REPORT

Ecological Impact Assessment

Proposed Battery Energy Storage System, Rigifa

Client:	Field Rigifa Ltd
Reference:	PC3506-RHD-07-XX-RP-Z-0008
Status:	Final/01
Date:	30 September 2024

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Document title:	Ecological Impact Assessment
Subtitle:	Proposed Battery Energy Storage System, Rigifa
Reference:	PC3506-RHD-07-XX-RP-Z-0008
Date:	30 September 2024
Project name:	Rigifa BESS
Project number:	PC3506
Author(s):	AH, TC
Drafted by:	AH, TC, LMF
Checked by:	TC, WS
Date:	05/09/2024
Approved by:	EW, JP
Date:	18/09/2024
Classification:	Project related

Royal HaskoningDHV

Revision	Date	Description	Prepared	Checked	Approved
01	18 September 2024	EcIA	AH, TC, LMF	TC, WS	EW, JP
02	25 September 2024	EcIA	TC	TC	EW

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Summary

The construction of a battery energy storage system (BESS) is proposed at land 625 m southwest of 1 Phillips Mains, Mey, Rigifa, Scotland, for which detailed planning permission is sought from the Highland Council.

Royal HaskoningDHV was instructed by Field Rigifa Ltd to undertake an Ecological Impact Assessment (EcIA) of the Proposed Development. To inform this assessment, a desktop study, habitat and species surveys were undertaken.

The Proposed Development occupies a total footprint of c. 12.93 ha (and a footprint of c. 6.4 ha for the newly created permanent infrastructure) across the wider 45.4 ha Site (**Figure 1),** the footprint of newly created permanent infrastructure will cover an area of c. 6.4ha.

The Site is dominated by winter stubble habitat with negligible ecological importance. Other habitats of greater importance present within the Site include bog, types of woodland and grassland and standing water habitats, the majority of which will be retained alongside the Proposed Development.

Approximately 3.2 km of Locally important hedgerow are present within the Site. Approximately 0.12 km is anticipated to be lost as a result of the Proposed Development. However, the enhancement of 2.43 km of retained hedgerow will result in significant biodiversity enhancement within the context of the Site.

The scheme will deliver significant biodiversity enhancement within the context of the Site, this will comprise a net gain of 51.08% for Hedgerow habitats and 5.39% for Area habitats. The positive effects will be delivered through the provision of new landscaping alongside the Proposed Development and enhancement of the existing retained hedgerows.

Subject to the implementation of mitigation measures and safeguards detailed within this EcIA, no significant adverse ecological effects are anticipated as a result of the Proposed Development.

Mitigation measures detailed herein could be secured by appropriately worded planning conditions.

1 Introduction

The assessment within this report has been authored by Tom Clemence (MSc, BSc (Hons), ACIEEM) and Dr Lowell Mills-Frater (PhD, MRes, BSc (Hons)) who have eleven and five years of consultancy experience respectively. In addition, Dr Lowell Mills-Frater has 15 years of wider deployment experience in ornithology, with expertise from doctoral studies in terrestrial ground-nesting birds of open habitats.

1.1 Purpose of the report

This report has been prepared by Royal HaskoningDHV on behalf of Field Rigifa Ltd (Field). It sets out the findings of an Ecological Impact Assessment (EcIA) of the Proposed Development at Land 625 m southwest of 1 Phillips Mains, Mey, Rigifa, Scotland (hereafter the 'Site').

Construction of a Battery Energy Storage System (BESS) (hereafter 'the Proposed Development') is proposed at the Site, for which detailed planning permission is sought. These areas are further defined within **Section 1.2** below.

The purpose of this EcIA report is to:

- Identify and describe all potentially significant ecological effects associated with the Proposed Development;
- Set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects;
- Identify how mitigation measures will/could be secured;
- Provide an assessment of the significance of any residual effects;
- Identify appropriate enhancement measures; and
- Set out the requirements for post-construction monitoring.

The scope of this assessment has been determined with consideration of best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and the Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013).

1.2 Description of the project

The Site comprises the overall planning application boundary. This area covers 45.4 ha and is shown within **Figure 1**.

Within the Site is the Proposed Development. This comprises a battery energy storage system (BESS) with a capacity of up to 200 megawatts (MW) which will charge and discharge electricity from the adjacent planned and consented Gills Bay substation, as shown on **Figure 1**. The footprint of the Proposed Development covers an area of 12.9 ha. Within the Proposed Development, the footprint of newly created permanent infrastructure will cover an area of c. 6.4 ha. This will comprise the battery compound, substation compound and access tracks.

The primary reason for the Site boundary exceeding the Proposed Development footprint is to allow flexibility in the design during the pre-application phase, including landscaping, drainage and access designs. This also provides some flexibility for the underground cable route to connect the Proposed Development to the consented Gills Bay substation (which is located within the Site boundary); the exact point of connection will be determined by SSE following their detailed design. The Proposed Development footprint will include:

- Battery storage units arranged into rows;
- Medium-voltage (MV) skids and ancillary low-voltage (LV) equipment;
- High-voltage (HV) grid transformers;
- Air insulated switchgear;
- A substation building comprising welfare facilities, a switch room and control room;
- An interface substation and underground 132 kV grid connection cable; and
- Site-wide supporting infrastructure including cabling, access tracks, fencing, attenuation basins, and landscaping measures.

1.3 Supporting documents

The following report should be read in conjunction with this EcIA for full context of the baseline conditions present:

- Breeding Bird Appraisal Report (document reference PC3506-RHD-07-XX-RP-Z-0005), provided in **Appendix B**; and
- Shadow Habitats Regulations Appraisal (document reference PC3506-RHD-07-XX-RP-Z-0010).

1.4 Consultation

Consultation was sought during the pre-application phase from the following stakeholders, as laid out in **Table 1-1** below.

Table 1-1. Stakeholder responses to pre-application phase consultation.

Stakeholder	Consultation area	Stakeholder response
The Highland Council	Pre-application advice	Responded on 12 June 2024 (reference number: 24/00186/PREMAJ). Responses have been reviewed and accounted for fully in the assessment.
NatureScot	Regarding the proposed methods to assessing potential impacts upon groundwater dependent terrestrial ecosystems (GWDTE) and ornithology.	Responded on 3 August 2024 regarding ornithology and 5 September regarding GWDTE. Responses have been reviewed and accounted for fully in the assessment.
Scottish Environmental Protection Agency (SEPA)	Regarding the proposed methods to assessing potential impacts on GWDTE.	Responded via email on 13 September 2024, with advice for the parameters that should be considered when undertaking an assessment on GWDTE; these have been reviewed and accounted for fully in the assessment.

2 Planning policy and legislation

2.1 Legislation

Legislation relating to wildlife and biodiversity of relevance to this EcIA includes:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992; and
- Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended).

This legislation has been addressed, as appropriate, in the production of this report with further information provided in **Appendix A**.

2.2 National planning policy

National Planning Framework 4 and the Scottish Biodiversity List (SBL) provide national policy relating to wildlife and biodiversity and are considered herein.

Full details of these relevant policies are provided within **Appendix A**.

2.3 Local planning policy

Local policy of relevance to the Proposed Development include:

- The Highland Nature Biodiversity Action Plan (BAP); and
- The Highland Council Biodiversity Planning Guidance (Highland Council, 2024).

Full details of these relevant policies are provided within **Appendix A**.

2.4 Standing advice

NatureScot's standing advice regarding protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from NatureScot following consultation. Standing advice has therefore been given due consideration, alongside other relevant detailed guidance documents, in the scoping of ecological surveys and production of this report.

3 Methodology

3.1 Desk study

A desk study of the Site was undertaken in April 2024 and updated in August 2024 comprising a review of online resources and biological records centre data as detailed below.

The desk study data sources consulted included:

- The Multi-Agency Geographic Information for the Countryside (MAGIC) online database;
- Data regarding SBL habitats across various databases through NatureScot (2023);
- Highland Biological Recording Group (HBRG) who provided non-statutory designated sites data and protected and notable species records for within 2 km of the Site (as defined in Section 1.2) and protected and notable bird data for within 3 km of the Site (data requested and received from HBRG in April 2024);
- Royal Society for Protection of Birds (RSPB) data was requested and received for notable bird records within 5 km of the Site within the past 10 years;
- Highland Council and Energy Consents Unit planning portals to interrogate relevant publicly available ecological information regarding local and adjacent planning submissions. These comprise the EcIA for the nearby proposed BESS development known as Mey BESS (Energy Consent Unit (ECU) planning reference ECU00004838) (ITP Energised, 2023) and the Environmental Impact Assessment for Hollandmey Renewable Energy Development (ECU planning reference ECU00003353) (SPR, 2021);
- Scottish Natural Heritage (SNH, now NatureScot) survey report on feeding areas, roosts and flight activity of qualifying species of Caithness Lochs SPA (Special Protection Area); 2011/12 and 2012/13 (Patterson et al. 2013) were consulted for recorded locations of wintering geese and swans associated with the SPA; and
- The British Trust for Ornithology (BTO) Bird Atlas 2007-11 (Balmer et al., 2013) and Caithness Bird Report 2023 (SOC, 2024) were consulted for status of specific breeding bird species in Caithness.

The above data sources were reviewed to identify ecological features which may be within the Site's likely 'zone of influence' (ZoI). The ZoI is the area over which off-site ecological features may be subject to significant effects arising from the Proposed Development and associated activities within the Site.

For the purposes of this appraisal, the features considered and their maximum potential ZoI are:

- Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 5 km of the Site (including possible/proposed sites);
- Sites of Special Scientific Interest (SSSI) within 2 km of the Site;
- Non-statutory designated sites within 1 km of the Site;
- Notable habitats such as Ancient Woodland, groundwater dependent terrestrial ecosystems and SBL Habitats of Principal Importance within 250 m of the Site;
- Protected and notable birds within 5 km of the Site; and
- All other protected and notable species within 2 km of the Site.

A review was undertaken of the location of any such features, their distance from and connectivity with the Site, and the reasons for their ecological interest. This information was used to determine whether they may be within the ZoI.

The location of designated sites in relation to the Site are presented in **Figure 2.**

3.2 Field survey

A UK Habitat Classification ('UKHab') survey, encompassing the Site, was carried out in fine and dry weather conditions on 5 March 2024 by a suitably qualified ecologist who is ACIEEM and FISC Level 4.

The field survey classified habitats in accordance with the UKHab methodology (UKHab Ltd, 2023).

The following parameters were adopted for the UKHab survey undertaken for this assessment:

- Minimum Mappable Unit (MMU):
  - $10m^2$/0.001ha (polygons);
  - 5m (linear);
- Primary Habitats recorded to a minimum of Level 3 (**Section 4.2** below) with UKHab codes provided; and
- Mandatory secondary codes used.

Alongside the UKHab survey, additional field survey information was collected, comprising:

- Detailed floral species lists recorded for each identified habitat/parcel;
- Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt and otter);
- Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates);
- Evidence of, or potential for, other notable species (including SBL Species of Principal Importance as well as notable, rare, protected or controlled plants and invertebrates); and
- Any other survey information relevant to ecological matters.

Results of the UKHab survey are presented within **Figure 1**.

3.2.1 Further Survey Work

A Breeding Birds Appraisal was carried out in June 2024 (**Appendix B**). Methods, limitations and results are presented in full within the Breeding Birds Appraisal report (**Appendix B**).

3.3 Biodiversity Calculation

Taking cognisance of The Highland Council Biodiversity Planning Guidance (Highland Council, 2024), the Defra Statutory Biodiversity Metric (herein the 'Biodiversity Metric') was used to calculate the net effect of the Proposed Development upon biodiversity (Defra, 2024).

It should be noted that the Biodiversity Metric has been developed to quantify the value of the habitats in England, where it is now a statutory requirement of most planning applications under the Environment Act (2021). However, in Scotland, the Biodiversity Metric is only used as a complementary tool to help quantify the value of habitats present, and to assess the effectiveness of a proposed developments habitat retention, creation and enhancement measures in achieving positive effects for biodiversity, in accordance with planning guidance.

Until a suitable metric for use in Scotland has been developed, the Highland Council Biodiversity Planning Guidance (Highland Council, 2024) and research published by Scottish Government (2023) suggest that the Biodiversity Metric is a tool that may be considered appropriate to use.

When using the Biodiversity Metric in Scotland, it must also be considered that the value and types of habitat present in Scotland and England vary and therefore the values assigned by the Biodiversity Metric (which is based on English habitats) may not be entirely applicable.

Notwithstanding the above, the Biodiversity Metric (Defra, 2024) has been a useful tool to allow assessment of the baseline and understand the potential for biodiversity enhancement. Enhancement assessments have been undertaken by qualified professionals, in a qualitative manner, to determine the most effective delivery of enhancement for the Site and which are considered appropriate in this instance and until further guidance is available. This includes determining habitat condition, ecological connectivity and strategic significance of the habitats present within the Site, with these factors used as proxies to assess and assign a numeric value to describe the biodiversity of habitats. Enhancement proposals have been incorporated as part of the Proposed Development based on careful consideration of the site specifics and realities of delivering effective enhancement.

In accordance with the Defra (2024) guidance, the biodiversity value of a habitat is measured in Biodiversity Units (BDU). BDUs are further split between three broad habitat types:

- Hedgerow habitats;
- Watercourse habitats; and
- Area habitats (e.g. all types of grassland, woodland and wetland).

3.4 Limitations

The UKHab survey was undertaken in early March and recorded species and habitats observed during this period. There is potential that species present within the Site would not have been observed during the surveys and therefore not recorded. This may include ground nesting birds that nest later in the year but were not present at the time of survey.

The Biodiversity Metric used has been developed for habitats in England and is not adjusted to reflect the value of the habitats found in Scotland. Therefore, where required, the quantified biodiversity values as calculated by the Biodiversity Metric are used as a guide. Where appropriate, professional judgement has been used to also qualify habitat value and recommended proportionate mitigation measures.

Despite these constraints, when considering the objective of the survey, the habitats present and the surrounding areas, it is considered that these constraints would not have a major impact on the validity of findings.

Any potential limitations regarding the Breeding Bird Appraisal are listed within the **Appendix B**.

3.5 Assessment

Ecological features are identified, evaluated and assessed in accordance with the CIEEM Guidelines for Ecological Impact Assessment (2018).

It is an established principle (CIEEM, 2018) that EcIA is an iterative process. Specialist advice on the avoidance and mitigation of the potential negative effects of the Proposed Development has been input from an early design stage.

4 Baseline ecological conditions

4.1 Designated sites

No statutory designated sites were recorded within or immediately adjacent to the Site.

There are six internationally designated sites are within 5 km of the Site. These are Caithness Lochs SPA and Ramsar site, North Caithness Cliffs SPA, and Caithness and Sutherland Peatlands SAC, SPA and Ramsar site.

There are two nationally designated sites within 2 km of the Site. These are Loch of Mey SSSI and Phillips Mains Mire SSSI.

There are no non-statutory designated sites located within 1 km of the Site.

Further details of the above sites are provided in **Table 4-1** and their locations are show within **Figure 2**.

Table 4-1. Statutory and non-statutory designations within search area

Site name and designation	Distance and direction from Site	Special interests or qualifying features
International designations within 5 km		
Caithness Lochs SPA	1.8 km north-west	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 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.
Caithness Lochs Ramsar site	1.8 km north-west	Ramsar Criterion 6 – species/populations occurring at levels of international importance: • **Greylag goose** (8,730 individuals in winter, representing an average of 8.7% of the population (5 year peak mean for 1996/97-2000/01) Noteworthy fauna:

Site name and designation	Distance and direction from Site	Special interests or qualifying features
		• **Greenland white-fronted goose** (252 individuals in winter, representing an average of 1.2% of the GB population (5-yr peak mean for 1996/7-2000/1)) • **Whooper swan** (192 individuals in winter, representing an average of 3.3% of the GB population (5-yr peak mean 1998/9-2002/3)) • **Ruff** *Philomachus pugnax* (22 individuals in spring/autumn, representing an average of 3.1% of the GB population (5-yr peak mean 1998/9-2002/3)
North Caithness Cliffs SPA	2.6 km north-east	• **Peregrine** *Falco peregrinus* (estimated 6 pairs, 0.5% of the GB population and selected as one of the most suitable sites for peregrine in GB). • **Common guillemot** *Uria aalge* (1985 to 1987, 38,300 individuals, 1% of the North Atlantic biogeographic population, 4% of the GB population). • **Seabird assemblage (breeding) comprising the above species and the following further component species:** o **Northern fulmar** *Fulmarus glacialis* (14,700 pairs; 3% of the GB population) o **Black-legged kittiwake** *Rissa tridactyla* (13,100 pairs, 3% of the GB population) o **Razorbill** *Alca torda* (4,000 individuals, 3% of the GB population) o **Puffin** *Fratercula arctica* (2,080 pairs, 0.4% of the GB population and greater than 2,000 individuals)
Caithness and Sutherland Peatlands SPA	2.8 km south-east	• **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). • **Dunlin** *Calidris alpina schinzii* (1993 and 1994, 1,860 pairs, 20% of the GB population).

Site name and designation	Distance and direction from Site	Special interests or qualifying features
		• **Common scoter** *Melanitta nigra* (2007, at least 21 pairs, <0.1% of the Western Siberia/Western & Northern Europe/Northwestern Africa biogeographic 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). • **Wigeon** *Anas Penelope* (1993/94, at least 43 pairs, <0.1% of the Western Siberia/Northwestern/Northeastern Europe biogeographic population and at least 10.8% of the GB population).
Caithness and Sutherland Peatlands SAC	2.8 km south-east	The selection of this site is largely due to the presence of Annex I habitats: • Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoeto-Nanojunctea. • Natural dystrophic lakes and ponds • Blanket bogs Noteworthy fauna and flora (Annex II qualifying species): • Otter *Lutra lutra* – good population • Marsh saxifrage *Saxifraga hirculus*
Caithness and Sutherland Peatlands Ramsar site	2.8 km south-east	Ramsar criterion 1 – presence of one the largest and most intact blanket bogs in the world. Ramsar criterion 2 – support of rare species of wetland plants and animals: • 3 nationally rare mosses • 8 nationally scarce vascular plants • 4 nationally scarce mosses • Several nationally scarce insect species • 1 nationally rare insect species • 10 breeding waterfowl species Ramsar criterion 4 – (pending update to RIS) supporting flora and fauna at a critical stage in their life cycle and/or provides refuge during adverse conditions. Ramsar criterion 6 – species/populations occurring at levels of international importance: • Dunlin *Calidris alpina schinzii* - 1860 breeding pairs, representing an average of 7.4% of the breeding population.
National designations within 2 km		
Phillips Mains Mire SSSI	0.5 km east	Noted for blanket bog.

Site name and designation	Distance and direction from Site	Special interests or qualifying features
Loch of Mey SSSI	1.7 km north-west	Noted for transition grassland and breeding bird assemblage including redshank (*Tringa tetanus*), snipe (*Gallinago gallinago*), gadwall (*Anas strapera*) and lapwing. Part of the Caithness Lochs SPA.

4.1.1 Ancient woodland

There is no ancient woodland, as shown on the ancient woodland inventory, covering any part of the Site or immediately adjacent land. No trees on or adjacent to the Site are listed on the Ancient Tree Inventory.

4.2 Habitats and flora

All habitats recorded on-site are shown within **Figure 1**.

Biodiversity Metric values of habitats are referenced within this Section of the report and detailed in full within **Section 4.4**.

4.2.1 Notable flora records

The data search returned no records of notable flora species or invasive non-native species (INNS) of plant from within the Site or within 2 km.

No notable floral communities, notable individual species or INNS were recorded during the UKHab field survey.

4.2.2 Winter stubble (c1c5)

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 69.76 Biodiversity Units (BDU), a condition assessment is not required for this habitat type (Defra, 2024).

Habitat Description
At the time of survey, the Site was dominated by winter stubble, comprising c. 34.88 ha of the overall c. 45.4 ha Site.

The fields which comprised winter stubble had narrow field margins and were in active agricultural rotation.

Although this habitat provides some value under the Biodiversity Metric (69.76 BDU), it is common, widespread, highly artificial and of low fragility. Furthermore, it does not meet the criteria for any SBL Habitats of Principal Importance. The ecological value of this habitat alone is considered to **fall below the threshold of Local importance**.

4.2.3 Other coniferous woodland (w2c)

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 4.01 BDU, condition is poor (Defra, 2024).

Habitat Description
There are several blocks of 'other coniferous woodland' (UKHab code w2c, secondary code 29) present within the survey area covering a total area of c. 2 ha.

All blocks comprise Sitka spruce (*Picea sittchensis*) and are assessed to be in 'poor' condition in accordance with the Defra Condition Assessment criteria (Defra, 2024).

Due to the highly artificial nature of this habitat, the lack of connectivity, low species diversity and common and widespread abundance within the wider local and national landscape, the ecological value is considered to **fall below the threshold of Local importance**.

The importance of this habitat in relation to protected and notable species, specifically birds, is discussed separately where appropriate.

4.2.4 Deschampsia neutral grassland (g3c7)

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 14.79 BDU, condition is moderate (Defra, 2024).

