REPORT

Shadow Habitats Regulations Appraisal

Proposed Battery Energy Storage System, Rigifa,

Client:	Field Rigifa Ltd
Reference:	PC3506-RHD-07-XX-RP-Z-0010
Status:	Final/01
Date:	26 September 2024

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Enhancing Society Together

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1 Introduction

Royal HaskoningDHV has been commissioned by Field Rigifa Limited (Field) to carry out a 'shadow' Habitats Regulations Appraisal (HRA) of the site of a proposed Battery Energy Storage System (BESS), hereafter the 'Proposed Development', on land at Phillips Main Farm, Rigifa, Thurso KW14 8XH (the 'Site'); refer to **Figure 1**. This 'shadow' HRA provides the information that The Highland Council (THC) may reasonably require to determine whether there is a likely significant effect (LSE) arising from the Proposed Development, and to undertake an 'Appropriate Assessment' where a LSE has been identified.

In Scotland, European Sites are defined as classified Special Protection Areas (SPAs), designated Special Areas of Conservation (SACs) and candidate Special Areas of Conservation (cSACs). The Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the 'Habitats Regulations') apply to European Sites and require that, where a competent authority concludes that a development proposal unconnected with the nature conservation management of a European site is likely to have a significant effect on that site, it must undertake an Appropriate Assessment of the implications for the site's designated conservation interests. If significant effects are unknown or likely, the authority can only agree to the proposal after having ascertained by means of the Appropriate Assessment that it will not adversely affect the integrity of the site. If it is not possible to ascertain that the proposal will not adversely affect the integrity of the site and there are no alternative solutions, the proposal can only be allowed to proceed if there are imperative reasons of overriding public interest for doing so (and any necessary compensatory measures have been secured).

Ramsar sites are wetlands designated under the Ramsar Convention on Wetlands of International Importance, especially as waterfowl habitat. Where Ramsar site interests coincide with European qualifying interests protected under an SPA or an SAC, the interests are thereby given the same level of (legal) protection as European sites.

2 Approach

2.1 Report structure

The HRA process in Scotland comprises of series of stages which are summarised in **Table 2-1** below (following the proforma provided by NatureScot[1]). The structure of this report follows this staged approach.

Table 2-1: Approach to HRA

Stage	Summary
Stage 1: What is the plan or project?	Details of all aspects of the plan or project that may affect the qualifying features should be provided.
Stage 2: Is the plan or project directly connected with or necessary to site management or nature conservation?	This test is to identify and remove from further assessment those proposals which are clearly necessary to, or of value to, or inevitable as part of, management of the site for its qualifying interests. All qualifying interests should be considered.
Stage 3: Is the plan or project (either alone or in combination with other plans or projects) likely to have a significant effect on a European site?	LSE screening stage to determine whether or not an appropriate assessment is required. Each qualifying interest must be considered in relation to their conservation objectives. Any mitigation measures that have been included in a proposal specifically to avoid harmful effects cannot be taken into account at this stage.
Stage 4: Undertake an appropriate assessment of the implications for the site in view of its conservation objectives.	Where a plan or project is considered to have a LSE on the qualifying interest(s) of a European site, an appropriate assessment is required. The assessment should consider the potential impacts on each qualifying interest and their conservation objectives, including the magnitude and duration of effects and any cumulative effects from other

[1] https://www.nature.scot/doc/naturescot-habitats-regulations-appraisal-hra-proforma (accessed 2 August 2024)

Stage	Summary
	plans or projects. Mitigation to remove or reduce impacts of the proposal can be considered at this stage.
Stage 5: Can it be ascertained that the proposal will not adversely affect the integrity of the site?	For a plan or project to be consented, the appropriate assessment must ascertain that the plan or project will not adversely affect the integrity of a European site. Conclusions must be made on the basis of there being no reasonable scientific doubt as to the absence of adverse effects
Stages 6 to 9 are only considered in exceptional circumstances where it cannot be ascertained that the plan or project will not adversely affect the integrity of a European site.	
Stage 6: Are there alternative solutions?	If it cannot be ascertained that the proposal will not adversely affect the integrity of a European site, it can only proceed if there are no alternative solutions.
Stage 7: Would a priority species or habitat be adversely affected?	Priority qualifying habitats for individual SACs are identified in the relevant site documentation. There are no priority species (as defined in the Habitats Directive) in Scotland's SACs; the Birds Directive does not refer to priority species and therefore there are no priority bird species in Scotland's SPAs.
Stages 8 and 9: Are there imperative reasons of overriding public interest?	If it cannot be ascertained that a plan or project will not adversely affect the integrity of a European site, and there are no alternative solutions, a plan or project can only proceed if there are imperative reasons of overriding public interest for doing so and compensation measures are secured to protect the UK site network coherence.

2.2 Evidence gathering

The following key documents and data sources have been reviewed to inform the HRA:

- Caithness Bird Report 2023 (SOC, 2024)
- Caithness Lochs SPA Citation (SNH, 1999) and Conservation Objectives
- Caithness Lochs Ramsar Site Citation and Information Sheet
- Defra MAGIC map application (https://magic.defra.gov.uk/magicmap.aspx)
- Francis, I., Mitchell, C., Griffin, L. and Fox, T. (2011). Greenland white-fronted geese: Land use and conservation at small wintering sites in Scotland. Final report (November 2011). Wildfowl and Wetlands Trust and Scottish Natural Heritage.
- Hollandmey EIA Technical Appendix 9.1: Ornithology Technical Report (NRP, 2021)
- Patterson *et al.* (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.
- RSPB data for notable bird records within 5km of the Proposed Development between 2013 – 2023.
- Scottish Bird Report Online (https://www.the-soc.org.uk/pages/online-scottish-bird-report)
- NatureScot Research Report 1283 – updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022)
- Woodward *et al.* (2023). Waterbirds in the UK 2022/23: The Wetland Bird Survey and Goose & Swan Monitoring Programme.

