1+1: BR	0.3/m2
1083	Cm	30	Crataegus monogyna	Transplant	60-80	1+1: BR	0.3/m2
722	Psp	20	Prunus spinosa	Transplant	60-80	1+1: BR	0.3/m2
361	Sc	10	Salix caprea	Transplant	60-80	1+1: BR	0.3/m2
361	Sn	10	Sambucus nigra	Transplant	60-80	1+1: BR	0.3/m2

Native Mixed Hedgerow (planted in double staggered row, 5no per m, in groups of 3-7no same species)

No.	Code	% mix	Species	Form	Height (cm)	Grown	Pot size
765	Ca	10	Corylus avellana	Transplant	60-80	1+1: BR	N/A
4207	Cm	55	Crataegus monogyna	Transplant	60-80	1+1: BR	N/A
765	Psp	10	Prunus spinosa	Transplant	60-80	1+1: BR	N/A
765	Rc	10	Rosa canina	Transplant	60-80	1+1: BR	N/A
765	Sa	10	Sorbus aucuparia	Transplant	60-80	1+1: BR	N/A
382	Sn	5	Sambucus nigra	Transplant	60-80	1+1: BR	N/A

Native Wildflower Meadow

Weight	Seed Mix	Description	Sowing rate
80.8kg	HMM	Hedgerow Meadow Mix (SCM4) by Scotia Seeds	3.0g / m2

Wet Wildflower Mix

Weight	Seed Mix	Description	Sowing rate
5.9 kg	WeM	Wet Meadow Mix (SCM2) by Scotia Seeds	3.0g / m²

Notes: Planting Approach

1. Topsoil: Where necessary, topsoil shall be a minimum of 400mm deep over new planting areas and graded to fall (excluding wildflower areas). Imported topsoil must be BS 3882:2015 compliant and existing topsoil must be cultivated in accordance with BS 3882:2015 outside Root Protection Areas (RPAs) of existing trees. No cultivation should take place in wet / waterlogged conditions and within the RPAs of existing trees.

2. Native Trees (Select Standards and Feathers): trees to be planted in individual pits - Select Standards at 850x850x450mm, Feathers at 450x450x450mm, or dimensions of roots, whichever is greater. Each tree to be supported by 1no. stake and bio-degradeable tie, and protected via rabbit guard. All native trees shall be of local provenance.

3. Native Woodland Edge Mix: Bare root shrubs to be planted at rate of 0.3no. plants per m^2 (i.e. 1.8m centres). Planting areas cultivated to 150mm depth, in pits 150 x 150 x 150mm. Each plant to be supported by 1no. cane, and protected via rabbit guard. All plants shall be of local provenance.

4. Native Mixed Hedgerow: Hedges to comprise a double staggered row of plants 400mm apart within each row, overall 5no. plants per linear metre. Species mixed throughout the hedge line in random groups of 3/7. 500mm wide trench excavated to take plants and topsoil cultivated to 450mm depth. All plants shall be of local provenance.

5. Mulch: All tree and hedge planting areas to be covered using coarse bark mulch 50-75mm depth.

6. Native Wildflower Meadow & Wet Wildflower Mix: prior to sowing, the ground shall be cultivated to depth of 50mm, reducing upper soil to fine tilth.

7. Planting Seasons / Phasing: Planting to be undertaken in accordance with planting season (Nov - March for bare root plants). Wildflower Meadow to be sown upon completion of the works at first available season (Spring sowing from March to May, or Autumn sowing from Mid-August to late September).

Notes: Future Management

Management shall be undertaken in a manner which maintains the mix of plant species and prevents any one species from dominating. Weed control shall ensure any pernicious weeds are removed, allowing specified species to develop free of unnecessary competition.

Trees shall be periodically inspected to ensure they remain in a healthy and attractive condition. Pruning of trees shall be carried out in accordance with BS 3998; 1989. Maintenance works will observe bird nesting seasons (months of March to July inclusive) with management works to trees undertaken outwith this period. Replacement of any plants that are found to be dead or dying shall be undertaken on an annual basis up to the end of the fifth year following planting. This shall be undertaken at the first planting season with a like-for-like replacement.