Habitat Description
Deschampsia neutral grassland with scattered rushes, dwarf shrubs and individual trees (UKHab code g3c7, secondary codes 14, 13, 32, 57 and 502) covers c.3.7 ha of the Site. The grassland was water-logged, peaty and heavily poached by cattle.

The species composition of the habitat includes tufted hair-grass (*Deschampsia cespitosa*), red fescue (*Festuca rubra*), yellow iris (*Iris pseudacorus*), soft-rush (*Juncus effusus*), sycamore (*Acer pseudoplatanus*) and silver birch (*Betula pendula*).

The condition assessment (Defra, 2024) for this area was 'moderate'.

The habitat has a semi-natural origin and comprises a range of native species of broad ecological value. However, negative condition indicators, such as heavy cattle poaching, were recorded. The habitat is common and widespread, and falls short of any SBL Habitats of Principal Importance qualifying criteria. The habitat is therefore considered to be of **Local importance**.

4.2.5 Other neutral grassland (g3c)

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 8.13 BDU, condition is moderate (Defra, 2024).

Habitat Description
The Site boundary intersects the edges of numerous 'other neutral grassland' (UKHab code g3c) fields which bound the access track in the north-east of the Site. This total area of this habitat within the Site comprises c. 2 ha.

The grassland within these fields was not surveyed in detail as part of the original UKHab survey and therefore detailed botanical data has not been collected. However, at the time of survey, these fields were anecdotally observed to comprise grassland which was grazed, managed or modified for agricultural or pastoral purposes. According to the assessment completed by ITP Energised (2023) for the Mey BESS application (ECU planning reference ECU00004838), these fields comprised 'modified grassland' (g4) and 'winter stubble' (c1c5) in May 2023. Therefore, as a precautionary approach, they have been categorised for the purposes of this assessment as an incrementally more distinctive grassland type.

As a precaution, this habitat is of **Local importance**.

4.2.6 Artificial unvegetated, unsealed surface (u1c) and built-up areas and gardens (u1)

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 0 BDU, a condition assessment is not required for this habitat type (Defra, 2024).

Habitat Description
A series of access tracks, and areas of hardstanding cover c. 2.8 and 0.09 ha of the Site respectively. Both areas are devoid of vegetation and of **negligible importance** for ecology and biodiversity.

4.2.7 Bog

Biodiversity Metric Summary
Bog is an irreplaceable habitat and therefore excluded from the Biodiversity Metric calculation. The condition of this habitat is moderate (Defra, 2024).

Habitat Description
A 0.07 ha area of remnant 'bog' habitat (UKHab code: f1, secondary codes 57 56) is located within the south-eastern corner of the Site.

The habitat is dominated by a combination of soft rush (*Juncus effusus*) and grasses. Notably, the grass species are non-aquatic species, indicating that the bog is seasonally dry, and no longer active or peat forming. This is further supported by the shallow water levels which were present at the time of survey in early spring, following a prolonged period of wet weather.

A review of the Site topography shows that the bog is located within a low-lying part of the Site and is therefore considered to be surface water fed.

The bog is located within a corner of a winter stubble field. As a result, the quality of surface water flowing into the bog is likely poor and loaded with sediment and artificial nutrients from the adjacent arable land.

Though the bog is in a degraded condition due to the adjacent land use and covers a small area, it is a SBL habitat of Principal Importance. The habitat is therefore assessed to be of **County importance**.

4.2.8 Other standing water (r1g)

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 0.75 BDU. The condition of this habitat is moderate (Defra, 2024).

Habitat Description
Two ponds (UKHab code r1g, secondary code 42) were recorded within the Site (**Figure 3. Pond Plan**). Details of their location and condition (Defra, 2024) are provided in **Table 4-2**.

Table 4-2. Summary of ponds located within the Site

Pond ID	Grid reference	Size (ha)	Condition assessment
P1	ND 29530 71510	0.09	Moderate
P2	ND 29070 71827	0.003	Moderate

Though the ponds fall short of the SBL habitat of Principal Importance criteria, they provide a range of benefits to biodiversity and are of intrinsic ecological interest. They are therefore of **Local importance** within the context of the Site.

A third pond (P3) was identified off-site and mapped as shown within **Figure 1** and **Figure 3**. As the pond is outside of the Site boundary, further assessment was not completed.

4.2.9 Hedgerows

Biodiversity Metric Summary
The total Biodiversity Metric value of this habitat is 7.5 Hedgerow BDU.

The majority of the hedgerows within the Site are in poor condition, according to the Defra (2024) assessment criteria. However, one c. 0.28 km section of hedgerow is assessed to be in good condition. This hedgerow is located on the north-eastern boundary of the Central Field (**Figure 1**).

Habitat Description
There is c. 3.2 km of 'other native hedgerow' (h2a6) within the Site. These bound the access track to the north-east of the Site and the winter stubble fields.

Species recorded within the hedgerows included blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*) and dog-rose (*Rosa canina*). Native hedgerow is a SBL Habitat of Principal Importance.

The hedgerows within the Site are of **Local importance**.

4.2.10 Other rivers and streams

Biodiversity Metric Summary
The Biodiversity Metric value of this habitat is 1.18 Watercourse BDU, condition is poor (Defra, 2024).

Habitat Description
A c. 0.37 km section of artificial ditch (UKHab code r2b, secondary code 50) is present within the Site. The ditch is located adjacent to an access track and comprised a manmade drainage feature. The ditch has a straight 0.37 km channel, approximately 30 cm wide with a water depth of approximately 10 cm at the time of survey. There is no marginal aquatic vegetation present with only grasses, which are also found within dry habitats, recorded. These included cock's-foot (*Dactylis glomerata*) and red fescue.

The ditch is narrow, artificial and likely seasonally dry. The ecological importance of this habitat is **negligible**.

4.3 Species

4.3.1 Bats

One bat record was returned by the HBRG data search; this was for a foraging pipistrelle (*Pipistrellus* sp.), located approximately 2 km north of the Site in 2008.

No bats or evidence of their presence were recorded during the UKHab field survey. However, the trees within the 'other woodland; broadleaved' habitat may provide suitable roost features. Roosting opportunities within the 'winter stubble' habitat which dominates the Site are absent.

In addition, foraging opportunities within the 'winter stubble' habitat are limited. Foraging and navigational opportunities are however provided within the limited areas of woodland, 'Deschampsia neutral grassland' and along the hedgerows.

The Site is of limited value to bats due to low roosting and suboptimal foraging opportunities. However, given the legal protection afforded to bats, this species is taken through to assessment regarding providing suitable mitigation.

4.3.2 Badgers

No records of badger (*Meles meles*) were returned within 2 km of the Site.

Field signs of badger were searched for during the field survey. However, no evidence of badger activity, including setts, were recorded.

Badger setts are confirmed as likely absent from the Site. However, there remains the potential for foraging and dispersing badgers to be present.

Badgers are common and widespread and not of current conservation concern. However, given their legal protection, this species is taken through to assessment to ensure suitable safeguards and mitigation are secured.

4.3.3 Dormice

No records of dormice (*Muscardinus avellanarius*) were returned by the HBRG data search. Dormice are known to be absent from Scotland and therefore not considered further within this assessment.

4.3.4 Riparian mammals

No records of otter (*Lutra lutra*) or water vole (*Arvicola amphibius*) were returned within the Site.

Within 2 km, one record of otter was provided, approximately 1.43 km west-north-west of the Site. The record was however dated from 1998.

Within 2 km of the Site, eight records of water vole were provided. The closest two records are located 0.06 km east south-east and 0.48 km south south-east of the Site and were both from 2008.

During the UKHab survey no signs of otter or water vole were identified. Though suitable habitats for otter and water vole are present within the wider local landscape, as evidenced by records from within 0.06 km of the south-south-eastern boundary, none are present within the Site. The ponds on-site are too small and

isolated to support populations of otter or water vole and the section of ditch is seasonally dry, therefore unsuitable for both species also.

Otter and water vole are considered likely absent from within the Site, and the Proposed Development provides buffers to off-site suitable habitat thereby avoiding risks of direct or indirect impacts. These species are therefore scoped out from further assessment.

4.3.5 Birds

4.3.5.1 Breeding birds

The HBRC data search returned no records of notable breeding bird species within the 3 km search radius from the Site. The RSPB data search of records dated 2013 to present returned breeding bird records within the 5 km search radius that are typical of the region (based on BTO (2013) Atlas distributions); which has relatively high and continuous cover of bog, moorland and other open semi-natural habitats. The list of species returned from records dating from April to July was significantly larger than those dating from the other (non-breeding) months. This in part relates to the large contingent of breeding species which are long-distance migrants present only in spring and summer, and in part also likely to relate to seasonally higher surveying and recording effort. Species recorded in the breeding season within the RSPB desk study data are listed in **Table 4-3**.

The EcIA for the Mey BESS (ITP, 2023) immediately north-east of the Proposed Development recorded notable bird species including cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), lapwing (*Vanellus vanellus*), skylark (*Alauda arvensis*), snipe (*Gallinago gallinago*) and yellowhammer (*Emberiza citronella*) within the Mey BESS site plus evidence of barn owl (*Tyto alba)*, dating from April and May 2023. The EIA for Hollandmey Renewable Energy Development (SPR, 2021) recorded notable species including curlew, golden plover (*Pluvialis apricaria*), ringed plover (*Charadrius hiaticula*), lapwing, oystercatcher *(Haematopus ostralegus*) and skylark dating from April 2018 to August 2021. The surveys recorded one flightpath of hen harrier (*Circus cyaneus*) in vicinity of the Proposed Development during the breeding season, but there was no evidence or indication of a breeding attempt across the Hollandmey survey programme. This record is therefore concluded to represent a bird passing through the area during foraging/ranging.

During the Breeding Birds Appraisal walkover survey in June 2024, a total of 19 species were recorded. Oystercatcher was confirmed breeding with one hatchling located in an arable cropland field. This is a UK Birds of Conservation Concern (BOCC) (Stanbury et al 2021) Amber-listed wading bird species. Curlew and lapwing, both BOCC Red-listed wading bird species, were also recorded in arable cropland on site with breeding status of ‘possible’. Recorded species with breeding status of ‘likely’ were meadow pipit (*Anthus pratensis*), skylark and willow warbler (*Phylloscopus trochilus*), all of which are BOCC Amber or Red- listed ground-nesting songbirds; plus, siskin (*Spinus spinus*) and chaffinch (*Fringilla coelebs*) which are woodland birds with Green conservation concern status. Other species recorded on the survey with ‘possible’ breeding status were lesser redpoll (*Acanthis cabaret*), linnet (*Linaria cannabina*), mistle thrush (*Turdus viscivorus*), reed bunting (*Emberiza schoeniclus*), woodpigeon (*Columba palumbus*) and yellowhammer, all of which are above-ground nesting songbirds of Red or Amber conservation concern; plus pied wagtail (*Motacilla alba*), barn swallow (*Hirundo rustica*) and feral pigeon (*Columba livia*) which are above-ground nesting birds with Green conservation concern status. Swift (*Apus apus*) and peregrine (*Falco peregrinus*) were also recorded during the survey, but considered unlikely to be breeding due to lack of suitable nesting habitat.

The assemblage of species recorded during the June 2024 walkover survey is a subset of that recorded within the RSPB breeding season records from within 5 km of the Site. Species recorded during the survey which are not found within the RSPB breeding season records are swift and peregrine (reported as flyovers during the survey and likely to be passing through the area, both being species with wide daily ranging behaviour). In addition, woodland birds such as mistle thrush and siskin, attributable to woodland / plantation

(although it is noted that the RSPB records were weighted in favour of species associated with wetlands and other open habitats). The assemblage of species recorded is considered typical of the locality as characterised by the desk study.

Table 4-3. Species recorded in the breeding season within the RSPB desk study data

Breeding month records (from A-Z)			
Arctic skua	Great black-backed gull	Oystercatcher	Song thrush
Blackbird	Grey heron	Pheasant	Sparrowhawk
Black-headed gull	Greylag goose	Pied wagtail	Starling
Buzzard	Hooded crow	Red grouse	Stonechat
Carrion crow	House martin	Redshank	Swallow
Carrion/hooded crow	Jay	Reed bunting	Twite
Chaffinch	Kestrel	Robin	Wheatear
Common gull	Lapwing	Rock dove	Whinchat
Cuckoo	Lesser black-backed gull	Rook	White wagtail
Curlew	Lesser redpoll	Sandwich tern	Willow tit
Dunnock	Linnet	Sedge warbler	Willow warbler
Garden warbler	Mallard	Skylark	Woodpigeon
Golden plover	Meadow pipit	Snipe	Wren
			Yellowhammer

The Site is further considered to include suitable habitat for common snipe (*Gallinago gallinago*), i.e., relatively wet areas of neutral grassland. This species is widespread in Caithness according to BTO Atlas data (Balmer et al. 2013). Spotted flycatcher (*Muscicapa striata*), cuckoo, song thrush (*Turdus philomelos*) and house sparrow (*Passer domesticus*) were all considered potential breeding species based on availability of suitable habitat and are BOCC Red-listed species. Woodland habitat present (specifically the coniferous plantation) is considered suitable to support one to two pairs of sparrowhawk (*Accipiter nisus*), buzzard (*Buteo buteo*) and kestrel (*Falco tinnunculus*) (relatively common birds of prey in the region). The habitat on Site is considered only suitable to support foraging (and not breeding) by barn owl, and unlikely to constitute important foraging habitat for breeding owls or raptors associated with Caithness and Sutherland Peatlands SPA (i.e. hen harrier, merlin (*Falco columbarius*) and short-eared owl (*Asio flammeus*)).

A total of two species recorded within the search area are listed as Schedule 1 breeding birds under the Wildlife and Countryside Act (1981), namely peregrine and barn owl. Within the Site itself it is considered there is no suitable breeding habitat for either species.

4.3.5.2 Overwintering and non-breeding birds

The HBRC data search did not return any records of notable non-breeding bird species within 3 km of the Site.

The RSPB data search of records dated 2013 to present returned overwintering and non-breeding bird records within the 5 km search radius that included records of the three qualifying feature species of the Caithness Lochs SPA. Locations of each RSPB record of these species – greylag goose (*Anser anser*), whooper swan (*Cygnus cygnus*) and Greenland white-fronted goose (*Anser albifrons flavirostris*) – are shown in **Figure 4, Figure 5** and **Figure 6**.

No bird records were returned by RSPB for within the Site. However, both greylag goose and Greenland white-fronted goose were recorded in close proximity to the access roads that form part of the planning boundary. Pink-footed goose (*Anser brachyrhynchus*) was also regularly recorded in the 5 km radius of the Site. Other non-breeding species reported from the desk study are species typical of the region, largely comprising resident birds of open and wetland habitats. Species recorded in the breeding season within the RSPB desk study data are listed in **Table 4-4**.

Table 4-4. Species recorded in the non-breeding season within the RSPB desk study data

Non-breeding month records (A-Z)			
Blackbird	Greylag goose	Pink footed goose	Starling
Black headed gull	Hooded crow	Pintail	Teal
Goldeneye	Kestrel	Redshank	Tufted duck
Great black-backed gull	Mallard	Reed bunting	Whooper swan
Greenland white fronted goose	Mute swan	Shoveler	Wigeon

Surveys for Hollandmey Renewable Energy Development (SPR 2021) during the non-breeding season recorded greylag goose and whooper swan on or adjacent to the Proposed Development (in addition to numerous flight records over the site) although Greenland white-fronted goose was not recorded. These are qualifying feature species of Caithness Lochs SPA and Ramsar site. The Mey BESS EcIA (ITP 2023) did not identify any records of Greenland white-fronted goose or whooper swan closer than 580 m, but there were previous records of greylag goose from that site. Patterson et al (2013) recorded whooper swan in the immediate vicinity of the Proposed Development but not Greenland white-fronted goose or greylag goose, although it is noted that a significant proportion of the land around the Proposed Development was not surveyed to inform that study.

Hollandmey surveys during the non-breeding season also recorded pink-footed goose (*Anser brachyrhynchus*) on the Site in addition to numerous flightpaths over the Site, as well as hen harrier perching and flights within the Site on several occasions, and merlin was recorded in flight within 3 km of the Site. There is considerable alternative wintering habitat in the vicinity for hen harrier and merlin and the Site is unlikely to represent wintering habitat of particular importance/significance for either species.

Golden plover, curlew and dunlin (*Calidris alpina*) flightpaths were regularly recorded over the site during Hollandmey surveys in the non-breeding season, but these species were not noted to land within the site. Hollandmey surveys also recorded grey heron (*Ardea cinerea*), mallard (*Anas platyrhynchos*), teal (*Anas crecca*), goldeneye (*Bucephala clangula*), buzzard (*Buteo buteo*), sparrowhawk (*Accipiter nisus*), kestrel,

snipe and raven (*Corvus corax*) plus small songbird species in "*small [numbers] relative to the likely regional populations*", but these species were not assessed. All of these species can be expected to occur in the region, locality and site itself during the non-breeding season.

All wild birds are protected under the Wildlife & Countryside Act 1981 (as amended) and are therefore taken through to assessment on this basis.

4.3.6 Reptiles

No records of protected or notable reptile species were provided for within the Site. One record of adder (*Vipera berus*) was recorded within 2 km of the Site, 0.81 km south-east, however this record is from 1994 and to an accuracy of 1 km grid square.

No reptiles or evidence of their presence was recorded during the UKHab survey.

Opportunities for reptiles within the habitats on-site are limited to the areas of '*Deschampsia* neutral grassland'. However, the seasonal flooding of this area makes it suboptimal as any hibernating reptiles are likely to drown during winter months (ARGUK, 2018). Reptiles are therefore taken as likely absent from within the Site.

Given their likely absence, reptiles are not considered further within the context of this assessment.

4.3.7 Amphibians

No records of protected or notable amphibian species were recorded within the Site. One record of common toad (*Bufo bufo*) was recorded 0.81 km south-east of the Site, however this record is from 1960 and to an accuracy of 1 km grid square.

Two ponds are present within the Site which could provide potential breeding opportunities for amphibian species such as common toad. However, great crested newts are considered likely absent due to their natural range being restricted to south of the Scottish Highlands.

Though the age of the common toad record is no longer considered of high relevance, the habitats within and adjacent to the Site provide potential opportunities for this species to be present. Common toad are a SBL species of Principal Importance and therefore of **Local importance** within the context of the Site and considered within the assessment of effects.

4.3.8 Invertebrates

No records of protected or notable invertebrate species were returned for within the Site by HBRG. However, within 2 km, three records of great yellow bumblebee (*Bombus distinguendus*) were provided, the closest record 0.81 km south-east of the Site was recorded in 2021. This species is an SBL Species of Principal Importance for conservation.

As mentioned in **Section 4.2.2**, the majority of the Site is dominated by winter stubble which is in active use. This habitat provides suboptimal conditions for notable invertebrate populations. However, greater invertebrate interest could be present within the areas of bog, grassland, woodland and ponds which are to be retained alongside the Proposed Development. As such, direct and indirect effects are unlikely and populations which are present within the winter stubble habitats are anticipated to fall short of the criteria for Local ecological importance.

Invertebrates are therefore not considered further within the context of this assessment.

4.4 Biodiversity baseline

The baseline Biodiversity values of the Site, based upon the UKHab survey and condition assessment undertaken and calculated using the Biodiversity Metric, are summarised below:

- Habitat units: 97.44 BDU
- Hedgerow units: 7.5 BDU
- Watercourse units: 1.18 BDU

These are detailed in full within **Appendix D** of this report.

4.5 Groundwater dependent terrestrial ecosystems

The findings of a GWDTE assessment are provided within a Technical Note which was submitted to NatureScot and SEPA for consultation feedback on 6 August 2024 and 29 August 2024 respectively.

The Technical Note was written in response to the pre-application advice from the Highland Council received on 12 June 2024 (reference number: 24/00186/PREMAJ). For ease of reference, the Technical Note is provided in full in **Appendix C** of this report.

By way of summary, to assess the potential for GWDTE to be present within or adjacent to the Site, the following field and desk-based assessments were carried out:

- A UKHab survey of the Site, completed in March 2024;
- A desk review of the Hollandmey Renewable Energy Development (ECU reference ECU00003353) (Energy Consents Unit, 2021) and the Mey BESS (ECU reference ECU00004838) (Energy Consents Unit, 2024) GWDTE assessments, which encompass the majority of the Site;
- A review of the Site's topography; and
- A review of Scotland's Environment Web National Soil Map of Scotland (NatureScot, 2024).

Based on these combined inputs, GWDTE are considered absent from within the Site boundary. However, GWDTE are confirmed as present within 250 m of the Site. Specifically, adjacent to the north-north-western Site boundary where areas of mire (National Vegetation Classification (NVC) community M25) and rush pasture (NVC community M23) are confirmed as present (RSK, 2021). This location is adjacent to where the Site access track joins the public road and is shown within **Figure 7**.

Both habitats qualify as SBL Habitats of Principal Importance and are therefore of importance at the **County** level.

4.6 Summary of ecological features

Table 4-5 below summarises all important ecological features identified within the respective zones of influence, together with the geographic context of their importance.