3 Consultation

3.1 Pre-application advice

THC provided pre-application advice for the Proposed Development on 12 June 2024 (reference no: 24/00186/PREMAJ). THC indicated it is broadly supportive of renewable energy related developments and as such the principle of the BESS may be considered acceptable. However, THC also stated that the potential impact on designated nature conservation sites would need to be satisfactorily addressed. Specifically of relevance to this report, the pre-application advice contained the following:

Impact on Protected Sites (NatureScot)
The proposal has the potential to have a significant effect on the Caithness Lochs Special Protection Area (SPA) and Loch of Mey Site of Special Scientific Interest (SSSI) due to connectivity. More information on these sites, their features and conservation objectives can be found on SiteLink at: https://sitelink.nature.scot/home. Avoiding impacts to these sites should be a key consideration of a battery electricity storage system (BESS) in this area. Where impacts are predicted, the Applicant will need to demonstrate that the proposal can be built without adverse effects to these protected sites.

1. Caithness Lochs SPA
The proposal lies approximately 2.5km south-east from this SPA, protected for its wintering populations of Greenland white-fronted geese, greylag geese and whooper swans. Although the proposal is located away from the SPA roost sites, it will lie within foraging range and suitable foraging habitat for all 3 SPA species. NatureScot advise further assessment will be required in relation to this SPA, as part of any future planning application. NatureScot are aware that SPA species feed in this area. In particular, Greenland white-fronted geese are 'site-faithful' meaning they return to the same roosting and feeding areas each year. Given their restricted feeding regime and small population, any impacts to this species could be significant.

NatureScot advise that the Applicant should gather current information on the use of the proposal site and surrounding fields by these species. This information could then be used to inform their assessment of disturbance and displacement impacts to feeding geese and swans. Current information is available from existing sources such as RSPB, the links provided below and other nearby developments. NatureScot would be happy to provide further advice to the Applicant on the suitability of such information.

NatureScot Commissioned Report 523b – Survey of the feeding areas, roosts and flight activity of qualifying species of the Caithness Lochs SPA 2011/12 and 2012/13, available at: https://www.nature.scot/doc/naturescot-commissioned-report-523b-survey-feeding-areas-roosts-and-flight-activity-qualifying; and Greenland white-fronted geese: Land use and conservation at small wintering sites in Scotland, available at: https://greenlandwhitefront.org/wp-content/uploads/2016/04/Greenland white-fronted goose-Small-Sites-Project-final-report-2011.pdf

2. Loch of Mey SSSI
The proposal lies approximately 2.5km south-east from this SSSI (part of Caithness Lochs SPA), protected for its Greenland white-fronted geese, breeding bird assemblage and transition grassland.

Additional advice relating to protected sites
NatureScot highlights that the comments provided are given without prejudice to a full and detailed consideration of the impacts of the proposal, should it be submitted as a formal application.

3.2 NatureScot consultation

A technical note was submitted to NatureScot on 6 August 2024, which provided a review of the Site in terms of its suitability for wintering birds, in particular goose and swan populations associated with Caithness Lochs SPA and Ramsar site, and also considered the requirement for wintering bird surveys. It was considered that the that the Site is unlikely to comprise foraging habitat for Greenland white-fronted goose associated with Caithness Lochs SPA, but may be used by greylag geese and whooper swans, although it is unlikely to be of particular importance for either species and there is considerable alternative habitat in the vicinity. It was concluded that there is sufficient existing information available to characterise the baseline and inform the assessment in respect of these and other non-breeding species which may occur on and adjacent to the Site, and that no wintering bird surveys were necessary.

The following response was received from NatureScot on 4 September 2024:

Summary
The ornithological assessment for the Caithness Lochs SPA could be undertaken using a desk-based exercise from existing data.

Appraisal of impacts and our advice - Caithness Lochs Special Protection Area (SPA)
The information provided within your scope of bird survey work summary, seems adequate to inform a shadow Habitats Regulation Appraisal (HRA).

At this present time, we are unable to advise on cumulative effects from loss of available foraging areas for both Greenland white-fronted geese and whooper swan. However, it would seem that this development may result in loss of 'forage availability' for whooper swan linked to this SPA & this should be clearly stated indicating the number of hectares lost (using the relevant field boundary). This could then be picked up and included within any future cumulative assessment for this SPA, as and when.

This shadow HRA has been undertaken in accordance with this agreed approach with NatureScot.

4 Designated sites considered

4.1 Scoping

Due to the small scale (approximately 6.4ha footprint) and nature of the Proposed Development, it can be reasonably assumed that any effects arising from the Proposed Development would be highly localised. Therefore, based on professional judgement the Zone of Influence (ZoI) is defined as a 5 km radius from the Site for all designated sites except those supporting non-breeding goose populations, for which the ZoI is extended to 20 km. This is because the core foraging range for wintering geese can extend up to 20 km from roost sites (SNH, 2016). In addition to the sites described below, Switha SPA falls within the 20 km goose ZoI and is designated for non-breeding barnacle goose *Branta leucopsis,* however this population forages in improved grassland on South Walls, Orkney (Mitchell & Hall, 2020) and was not considered in the assessment as there is no potential for connectivity to the Site (i.e. birds from Switha SPA are faithful to the South Walls area).

4.2 Designated sites

Table 4-1 to **Table 4-6** below describe the designated sites considered and provide details on their component SSSIs, conservation objectives and qualifying interests.

Table 4-1: Caithness Lochs SPA site details

Distance and direction from site (nearest point)	1.8 km NW
Site description	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.
Component SSSIs	Loch of Mey SSSI (nearest component) Broubster Leans SSSI Loch Calder SSSI Loch Heilen SSSI Loch Scarmclate SSSI Loch Watten SSSI Loch of Wester SSSI.
Conservation objectives	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Qualifying interest	The SPA qualifies under Article 4.1 by regularly supporting, in winter, populations of European importance of the Annex 1 species **whooper swan** *Cygnus cygnus* (1993/94-1997/98 winter peak mean of 240 representing 4% of 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 SPA also qualifies under Article 4.2 by regularly supporting, in winter, a population of European importance of the **greylag goose** *Anser anser* (1993/94-1997/98 winter peak mean of 7,190 representing 7% of the GB and Icelandic populations).