All types of litter, debris and rubbish that has become trapped in tree branches shall be removed on a periodic basis.

Rev	Date	Note

TGP LANDSCAPE ARCHITECTS
7 The Square, 95 Morrison Street,
Glasgow, G5 8BE Tel: 0141 429 2999
info@tgp.uk.com/www.tgp.uk.com
Also in Edinburgh & Newcastle

Project	Mey BESS
Title	Landscape Plan LVA Figure 5

Date	Scale	Drawn	Checked
01/11/23	1: 1000 @ A1	XX	NH

Job	Suitability	No.	Issue	Revision
2142	-	L01	-	-

LI WORKSTAGE: 0/1 ☐ 2 ☐ 3 ☒ 4 ☐ 5 ☐ 6 ☐

Annex C – Planning Policy

National Planning Framework 4 (NPF4)

National Planning Framework 4 (NPF4) (Scottish Government, 2023) replaces National Planning Framework 3 (Scottish Government, 2014a) and Scottish Planning Policy (Scottish Government, 2014b). NPF4 outlines the duty of planning authorities to further the conservation of biodiversity as defined in the Nature Conservation (Scotland) Act 2004.

The planning system has an important role to play in improving the environment, for example by strengthening green and blue infrastructure, safeguarding, and enhancing urban and rural biodiversity, and contributing to the improvement of water, air and soil quality. Development plans should also seek to achieve a net enhancement of landscape quality and biodiversity. Policies relevant to nature conservation include:

- Policy 1: Tackling the climate and nature crisis;
- Policy 3: Biodiversity;
- Policy 4: Natural places;
- Policy 5: Soils;
- Policy 6: Forestry, woodland and trees;
- Policy 8: Green belts;
- Policy 11: Energy; and
- Policy 20: Blue and green infrastructure.

Planning Advice Note (PAN) 60

National planning policy on landscape and natural heritage is supported by Planning Advice Note (PAN) 60 Planning for Natural Heritage, the key elements include:

- Taking a broader approach to landscape and natural heritage than just conserving designated or protected sites and species, taking into account ecosystems and natural processes.
- Facilitating positive landscape change whilst maintaining and enhancing distinctive character.
- Seeking benefits for species and habitats from new development including the restoration of degraded habitats.
- Siting and design of development should be informed by local landscape character.
- Encouraging connectivity between habitats, through green networks.
- Protecting internationally and nationally designated habitats and species.
- Protecting and enhancing woodland and trees of high nature conservation value.

The Highland-wide Local Development Plan (HwLDP)

The Highland-wide Local Development Plan (HwLDP) was adopted on 5th in April 2012 (THC, 2012). A review process commenced in 2016 which is on hold awaiting updates following the adoption of NPF4. Policies and related supplementary guidance under the HwLDP related to nature conservation and biodiversity are:

- Policy 28 - Sustainable Design;
- Policy 51 - Trees and Development;
- Supplementary Guidance 'Trees, woodland and Development (THC, 2013a);
- Policy 55 - Peat and Soils
- Policy 57 - Built, Natural and Cultural Heritage;

- Policy 58 - Protected Species;
- Supplementary Guidance 'Highland's Statutorily Protected Species' (THC, 2013b);
- Policy 59 - Other Important Species;
- Policy 60 - Other Important Habitats;
- Policy 74 - Green Networks; and
- Supplementary Guidance 'Green Networks' (THC, 2013c).

Caithness and Sutherland Local Development Plan (CaSPlan)

The Caithness and Sutherland Local Development Plan (CaSPlan) was adopted on 18 August 2020 and together with the HwLDP and Supplementary Guidance forms the Highland Council's Development Plan that guides future development in Highland (THC, 2020). The CaSPlan aims to deliver key outcomes for growing communities; employment; connectivity and transport; and environment and heritage. The environment and heritage strategy includes:

- Green Networks and Green Space; and
- Climate Change.

Annex D - Seed Mixes

Wet Meadow Mix (SCM2)

SCOTIA SEEDS Wildflowers of Scotland
www.scotiaseeds.co.uk
01356 626425
Mavisbank, Farnell, Brechin, DD9 6TR

MIX CONTENTS

Wet Meadow Mix

This mix has a colourful range of species for wet soils, including sites which are occasionally flooded or waterlogged for short periods. There are 19 wildflower & 7 grass, rush & sedge species in this mix.