Table 4-5. Summary of important ecological features and their geographic context

Ecological feature	Geographic context of importance and/or protection status
SAC, SPA and Ramsar designated sites	International
SSSI	National
Ancient woodland	County
Deschampsia neutral grassland	Local
Other neutral grassland	Local
Bog	County
Other standing water	Local
Hedgerows	Local
Bats	Legally protected
Badgers	Legally protected
Breeding birds	Local and legally protected
Non-breeding greylag goose, Greenland white-fronted goose and whooper swan	International (as qualifying features of the Caithness Lochs SPA and Ramsar site)
Other non-breeding birds	Local
Amphibians	Local

5 Description of the Proposed Development

Detailed planning permission is sought for construction and operation of a BESS at the Site. The following impact assessment is based on the Indicative Site Layout Plan on behalf of Field.

5.1 Construction

The construction phase is estimated to take up to two years and would involve the following activities:

- Site preparation and establishment activities, including vegetation removal and the erection of temporary fencing;
- Earthworks and establishment of site compound;
- Construction of equipment platforms and foundations, including underground ducting and cabling;
- Access improvement works and access construction;
- Delivery and arrangement of equipment;
- Cabling and connection works between battery equipment, ancillary equipment and substation compound;
- Installation of underground cabling between substation compound and Gills Bay substation;
- Testing and commissioning; and
- Landscape planting, earthworks and site restoration.

The final construction sequencing and programme will be determined subject to detailed design following the appointment of a suitable construction contractor. Landscaping and site restoration would be programmed and carried out as early as possible following construction to ensure landscape planting is given suitable time to establish, and any disturbed areas are returned to their pre-development condition.

The majority of construction traffic would be limited to the initial 12 months of the construction period during the civils stage and equipment deliveries. A Transport Statement and Outline Construction Traffic Management Plan (OCTMP) has been prepared to support the application which outlines expected traffic movements and traffic management measures. Subject to a consent being granted, a final CTMP would be prepared for approval by the Local Planning Authority prior to any construction works commencing.

5.2 Operation

During the operational phase, the facility would be available to import and export electricity on a 24/7 basis. During normal operations, the facility would be operated entirely remotely. It would only be necessary for a maintenance engineer to visit the Proposed Development during routine maintenance visits (approximately monthly) or in the rare event that emergency maintenance is required.

On-site security, including security fencing around and gated accesses into site compounds would ensure the Proposed Development is secure and not accessible to the public or trespassers. On-site CCTV cameras, motion sensors and security lights would be arranged to provide full coverage of the Proposed Development. An off-site 24/7 security contractor would be appointed to ensure any security breaches are responded to, including police notification.

To reduce light pollution, the Proposed Development would not be lit at night, and lighting would only be used when accessed by maintenance staff or if triggered by a security breach. Lighting would be low level directional LED lighting with shrouds to prevent any upward light spill.

5.3 Decommissioning

The Proposed Development would have an operational life of 30 years, after which the site would be restored to its former use. Decommissioning works and site rehabilitation would be subject to a Decommissioning Strategy which would be prepared in consultation with and approved by the local planning authority prior to the commencement of any works.

Decommissioning works would be undertaken in accordance with a statement of operations covering safety and environmental issues, including the safe removal of electrical equipment and foundations down to 1 m below ground level, to ensure the site can be effectively returned to its former use. The works will consider all relevant environmental legislation and technology available at the time of decommissioning, and notice will be given to the local planning authority prior to the commencement of any works.

6 Assessment of effects and mitigation measures

6.1 Designations

6.1.1 Caithness Lochs SPA

Caithness Lochs SPA 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. Loch of Mey, the nearest component, is a shallow ephemeral loch fringed by fen and marshy grassland that is subject to prolonged inundation in winter. The Site lies approximately 1.8 km south-east from Caithness Lochs SPA. At this distance, there is potential for aggregations of swan or goose species which are non-breeding qualifying features of the SPA to forage on land within or adjacent to the Site during daily foraging movements from the SPA. Land used for foraging in this way constitutes functionally linked land of a European site. Bird aggregations present on functionally linked land retain the same legal protection as when present in the SPA itself and potential project impacts on these aggregations must be considered.

In the absence of mitigation, the Proposed Development has the potential to result in the disturbance of qualifying bird assemblages on functionally linked land.

A detailed assessment of impacts and mitigation measures has been provided within the Shadow HRA (Habitats Regulations Appraisal) document issued separately to this report.

Subject to the implementation of the mitigation measures detailed within the Shadow HRA, no adverse or residual effects are anticipated.

6.1.2 Caithness Lochs Ramsar site

The Site lies approximately 1.8 km south-east from Caithness Lochs Ramsar site. As for Caithness Lochs SPA, at this distance there is potential for aggregations of swan or goose species which are non-breeding qualifying features of the Ramsar site to forage on land within or adjacent to the Site during daily foraging movements from the Ramsar site. A detailed assessment of impacts to goose or swan populations associated with Caithness Lochs Ramsar site has been undertaken within the Shadow HRA document issued separately to this report.

In the absence of mitigation, the Proposed Development has the potential to result in the disturbance of qualifying bird assemblages on functionally linked land.

A detailed assessment of impacts and mitigation measures has been provided within the Shadow HRA document issued separately to this report.

Subject to the implementation of the mitigation measures detailed within the Shadow HRA, no adverse or residual effects are anticipated.

6.1.3 North Caithness Cliffs SPA

North Caithness Cliffs SPA spans a number of mainland coastal headland and island cliffs systems in North Caithness including Duncansby Head, Stroma, Dunnet Head, Holborn Head, and Red Point coast, and also extends 2 km into the open marine environment from these features covering the seabed, water column and surface.

There is no potential for adverse effects of the Proposed Development on this SPA. The only species associated with North Caithness Cliffs SPA to be recorded during surveys or desk-study for the Project is peregrine, and there is no pathway to impact on this species as any individual will be unaffected if passing through or aerial hunting over the site. There is no pathway for the Proposed Development to impact on any of the other features of the SPA (breeding seabirds), which have no potential connectivity to the site during foraging or otherwise.

6.1.4 Caithness and Sutherland Peatlands SPA

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. Other habitats include freshwater lochs, natural dystrophic lakes and ponds.

Habitats within and adjacent to the Site were considered to be unsuitable for breeding divers, waders and birds of prey associated with Caithness and Sutherland Peatlands SPA; it is possible that the Site may be occasionally visited by individual wandering hen harrier, merlin or short-eared owl from the SPA, however given the presence of extensive, more suitable habitat in the general vicinity, the Site is very unlikely to be of importance for these species. On this basis there is no potential for adverse effects of the Proposed Development on this SPA.

6.1.5 Caithness and Sutherland Peatlands SAC

The Caithness and Sutherland Peatlands SAC is designated for the presence of oligotrophic to mesotrophic standing water, natural dystrophic lakes and ponds and blanket bogs.

The majority of the designation is located within the Wick Coastal catchment (SEPA, no date) which is separate to the Thurso Coastal catchment which covers the Site. However, there is a small part of the designation which is also located within the Thurso Coastal catchment.

A review of the watercourses within the Site does not show any direct connectivity with the designation and therefore hydrological pathways for potential effects are considered negligible.

Given the c. 2.8 km separation between the Site and the designation, the potential for adverse effects to air quality, or airborne pollution, effecting the designation is considered negligible.

Therefore, there are no direct impact pathways for potential habitat degradation or other effects from the Proposed Development upon the designated site.

However, as a precaution, best practice pollution prevention measures will be implemented throughout the pre-construction, construction, operational and decommissioning phases of the Proposed Development. This will be presented within a Pollution Prevention Plan which will form part of an appropriately worded Construction Environmental Management Plan (CEMP). Plans will be written with due consideration of guidance from SEPA (2024) and potential pollution pathways at the pre-construction, construction, operational and decommissioning phases of the Proposed Development.

Subject to the above measures being secured and implemented, no adverse effects are anticipated upon the designation.

6.1.6 Caithness and Sutherland Peatlands Ramsar site

Caithness and Sutherland Peatlands Ramsar site is designated for supporting blanket bog habitat, scarce and rare flora and fauna and internationally important populations of breeding dunlin.

The measures which will be implemented regarding Caithness and Sutherland Peatlands SAC and Caithness and Sutherland Peatlands SPA will address any potential direct or indirect impacts upon the designation.

6.1.7 Phillips Mains Mire SSSI

Phillips Mains Mire SSSI is designated for supporting a nationally important area of blanket bog habitat and is located c. 0.5 km east of the planning boundary.

The designation is located within the Link Burn river and loch waterbody sub-catchment (SEPA, no date). The majority of the Site falls outside of this catchment, with less than 1 ha of the Proposed Development footprint located within this catchment.

There are no watercourses within or adjacent to this part of the Site which flow into the designated Site. Therefore, the 0.5 km buffer between the Site and the designation is considered sufficient to buffer any potential impact pathways and no significant impacts are anticipated, subject to the production and implementation of a suitably worded Pollution Prevention Plan within the CEMP to avoid the risk of any potential surface water run-off impacts.

6.1.8 Loch of Mey SSSI

The Loch of Mey SSSI is designated for supporting nationally important transition grassland and breeding bird assemblages. The designation is located c. 1.7 km north-west of the Site and is hydrologically connected with the Site via the Burn of Horsegrow which flows adjacent to the Site boundary.

Therefore, in the absence of mitigation, there is potential for impacts to the water quality of the Burn of Horsegrow during the construction, operational and decommissioning phases which would have an indirect significant adverse impact on the designation.

A suitably worded Pollution Prevention Plan will be contained within the CEMP, to be approved by the Local Planning Authority and implemented throughout any construction, operational and decommissioning phases of the Proposed Development. This will include any enabling works or any other activities which could result in pollution of the Burn of Horsegrow. For the operational phase of the Proposed Development, the Pollution Prevention Plan will also consider potential risks from battery leakage and ensure a suitable emergency response plan is detailed so that it may effectively be implemented.

Subject to the implementation of the above mitigation measures, no significant adverse effects or residual adverse effects are anticipated from the Proposed Development.

6.2 Habitats and flora

6.2.1 Deschampsia neutral grassland

The c. 3.7 ha of Locally important *Deschampsia* neutral grassland located within the Site is outside of the Proposed Development footprint and proposed construction area. As such, this habitat will be retained in its entirety alongside the Proposed Development and no impacts are anticipated.

6.2.2 Other neutral grassland

The c. 1.9 ha of Locally important other neutral grassland located within the Site is outside of the Proposed Development footprint and proposed construction area. As such, this habitat will be retained in its entirety alongside the Proposed Development and no impacts are anticipated.

6.2.3 Bog

There is c. 0.07 ha of County important bog located within the Site. In the absence of mitigation, the Proposed Development could result in significant adverse effects through habitat loss or degradation.

To avoid potential adverse effects, the Proposed Development has been designed to retain the bog alongside development. In addition, a Construction Exclusion Zone with a 15 m buffer from the edge of the habitat will be established and demarcated with Heras fencing or similar. This will be retained throughout the construction phase to ensure this sensitive habitat is not directly, indirectly, or accidentally impacted.

Furthermore, the proposed Landscape Masterplan (Stephenson Halliday, 2024) has been sympathetically designed to retain this habitat, and allow it to naturally enhance its condition. This will be achieved through the creation of new grassland habitat adjacent to the bog, on all sides. It is anticipated that this will improve the quality of surface water run-off which feeds the bog and is currently likely laden with artificial nutrients and sediment from the arable (winter stubble) habitats which currently encompass it.

All new habitats will be managed post-construction in accordance with an appropriate Habitat Management and Monitoring Plan. This will include long-term habitat management and monitoring measures for a minimum of 30 years.

During the construction phase a suitably worded Pollution Prevention Plan will also be written and included within the CEMP and implemented. This Plan will ensure potential pollution of surface water, generated during the construction phase, does not adversely affect the bog habitat.

Subject to the implementation of the above measures, a positive impact is anticipated upon the bog habitat as a result of the Proposed Development.

6.2.4 Other standing water

The Locally important ponds located within the Site will be retained alongside the Proposed Development.

The Proposed Development has the potential to adversely effect the water quality of the Ponds. Therefore, the Pollution Prevention Plan will include sufficient measures to avoid any pollution during the construction phase.

Subject to the implementation of these measures, no adverse or residual effects are anticipated.

6.2.5 Hedgerows

The c. 3.2 km of hedgerow located within the Site are of Local importance.

The Proposed Development is anticipated to result in a series of c. 18 m sections of hedgerow being removed along the north-eastern access track to create vehicle passing places (the location and extent of the passing places are shown within Access Route plans of the Transport Statement (with Outline Construction Management Plan) (Report reference: PC3506-RHD-07-XX-RP-Z-0009)). These lengths of removal are expected to result in a loss of c. 0.12 km of hedgerow from throughout the Site.

In the absence of mitigation, these losses will result in a significant adverse effect at the Local level.

As part of the Proposed Development, c. 2.43 km of retained hedgerow will be enhanced alongside the proposed development. The enhancement measures will comprise the planting of additional native species

to increase the species richness of the hedgerows. This will be detailed within an appropriately worded Habitat Management and Monitoring Plan.

Subject to the implementation of these measures, the Proposed Development is anticipated to result in a positive effect on hedgerows, significant at the Local level.

6.3 Fauna

6.3.1 Bats

The Proposed Development will result in the permanent loss of c. 9.6 ha of winter stubble habitat that provides negligible foraging, dispersal and roosting opportunities for bats.

The majority of the habitats present within the Site that provide opportunities for bats will be retained alongside the Proposed Development, including areas of woodland, grassland, ponds, the bog habitat and the majority of hedgerows.

Although c. 0.12 km of hedgerow will be removed from the Site, this length will comprise a series of short, c. 18 m sections which, in isolation, are not considered to be sufficient to sever any potential commuting or foraging routes.

No lighting of the Site will be used during the construction phase, avoiding any potential adverse effects upon bats.

Lighting during the operational phase will only be required when the Site is accessed by maintenance staff or if triggered by a security breach. The lighting will be low level directional LED lighting with shrouds to prevent any upward light spill. The detail of the lighting plan should be informed by consultation with a Suitably Qualified Ecologist (SQE) and in accordance with the Institution of Lighting Professionals (ILP) Bats and Artificial Lighting at Night Guidance Note 8 (2023).

In addition, the Proposed Development landscaping design, which will include areas of grassland, scrub and a waterbody, is anticipated to enhance the areas of former winter stubble suitability for foraging and commuting bats. All new habitats will be managed post-construction in accordance with an appropriate Habitat Management and Monitoring Plan.

Subject to the implementation of the above mitigation measures, no significant adverse effects are predicted upon bats.

6.3.2 Badgers

Badger setts are considered to be likely absent from the Site and no evidence of foraging or commuting badgers was recorded during the UKHab survey. Therefore, no legal infringements are anticipated.

However, there remains the risk that badgers could pass through the Site and therefore, safeguards will be implemented. These include:

- Any excavations during the construction or site investigation phases will either be covered or provided with a means of escape (e.g. an angled scaffold board ramp at one end of an excavation);
- Large diameter (over 150 mm) pipes will be capped to avoid any animals entering and taking shelter; and

- Any suspected mammal holes over 10 cm in diameter identified during the construction or site investigation phases will be reported to a SQE prior to any works commencing within 30 m of that location.

These measure will be detailed within a Species Protection Plan.

6.3.3 Breeding birds

Potential impacts on breeding birds arising from construction phase activities are primarily direct destruction or disturbance of nests, and direct loss or degradation of nesting and foraging habitat as a result of site preparation, earthworks, vegetation removal and conversion of habitat.

To avoid direct impacts to breeding birds during construction, removal of all vegetation (including arable cropland, given the likely presence of waders and other ground-nesting species) should take place outside of the bird nesting season i.e. undertaken between September and February inclusive.

If clearance or groundwork is required between March and August, a suitably experienced ecologist should first check the habitats due to be cleared for active nests. If any are found, the nest(s) and immediate surroundings should be left undisturbed (e.g. through creation of a 5 m buffer area) until the nestlings or precocial (mobile) chicks reach flight ability (i.e., fledge), or the breeding attempt has otherwise naturally concluded.

If breeding waders or birds of prey are present, a larger buffer area around the nest(s) may be necessary. Buffer distances will be influenced by the nature of the work, location of the receptor and possible lines of sight, however in accordance with NatureScot (2022) guidance, they are likely to be between 50m and 600m depending on the species.

Following initial clearance or groundworks, ongoing habitat management and checks for new nesting attempts will be required to prevent ground-nesting species from re-colonising the Site until construction works have ended.

A c. 9.6 ha area of winter stubble habitat and c. 0.12 km length of hedgerow which may provide nesting bird habitat will be permanently lost during the construction phase of the Proposed Development. These habitat losses will be mitigated for through the creation of c. 3.13 ha of grassland, scrub and pond habitats within the Proposed Development. Though the areas of these habitats are less that the winter stubble being lost, the created habitats will provide a greater range of nesting opportunities for a range of breeding birds due to the improved structure and permeance of the habitats (i.e. not in active arable rotation). In addition, c. 2.43 km of retained hedgerow will be enhanced alongside the Proposed Development. The enhancement measures will comprise the planting of additional native species to increase the species richness of the hedgerows. This will result in enhanced nesting and foraging opportunities due to the increased density of the retained hedgerows and improved seasonal availability of fruits, seeds and invertebrates borne of the increased hedgerow species diversity.

Potential impacts on breeding birds arising from operational phase activities (other than direct loss of nesting and foraging habitat as a result of installation of the Proposed Development which are encapsulated as a construction impact) are limited to potential disturbance or destruction of nests during routine maintenance visits. The Proposed Development will not be lit at night and low-level lighting would only be triggered during occasional maintenance and security visits (see **Section 5.2**), therefore no impacts from artificial lighting are predicted.

To avoid direct destruction or disturbance of nests during the operational phase, locations within the completed site where bird nesting may occur with high likelihood of destruction or disturbance, such as structures subject to movement (e.g. machinery), opening (e.g. doors) or high footfall should be fitted with deterrents such as anti-perching spikes or gratings, during or at conclusion of construction. If an active nest or nests are found in such locations, the nest(s) and immediate surroundings should be left undisturbed (e.g. through creation of a 5 m buffer area) until the nestlings or precocial (mobile) chicks reach flight ability (i.e., fledge), or the breeding attempt has otherwise naturally concluded. If breeding waders or birds of prey are present, a larger buffer area around the nest(s) may be necessary. These measures will be detailed within an appropriately worded Species Protection Plan.

Subject to the implementation of the above mitigation measures, no significant adverse effects are predicted.

6.3.4 Non-breeding (overwintering and passage) birds

During the construction phase the Proposed Development has the potential to result in a moderate adverse effect on non-breeding birds through disturbance, displacement and loss or degradation of resting and foraging habitat between October and February.

Adverse effects from disturbance are anticipated to be greatest during works which produce a sudden visual or loud noise stimulus (e.g. hammer piling and large off-track vehicle movements). The magnitude of this effect is anticipated to be its greatest during the mid-winter period (November to January, inclusive) when movement and flights are most energetically costly to the birds.

Impacts to goose and swan populations associated with Caithness Lochs SPA and Ramsar site are considered separately in the Shadow HRA Report.

To minimise impacts, the following, mitigation measures will be detailed and implemented in accordance with a suitably worded Species Protection Plan. These measures will also be set out within a Construction Environmental Management Plan (CEMP) to ensure relevant contractors are aware of these measures. Mitigation measures will include:

- Sensitive timing - the construction phase should be started outside the mid-winter period (November to January, inclusive) to avoid the initiation of activities which will cause disturbance when the Site is already in use by waterbirds and therefore, movement and flights are most energetically costly to the birds;
- Ecological Clerk of Works (ECoW) – ECoW will attend Site during works which are likely to pose a high risk of disturbance to non-breeding waterbirds. Working methods and timing may be adjusted, based on the guidance of the attending ECoW to avoid and minimise impacts on non-breeding waterbirds;
- Works producing a sudden visual or loud noise stimulus (e.g. hammer piling and large off-track vehicle movements) should be avoided where possible so as not to occur in proximity to aggregations of non-breeding waterbirds within or in proximity to the Site, particularly during dusk, night or dawn, or in sustained periods (i.e., seven days or more) of below-freezing temperatures. Where this cannot be avoided, alternative, methods which make use of best available techniques (BAT) to reduce noise, such as vibro piling, may be necessary.

Subject to the implementation of the above measure, moderate adverse effects will be reduced to a minor adverse effect. This effect will be reduced to negligible outside of the winter months (October to February, inclusive).

6.3.5 Amphibians

Common toad, a SBL species of Principal Importance, are considered Locally important within the context of the Site.

In the absence of mitigation there is the possibility of killing and injury them during the construction and any site investigation phases which may require the removal of long vegetation or hedgerow. Any such impact would result in an adverse effect.

To avoid adverse effects, a Species Protection Plan will be provided and approved by the Local Planning Authority prior to the commencement of construction or site investigation works which involve trial trenching or other destructive works.

The Species Protection Plan will detail safeguards such as sensitive habitat clearance methods to reduce the risk of killing and injury.

Subject to the implementation of the above mitigation measures, no significant adverse effects are predicted.