Table 4-2: Caithness Lochs Ramsar site details

Distance and direction from site (nearest point)	1.8 km NW
Site description	Caithness Lochs Ramsar site consists of six lochs and a mire, Broubster Leans. The lochs range in type from oligotrophic to eutrophic and support a wide diversity of aquatic and wetland vegetation. 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.
Component SSSIs	Loch of Mey SSSI (nearest component) Broubster Leans SSSI Loch Calder SSSI Loch Heilen SSSI Loch Scarmclate SSSI Loch Watten SSSI Loch of Wester SSSI.
Conservation objectives	N/A

Distance and direction from site (nearest point)	1.8 km NW
Qualifying interest	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: • **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)

Table 4-3: North Caithness Cliffs SPA site details

Distance and direction from site (nearest point)	2.6 km NE
Site description	North Caithness Cliffs SPA consists of the rocky cliffs to the west and east of the Site, as well as those of the island of Stroma to the north-east. They provide habitat for an assortment of seabirds. The SPA area also covers the areas of sea immediately beyond the cliffs.
Component SSSIs	Holborn Head SSSI Stroma SSSI Duncansby Head SSSI Dunnet Links SSSI Red Point Coast SSSI
Conservation objectives[2]	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Qualifying interest	North Caithness Cliffs SPA qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species: **peregrine** *Falco peregrinus* (an estimated 6 pairs, 0.5% of the GB population and selected as one of the most suitable sites for peregrine in GB). North Caithness Cliffs SPA further qualifies under Article 4.2 by regularly supporting a population of European importance of the migratory species: **guillemot** *Uria aalge* (1985 to 1987, 38,300 individuals, 1% of the North Atlantic biogeographic population). North Caithness Cliffs SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds. The site regularly supports in the period 1985 to 1987 110,000 seabirds including nationally important populations of the following species: **fulmar** *Fulmarus glacialis* (14,700 pairs; 3% of the GB population); **kittiwake** *Rissa tridactyla* (13,100 pairs, 3% of the GB

[2] *NatureScot SiteLink – North Caithness Cliffs SPA*

Distance and direction from site (nearest point)	2.6 km NE
	population); **guillemot** (38,300 individuals, 4% of the GB population); **razorbill** *Alca torda* (4,000 individuals, 3% of the GB population) and **puffin** *Fratercula arctica* (2,080 pairs, 0.4% of the GB population and > 2,000 individuals).

Table 4-4: Caithness and Sutherland Peatlands SPA site details

Distance and direction from site (nearest point)	2.8 km SE
Site description	Caithness and Sutherland Peatlands SPA is formed of freshwater loch habitats amongst peatlands and 7130 blanket bogs. Natural dystrophic lakes and ponds are also present.
Component SSSIs	The boundary of the SPA generally follows those of 39 peatland SSSIs in Caithness and Sutherland.
Conservation objectives[3]	To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Qualifying interest	Caithness and Sutherland Peatlands SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species: • **Red-throated diver** *Gavia stellata* (2006, 46 pairs, 3.5% of the GB population). • **Black-throated diver** *Gavia arctica* (1994, 26 pairs, 15% of the GB population). • **Hen harrier** *Circus cyaneus* (1993 to 1997, mean of at least 14 pairs, at least 2.8% of the GB population). • **Golden eagle** *Aquila chrysaetos* (1992, 5 pairs, 1% of the GB population). • **Merlin** *Falco columbarius* (1993 and 1994, an estimated 54 pairs, 4% of the GB population). • **Golden plover** *Pluvialis apricaria* (1993 and 1994, 1,064 pairs, 5% of the GB population). • **Wood sandpiper** *Tringa glareola* (up to 5 pairs, up to 40% of the GB population). • **Short-eared owl** *Asio flammeus* (30 pairs, 2% of the GB population). • **Dunlin** *Calidris alpina schinzii* (1993 and 1994, 1,860 pairs, 20% of the GB population). The SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: • **Common scoter** *Melanitta nigra* (2007, at least 21 pairs, <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 paris, at least 0.9% of the Europe/Western Africa biogeographic population and at least 59.4% of the GB population).

[3] *SiteLink - Caithness and Sutherland Peatlands SPA (nature.scot)*

Distance and direction from site (nearest point)	2.8 km SE
	• **Wigeon** *Anas Ppnelope* (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).

Table 4-5: Caithness and Sutherland Peatlands SAC site details

Distance and direction from site (nearest point)	2.8 km SE
Site description	Caithness and Sutherland Peatlands SAC is formed of freshwater loch habitats (which include Oligotrophic to mesotrophic standing waters) amongst peatlands and 7130 blanket bogs. Natural dystrophic lakes and ponds are also present.
Component SSSIs	Caithness and Sutherland Peatlands SAC has the same boundary as 36 of the 39 component SSSIs, and overlaps partly or largely with five other SSSIs.
Conservation objectives	The overarching objectives are: 1. To ensure that the qualifying features of Caithness and Sutherland Peatlands SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status; and 2. To ensure that the integrity of Caithness and Sutherland Peatlands SAC is restored by meeting individual objectives for all qualifying features.
Qualifying interest	The selection of this SAC is largely due to the presence of Annex I habitats: • Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels • Natural dystrophic lakes and ponds • Blanket bogs • Northern Atlantic wet heaths with *Erica tetralix* • Transition mires and quaking bogs • Depressions on peat substrates Noteworthy fauna and flora (Annex II qualifying species): • Otter *Lutra lutra* – good population • Marsh saxifrage *Saxifraga hirculus*

Table 4-6: Caithness and Sutherland Peatlands Ramsar site details

Distance and direction from site (nearest point)	2.8 km SE
Site description	Caithness and Sutherland Peatlands Ramsar site is formed of freshwater loch habitats amongst peatlands and 7130 blanket bogs. Natural dystrophic lakes and ponds are also present.
Component SSSIs	Caithness and Sutherland Peatlands Ramsar site has the same boundary as 36 of the 39 component SSSIs, and overlaps partly or largely with five other SSSIs.
Conservation objectives	N/A
Qualifying interest	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

Distance and direction from site (nearest point)	2.8 km SE
	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.