Species	Common name	Origin	%
20	% wildflowers		
Achillea ptarmica	Sneezewort	Inverness-shire	1.5
Centaurea nigra	Common Knapweed	Fife	1
Cirsium palustre	Marsh Thistle	Angus	0.1
Filipendula ulmaria	Meadowsweet	Fife	1.5
Geranium pratense	Meadow Cranesbill	Fife	2
Geum rivale	Water Avens	Fife	1
Hypericum tetrapterum	Square stemmed St John's wort	Argyll	0.2
Hypochaeris radicata	Cats Ear	Inverness-shire	1
Iris pseudacorus	Yellow Flag Iris	Fife	2.5
Leucanthemum vulgare	Ox-eye Daisy	Fife	1
Lotus uliginosus	Greater trefoil	Angus	1
Plantago lanceolata	Ribwort Plantain	Fife	1.2
Prunella vulgaris	Selfheal	Fife	0.5
Ranunculus acris	Meadow Buttercup	Fife	1
Rhinanthus minor	Yellow Rattle	Inverness-shire	1
Rumex acetosa	Common Sorrel	Fife	1
Scorzoneroides autumnalis	Autumn Hawkbit	Fife	1
Silene flos-cuculi	Ragged Robin	Fife	1
Succisa pratensis	Devils-bit Scabious	Fife	0.5
80	% grasses, sedges & rushes		
Agrostis capillaris	Common Bent	cultivated	10
Alopecurus pratensis	Meadow Foxtail	Fife	5
Carex ovalis	Oval Sedge	Berwickshire	0.2
Deschampsia caespitosa	Tufted Hair Grass	Inverness-shire	7.4
Festuca rubra	Red Fescue	Angus	36.5
Phalaris arundinacea	Reed Canary Grass	Berwickshire	0.3
Poa pratensis	Smooth-stalked Meadow Grass	cultivated	20.6

If you have any queries about the mix please call us on 01356 626425. 22

Hedgerow Meadow Mix (SCM4)

Hedgerow Meadow Mix

A tall mix of perennial and biennial and one annual (Yellow Rattle) wildflowers for areas of light shade beside hedges or walls or in woodland clearings. There are 18 wildflower & 5 grass species in this mix.

Species	Common name	Origin	%
	20 % wildflowers		
Alliaria petiolata	Hedge Mustard	Angus	2
Campanula latifolia	Giant Bellflower	Fife	0.2
Centaurea nigra	Common Knapweed	Fife	2
Cruciata laevipes	Crosswort	Midlothian	0.5
*Digitalis purpurea**	Foxglove	Fife	1
Geum urbanum	Herb Bennet	Fife	2
Geranium sylvaticum	Wood Cranesbill	Perthshire	2
Hypericum perforatum	St John's Wort	Fife	0.5
Knautia arvensis	Field Scabious	Fife	1
Leucanthemum vulgare	Ox eye Daisy	Fife	1
Primula vulgaris	Primrose	Inverness-shire	0.2
Rhinanthus minor	Yellow Rattle	Inverness-shire	1
Silene dioica	Red Campion	Fife	2
Stachys sylvatica	Hedge Woundwort	Inverness-shire	1
Stellaria holostea	Greater Stitchwort	Fife	0.1
Teucrium scorodinia	Wood Sage	Angus	1
Torilis japonica	Upright Hedge Parsley	Inverness-shire	1.5
Vicia sepium	Bush Vetch	Angus	1
	80 % grasses		
Agrostis capillaris	Common Bent	cultivated	10
Cynosurus cristatus	Crested Dog's Tail	cultivated	10
Festuca rubra ssp commutata	Chewings Fescue	cultivated	25
Poa nemoralis	Wood Meadow Grass	cultivated	10
Poa pratensis	Smooth-stalked Meadow Grass	cultivated	25

*Many wildflower plants are inedible &/or toxic, **in particular, all parts of the Foxglove plant are toxic**. Please do not eat this plant and wash hands after handling any part of it including its seeds.

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