6.4 Biodiversity

In order to assess whether the Proposed Development delivers significant biodiversity enhancement, in accordance with NPF4, the baseline and post-development biodiversity value of the Ecology Study Area have been quantified using the Biodiversity Metric (Defra, 2024), as noted within Section 3.3. Given that the Biodiversity Metric is specific to England and is not applicable in real policy terms in Scotland, the calculations have been combined with qualitative approach to ensure bespoke and appropriate enhancement for the Site and local context.

As summarised in **Table 6-1** and set out in full within **Appendix D**, the Proposed Development is anticipated to deliver a significant biodiversity enhancement which is further discussed below.

The post intervention values of the Biodiversity Metric are based on the habitat retention, restoration, enhancement and creation measures which have been set out within:

- This report;
- The Landscape Masterplan (Stephenson Halliday, 2024);
- Hedgerow removal shown within the Access Route plans of the Transport Statement (with Outline Construction Management Plan) (Report reference: PC3506-RHD-07-XX-RP-Z-0009)); and
- The Indicative Site Layout Plan (Field, 2024)

In order to ensure the success of the proposed habitat retention, creation and enhancement measures, long-term management of the habitats within the Proposed Development will be required post-development. These measures will be detailed and implemented in accordance with a Habitat Management and Monitoring Plan. An overview of the Habitat Management and Monitoring Plan is provided in **Section 6.4.1**.

Table 6-1. Biodiversity effects summary

	Habitat units	Hedgerow units	Watercourse units
On-site baseline	97.44	7.5	1.18
On-site post-intervention	102.69	11.33	1.18
On-site net change in BDU	+ 5.25	+ 3.83	0
On-site net change as a percentage	+ 5.39%	+51.08%	0%

The Biodiversity Metric calculation demonstrates that the Proposed Development will deliver a 5.39% and 51.08% increase in the biodiversity value of Area habitats and Hedgerow habitats respectively within the Site. No changes to the watercourse habitats within the Site are proposed and therefore there is no change anticipated.

Measures included within the Proposed Development which seek to maximise opportunities for biodiversity are shown within the Landscape Masterplan (Stephenson Halliday, 2024). These include:

- An additional area of land directly south of the BESS compound has been designated within the Site for biodiversity enhancements;
- The creation of species rich and regionally appropriate grassland;
- The creation of new areas of scrub which include the planting of SBL Species of Principal Importance (common juniper (*Juniperus communis*)) and species of conservation interest (creeping willow (*Salix repens*) and ling heather (*Calluna vulgaris*)) within the scrub mix; and
- Enhancement of the c. 2.43 km retained hedgerows though the planting of additional species to increase species richness. Newly planted hedgerow species may include hazel, elder, dog rose and holly.

The bespoke enhancements to hedgerows (51.08%) are considered significant and far exceed the guidance requirements. As shown within the Landscape Masterplan (Stephenson Halliday, 2024), an area of land to the south of the BESS and within the Proposed Development has been set-aside and designated specifically for landscaping measures which will benefit biodiversity. Through the measures which will be implemented within this area, and the remainder of the Proposed Development area, a significant enhancement of biodiversity is anticipated (5.39%). Moreover, the inclusion of SBL Species of Principal Importance (common juniper) and species of conservation interest (creeping willow and ling heather) within the newly created areas of scrub will contribute to Scotland's biodiversity conservation objectives (NatureScot, 2020), helping to bolster the species geographic ranges which have nationally declined due to agricultural intensification and other types of habitat modification.

In combination, the Proposed Developments significant enhancement of hedgerows and area habitats are considered to deliver a significant biodiversity enhancement, in accordance with NPF4 (Scottish Government, 2023).

6.4.1 Habitat Management and Monitoring Plan

A Habitat Management and Monitoring Plan will be delivered post consent and prior to commencement of construction, ground investigation or enabling works. The Habitat Management and Monitoring Plan will:

- Be informed by the recommendations within this report and the Landscape Masterplan (Stephenson Halliday, 2024);
- Ensure the appropriate management of retained, created and enhanced habitats within the Site during construction, operation and decommissioning of the Proposed Development;
- Provide detail on the location and techniques for habitat creation and restoration;
- Describe the management objectives for each habitat type that will be created, enhanced, or restored in order to establish success criteria for the different habitat types affected; and
- Be agreed with the Highland Council.

The Habitat Management and Monitoring Plan should seek to maximise opportunities for biodiversity. This will include:

- Low intensity management of grassland habitats (e.g. annual hay cuts once the grassland is established);
- Management of invasive or fast growing species which, if unmanaged, could reduce diversity, such as gorse;
- Replacement of failed planting; and
- Adaptive management measures.

6.5 Groundwater dependent terrestrial ecosystems

There are no GWDTE within the Site. However, the GWDTE mire and rush pasture have been confirmed as present adjacent to the north-western Site boundary (as shown within **Figure 7** and detailed within **Appendix C**).

SEPA Guidance Note 31 (2017) states that mitigation measures are required to avoid impacts upon GWDTE if:

- Excavations are proposed within 100 m of any GWDTE; or
- Excavations over 1 m deep are proposed within 250 m of any GWDTE.

Figure 7 demonstrates that no development or excavations are proposed as part of the Proposed Development within 250 m of GWDTE. Therefore, no direct significant effects are anticipated.

However, as a precaution and to ensure there are no indirect or residual adverse effects as a result of the Proposed Development, pollution prevention measures will be implemented with due consideration of the GWDTE identified to avoid potential degradation of water quality. These measures will be implemented throughout the pre-construction, construction and decommissioning phases of the Proposed Development. Measures will be detailed within a Pollution Prevention Plan, which will form part of the CEMP and will be approved prior to commencement be the Local Planning Authority.

6.6 Significance of residual effects

Table 6-2 below summarises the assessment of potential impacts on each important ecological feature, proposed mitigation and the assessed residual effects.

Table 6-2. Summary of effects

Important ecological feature	Potential impacts and effects	Avoidance and mitigation measures	Mechanism by which measures are secured	Residual effects
Caithness Lochs SPA	Disturbance of qualifying bird assemblages on functionally linked land.	Detailed within Shadow HRA.	Planning condition	None
Caithness Lochs Ramsar site	Disturbance of qualifying bird assemblages on functionally linked land.	Detailed within Shadow HRA.	Planning condition	None
Phillips Mains Mire SSSI	Degradation of qualifying habitats.	Pollution Prevention Plan (as part of a CEMP)	Planning condition	None

Important ecological feature	Potential impacts and effects	Avoidance and mitigation measures	Mechanism by which measures are secured	Residual effects
Loch of Mey SSSI	Degradation of qualifying habitats	Pollution Prevention Plan (as part of a CEMP)	Planning condition	None
Bog	Habitat loss or degradation.	Avoidance of loss through design. 15 m exclusion buffer zone, Pollution Prevention Plan and new landscaping.	Planning condition	None
Other standing water	Habitat loss or degradation.	Avoidance of loss through design. Pollution Prevention Plan and new landscaping.	Planning condition	None
Hedgerows	Habitat loss or degradation.	Hedgerow enhancement to be detailed within a Habitat Management and Monitoring Plan.	Planning condition	Minor beneficial
Bats	Lighting impacts degrading foraging and commuting suitability.	Sensitive lighting plan for operational phase and new landscaping.	Planning condition	None
Badgers	Killing or injury during construction phase.	Covering or installing ramps in excavations, covering open ended pipework and reporting any suspected mammal holes to a SQE.	Planning condition and Species Protection Plan	None

Important ecological feature	Potential impacts and effects	Avoidance and mitigation measures	Mechanism by which measures are secured	Residual effects
Breeding birds	Direct destruction or disturbance of nests Direct loss or degradation of nesting and foraging habitat. Potential disturbance or destruction of nests during routine maintenance visits	Removal of all vegetation should take place outside of the bird nesting season i.e. undertaken between September and February. If nests are found, the nest(s) and immediate surroundings should be left undisturbed. Ongoing checks during construction phase for new nesting attempts during the breeding season. New habitat creation and enhancement.	CEMP and Species Protection Plan	None
Non-breeding greylag goose, Greenland white-fronted goose and whooper swan associated with Caithness Lochs SPA and Ramsar site	Potential impacts, avoidance and mitigation measures have been considered in the Shadow HRA report.			
Non-breeding birds (excluding greylag goose, Greenland white-fronted goose associated with Caithness Lochs	Direct disturbance and displacement. Direct loss or degradation of	Construction phase should be initiated outside the mid-winter period (Nov-Jan).	CEMP and Species Protection Plan	Minor adverse during construction phase between October and February inclusive

Important ecological feature	Potential impacts and effects	Avoidance and mitigation measures	Mechanism by which measures are secured	Residual effects
SPA and Ramsar site)	resting and foraging habitat. Disturbance and displacement during routine maintenance visits.	Works producing a sudden visual or loud noise stimulus (e.g. hammer piling, large off-track vehicle movements) will be reduced where possible by using best available techniques.		
Amphibians	Killing or injury during the construction and any site investigation phases.	Species Protection Plan	Planning condition and Species Protection Plan	None
Biodiversity	Loss of habitats and associated biodiversity.	Habitat retention, creation and enhancement.	Landscape Plan and planning condition	Positive effects for biodiversity
GWDTE	Potential indirect or non-significant residual adverse effects from degradation of water quality.	No excavations proposed within 250 m of the GWDTE. Precautionary Pollution Prevention Plan.	Planning condition	None

Subject to the implementation of the above mitigation, residual adverse effects from the Proposed Development are anticipated to be avoided on all features, with the exception of non-breeding birds (excluding greylag goose, Greenland white-fronted goose associated with Caithness Lochs SPA and Ramsar site). Residual effects on this feature are anticipated to be minor adverse and temporary, during the construction phase only.

With the implementation of c 2.43 km hedgerow enhancements, there is predicted to be a minor beneficial impact, which is considered to be significant at the Local level. Positive effects for biodiversity are also anticipated.

7 Cumulative effects

Cumulative effects can result from actions which are individually insignificant but, when take in combination, can become significant when concentrated on a specific location or over a period of time.

A high-level review of projects or plans with the potential to have cumulative effects with the Proposed Development has been undertaken.

A review of the Highland Council and Energy Consents Unit Planning Portals identified projects within 1 km of the Site boundary which have been screened in for consideration of cumulative effects, in combination with the Proposed Development. The location of these projects is shown within **Figure 8.**

7.1 Description of projects screened in

7.1.1 Hollandmey Renewable Energy Development

Status: consent granted
Construction and operation of a renewable energy development, known as Hollandmey Renewable Energy Development, at Hollandmey, located within Caithness in the Highlands. The proposed generating station has an installed capacity of up to 65 MW, comprising 10 wind turbines with a ground to blade tip height of 149.9 m with a generating capacity of around 50 MW, and around 15 MW of ground mounted solar arrays. The Proposed Development also includes approximately 15 MW of battery energy storage (Energy Consents Unit, 2021).

7.1.2 Gills Bay Substation

Status: consent granted
Construction and operation of a 132 kilovolt (kV) switching station and associated infrastructure.

7.1.3 Mey BESS

Status: planning application pending decision
Construction and operation of a BESS with installed capacity of up to 300 MW, and associated/ancillary works and development (Energy Consents Unit, 2024).

7.1.4 Slickly Wind Farm Connection

Status: scoping opinion issued
Connection of the Slickly Wind Farm into the electricity transmission network via trident wood poles (approximately 8.5 km in length) (Energy Consent Unit, 2023).

7.1.5 Gills Bay 132kV Overhead Transmission Line

Status: consent granted but lapsed
A 132 kV alternate current overhead double-circuit transmission line carried on steel-lattice towers (approximately 52) between a proposed sealing end compound at Weydale, Caithness and a proposed sealing end compound at Reaster, Caithness; and for ancillary development including about 10 km of underground cables, access works including new tracks and junctions, and temporary protection measures at roads and water crossings during construction (Energy Consent Unit, 2019).

7.2 Assessment of cumulative effects

Additive, incremental, associated and connected cumulative effects have been considered with regard to the above projects and the Proposed Development, in accordance with CIEEM (2018) guidance.

Subject to the implementation of mitigation measures detailed herein, the Proposed Development is not anticipated to result in any adverse significant effects, as summarised within **Table 6-2**. However, a minor adverse effect is anticipated with regard to non-breeding birds (excluding the goose and swan populations associated with Caithness Lochs SPA and Ramsar site).

This is anticipated to result from temporary disturbance during the construction phase of the Proposed Development. Given the scale of the Proposed Development (c. 0.024% of the Caithness county) and abundance of suitable habitat for wintering birds (open habitats such as grassland and winter stubble) within Caithness and surrounding the Site, the potential for this effect to be additive or incremental is low. Moreover, the Site is considered unlikely to be of significant importance to non-breeding birds (as referenced within the Wintering Birds Review and Breeding Bird Appraisal Summary, **Appendix B**). Therefore, the risk of this becoming an additive or incremental cumulative significant adverse effect is negligible.

Associated or connected cumulative effects may occur if the Proposed Development served to enable any of the projects identified within Section 7.1 to be constructed. This is not the case and therefore there is no potential for the minor adverse effect to non-breeding birds to result in an associated or connected cumulative effect (CIEEM, 2018).

Therefore, no projects have been identified which are anticipated to interact with the Proposed Development and result in significant adverse cumulative effects upon ecology.

8 Enhancement

The Landscape Masterplan includes landscape planting enhancements and habitat creation which will make positive contributions to on-site biodiversity.

In addition to these enhancements which are embedded into the Proposed Development, a range of additional ecological enhancement measures will be delivered, as identified below.

Further details will be set out in a Habitat Management and Monitoring Plan and/or Species Protection Plan at the detailed design stage, however as an indicative guide, these may include:

- Inclusion of plant species of known wildlife value;
- Provision of new bird nesting opportunities;
- Creation of log piles; and
- Provision of mammal passing places – it is anticipated that the Proposed Development will be surrounded by security fencing. To ensure that wildlife can access the newly created areas of soft landscaping, access points should be installed at the base of the fences. These should be a minimum of 200 mm x 200 mm. Two-way badger gates with the flap removed may be a practical means of implementation.

9 Conclusions

In the absence of mitigation, the Proposed Development is anticipated to result in a range of adverse ecological effects significant at the Local and County Level. However, subject to the implementation of the mitigation and precautionary measures proposed within this Assessment, no significant adverse ecological effects are anticipated.

The majority of the Proposed Development footprint comprises winter stubble habitat of negligible ecological importance. The proposed Landscape Masterplan (Stephenson Halliday, 2024) will result in the creation of new habitats which will mitigate for the losses of baseline habitats. In addition, landscape proposals are anticipated to enhance opportunities for ecology and biodiversity.

The Proposed Development is anticipated to achieve significant biodiversity enhancement, with a 5.39% gain in Area habitat and 51.08% gain in Hedgerow habitats BDUs.

The measures set out herein can be secured though appropriately worded planning conditions. Those expected to be secured are:

- **CEMP** – to avoid impacts to breeding and non-breeding birds during the construction phase. The CEMP will also include a Pollution Prevention Plan to avoid impacts on statutory designated sites, water quality, bog habitat and GWDTE.

- **Habitat Management and Monitoring Plan** – to include management and monitoring measures for all habitats retained, created or enhanced within the Site as part of the Proposed Development. Management and monitoring activities should last a minimum of 30 years with responsible parties and funding mechanisms secured. The Plan should be agreed in advance of construction with the Highland Council. Monitoring against the agreed management objectives will be an essential part of the Habitat Management and Monitoring Plan and will be used to evaluate effective habitat creation and restoration interventions; as well as identifying the need to finetune management. On this basis, it is expected that the Habitat Management and Monitoring Plan will function as a live document where success, criteria and management prescriptions may be subject to revision subject to relevant agreements based on monitoring findings.

- **Lighting Plan** – to avoid potential impacts on bats.

- **Species Protection Plan** – to avoid potential impacts to amphibians, badgers and birds.

Royal HaskoningDHV

References

Amphibian and Reptile Ground of the United Kingdom (ARGUK) (2018). Advice Note 10: Reptile Survey and Mitigation Guidance for Peatland Habitats.

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. (2013) Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland

Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.

Defra (2024). Statutory biodiversity metric tools and guides. Available at: https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides. Last accessed June 2024.

Energy Consent Unit (2019). Gills Bay 132kV Overhead Transmission Line. ECU Reference: EC00005260. Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=EC00005260. Last accessed August 2024.

Energy Consent Unit (2021). Hollandmey Renewable Energy Development. ECU Reference: ECU00003353. Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00003353. Last accessed August 2024.

Energy Consent Unit (2023). Slickly Windfarm Connection. Screening. ECU Reference: ECU00004886. Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004886. Last accessed September 2024.

Energy Consent Unit (2024). Mey BESS. ECU Reference: ECU00004838. Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004838. Last accessed August 2024.

Highland Council (2024) Revised Biodiversity Enhancement Planning Guidance.

The Institution of Lighting Professionals (2023). Bats and Artificial Lighting at Night. Guidance Note GN08/23. Institution of Lighting Professionals: Rugby.

ITP Energised (2023). Mey BSS Ecological Impact Assessment.

NatureScot (2020). Scottish Biodiversity List. Available at https://www.nature.scot/doc/scottish-biodiversity-list. Last accessed August 2024.

NatureScot (2022). Disturbance Distances in selected Scottish Bird Species – NatureScot Guidance. Available at: https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance. Last accessed September 2024.

NatureScot (2023). Habitat Map of Scotland (HabMoS). Available at: https://map.environment.gov.scot/sewebmap/?layers=HabVegSurvey1,saltmarshSurvey1,habmos-OtherLanduse,habmosNVCToAnnexIAndEUNIS,habmos-FreshWater,eunisLandCoverScotland,habmos-NativeWoodlandSurveyScotland,coastalVegShingle1&extent=-301028,528191,722972,1215192. Last accessed August 2024.

Patterson, I.J., Lambie, D., Smith, J. & Smith, R. (2013). Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs Special Protection Area, 2011/12 and 2012/13. Scottish Natural Heritage Commissioned Report No. 523b.

RSK (2021). Hollandmey RED: Groundwater-Dependent Terrestrial Ecosystems Assessment. Technical Appendix 10.4. Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00003353. Last accessed August 2024.

Scottish Environment Protection Agency (SEPA) (no date). Main river and coastal catchments - map layer. Available at: https://map.environment.gov.scot/sewebmap/. Last accessed August 2024.

Scottish Government (2023). Measuring biodiversity: research into approaches. Available at: https://www.gov.scot/publications/research-approaches-measuring-biodiversity-scotland/pages/2/. :Last accessed September 2024.

Scottish Ornithologists' Club (SOC) Caithness Branch (2024). Caithness Bird Report 2023.

ScottishPower Renewables (SPR) (2021). Hollandmey Renewable Energy Development EIA Report Chapter 9: Ornithology.

SEPA (2017). Land Use Planning System SEPA Guidance Note 31. *Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*. Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf. Last accessed August 2024.

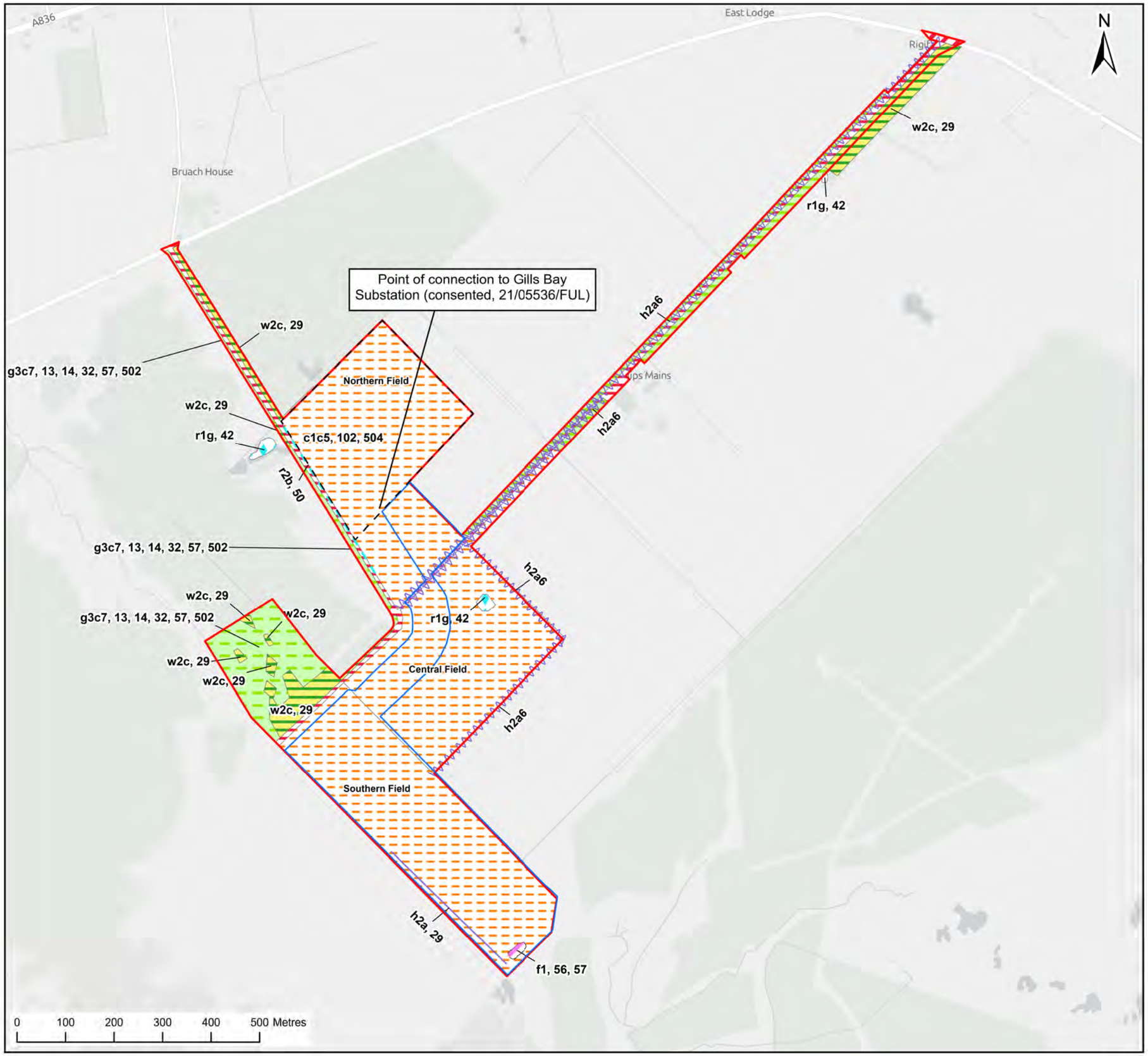
SEPA (2024). Water run-off from construction sites. Available at: https://www.sepa.org.uk/regulations/water/pollution-control/water-run-off-from-construction-sites/. Last accessed September 2024.