5 Stage 1: Project description

The Proposed Development principally comprises the construction and operation of a battery energy storage system (BESS) with a capacity of up to 200 megawatts (MW). The Proposed Development would charge and discharge from the electricity transmission network via the adjacent planned and consented Gills Bay substation. The Proposed Development would have a total development footprint of approximately 6.4 ha across the 45.5 ha site; refer to **Figure 1** (Indicative Site Layout plan).

Exact battery specifications are still to be determined and will be confirmed as part of the detailed design stage during pre-construction, however the principal components of the Proposed Development which inform the application for planning consent include:

- A BESS compound comprising:
  - Individual battery storage units arranged into rows / strings.
  - Medium voltage (MV) skids (i.e. one MV skid per battery string), each of which houses two power conversion system (PCS) units and one medium-voltage transformer.
  - Ancillary infrastructure including low voltage (LV) cabinets, auxiliary transformers and underground ducting and cabling.
- A high voltage (HV) substation compound comprising:
  - Two HV grid transformers.
  - Auxiliary transformers and LV distribution infrastructure.
  - An on-site substation building, comprising a control room, high voltage switch room and welfare facilities.
- An interface substation between the batteries and the Gills Bay substation site.
- An underground 132 kilovolt (kV) grid connection cable between the HV substation and the planned Gills Bay substation, via the interface substation.
- 3-metre-high pallisade security fencing around electrical equipment.
- Cut and fill / earthworks and foundational civil structures to create level compounds upon which the batteries, substation and other ancillary structures will be located.
- Access arrangements, including two site access points along the site's eastern boundary, parking spaces and 5-metre-wide internal access tracks throughout the site.
- CCTV and lighting columns across the site.
- Drainage infrastructure, including an attenuation basin.
- Landscape and biodiversity mitigation and enhancement measures.

5.1 Construction

The construction phase is estimated to take up to two years and would involve the following key 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;
- 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.

5.2 Operation

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 site 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 site 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 site. 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 site 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 Stage 2: Connection to site management / nature conservation

The Proposed Development is a BESS, as described in **Section 5**, and therefore has no connection with, and is not necessary to the conservation management of any European designated site or its qualifying interests.

7 Stage 3: Likely Significant Effect screening

Table 7-1 to **Table 7-6** below describe the potential impact pathways that could arise from the Proposed Development on each European site, and consider whether there is a risk of a LSE from the Proposed Development. The aim of this screening exercise is to:

- 'Screen out' impact pathways that would not have an LSE and do not require further assessment.
- 'Screen in' impact pathways where there is the risk of the LSE so that these pathways can be considered further through Appropriate Assessment (Stage 4).

In accordance with the European Court judgement known as 'People Over Wind' (case C-323/17), specific mitigation measures designed to avoid or reduce any harmful effects of the Proposed Development have not been taken into account at this stage.

7.1 Caithness Lochs SPA

Table 7-1: Caithness Lochs SPA

Potential impact pathway	Consideration of potential impact	LSE?
Direct impacts (e.g. loss / damage / fragmentation of habitats and mortality to qualifying species within a European site)	The Site lies no closer than 1.8 km from Caithness Lochs SPA, therefore it is considered there is no risk of direct impacts to the SPA from the Proposed Development.	No
Disturbance / displacement to qualifying species (e.g. noise, visual disturbance)	Caithness Lochs SPA is designated for wintering whooper swan, Greenland white-fronted goose and greylag goose, however these species are not constrained to the SPA and are known to move into surrounding habitats, primarily to forage. Core foraging ranges from night roost during the winter season are <5 km for whooper swan, 5-8 km for Greenland white-fronted goose and 15-20 km for greylag geese (SNH, 2016). Habitats within and adjacent to the Site provide suitable habitat for these species, and therefore there is potential for disturbance and / or displacement of these species from the Proposed Development.	Yes
Land use changes (e.g. loss of foraging habitat outside a European site)	As set out above, it is considered there is potential for whooper swans, greylag goose and Greenland white-fronted geese associated with Caithness Lochs SPA to occur on or in the vicinity of the Site. The majority of the Site comprises arable cropland, a habitat which (when left as stubble) is regularly used by all three species during the winter (Patterson *et al.* (2013)). The Proposed Development will result in the permanent conversion of arable cropland to built form and habitats that are not suitable for these species, resulting in the potential loss of foraging habitat outside of Caithness Lochs SPA.	Yes
Water quality / hydrological changes	A minor watercourse (Burn of Horsegrow) links the Site to the Loch of Mey, therefore there is the potential for pollutants released during construction, operation and decommissioning to affect the loch and supporting habitats which are used by non-breeding whooper swan, Greenland white-fronted goose and greylag goose.	Yes
Air pollution	Due to the small scale and nature of the Proposed Development, non-breeding goose and swan populations potentially present in the vicinity of	No

Potential impact pathway	Consideration of potential impact	LSE?
	the Site are unlikely to be sensitive to minor changes in air quality arising from construction and decommissioning activities.	

Table 7-2: Caithness Lochs Ramsar site

Potential impact pathway	Consideration of potential impact	LSE?
Direct impacts (e.g. loss / damage / fragmentation of habitats and mortality to qualifying species within a European site)	The site lies no closer than 1.8 km from Caithness Lochs Ramsar site, therefore it is considered there is no risk of direct impacts to the Ramsar site from the Proposed Development.	No
Disturbance / displacement to qualifying species (e.g. noise, visual disturbance)	Caithness Lochs SPA is designated for wintering whooper swan, Greenland white-fronted goose and greylag goose, however these species are not constrained to the SPA and are known to move into surrounding habitats, primarily to forage. Core foraging ranges from night roost during the winter season are <5 km for whooper swan, 5-8 km for Greenland white-fronted goose and 15-20 km for greylag geese (SNH, 2016). Habitats within and adjacent to the Site provide suitable habitat for these species, and therefore there is potential for disturbance and / or displacement of these species from the Proposed Development. Ruff is likely to be faithful to habitats within the Ramsar site and the risk of disturbance from the Proposed Development affecting this species is considered to be negligible.	Yes
Land use changes (e.g. loss of foraging habitat outside a European site)	As set out above, it is considered there is potential for whooper swans, greylag goose and Greenland white-fronted geese associated with Caithness Lochs Ramsar site to occur on or in the vicinity of the site. The majority of the site comprises arable cropland, a habitat which (when left as stubble) is regularly used by all three species during the winter (Patterson *et al.* (2013)). The Proposed Development will result in the permanent conversion of arable cropland to built form and habitats that are not suitable for these species, resulting in the potential loss of foraging habitat outside of Caithless Lochs Ramsar site. Ruff is likely to be faithful to habitats within the Ramsar site and the risk of land use changes from the Proposed Development affecting this species is considered to be negligible.	Yes
Water quality / hydrological changes	A minor watercourse (Burn of Horsegrow) links the Site to the Loch of Mey, therefore there is the potential for pollutants released during construction, operation and decommissioning to affect the loch and supporting habitats which are used by non-breeding whooper swan, Greenland white-fronted goose and greylag goose.	Yes
Air pollution	Due to the small scale and nature of the Proposed Development, non-breeding goose and swan populations potentially present in the vicinity of the Site are unlikely to be sensitive to minor changes in air quality arising from construction and decommissioning activities.	No

Table 7-3: North Caithness Cliffs SPA

Potential impact pathway	**Consideration of potential impact**	LSE?
Direct impacts (e.g. loss / damage / fragmentation of habitats and mortality to qualifying species within a European site)	The site lies no closer than 2.5 km from North Caithness Cliffs SPA, therefore it is considered there is no risk of direct impacts to the SPA from the Proposed Development.	No
Disturbance / displacement to qualifying species (e.g. noise, visual disturbance)	The birds which qualify North Caithness Cliffs as an SPA are unlikely to be physically or visually disturbed by the Proposed Development which lies far from their breeding sites (>2.5 km).	No

Potential impact pathway	Consideration of potential impact	LSE?
Land use changes (e.g. loss of foraging habitat outside a European site)	Peregrine *Falco peregrinus* is a qualifying species for the SPA, but has a core foraging range of 2 km from the nest site**Error! Bookmark not d efined.** The 2.5 km distance between the SPA and the Site means that the loss of arable cropland (a sub-optimal habitat) on the Site is unlikely to have any significant impact on the foraging habits of peregrines. The remainder of the qualifying bird species for North Caithness Cliffs SPA are seabirds and as such tend to forage at sea, so are highly likely to have their foraging ranges overlap with the site, which is 2.5 km inland.	No
Water quality / hydrological changes	The primary water body of North Caithness Cliffs SPA is the North Sea, which is over 2 km away from the Site at its nearest point, and there are no direct hydrological links between the site and the SPA, therefore it is highly unlikely to be affected by construction on the Site.	No
Air pollution	It is likely that the A836 (the primary A-road in proximity to the site) will experience a temporary increase in road traffic over the course of construction, which could cause an increase in air pollution in the immediate area. The impacts of road pollution ecologically are most significant within 50 to 100 m of a road[4]. Given that the closest points of the North Caithness Cliffs SPA and the A836 are around 586m apart, air pollution as an impact can be screened out for this SPA.	No

Table 7-4: Caithness and Sutherland Peatlands SPA

Potential impact pathway	Consideration of potential impact	LSE?
Direct impacts (e.g. loss / damage / fragmentation of habitats and mortality to qualifying species within a European site)	The site lies no closer than 2.8 km from Caithness and Sutherland Peatlands SPA, therefore it is considered there is no risk of direct impacts to the SPA from the Proposed Development, either alone or in-combination with other plans / projects.	No
Disturbance / displacement to qualifying species (e.g. noise, visual disturbance)	The birds which qualify Caithness and Sutherland Peatlands as an SPA are unlikely to be physically or visually disturbed by the Proposed Development which is situated over 2.8 km from their breeding sites.	No
Land use changes (e.g. loss of foraging habitat outside a European site)	The most significant factor in the land use change from agricultural farmland to a BESS is that it could result in the loss of foraging land for some of the qualifying species of the Caithness and Sutherlands Peatlands SPA. Wading birds and diving seabirds associated with this SPA can be immediately screened out of this effect due to the current land use not being compatible with their foraging habitats, leaving hen harrier, golden eagle, merlin and short-eared owl. The core foraging range for hen harriers is usually within 2 km of the nest for males, and within 1 km for females[5] (Arroyo *et al.* 2014). Golden eagle, with a core foraging range of 6 km**Error! Bookmark not defined.** (SNH, 2 016) may be more likely to be affected by the Proposed Development. However, golden eagles have a relatively large core range focused on upland areas, and much of the surrounding land beyond the Site is unsuitable for the species. Similarly, merlin have a foraging range of within 5 km from nest sites **Error! Bookmark not defined.** (SNH, 2016) b ut this species also favours upland areas when nesting and the relatively	No

[4] *NECR199, The ecological effects of air pollution from road transport: an updated review*