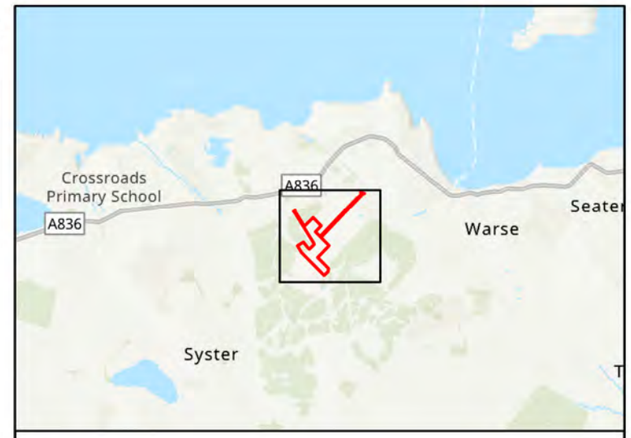
Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

UKHab Ltd (2023). UK Habitat Classification Version 2.0. Available at: https://www.UKHab.org/. Last accessed May 2024.

Figures

Figure 1. Habitats Plan





Legend:

- Planning Boundary
- Proposed Development Boundary
- Consented SSE Gills Bay Substation (By others)

Primary habitat

- h2a - Native hedgerow
- h2a6 - Other native hedgerow
- r2b - Other river/stream
- c1c5 - Winter stubble
- f1 - Bog
- g3c - Other neutral grassland
- g3c7 - Deschampsia neutral grassland
- r1g - Other standing water
- u1 - Built-up areas and gardens
- u1c - Artificial unvegetated, unsealed surface
- w2c - Other coniferous woodland

Secondary habitat

50 - Ditch
13 - Scattered dwarf shrubs
29 - Plantation
42 - Pond
56 - Depressions on peat substrates (H7150)
102 - Sheep grazed
14 - Scattered rushes
504 - Waterlogged
57 - Peat
32 - Scattered trees
502 - Seasonally wet

Report:
Field Rigifa Ltd –
Ecological Impact Assessment

Title:
Habitats Plan

Figure:	1	Drawing No:	PC3506-RHD-07-XX-DG-Z-0009		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P04	26/09/2024	JH	TC	A3	1:8,000
P03	10/09/2024	JH	TC	A3	1:8,000

Co-ordinate system: British National Grid

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Figure 2. Designated Sites Plan

320000
325000
330000
335000
340000
980000
975000
970000
965000
960000
N
North Caithness Cliffs
North Caithness Cliffs
Loch of Mey SSSI / Caithness Lochs SPA & RAMSAR
Phillips Mains Mire
Caithness Lochs SPA & RAMSAR
Caithness and Sutherland Peatlands SAC, SPA & RAMSAR
0 1 2 4 Kilometres

Legend:

- Planning Boundary
- Consented SSE Gills Bay Substation (By others)
- Site 2km Buffer
- Site 10km Buffer
- Special Areas of Conservation (SAC)
- Ramsar site
- Special Protection Area (SPA)
- Sites of Special Scientific Interest (SSSI)

Report: Field Rigifa Ltd – Ecological Impact Assessment

Title: Designated Sites plan

Figure: 2

Drawing No: PC3506-RHD-07-XX-DG-Z-0008

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P04	26/09/2024	JH	TC	A3	1:90,000
P03	10/09/2024	JH	TC	A3	1:90,000

Co-ordinate system: British National Grid

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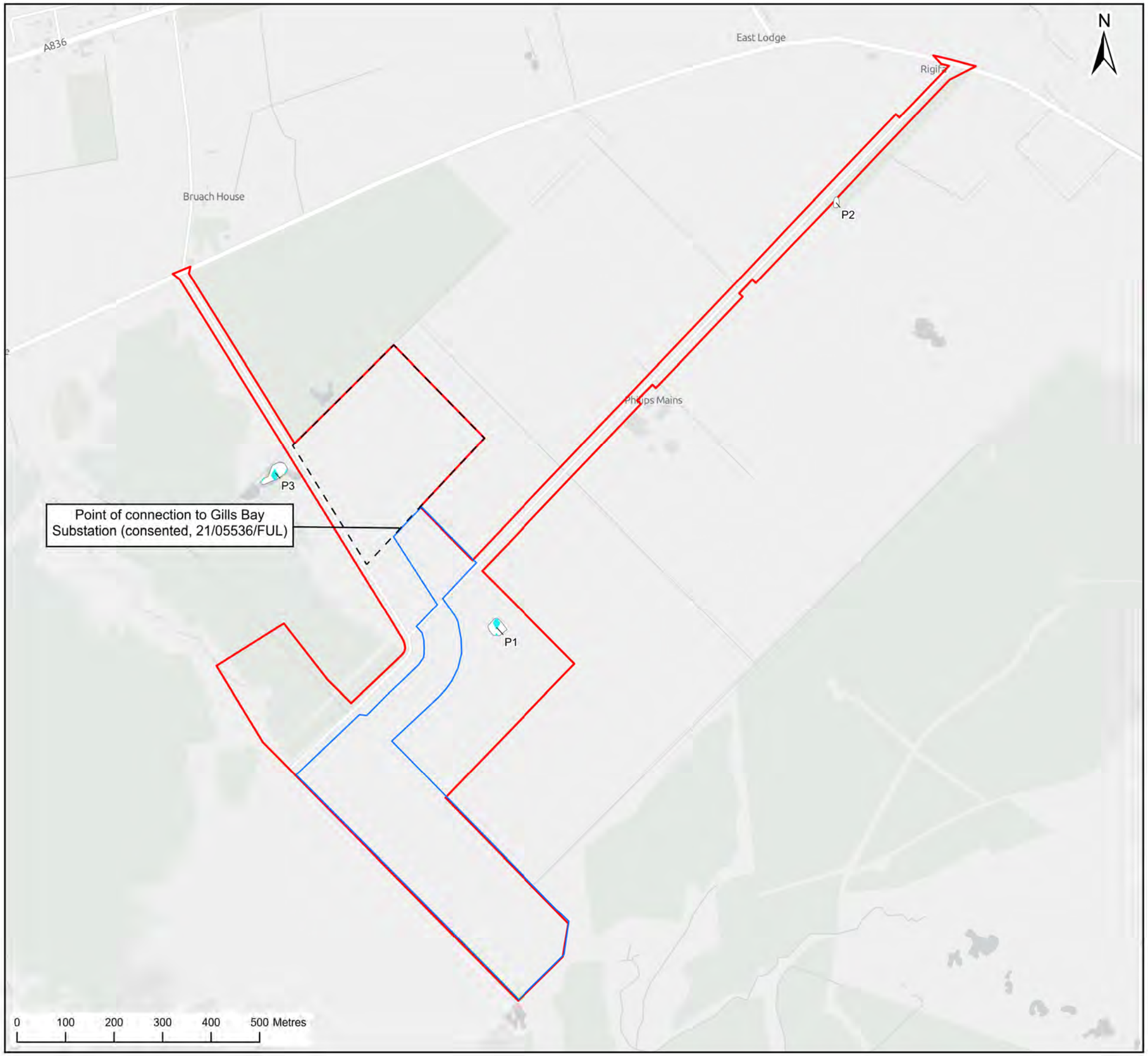
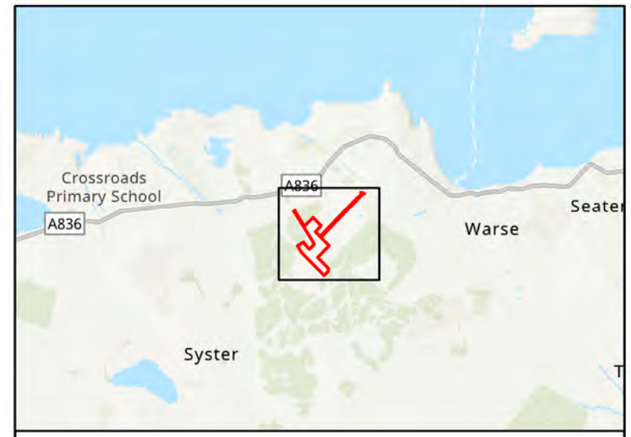
Figure 3. Pond Plan





Legend:

- Project Boundary
- Proposed Development Boundary
- Consented SSE Gills Bay Substation (By others)

Primary Habitat

- r1g - Other standing water

Report:
Field Rigifa Ltd –
Ecological Impact Assessment

Title:
Pond Plan

Figure: 3 | Drawing No: PC3506-RHD-07-XX-DG-Z-0014

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	26/09/2024	JH	TC	A3	1:8,000
P01	10/09/2024	JH	TC	A3	1:8,000

Co-ordinate system: British National Grid

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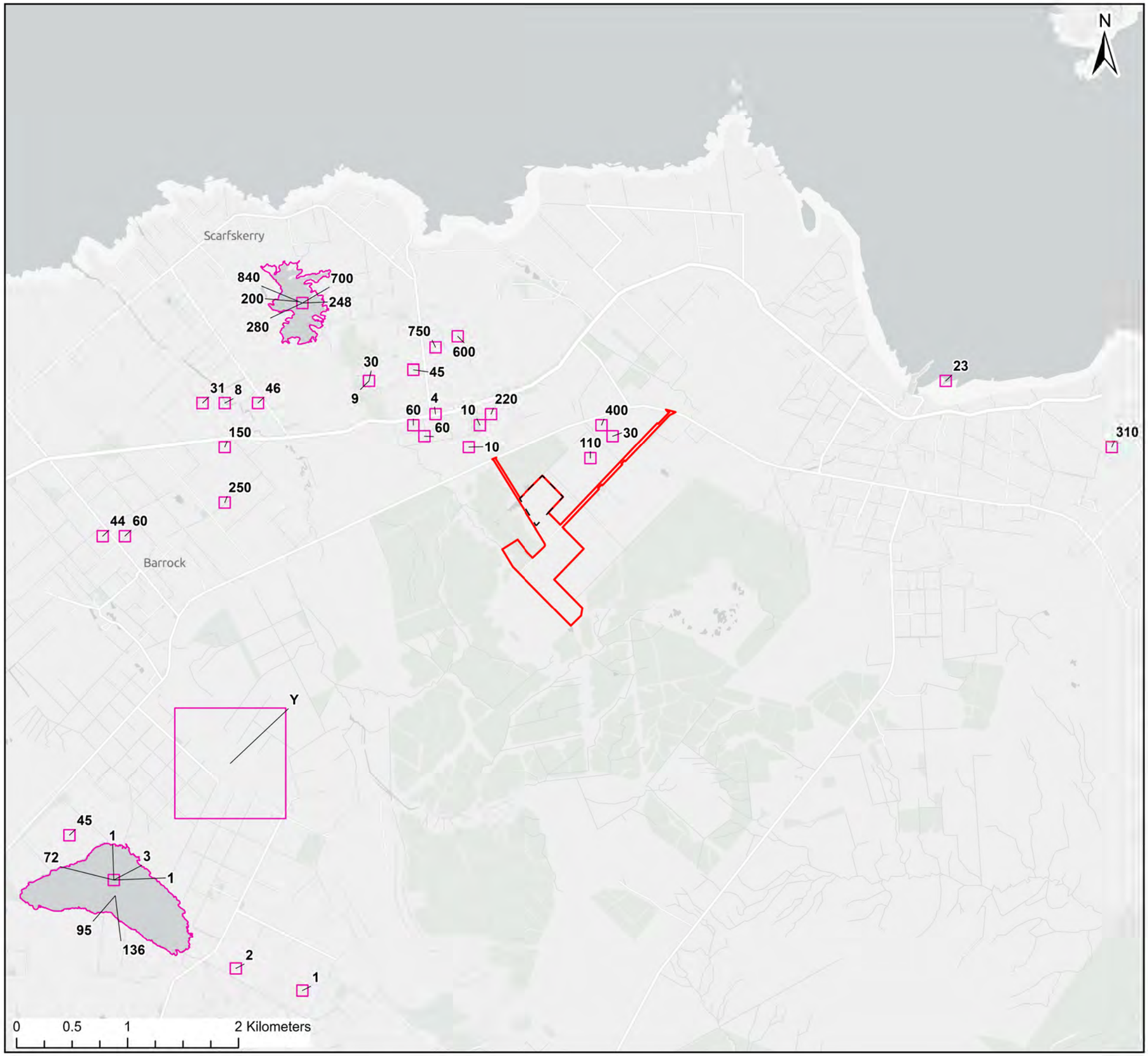
Figure 4. Locations of records of greylag goose (Anser anser) within RSPB desk study data 2013 to 2024, relative to the Site



Legend:

- Planning Boundary
- Consented SSE Gills Bay Substation (By others)
- Recorded sighting

Report: Field Rigifa Ltd – Breeding Bird Appraisal

Title: Locations of records of greylag goose (Anser anser) within RSPB desk study data 2013 to 2024, relative to the Site.

Figure: 4 | Drawing No: PC3506-RHD-07-XX-DG-Z-0011

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	26/09/2024	JH	WS	A3	1:35,000
P01	30/08/2024	JH	WS	A3	1:35,000

Co-ordinate system: British National Grid

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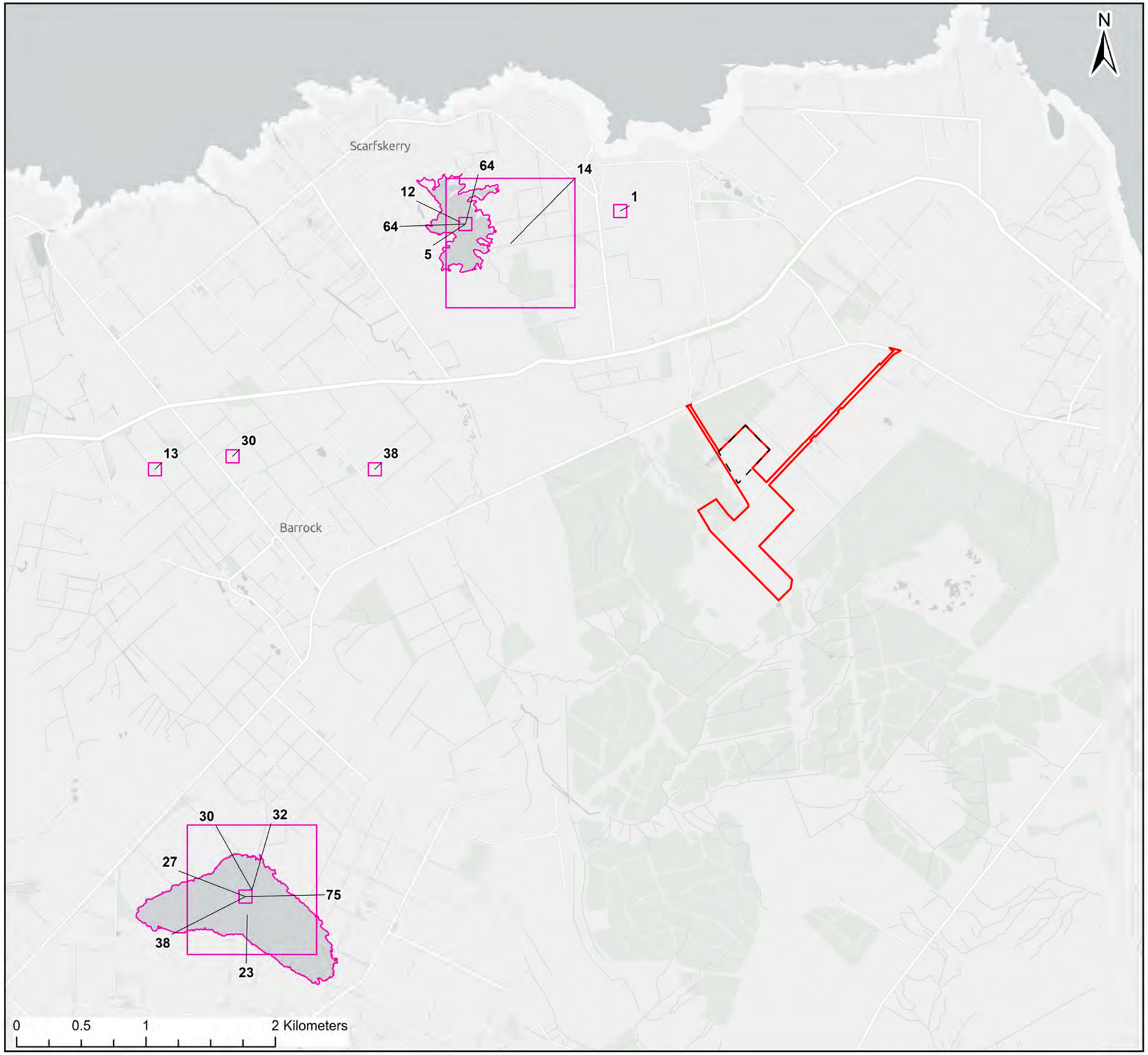
Figure 5. Locations of records of greylag goose (Anser anser) within RSPB desk study data 2013 to 2024, relative to the Site



Legend:

- Project Boundary
- Consented SSE Gills Bay Substation (By others)
- Recorded Sighting

Report: Field Rigifa Ltd – Breeding Bird Appraisal

Title: Locations of records of whooper swan (Cygnus cygnus) within RSPB desk study data 2013 to 2024, relative to the Site.