Potential impact pathway	Consideration of potential impact	LSE?
	small size of the Proposed Development would have a minimal impact on the overall foraging range of merlin in the area. The core foraging range for short-eared owls is 2 km (SNH, 2016). Due to the distance from the site, they will therefore not be impacted by the change in land use 2.8 km away. On this basis, the Proposed Development is unlikely to have a significant effect on the hen harrier, golden eagle, merlin and short-eared owl populations within Caithness and Sutherland Peatlands SPA.	
Water quality / hydrological changes	There is no direct above-ground hydrological link between the Site and Caithness and Sutherland Peatlands SPA. Below-ground is a large area of sandstone aquifer which is highly porous and could be at risk of facilitating the leaching of pollutants as a by-product of construction, operation and decommissioning on the Site to the SPA. However due to the topography of the land, most water flow is in a northern direction, away from the SPA and moreover due to 2.8 km separation between the Site and the SPA, pathways for below ground hydrological effects are considered to be negligible.	No
Air pollution	It is likely that the A836 (the primary A-road in proximity to the site) will experience a temporary increase in road traffic over the course of construction, which could cause an increase in air pollution in the immediate area. The impacts of road pollution ecologically are most significant within 50 to 100 m of a road[4]. Given that the closest points of the Caithness and Sutherlands Peatlands SPA and the A836 are around 1.1 km apart, air pollution as an impact can be screened out for this SPA.	No

Table 7-5: Caithness and Sutherland Peatlands SAC

Potential impact pathway	Consideration of potential impact	LSE?
Direct impacts (e.g. loss / damage / fragmentation of habitats and mortality to qualifying species within a European site)	The site lies no closer than 2.8 km from Caithness and Sutherland Peatlands SAC, therefore it is considered there is no risk of direct impacts to the SAC from the Proposed Development, either alone or in-combination with other plans / projects.	No
Disturbance / displacement (e.g. noise, visual disturbance to qualifying species)	The Proposed Development is expected to have a low noise impact on the local area and no specific noise mitigation measures are anticipated to be required (TNEI, 2024). Disturbance impacts of the Proposed Development on the Caithness and Sutherland Peatlands SAC can therefore be screened out on grounds of distance and low noise impact.	No
Land use changes (e.g. loss of foraging habitat outside a European site)	While otters (a qualifying species of the SAC) can have a large range of 30 km+, the terrestrial farmland habitat of the Site is unlikely to be an area they frequently, if ever, stray from the Caithness and Sutherland Peatlands SAC to visit, as they do all of their foraging either in fresh or saltwater.	No
Water quality / hydrological changes	There is no direct above-ground hydrological link between the Site and Caithness and Sutherland Peatlands SAC. Below-ground is a large area of sandstone aquifer which is highly porous[6] and could be at risk of facilitating the leaching of pollutants as a by-product of construction, operation and decommissioning on the Site to the SAC. However due to the topography of the land, most water flow is in a northern direction, away from the SAC and moreover due to 2.8 km separation between the Site	No

[6] *British Geological Survey materials © UKRI [2024]*

Potential impact pathway	Consideration of potential impact	LSE?
	and the SAC, pathways for below ground hydrological effects are considered negligible..	
Air pollution	It is likely that the A836 (the primary A-road in proximity to the site) will experience a temporary increase in road traffic over the course of construction, which could cause an increase in air pollution in the immediate area. The impacts of road pollution ecologically are most significant within 50 to 100m of a road[4]. Given that the closest points of the Caithness and Sutherlands Peatlands SAC and the A836 are around 1.1 km apart, air pollution as an impact can be screened out for this SAC.	No

Table 7-6: Caithness and Sutherland Peatlands Ramsar site

Potential impact pathway	Consideration of potential impact	LSE?
Direct impacts (e.g. loss / damage / fragmentation of habitats and mortality to qualifying species within a European site)	The site lies no closer than 2.8 km from Caithness and Sutherland Peatlands Ramsar site, therefore it is considered there is no risk of direct impacts to the Ramsar site from the Proposed Development, either alone or in-combination with other plans / projects.	No
Disturbance / displacement to qualifying species (e.g. noise, visual disturbance)	The Proposed Development is expected to have a low noise impact on the local area and no specific noise mitigation measures are anticipated to be required (TNEI, 2024. Disturbance impacts of the Proposed Development on the Caithness and Sutherland Peatlands Ramsar site can therefore be screened out on grounds of distance and low noise level.	No
Land use changes (e.g. loss of foraging habitat outside a European site)	All of the bird species used to support Criterion 2 are either waders or seabirds, and so can be immediately screened out of this effect due to the current land use not being compatible with their foraging habitats.	No
Water quality / hydrological changes	There is no direct above-ground hydrological link between the site and Caithness and Sutherland Peatlands Ramsar site. Below-ground is a large area of sandstone aquifer which is highly porous and could be at risk of facilitating the leaching of pollutants as a by-product of construction, operation and decommissioning on the Site to the Ramsar site. However, due to the topography of the land, most water flow is in a northern direction, away from the Ramsar site and moreover due to 2.8 km separation between the Site and the Ramsar site, pathways for below ground hydrological effects are considered to be negligible.	No
Air pollution	It is likely that the A836 (the primary A-road in proximity to the site) will experience a temporary increase in road traffic over the course of construction, which could cause an increase in air pollution in the immediate area. The impacts of road pollution ecologically are most significant within 50 to 100m of a road[4]. Given that the closest points of the Caithness and Sutherlands Peatlands Ramsar site and the A836 are around 1.1 km apart, air pollution as an impact can be screened out for this Ramsar site.	No

7.2 Summary of Stage 3

Table 7-7 provides a summary of the designated sites, qualifying interests and potential impact pathways that have been screened in for further assessment in Stage 4.