Figure: 5 | Drawing No: PC3506-RHD-07-XX-DG-Z-0012

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	26/09/2024	JH	WS	A3	1:30,000
P01	30/08/2024	JH	WS	A3	1:30,000

Co-ordinate system: British National Grid

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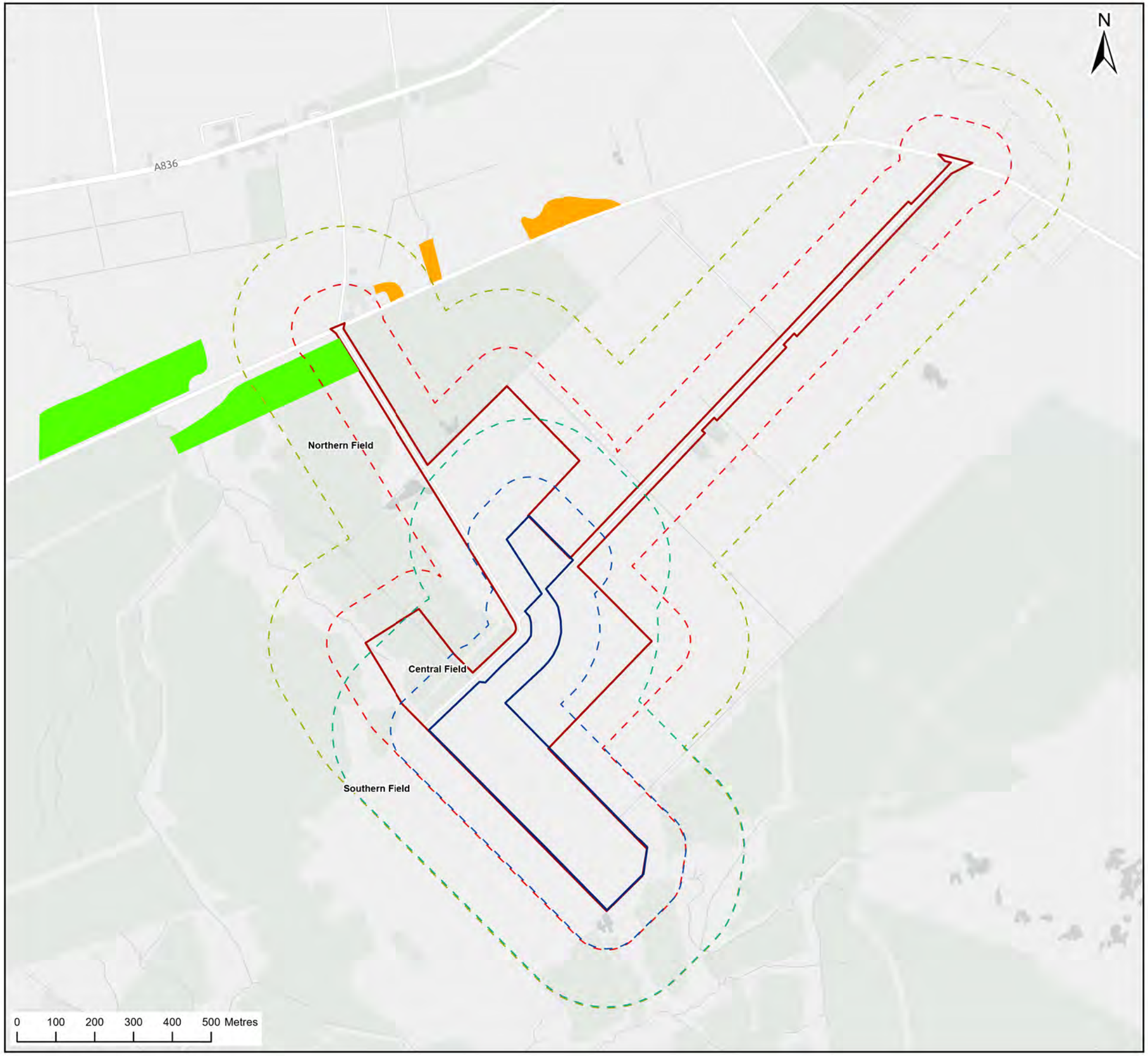
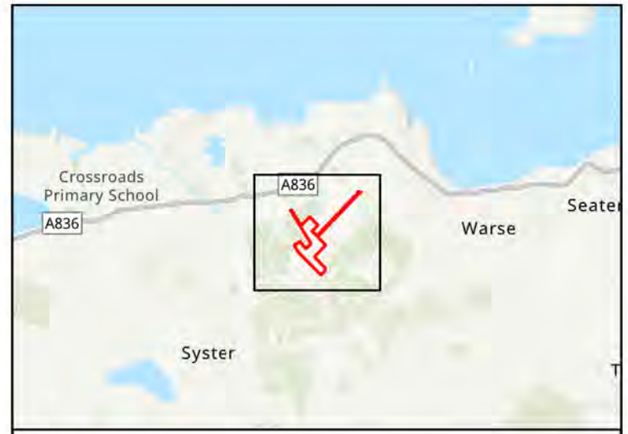
Figure 6. Locations of records of Greenland white-fronted goose (Anser albifrons flavirostris) within RSPB desk study data 2013 to 2024, relative to the Site

This figure has been redacted

Figure 7. Groundwater Dependent Terrestrial Ecosystems





Legend:

- Project Boundary
- Proposed Development Boundary
- Planning Boundary 100m Buffer
- Planning Boundary 250m Buffer
- Proposed Development Boundary 100m Buffer
- Proposed Development Boundary 250m Buffer

Habitat

- M23 rush-pasture
- M25 mire

Report: Field Rigifa Ltd – Ecological Impact Assessment

Title: Groundwater Dependent Terrestrial Ecosystems

Figure:	Drawing No:				
7	PC3506-RHD-07-XX-DG-Z-0015				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
P01	10/09/2024	JH	TC	A3	1:10,000

Co-ordinate system: British National Grid

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Figure 8. Projects Screened in for Assessment of Cumulative Effects

N

Legend

- Field Rigifa BESS Planning Boundary
- Rigifa BESS Site
- Gills Bay Overhead Line
- Gills Bay Substation
- Hollandmey Wind Farm
- Mey BESS
- Slickly Wind Farm Cable Route

Rattar
Rattar Farm
A836
East Lodge
Rigifa
Bruach House
Gills
Kittiwake Cottage
Hill of Rigifa
Philips Mains
Upper Gills
Warse
Charleston Farm
Hillside House
Barrock
Hollandmey Moss
Hollandmey
Sandbank
Inkstack
Braastemire
Craig Hill
Syster
Lochend
Hill of Slickly
Number 10
Number 9

0.65 0.33 0 0.65 1.3 1.95 2.6 Kilometers

Appendix A – Legislation and Policy

Legislation

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (also known as the Habitats Regulations) transposed into UK law the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives). The Habitats Regulations were amended in 2019 to retain the provision of the Regulations following the UK's exit from European Union (EU).

These regulations provide protection for specific habitats listed in Annex I and specific species in Annex II of the Habitats Directive. They set out the decision-making procedures for the protection of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) which, following the 2019 amendment, now form the UK's National Site Network. Under the Habitats Regulations it is an offence (subject to exceptions) to deliberately capture, injure, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, uproot, destroy, or trade in the plants listed in Schedule 4.

The Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act (1981) was enacted to implement the Birds Directive and Bern Convention in Great Britain but has been amended and supplemented over the intervening decades. It contains four parts and 17 schedules which cover:

- Part 1: Wildlife – the protection of birds, animals, plants and measures to prevent the establishment of non-native species which may be detrimental to native wildlife;
- Part 2: Nature conservation – the countryside and National Parks (including the designation of protected areas);
- Part 3: Public rights of way; and
- Part 4: Miscellaneous provisions of the act.

Under the Wildlife and Countryside Act (as amended) the country nature conservation bodies have a duty to notify any area of land which is 'of special interest by reason of any of its flora, fauna, or geological or physiographical features'. These sites are known as Sites of Special Scientific Interest (SSSIs).

The Wildlife and Countryside Act 1981 (as amended) makes it a criminal offence to:

- Intentionally kill, injure, or take any wild bird;
- To take, damage or destroy the nest of any wild bird while that nest is in use or being built;
- To take or destroy the egg of any wild bird;
- To intentionally kill, injure or take any animal listed in Schedule 5 of the act and protects occupied and unoccupied places used for shelter or protection by such animals;
- To intentionally pick, uproot or destroy any wild plant listed in Schedule 8 of the Act; or
- To plant or otherwise cause to grow any non-native, invasive species listed under Part 2 of Schedule 9 of the Act.

Protection of Badgers Act 1992

Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the Act to:

- wilfully taking, injuring or killing a badger;
- cruelty to a badger;
- intentional or reckless interference with a badger sett;
- sale or possession of a badger; and
- marking or ringing of a badger.

Interfering with a badger sett includes:

- damaging or destroying a sett or any part of it;
- obstructing access to a sett;
- disturbing a badger while it is in a sett; and
- causing or allowing a dog to enter a badger sett.

Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)

The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (known as CAR) regulate certain activities in Scotland that could affect its water environment. The regulations cover rivers, lochs, transitional waters (estuaries), coastal waters groundwater, and groundwater dependant wetlands. To carry out activities near or in waterbodies, a CAR license may be required depending on the nature of the works.

Policy and guidance

National Planning Framework 4 (NPF4)

NPF4 is a long-term plan looking to 2045 that guides spatial development, sets out national planning policies, designates national developments and highlights regional spatial priorities. Policy 3 of the NPF4 supports development that helps to secure positive effects for biodiversity. The Policy states that development proposals should seek to "*conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention"*.

Research has since been carried out by the Scottish Government regarding the implementation of NPF4, Policy 3 (Scottish Government, 2023). The findings state that the Defra Biodiversity Metric could be adapted for planning and development use in Scotland.

Scottish Biodiversity List

The Scottish Biodiversity List (SBL) is a list of animals, plants and habitats that Scottish Ministers consider to be of Principal Importance for biodiversity conservation in Scotland (NatureScot, 2020). Habitats and species in this list are noted where appropriate herein.

Highland Nature Biodiversity Action Plan

The Highland Nature Biodiversity Action Plan (BAP) contains nine key actions for Highland nature conservation and details priority species and habitats within the Highland region that must be considered within any development assessment. Any BAP habitats or species which may be affected by the development proposals are referenced herein.

The Highland Council Biodiversity Planning Guidance (BPG)

The Highland Council have developed BPG as non-statutory planning guidance to manage biodiversity enhancement (Highland Council, 2024). This includes the use of the Department for Environment, Food and Rural Affairs' (Defra) Biodiversity Net Gain (BNG) Metric (Defra, 2023) until a suitable metric for use in Scotland has been developed. At the time of writing there is no statutory requirement for BNG in Scotland, and a BNG metric, which will be relevant to Scottish habitats, is in development by NatureScot.

The Chartered Institute of Ecology and Environmental Management (CIEEM) has defined BNG as a goal for a development project, policy, plan or activity in which the impacts on biodiversity are outweighed by measures taken to avoid and minimise the impacts, to restore affected areas and finally to offset the residual impacts, to the extent that the gain exceeds the loss (CIEEM, 2019).

The BPG states that "a minimum 10% biodiversity enhancement is require although a higher percentage and/or bespoke measures may be expected where development impacts a non-statutory designated area or a locally important area as designated by the local Authority".

Appendix B – Wintering Birds Review and Breeding Bird Appraisal Summary

REPORT

Breeding Bird Appraisal

Proposed Battery Energy Storage System, Rigifa

Client: Field Rigifa Ltd

Reference: PC3506-RHD-07-XX-RP-Z-0005
Status: Final/01
Date: 26 September 2024

Royal HaskoningDHV
Enhancing Society Together

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Document title: Breeding Bird Appraisal

Subtitle: Proposed Battery Energy Storage System, Rigifa
Reference: PC3506-RHD-07-XX-RP-Z-0005

Status: Final/01
Date: 26 September 2024
Project name: Rigifa BESS
Project number: PC3506
Author(s): WS

Drafted by: WS

Checked by: RB

Date: 22/07/2024

Approved by: EW

Date: 31/07/2024

Classification

Project related

Royal HaskoningDHV

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1 Introduction

Royal HaskoningDHV has been commissioned by Field Rigifa Limited (Field) to carry out a breeding bird appraisal of the site of a proposed Battery Energy Storage System (BESS) on land at Phillips Main Farm, Rigifa, Thurso KW14 8XH (herein referred to as the 'site'). The site comprised predominantly of three agricultural fields (northern, central and southern fields; see **Figure 2**) with smaller areas of other habitats including coniferous plantation, neutral grassland and hedgerows.

The purpose of the breeding bird appraisal, which is documented in this report, is to provide an evaluation of the habitats and identify the likely importance of the site for breeding birds. Recommendations to ensure legal compliance and provide ornithological enhancement are also presented. This breeding bird appraisal has supported the Ecological Impact Assessment (EcIA) for the Proposed Development (report reference PC3506-RHD-07-XX-RP-Z-0008).

2 Legislation

Key legislation relating to ornithology is summarised below.

2.1 Conservation (Natural Habitats, &c.) Regulations 1994

In Scotland, the Habitats Directive (EU Council Directive 92/43/EEC) is translated into specific legal obligations by the Conservation (Natural Habitats, &c.) Regulations 1994, known as the Habitats Regulations. The Habitats Regulations were amended in 2019 to retain the provision of the Regulations following the UK's exit from the European Union (EU) and set out the decision-making procedures for the protection of SPAs (and Special Areas of Conservation (SACs)) which, following the 2019 amendment, now form the UK's National Site Network (NSN). Where Ramsar Sites coincide with an SPA or an SAC, they are afforded the same level of protection as NSN sites.

2.2 The Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act (1981) was enacted in order to implement the Wild Birds Directive and Bern Convention in Great Britain but has been amended and supplemented over the intervening decades, including (in Scotland) the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) 2011. In relation to nesting birds, the Wildlife and Countryside Act 1981 (as amended) makes it an offence to intentionally or recklessly:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built;
- Obstruct or prevent any bird from using its nest; and
- Take or destroy the egg of any wild bird.

For any wild bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), it's an offence to intentionally or recklessly disturb:

- Any bird while it is building a nest;
- Any bird while is in, on, or near a nest containing eggs or young;
- Any bird while lekking; and
- The dependent young of any bird.

Furthermore, those species listed on Schedules A1 and 1A receive additional protection which makes it an offence, at any time, to intentionally or recklessly:

- Take, damage, destroy or interfere with any nest habitually used by any wild bird included in Schedule A1 (golden eagle and white-tailed eagle); and
- Harass any bird included in Schedule 1A (golden eagle, white-tailed eagle, hen harrier and red kite).

3 Information sources

Documents and assessments relating to bird conservation status referenced within this report are summarised below.

3.1 Birds of Conservation Concern 5

Birds of Conservation Concern 5 (BoCC5; Stanbury *et al*, 2021) is the latest assessment of the status of all the UK's regularly occurring bird species. Birds have been assessed against a set of objective criteria and placed on the Green, Amber or Red lists to indicate an increasing level of conservation concern.

3.2 Scottish Biodiversity List

The Scottish Biodiversity List (SBL) (NatureScot 2020) is a list of animals, plants and habitats that are considered to be of principal importance for biodiversity conservation in Scotland. Bird species on this list and relevant to the site include curlew *Numenius arquata,* skylark *Alauda arvensis,* linnet *Linaria cannabina*, reed bunting *Emberiza schoeniclus* and lapwing *Vanellus vanellus.*

3.3 Highland Nature Biodiversity Action Plan

The Highland Nature Biodiversity Action Plan (HNBAP) (The Highland Council, 2021) contains key actions for Highland nature conservation. Priority bird species on the HNBAP and relevant to the site include curlew, lapwing and oystercatcher *Haematopus ostralegus*.

4 Methodology

4.1 Desk study

The Defra MAGIC map application (https://magic.defra.gov.uk/magicmap.aspx) was used to identify statutory designated sites with ornithological interest within a 5km radius of the site, including Special Protection Areas (SPAs), Ramsar sites and Sites of Special Scientific Interest (SSSIs). Biodiversity data from the Highland Biological Recording Group (HBRC) was reviewed for previous records of notable bird species within 3km of the site. Publicly available data from other proposed developments in the immediate vicinity were also reviewed for historical bird records.

4.2 Field survey

A walkover survey was undertaken on 26 June 2024 in suitable weather conditions (sunny, wind force 4-5, temperature 16^{O}C, no precipitation). The survey focused on both habitats and bird species within the site, although habitats and birds up to 50 m from the site boundary were also noted. All bird species were identified and recorded in broad accordance with the breeding bird survey methodology for a single visit (Bird Survey & Assessment Steering Group, 2023) including behavioural notations where appropriate. Each species' breeding status on site was estimated based on habitats present and behaviours observed.

Recording of habitats was carried out predominantly in relation to their ability to support breeding birds. A formal habitat survey was previously undertaken by Royal HaskoningDHV in accordance with the UK Habitat Classification methodology (UKHab Ltd, 2023) in March 2024.

4.3 Evaluation

The breeding bird assemblage of the site has been evaluated in accordance with Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) guidelines.

5 Results

5.1 Desk study

5.1.1 Designated sites with ornithological interest

The site does not lie within, or adjacent to, any statutory designated sites with ornithological interest. A total of seven statutory designated sites with ornithological interest have been identified within a 5 km radius of the site; details of these are provided in **Table 5-1** and their locations are shown on **Figure 1**. Other SSSIs are present within 5 km, however these do not have birds listed as reasons for notification.

Table 5-1. Statutory designated sites within 5km of the site

Designated site(s)	Approx. distance & direction from Proposed Development	Relevant qualifying features / reasons for notification
Caithness Lochs SPA	1.8 km NW; 4.1km SW	• Greenland white-fronted goose *Anser albifrons flavostris* (non-breeding) • Greylag goose *Anser anser* (non-breeding) • Whooper swan *Cygnus cygnus* (non-breeding)
Caithness Lochs Ramsar site	1.8 km NW; 4.1km SW	• Greenland white-fronted goose (non-breeding) • Greylag goose (non-breeding) • Whooper swan (non-breeding) • Ruff *Philomachus pugnax* (migration)
Loch of Mey SSSI	1.8 km NW	• Breeding bird assemblage (gadwall *Anas strepera*, shoveler *A. clypeata*, *little grebe Tachybaptus ruficollis*, sedge warbler *Acrocephalus schoenobaenus*, reed bunting, mute swan *Cygnus olor*. redshank *Tringa totanus*, snipe *Gallinago gallinago*, curlew and lapwing. • Greenland white-fronted goose (non-breeding)
North Caithness Cliffs SPA	2.6 km NW	• Peregrine *Falco peregrinus* (breeding) • Fulmar *Fulmar glacialis* (breeding) • Kittiwake *Rissa tridactyla* (breeding) • Guillemot *Uria aalge* (breeding) • Razorbill *Alca torda* (breeding)

Designated site(s)	Approx. distance & direction from Proposed Development	Relevant qualifying features / reasons for notification
		• Puffin *Fratercula arctica* (breeding) • Seabird assemblage (breeding)
Caithness and Sutherland Peatlands SPA	3 km E	• Red-throated diver *Gavia stellata* (breeding) • Black-throated diver *Gavia arctica* (breeding) • Hen harrier *Circus cyaneus* (breeding) • Golden eagle *Aquila chrysaetos* (breeding) • Merlin *Falco columbarius* (breeding) • Short-eared owl *Asio flammeus* (breeding) • Golden plover *Pluvialis apricaria* (breeding) • Wood sandpiper *Tringa glareola* (breeding) • Dunlin *Calidris alpina schinzii* (breeding) • Greenshank *Tringa nebularia* (breeding) • Common scoter *Melanitta nigra* (breeding) • Wigeon *Anas Penelope* (breeding)
Caithness and Sutherland Peatlands Ramsar Site	3 km E	• Red-throated diver (breeding) • Black-throated diver (breeding) • Hen harrier (breeding) • Golden eagle (breeding) • Merlin (breeding) • Short-eared owl (breeding) • Golden plover (breeding) • Wood sandpiper (breeding) • Dunlin (breeding) • Curlew (breeding) • Greenshank (breeding) • Arctic skua *Stercorarius parasiticus* (breeding) • Common scoter (breeding) • Wigeon (breeding) • Teal *Anas crecca* (breeding)
Loch Heilen SSSI	4.1 km SW	• Greenland white-fronted goose (non-breeding) • Greylag goose (non-breeding) • Whooper swan (non-breeding)

5.1.2 Previous records of notable bird species

The HBRC data search did not identify any records of notable bird species within 3 km of the site.

The EcIA for the nearby proposed BESS development known as Mey BESS (Energy Consent Unit (ECU) planning reference ECU00004838) included a breeding bird walkover survey and UK Habitat Classification survey carried out in April 2023 and May 2023 respectively (ITPEnergised (2023). These surveys recorded a number of notable bird species within the Mey BESS including cuckoo *Cuculus canorus*, curlew, lapwing, skylark, snipe *Gallinago gallinago* and yellowhammer *Emberiza citronella*. Evidence of barn owl *Tyto alba* was also noted.

The EIA for Hollandmey Renewable Energy Development (ECU planning reference ECU00003353), which incorporated the southernmost field of the site, included a range of ornithological surveys including moorland breeding bird surveys and scarce breeding bird surveys between April 2018 and August 2021 (SPR, 2021). Notable bird species confirmed to be breeding within the Hollandmey EIA study area included curlew, golden plover, ringed plover *Charadrius hiaticula,* lapwing, oystercatcher and skylark. There was no evidence of breeding within 2 km for raptor and owl species listed as qualifying features of Caithness and Sutherland Peatlands SPA & Ramsar site (hen harrier, golden eagle, merlin and short-eared owl).

5.2 Field survey

5.2.1 Species list

A total of 19 species were recorded during the walkover survey. These are listed in **Table 5-2** along with their legal and conservation status, and estimated breeding status on site. The conservation status has been established using the documents and assessments in Section 3.

Table 5-2. Bird species recorded during the walkover survey

Common name	Scientific name	Legal / conservation status*	Estimated breeding status
Chaffinch	*Fringilla coelebs*	*	Likely
Curlew	*Numenius arquata*	Red, SBL, HNBAP	Possible
Feral pigeon	*Columba livia*	*	Possible
Lapwing	*Vanellus vanellus*	Red, SBL, HNBAP	Possible
Lesser redpoll	*Acanthis cabaret*	Red	Possible
Linnet	*Linaria cannabina*	Red, SBL	Possible
Meadow pipit	*Anthus pratensis*	Amber	Likely
Mistle thrush	*Turdus viscivorus*	Red	Possible
Oystercatcher	*Haematopus ostralegus*	Amber, HNBAP	Confirmed
Peregrine	*Falco peregrinus*	Schedule 1, SBL, HNBAP	Unlikely
Pied wagtail	*Motacilla alba*	*	Possible
Reed bunting	*Emberiza schoeniclus*	Amber, SBL	Possible
Skylark	*Alauda arvensis*	Red, SBL	Likely

Common name	Scientific name	Legal / conservation status*	Estimated breeding status
Siskin	*Carduelis spinus*	*	Likely
Swallow	*Hirundo rustica*	*	Possible
Swift	*Apus apus*	Red, SBL, HNBAP	Unlikely
Willow warbler	*Phylloscopus trochilus*	Amber	Likely
Woodpigeon	*Columba palumbus*	Amber	Likely
Yellowhammer	*Emberiza citrinella*	Red, SBL	Possible
Notes: *standard protection and Green-listed unless stated. Red and Amber list species following Stanbury *et al* (2021).			

5.2.2 Habitat descriptions

The site consisted predominantly of arable cropland (recorded as winter stubble during the UKHab survey). Smaller areas of coniferous plantation, neutral grassland, ditches and hedgerows were also present; see **Figure 2** for habitat locations and **Figure 3** for photograph locations. The habitats are summarised below along with the bird species recorded during the walkover survey.

5.2.2.1 Arable cropland

This habitat dominated the site and was recorded in each field, although the majority of the fields were fallow at the time of survey. The southern field contained significant areas of bare ground, and arable weeds such as rough meadow grass *Poa trivialis*, broad-leaved dock *Rumex obtusifolius* and teasel *Dipsacus fullonum* had begun to colonise. Greater plantain *Plantago major*, pineappleweed *Matricaria discoidea* and shepherd's purse *Capsella bursa-pastoris* had proliferated in areas of compacted ground. Thistles *Cirsium* spp., common nettle *Urtica dioica* and creeping buttercup *Ranunculus repens* were noted along the field margins (**Photo 1**). A very small area of fen habitat was recorded in the far south. The northern field had become mostly overgrown with docks *Rumex* spp. and thistles, but also Yorkshire-fog *Holcus lanatus*, creeping buttercup and soft rush *Juncus effusus* (**Photo 2**). The central field had been planted with a winter cereal crop.

Oystercatchers were recorded in the southern field, with a pair exhibiting territorial behaviour and one chick present in the south-west corner, confirming breeding (see **Photo 3**). A single curlew was also present; however, it flew off to the south and there was no indication of breeding. Two skylarks were singing in the southern and central fields, and one in the northern field. The northern field also contained a single lapwing in one area of lower vegetation cover, and a male reed bunting. Other species associating with the fields included willow warbler, linnet, mistle thrush and pied wagtail. Peregrine, swift, swallow and lesser redpoll were recorded in flight only.

Photo 1. Southern field

Photo 2. Northern field

Photo 3. Oystercatcher chick in southern field

5.2.2.2 Coniferous plantation woodland

Stands of Sitka spruce *Picea sittchensis* plantation were present to the north of the southern field and alongside the eastern access track (**Photo 4**). The understorey and ground layer were limited to non-existent due to the density of the tree canopy. Chaffinch, siskin and lesser redpoll were recorded in the plantation to the north of the southern field.

5.2.2.3 Neutral grassland

Areas of grassland with scattered rushes, dwarf shrubs and trees were recorded around the coniferous plantation woodland, including tufted hair-grass *Deschampsia cespitosa*, red fescue *Festuca rubra*, yellow iris *Iris pseudacorus*, soft rush, sycamore *Acer pseudoplatanus* and silver birch *Betula pendula*. Meadow pipit was recorded singing in this habitat (**Photo 5**).

5.2.2.4 Hedgerows and ditches

A recently planted hedgerow occurred along the western boundary of the southern field, and a more mature hedgerow flanked the eastern access track (**Photo 6**). Woody species included hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and dog-rose *Rosa canina.* Willow warbler and linnet were noted in the southern field hedgerow, and a singing yellowhammer was present in the eastern access track hedgerow.

Photo 4. Coniferous plantation woodland (r)

Photo 5. Neutral grassland alongside access track

Photo 6. Hedgerows alongside access track

5.3 Discussion

5.3.1 Designated sites with ornithological interest

Several species listed as features of the Loch of Mey SSSI breeding bird assemblage were recorded on site, including reed bunting, curlew and lapwing. However, given the distance between the Loch of Mey SSSI and the site (1.8 km), and the species described in the assemblage, it is very unlikely that there is any overlap in breeding bird territories or any regular movement of birds between the two locations during the breeding season.

Habitats on site were unsuitable for breeding seabirds, divers, raptors, waders and waterfowl associated with North Caithness Cliffs SPA, and Caithness and Sutherland Peatlands SPA and Ramsar site. It is possible that the site may be occasionally visited by individual wandering hen harrier, merlin or short-eared owl from Caithness and Sutherland Peatlands SPA, however given the presence of extensive, more suitable habitat in the general vicinity, the site is very unlikely to be of any importance for these species.

5.3.2 Breeding birds on site

The site provided suitable breeding habitat for a number of wader species including curlew, lapwing and oystercatcher, all of which were recorded during the walkover survey and the latter was confirmed breeding. Another possible breeding wader is snipe, which may occur in wetter areas containing neutral grassland. Curlew and lapwing are both Red-listed, SBL and HNBAP species, oystercatcher is an Amber-listed, HNBAP species, and snipe is Amber-listed. All four species are fairly widespread in Caithness during the breeding season, as indicated by the BTO Bird Atlas 2007-2011 breeding distribution maps. Curlew and

lapwing are described as summer, passage and winter migrants in Caithness, with oystercatcher and snipe described as resident, passage and winter migrants with hundreds of records of each submitted in 2023 (SOC 2024). Given the size of the site and the habitats present, it is considered that the site supports no more than 1-2 pairs each of curlew, lapwing, oystercatcher and snipe.

Notable ground-nesting passerine species recorded on site and likely to be breeding include skylark and meadow pipit, with the former favouring the arable cropland and the latter occurring in neutral grassland. Skylark is a Red-listed, SBL species, and meadow pipit is an Amber-listed species, although both species are widely distributed across Caithness, as indicated by the BTO Bird Atlas 2007-2011 breeding distribution maps. Given the size of the site and the habitats present, it is considered that the site supports no more than 2-3 pairs each of skylark and meadow pipit.

Coniferous woodland and hedgerows may support small numbers of other notable breeding passerines including linnet, yellowhammer (both Red-listed, SBL species), reed bunting (Amber-listed, SBL) and lesser redpoll (Red-listed), all of which were recorded during the walkover survey. Other notable species not recorded during the survey, but which may breed on site, include spotted flycatcher *Muscicapa striata*, cuckoo *Cuculus canorus*, song thrush *Turdus philomelos* and house sparrow *Passer domesticus* which are all Red-listed, SBL species. However, given the size of the site and the habitats present it is considered that the site supports no more than 1-2 pairs each of the species described.

The site did not contain suitable breeding habitat for barn owl, although grassland and field margins provided suitable foraging habitat. Other than the SPA species already described, raptors which may use the site during the breeding season include buzzard *Buteo buteo*, sparrowhawk *Accipiter nisus* and kestrel *Falco tinnunculus*. No evidence of these species nesting was recorded, although coniferous plantation woodland may provide suitable breeding habitat for up to one pair each of buzzard and sparrowhawk.

6 Summary and Conclusion

The site consisted predominantly of arable cropland with smaller areas of coniferous plantation, neutral grassland, hedgerows and ditches, which are widespread habitats and/or habitats of low ecological value. The walkover survey recorded a number of notable bird species typical of the area, predominantly waders and passerines which were considered to be possibly breeding on site. This included oystercatcher, which was confirmed breeding; skylark, meadow pipit and willow warbler, which were likely breeding; and curlew, lapwing and yellowhammer, which were possibly breeding. However, given the size of the site and the habitats present, it is considered that the site supports no more than 1-2 breeding pairs of those species described, all of which are widespread in Caithness. No Schedule 1/A1/1A species or birds associated with statutory designated sites are considered likely to breed on site.

On the basis of the above, the breeding bird assemblage of the site is considered to be of **local importance** when assessed in a geographic context in accordance with CIEEM guidelines (2018). The results of the walkover survey are considered suitable to determine the likely breeding bird assemblage and the information presented in this report is considered sufficient to characterise the baseline in respect of breeding birds. Therefore, no further breeding bird surveys are considered necessary.

7 Recommendations and enhancement

This section outlines recommendations to ensure legal compliance in respect of breeding birds and summaries the proposed ornithological enhancement. Full details of ornithological avoidance, mitigation, compensation and enhancement measures are provided in the EcIA report.

To avoid direct impacts to nesting birds, removal of all vegetation (including arable cropland, given the likely presence of waders and other ground-nesting species) should take place outside of the bird nesting season i.e. undertaken between September and February inclusive. If clearance is required between March and August, a suitably experienced ecologist should first check the affected habitats for active nests. If any were found, the nest(s) and immediate surroundings should be left undisturbed (e.g. through creation of a 5 m buffer area) until the eggs had hatched and young had fledged, or the breeding attempt was otherwise concluded i.e. nest abandoned/predated. If breeding waders are present, a larger buffer area around the nest(s) may be necessary (e.g. 50m for oystercatcher (Goodship and Furness 2022)). Following initial clearance, ongoing habitat management will be required to prevent ground-nesting species from re-colonising the site (e.g. keeping vegetation to ground level) along with regular checks for new nesting attempts.

Losses of breeding bird habitat (arable cropland and hedgerow) will be mitigated through the creation of grassland, scrub and pond habitats on site, and the enhancement of existing hedgerows. The latter will be achieved by planting of additional native species to increase the species richness of the hedgerows, resulting in enhanced nesting and foraging opportunities for birds. New, retained and enhanced habitats will be managed in accordance with a Habitat Management and Monitoring Plan, to be agreed in advance with Highland Council prior to construction.

8 References

Chartered Institute of Ecology and Environmental Management (CIEEM 2018, updated 2022). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.

ITPEnergised (2023). Mey BSS Ecological Impact Assessment.

Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

NatureScot (2020) Scottish Biodiversity List (available at https://www.nature.scot/doc/scottish-biodiversity-list)

ScottishPower Renewables (SPR, 2021). Hollandmey Renewable Energy Development EIA Report Chapter 9: Ornithology.

Scottish Ornithologists' Club (SOC) Caithness Branch (2024). Caithness Bird Report 2023.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

The Highland Council (2021) Highland Nature Biodiversity Action Plan 2021 – 2026 (available at https://www.highlandenvironmentforum.info/wp-content/uploads/2022/01/Highland-Nature-Biodiversity-Action-Plan-2021-2026-_compressed-.pdf)

UKHab Ltd (2023). UK Habitat Classification Version 2.0 (available at https://www.ukhab.org/)

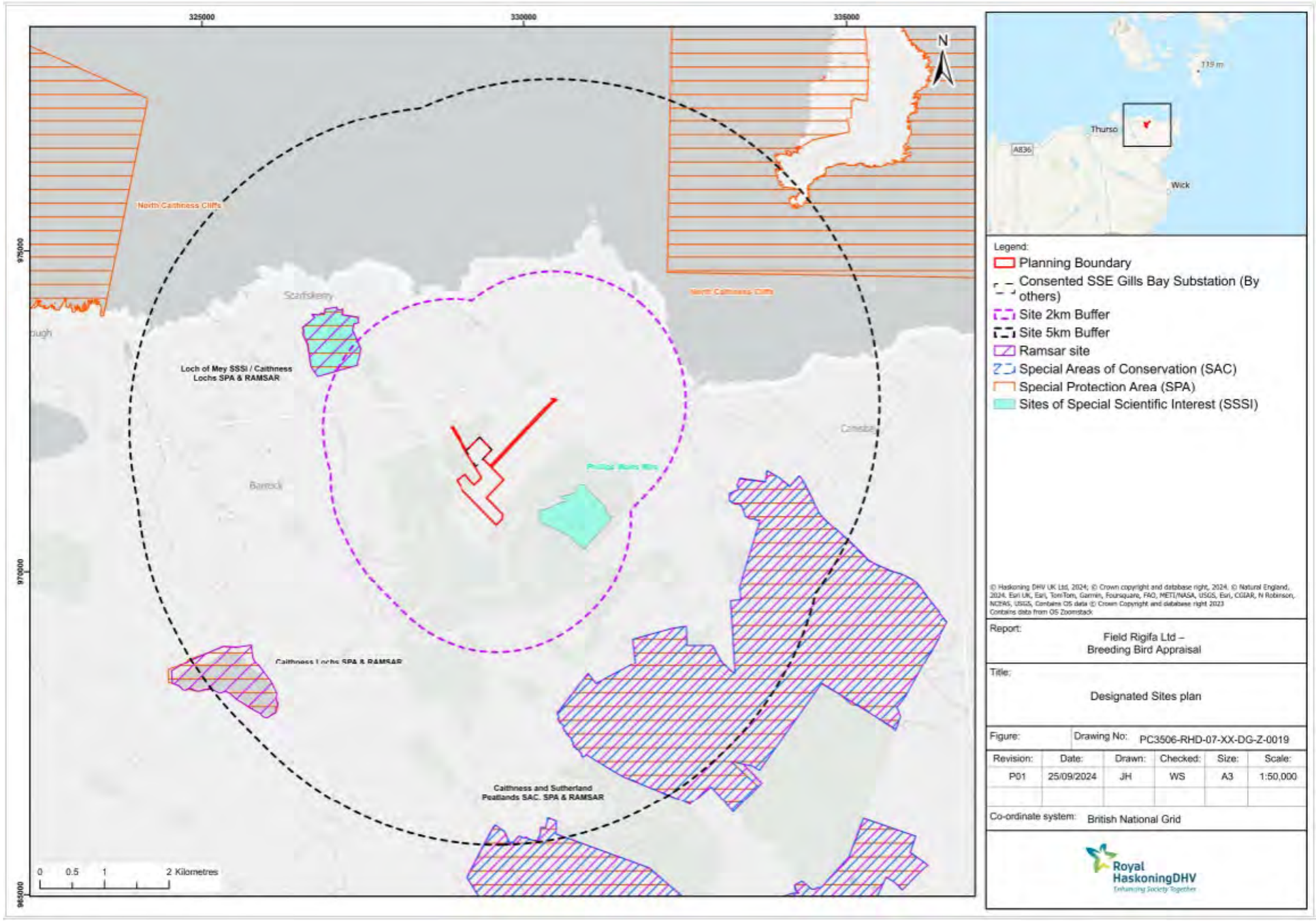

Figure 1: Statutory designated sites within 5km

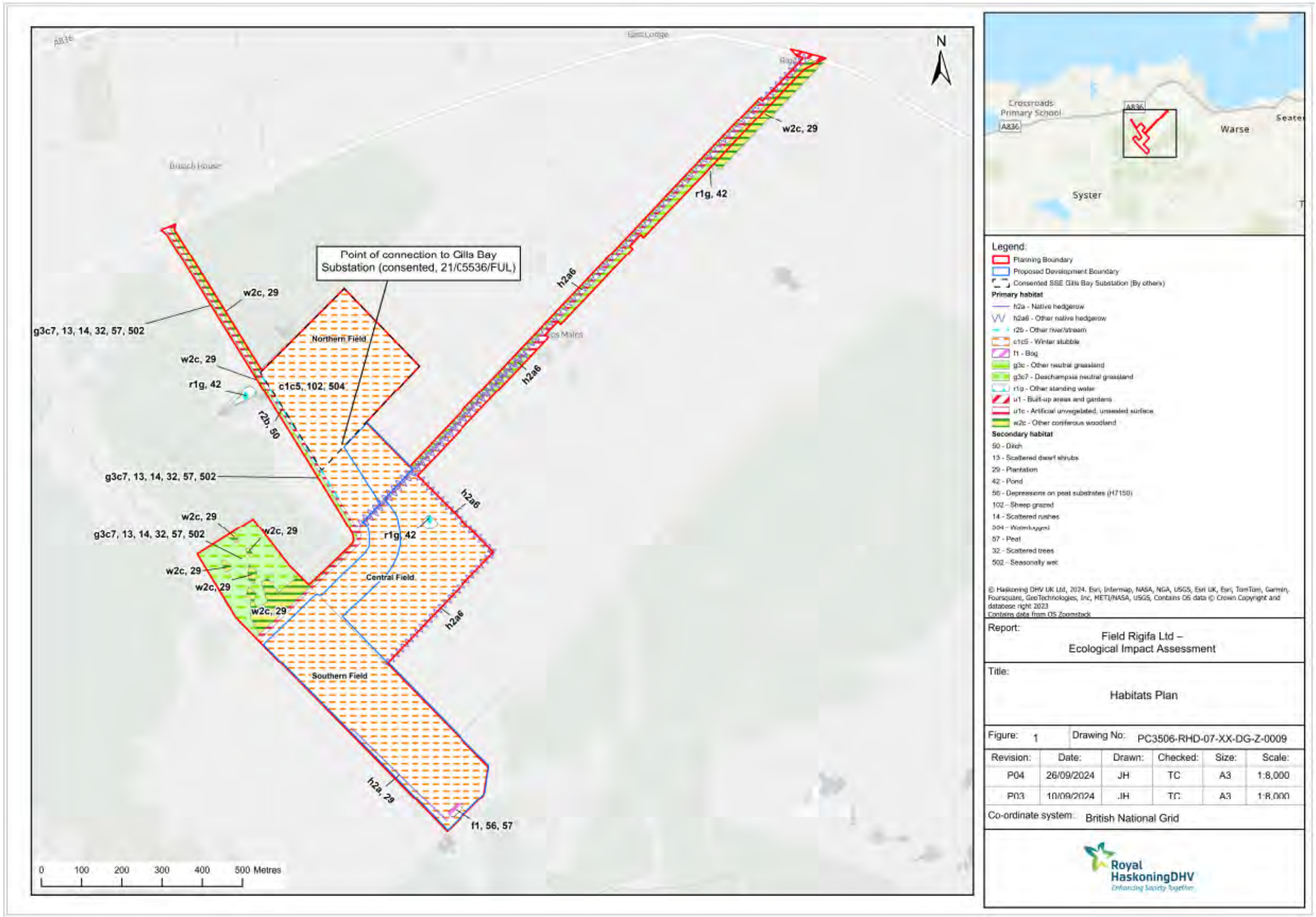

Figure 2: Habitat types recorded on site

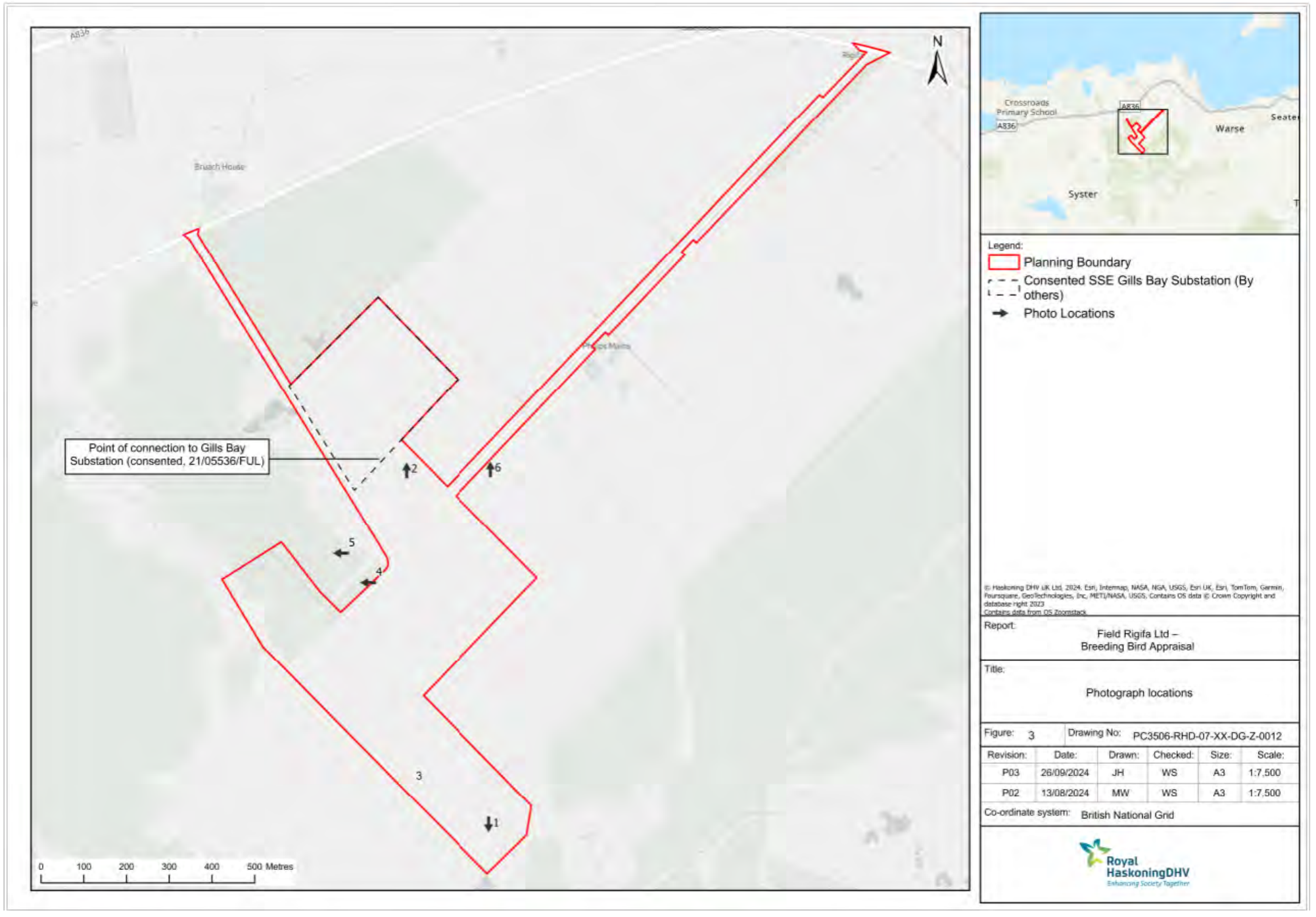

Figure 3: Photograph locations

Appendix C – Technical Note: Groundwater Dependent Terrestrial Ecosystems

Note / Memo

HaskoningDHV UK Ltd.
Water & Maritime

To:	NatureScot
From:	Tom Clemence
Date:	31 July 2024
Copy:	Lizzie Whittall
Our reference:	PC3506-RHD-07-XX-ME-Z-0005
Classification:	Project related
Checked by	Lizzie Whittall

Subject: **Rigifa – Groundwater Dependent Terrestrial Ecosystems**

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1 Introduction

This note provides a review of the potential for groundwater dependent terrestrial ecosystems (GWDTE) to be present within and adjacent to the proposed development site known as Land 625M SW Of 1 Phillips Mains, Mey (referred to herein as the "Site"). The proposal development is for the construction and operation of a 200 MW Battery Energy Storage System (BESS) and associated infrastructure, access and ancillary works.