Table 7-7: Designated sites, qualifying interests and potential impact pathways screened in

Designated site	Qualifying interests	Potential impact pathways screened in
Caithness Lochs SPA	• Greenland white-fronted goose (non-breeding) • Greylag goose (non-breeding) • Whooper swan (non-breeding)	• Disturbance / displacement (all development phases) • Land use changes (all development phases) • Water quality / hydrological changes (all development phases)
Caithness Lochs Ramsar site	• Greenland white-fronted goose (non-breeding) • Greylag goose (non-breeding) • Whooper swan (non-breeding)	• Disturbance / displacement (all development phases) • Land use changes (all development phases) • Water quality / hydrological changes (all development phases)

8 Stage 4: Appropriate Assessment

Stage 3 screened in the risk of a LSE on Caithness Lochs SPA and Ramsar site for Greenland white-fronted goose, greylag goose and whooper swan from three potential impact pathways: disturbance / displacement, land use changes, and water quality / hydrological changes. Since the qualifying interests and impact pathways carried forward to Stage 4 are the same, and their boundaries are coincident, Caithness Lochs SPA and Caithness Lochs Ramsar site are considered concurrently below to avoid repetition.

8.1 Designated site description

Caithness Lochs SPA and Ramsar site consists of a suite of six lochs and a mire (Broubster Leans) in Caithness (refer to **Figure 2**). The lochs cover a range of types from oligotrophic to eutrophic, and support a wide diversity of aquatic and wetland vegetation. The SPA and Ramsar site comprise the entire area of the Broubster Leans SSSI, Loch of Mey SSSI, Loch Calder SSSI, Loch Heilen SSSI, Loch Scarmclate SSSI, Loch Watten SSSI and Loch of Wester SSSI. Part of the site (Broubster Leans, Loch of Mey) was previously classified on the 2 February 1998 as Caithness Lochs SPA for Greenland white-fronted geese only (SNH, 1999). It is important to note that these designations only cover roost sites for Greenland white-fronted goose, greylag goose and whooper swan (Patterson *et al.* 2013) and do not include potentially 'functionally-linked' cropped habitats in the wider landscape, which are important habitats for all three qualifying species outside of the breeding season (Stroud *et al.* 2016).

8.2 Conservation objectives

The conservation objectives for Caithness Lochs SPA are *"to avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:*

- *Population of the species as a viable component of the site*
- *Distribution of the species within site*
- *Distribution and extent of habitats supporting the species*
- *Structure, function and supporting processes of habitats supporting the species*
- *No significant disturbance of the species"*

8.3 Baseline information

8.3.1 Greenland white-fronted goose

Caithness Lochs SPA qualifies under Article 4.1 by regularly supporting, in winter, a population of European importance of the Annex 1 species 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) (SNH, 1999). Greenland white-fronted goose arrives at Caithness Lochs SPA in October and departs in April; the core wintering period is considered to be October to April inclusive (Patterson *et al.* 2013). The Loch of Mey flock uses stubble fields in the early winter from arrival, moving to rough pastures during the majority of the winter and reseeded grassland in the spring (Francis *et al.* 2011).

The Loch of Mey flock has consistently numbered 100-250 birds since the mid-1980s, gradually increasing to peak in 2001 before declining (Francis *et al.* 2011). Patterson *et al.* (2013) noted that *"numbers appear to have declined to less than half of this* (citation) *level in recent years, with two main flocks of approximately equal size, roosting at Broubster Leans and Loch of Mey".* The most recent five-year average count (2018/19 – 2022-23) is 143 individuals at Loch of Mey and 63 birds at Broubster Leans, with a further five at other component Lochs giving a total average SPA population of 211 birds (Woodward *et al.* 2024). Agricultural operations have been identified as a negative pressure for Greenland white-fronted goose at Caithness Lochs SPA and Ramsar site, where its latest assessed condition was Favourable Declining (April 2016).

Greenland white-fronted goose is considered to have a core foraging range of 5-8 km around roosts (SNH, 2016) therefore the Site falls within the foraging range for birds from Loch of Mey. Francis *et al.* (2011) identified that Greenland white-fronted goose frequently used fields to the south and east of Loch of Mey, but not to the south of the minor road that runs west to east between Barrock and Rigifa where the Proposed Development lies (refer to **Figure 3**). Patterson *et al.* (2013) recorded Greenland white-fronted goose in fields surrounding the Loch of Mey, but not within the Site itself, although it is noted that a significant proportion of the land around the Site was not surveyed (refer to **Figure 5**). Surveys carried out for the Hollandmey Renewable Energy Development between 2017 and 2021, which encompassed the majority of the planning boundary of the Proposed Development, did not record Greenland white-fronted goose within the Site and no flight activity was recorded (SPR, 2021); all records were to the north of the Barrock – Rigifa road (refer to **Figure 4**). A comprehensive data review to inform the application for the Mey BESS, which lies adjacent to the Site, did not identify any records of Greenland white-fronted goose closer than 580 m nor any direct lines of sight to known goose fields (ITP, 2023).

Data was requested from the RSPB in August 2024 for notable bird records within a 5 km radius of the Proposed Development within the past 10 years. A total of 24 records of Greenland white-fronted goose were received, with flocks of between 18 and 163 birds recorded (refer to **Figure 8**). Although as expected some of the largest flocks were concentrated around Loch of Mey, 15 records occurred on land to the south and east of Loch of Mey, including a flock of 95 foraging birds approximately 100 m north-west of the Proposed Development in December 2016. However, there were no records to the south of the minor road that runs between Barrock and Rigifa, where the Proposed Development would be situated.

8.3.2 Greylag goose

Caithness Lochs SPA qualifies under Article 4.2 by regularly supporting, in winter, a population of European importance of greylag goose *Anser anser* (1993/94-1997/98 winter peak mean of 7,190 representing 7% of the GB and Icelandic populations). Greylag geese arrive at Caithness Lochs SPA in October and depart in April; therefore the core wintering period is considered to be October to April inclusive (Patterson *et al.* 2013). The flocks associated with Caithness Lochs SPA have been found to use mainly stubble in autumn,

transitioning to improved grassland in the winter and a combination of improved and unimproved grassland in the spring.