The information provided herein is in response to pre-application advice (reference number 24/00186/PREMAJ, 12 June 2024). The pre-application advice requests that to inform the assessment of proposed development, a Ground Water Dependent Terrestrial Ecosystems (GWDTE) assessment is completed and a National Vegetation Classification (NVC) survey is carried out to identify the presence of potential groundwater dependant habitats within the application boundary and within a 250 m buffer zone.

2 Aims

The aim of this note is to:

- Start consultation with NatureScot on the requirement for GWDTE assessment;
- Provide NatureScot with relevant information pertaining to GWDTE at the Site;
- Propose a suitable GWDE assessment method; and
- Seek agreement with NatureScot that this method would be found acceptable to assess the potential impacts upon GWDTE within the Site.

3 Approach

To assess the potential for the Site to support GWDTE within the Site, a series of field surveys and desk based studies have been carried out. These include:

- A UK Habitat survey of the Site, completed in March 2024;

- A desk review of the Hollandmey Renewable Energy Development (ECU reference ECU00003353)[1] and the Mey BESS (ECU reference ECU00004838)[2] GWDTE assessments, which encompass the majority of the Site;
- A review of the Sites topography; and
- A review of Scotland's Environment Web National Soil Map of Scotland[3]

The results of these surveys and studies have been used to determine the requirement for a full GWDTE assessment to inform the planning application for the proposed development of the Site.

4 Review of results

4.1 UK Habitat survey

A UK Habitat survey of the Site was completed in March 2024. A summary map which shows the survey results is provided within **Appendix A** below.

The survey found that the Site is dominated by cropland habitats which are in active rotation. Smaller areas of coniferous woodland plantation are also present. Boundaries comprise a combination of hedgerows and stone walls. One pond is present within the Site, located within the centre of a cropland field. The pond appears to be manmade and is considered to be surface water fed.

In addition, a small area (0.07ha) of bog habitat is present in the southeast of the Site. The habitat is dominated by a combination of rushes and grasses. A number of the grass species are non-aquatic species, indicating that the depression is seasonally dry. This is further supported by the shallow water levels which were present at the time of survey. A review of the Site topography shows that this area of habitat is located within a low-lying part of the Site and is therefore considered to be surface water fed.

4.2 Hollandmey Renewable Energy Development (ECU reference ECU00003353) GWDTE assessment

The red line boundary for Hollandmey Renewable Energy Development (ECU reference ECU00003353) encompasses the majority of the planning boundary for the proposed Rigifa site, with exception to the northeastern access track.

A GWDTE assessment and NVC survey was completed for the Hollandmey development in June and July of 2020 (full results are provided within Volume 4 - Chapter 10 - Technical Appendix 10.4 of the planning documentation[1]). As shown on Figure 10.4.6 within Volume 4 - Chapter 10 - Technical Appendix 10.4, the study area for the Hollandmey GWDTE assessment covers the majority of the planning boundary and the surrounding 250m buffer for the Rigifa site.

The results of the assessment show that there are no GWDTE located within any areas which overlap with the Site. However, there are areas of M25 mire and M23 rush pasture (GWDTE) located within

[1] https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00003353
[2] https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004838
[3] https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/

250m of the Site, including small areas adjacent to the Site. The part of the Site which is adjacent and within 250m of these habitats comprises an existing access track to the north-north-west (centred upon National Grid Reference ND 28890 72228).

4.3 Mey BESS (ECU reference ECU00004838) GWDTE assessment

The Mey BESS development (ECU00004838) also completed a GWDTE assessment, supported by UK Habitat surveys completed in May 2023. The Study Area of this assessment included land within 250m of the Site. Specifically land immediately north-west of the north-easter access track which was not covered by the Hollandmey Renewable Energy Development GWDTE assessment. This area is shown on Figure 3 of Annex 4, Ecological Impact Assessment of the planning documentation.

The results of the GWDTE assessment concluded that no GWDTE were present within the Mey BESS development site or within 250m of the application boundary.

4.4 National Soil Map of Scotland

A review of Scotland's Environment Web National Soil Map of Scotland shows that the soils located within the Site boundary comprise:

- Dominant cover of noncalcareous gleys, with parent material of greyish brown drifts derived from Middle Old Red Sandstone flagstones and sandstones; and
- A restricted area of dystrophic blanket peat.

Soils within 250m of the Site comprise the same soil types, with a greater occurrence of dystrophic blanket peat soils compared to on-site.

5 Assessment

The 2024 UK Habitat survey of the Site confirmed that no GWDTE habitats are present within the Site boundary.

Though a pond and small area of bog were recorded, following a review of the Sites topography, both were confirmed as being located within low lying parts of the Site with catchment areas sufficient to collect surface/rain water.

The area of bog included a combination of marginal wetland vegetation and grasses found within dry habitats. This confirmed that the bog was seasonally wet and further supports that the water recorded at the time of the March 2024 survey was surface water, rather than ground water.

The GWDTE study area for the Hollandmey and Mey BESS GWDTE assessments cover almost all of the Site and the 250m buffer area. No GWDTE were recorded within the Site during these studies. However, restricted areas of GWDTE were recorded within 250m of the Site at the north-north-western edge of the Site which comprises an existing access track (centred upon National Grid Reference ND 28890 72228).

Only a small area of the 250m Site buffer was not covered by the Hollandmey and Mey BESS GWDTE assessments. However, the habitats within this area comprise a combination of modified grassland and woodland. Neither are GWDTE and therefore not considered further.

A review of Scotland's Environment Web National Soil Map of Scotland further supports that the potential for GWDTE to be located within most of the Site is low, due to the dominant cover of noncalcareous gley soils. The National Soil Map of Scotland does show however, that there are small areas of dystrophic blanket peat located within the Site, and larger areas located within 250m of the Site.

The presence of these soil types aligns with where the Hollandmey GWDTE assessment identified areas of M25 mire and M23 rush pasture (GWDTE).

5.1 Summary of assessment

Based on the combined field and desk based studies carried out, GWDTE are considered absent from within the Site boundary.

However, GWDTE are confirmed as present within 250m of the Site. Specifically, adjacent to the north-north-western access track (centred upon National Grid Reference ND 28890 72228).

6 Conclusions and proposals

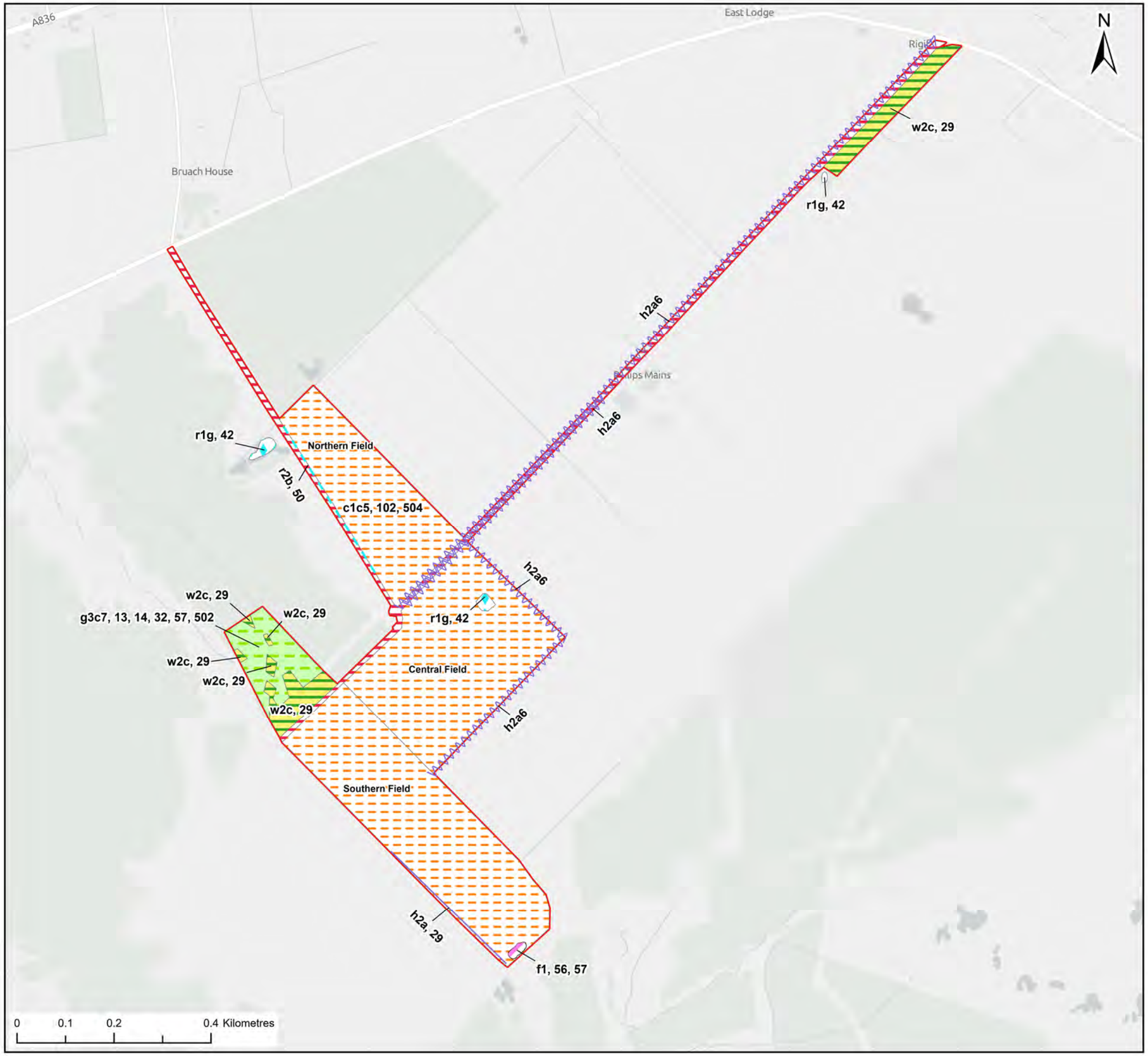
GWDTE have been confirmed absent from within the Site. However, they are present within 250m.

It is proposed that the results of field survey (UK Habitat) and desk study which have been summarised within this technical note are written up into a GWDTE Assessment for the proposed development. The GWDTE Assessment will accompany an Ecological Impact Assessment (EcIA) of the proposed development and will be used to inform appropriate mitigation measures regarding the GWDTE located within 250m of the Site.

No further surveys, including NVC, are considered necessary to inform the GWDTE Assessment or EcIA.

Appendix A

UK Habitat Survey Results Plan



Legend:

- Site Boundary

Primary habitat

- h2a - Native hedgerow
- h2a6 - Other native hedgerow
- r2b - Other river/stream
- c1c5 - Winter stubble
- f1 - Bog
- g3c7 - Deschampsia neutral grassland
- r1g - Other standing water
- u1c - Artificial unvegetated, unsealed surface
- w2c - Other coniferous woodland

Secondary habitat

50 - Ditch
13 - Scattered dwarf shrubs
29 - Plantation
42 - Pond
56 - Depressions on peat substrates (H7150)
102 - Sheep grazed
14 - Scattered rushes
504 - Waterlogged
57 - Peat
32 - Scattered trees
502 - Seasonally wet

Report:
Field Energy –
Rigifa Preliminary Ecological Appraisal

Title:
Habitat mapping from PEA survey

Figure: 4.3 | Drawing No: X

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	31/07/2024	JH	SB	A3	1:8,000

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

Appendix D – Biodiversity Metric

The Statutory Biodiversity Metric
Start page

Project details			
Planning authority:	The Highland Council		
Project name:	Rigifa		
Applicant:	Field Energy Ltd.		
Application type:	Planning Permission		
Planning application reference:			
Completed by:	RHDHV - TC		
Date of metric completion:	19 September 2024		
Reviewer:			
Calculation iteration:	3		
Planning authority reviewer:			
Date of planning authority review:			
Target % net gain:	0%	Target set below 10% ▲	
Irreplaceable habitat present at baseline:	Yes ⚠		
Total site area - including irreplaceable habitat area (hectares):	45.41	Irreplaceable habitat site area (hectares):	0.07
Total off-site area - including irreplaceable habitat area (hectares):	N/A	Irreplaceable habitat area off-site (hectares):	N/A

Cell style conventions	
⚠	Attention required
▲	Input error/rules and principles not met
	Use of this cell is not appropriate
	Enter data
	Automatic lookup
	Result

Main menu

Results

View all

Reset view

Rigifa

Headline Results

Scroll down for final results ⚠

Return to results menu

On-site baseline	*Habitat units*	97.44	
	Hedgerow units	7.50	
	Watercourse units	1.18	
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	102.69	
	Hedgerow units	11.33	
	Watercourse units	1.18	
On-site net change (units & percentage)	*Habitat units*	5.25	5.39%
	Hedgerow units	3.83	51.08%
	Watercourse units	0.00	0.00%
Off-site baseline	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	*Habitat units*	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	5.25	
	Hedgerow units	3.83	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	

FINAL RESULTS

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	5.25
	Hedgerow units	3.83
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	5.39%
	Hedgerow units	51.08%
	Watercourse units	0.00%
Trading rules satisfied?	Yes ✓	

Project Name: Riqifa	Map Reference:
A-1 On-Site Habitat Baseline	

Condense / Show Columns | Condense / Show Rows | Main Menu

Area habitat summary	
Total Net Unit Change	5.25
Total Net % Change	5.39%
Trading Rules Satisfied	Yes ✓

	Existing area habitats				Distinctiveness	Condition	Strategic significance		Ecological baseline							Bespoke compensation agreed for losses of VHDH or irreplaceable habitat	Comments		
Ref	Broad Habitat	Habitat Type	Irreplaceable habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		User comments	Planning authority comments	Habitat reference number
1	Cropland	Winter stubble	No	34.881421	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	69.76	25.235534		50.47	0.00	9.65	19.29				
2	Wetland	Blanket bog	Yes	0.07091	V.High	Moderate	Formally identified in local strategy	Bespoke compensation likely to be required	0.00	0.07091		Irreplaceable habitat - no units generated ⚠	0.00	0.00	0.00				
3	Grassland	Other neutral grassland	No	2.032361	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	8.13	2.032361		8.13	0.00	0.00	0.00				
4	Grassland	Other neutral grassland	No	3.697024	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	14.79	3.697024		14.79	0.00	0.00	0.00				
5	Lakes	Ponds (non-priority habitat)	No	0.093977	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.75	0.093977		0.75	0.00	0.00	0.00				
6	Urban	Developed land; sealed surface	No	0.098448	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	0.098448		0.00	0.00	0.00	0.00				
7	Urban	Artificial unvegetated, unsealed surface	No	2.531878	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	2.531876		0.00	0.00	0.00	0.00				
8	Woodland and forest	Other coniferous woodland	No	2.004711	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	4.01	2.004711		4.01	0.00	0.00	0.00				
9																			
10																			
11																			
12																			
13																			
		Total habitat area		45.41					97.44	35.76	0.00	78.15	0.00	9.65	19.29				
		Site Area (Excluding area of individual trees, green walls, intertidal hard structures)		45.41															

Total area lost (excluding area of individual trees, green walls and intertidal hard structures)	9.65

M² to hectares conversion tool:	Select a unit	Hectares	M²

Project Name: Rigifa Map Reference:

A-2 On-Site Habitat Creation

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Area habitat summary	
Total Net Unit Change	5.25
Total Net % Change	5.39%
Trading Rules Satisfied	Yes ✓
Area Check	Area Acceptable ✓

				Post intervention habitats									
				Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty multipliers		Comments		
Ref	Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of creation	Habitat units delivered	User comments	Planning authority comments	Habitat reference number
1	Heathland and shrub	Mixed scrub	0.449646	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	3.01			
2	Grassland	Other neutral grassland	2.830107	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	18.95			
3	Lakes	Ponds (non-priority habitat)	0.359473	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	3	Low	2.58			
4	Urban	Developed land; sealed surface	6.006558	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00			
5													
6													
7													
8													
9													
		Total habitat area	9.65							24.54			

Site Area (Excluding area of individual trees, green walls, intertidal hard structures)	9.65

M² to hectares conversion tool:	Select a unit	Hectares	M²

Project Name: Rigifa	Map Reference:
B-1 On-Site Hedge Baseline	

Condense / Show Columns | Condense / Show Rows

Main Menu

Hedgerow summary	
Total Net Unit Change	3.83
Total Net % Change	51.08%
Trading Rules Satisfied	Yes ✓

	Existing hedgerow habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline							Comments		
Ref	Hedge number	Habitat type	Length (km)	Distinctiveness	Condition	Strategic significance		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	User comments	Planning authority comments	Habitat reference number
1	1	Native hedgerow	0.329	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.66	0	0.329	0.00	0.66	0.00	0.00	Allows for hedgerow enhancement through bolster planting of additional species and less intensive management		
2	2	Native hedgerow	0.387	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.77	0.36	0	0.72	0.00	0.03	0.05			
3	3	Native hedgerow	0.28	Low	Good	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	1.68	0.28	0	1.68	0.00	0.00	0.00			
4	4	Native hedgerow	1.614	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	3.23	0	1.54	0.00	3.08	0.07	0.15	Allows for hedgerow enhancement through bolster planting of additional species and less intensive management		
5	5	Native hedgerow	0.58	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	1.16	0	0.562	0.00	1.12	0.02	0.04	Allows for hedgerow enhancement through bolster planting of additional species and less intensive management		
6																	
7																	
8																	
9																	
10																	
			3.19					7.50	0.64	2.43	2.40	4.86	0.12	0.24			

Project Name: Rigifa Map Reference:

B-3 On-Site Hedge Enhancement

Condense / Show Columns | Condense / Show Rows

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Hedgerow summary	
Total Net Unit Change	3.83
Total Net % Change	51.08%
Trading Rules Satisfied	Yes ✓

	Baseline Habitats	Post intervention habitats											Comments		
Baseline ref	Baseline habitat	Proposed habitat	Change in distinctiveness and condition: Distinctiveness movement	Change in distinctiveness and condition: Condition movement	Length (km)	Distinctiveness	Condition	Strategic significance	Temporal multiplier: Standard or adjusted time to target condition	Temporal multiplier: Final time to target condition (years)	Difficulty risk multipliers: Final difficulty of enhancement	Hedge units delivered	User comments	Planning authority comments	Habitat reference number
1	Native hedgerow	Species-rich native hedgerow	Low - Medium	Lower Distinctiveness Habitat - Poor	0.329	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	1.21			
4	Native hedgerow	Species-rich native hedgerow	Low - Medium	Lower Distinctiveness Habitat - Poor	1.54	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	5.66			
5	Native hedgerow	Species-rich native hedgerow	Low - Medium	Lower Distinctiveness Habitat - Poor	0.562	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	2.06			
					2.43							8.93			

Project Name: Rigifa Map Reference:
C-1 On-Site WaterC' Baseline

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Watercourse summary	
Total Net Unit Change	0.00
Total Net % Change	0.00%
Trading Rules Satisfied	Yes ✓

Existing watercourse type			Distinctiveness	Condition	Strategic significance	Watercourse encroachment	Riparian encroachment	Required Action to Meet Trading Rules	Ecological baseline							Bespoke compensation agreed for losses of VHDH	Comments		
Ref	Watercourse type	Length (km)	Distinctiveness	Condition	Strategic significance	Extent of encroachment	Extent of encroachment for both banks		Total watercourse units	Length retained	Length enhanced	Units retained	Units enhanced	Length Lost	Units Lost		User Comments	Planning authority comments	Habitat reference number
1	Ditches	0.37	Medium	Poor	Area/compensation not in local strategy/ no local strategy	No Encroachment	Major/Moderate	Same habitat required =	1.18	0.37		1.18	0.00	0.00	0.00				
2																			
3																			
4																			
5																			
6																			
		0.37							1.18	0.37	0.00	1.18	0.00	0.00	0.00				