Patterson *et al.* (2013) noted that "*recent numbers have varied between years, from 2,792 in November 2002 to 12,129 in November 2008, representing from 3.8% to 12.3% of GB wintering population (data from the Wildfowl and Wetlands Trust National Grey Goose Census). The numbers from recent years exclude an estimated 1,000 resident breeding birds (counted in August 2009), which are thought to remain to spend the winter in the area (Forrester et al. 2007)".* The most recent five-year average count for Loch of Mey (2018/19 – 2022-23) is 360 birds, with a further 3,700 at other component Lochs (excluding estimated resident breeding birds), giving a total average SPA population of 4,060 birds (Woodward *et al.* 2024). No negative pressures have been identified for greylag goose at Caithness Lochs SPA and Ramsar site, where its latest assessed condition was Favourable Maintained (November 2015).

Greylag goose is considered to have a core foraging range of 15-20 km around roosts (SNH, 2016) therefore the Site falls within the foraging range for birds from Loch of Mey and Loch Heilen, as well as Loch Scarmclate and Loch Watten. Patterson *et al.* (2013) recorded greylag geese in fields surrounding the Loch of Mey, but not within the Site itself, although it is noted that a significant proportion of the land around the Site was not surveyed (refer to **Figure 5**). Surveys for the Hollandmey Renewable Energy Development between 2017 and 2021 recorded greylag goose on a single occasion within the Site (SPR, 2021); refer to **Figure 4**. A comprehensive data review to inform the application for the Mey BESS, which lies adjacent to the Site, identified records of greylag geese within and adjacent to the Site (ITP, 2023).

Data was requested from the RSPB in August 2024 for notable bird records within a 5 km radius of the Proposed Development within the past 10 years. A total of 38 records of greylag goose were received, with the largest flock totalling 840 birds at Loch of Mey in December 2013 (refer to **Figure 9**). Records were also distributed around Loch Heilen and to the south of Loch of Mey, including three records to the south of the minor road that runs between Barrock and Rigifa where the Proposed Development lies (although none within the Site itself). This included a flock of 400 greylag geese approximately 250m north of the Proposed Development in January 2018.

8.3.3 Whooper swan

Caithness Lochs SPA qualifies under Article 4.1 by regularly supporting, in winter, a population 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). Whooper swan arrives at Caithness Lochs SPA in October and departs in April; therefore the core wintering period is considered to be October to April inclusive (Patterson et al. 2013). In the vicinity of Caithness Lochs, this species been found in stubble fields in the autumn, transitioning towards improved grassland over winter, and predominantly improved grassland in the spring (Patterson *et al.* 2013).

Forrester *et al.* (2007) reported that most birds were found to roost on Loch of Wester (158 birds) and Loch Heilen (60 birds). The most recent five-year average count (2018/19 – 2022/23) is 451 birds at Loch of Wester and 39 birds at Loch Heilen, with an average of 69 birds at Loch of Mey and a further 205 at other component Lochs, giving a total average SPA population of 982 birds (Woodward *et al.* 2024). No negative pressures have been identified for whooper swan at Caithness Lochs SPA and Ramsar site, where its latest assessed condition was Favourable Maintained (March 2015).

Whooper swan is considered to have a core foraging range of less than 5 km around roosts (SNH, 2016) therefore the Site potentially falls within the foraging range for birds from Loch of Mey and Loch Heilen. Patterson *et al.* (2013) recorded whooper swan in the immediate vicinity of the Site in autumn 2012. It was noted that a significant proportion of the land around the Proposed Development was not surveyed (refer to

Figure 5). Surveys for the Hollandmey Renewable Energy Development between 2017 and 2021 recorded whooper swan on a single occasion adjacent to the Site (refer to **Figure 4**). A comprehensive data review to inform the application for the Mey BESS, which lies adjacent to the Site, did not identify any records of whooper swan closer than 600m (ITP, 2023).

Data was requested from the RSPB in August 2024 for notable bird records within a 5 km radius of the Proposed Development within the past 10 years. A total of 15 records of whooper swan were received, with flocks of between one and 75 birds recorded (refer to **Figure 10**). Most flocks were concentrated around Loch of Mey and Loch Heilen, with few records away from the SPA boundary and immediate vicinity. There were no RSPB records of whooper swan within 1km of the Proposed Development.

8.4 Disturbance and displacement

8.4.1 Construction phase

The construction phase of the Proposed Development will last for up to two years. This is anticipated to include one year of site establishment, groundworks and civil works, when the potential for noise and visual disturbance is likely to be greatest (the remaining year is expected to comprise of electrical installations, cabling, commissioning and testing when potentially disturbing activities would be minimal). The number of heavy goods vehicle (HGV) movements per day would peak at a maximum of three per hour for stone deliveries, which equates to six two-way trips per hour, and a total of 36 HGV deliveries (72 two-way trips) per weekday; HGV traffic on Saturdays would peak at a maximum of 36 two-way trips (Royal HaskoningDHV, 2024). Decommissioning (after 30 years) will consider all relevant environmental legislation at the time (refer to **Section 5.3**); for the purpose of this assessment the potential associated disturbance impacts are assumed to be the same or less than the construction phase, and the same mitigation measures apply.

8.4.1.1 Greenland white-fronted goose

Greenland white-fronted goose inhabits a mosaic of habitats on its wintering foraging grounds, however in the vicinity of Caithness Lochs SPA it has been found to favour improved grassland, pasture and stubble (Patterson *et al.* 2013). Greenland white-fronted goose is assessed to have a high sensitivity to human disturbance and there is anecdotal evidence suggesting that this species avoids human activity more than other geese (Goodship and Furness, 2022). Among other factors, Stroud *et al.* (2012) identified deliberate and accidental human disturbance from farmland feeding sites as likely to cause significant local, but not population-scale, impacts on Greenland white-fronted goose. Whilst there are no published buffer zones for Greenland white-fronted goose, with reference from other studies on geese, a minimum buffer zone of 500-1000m is suggested to protect foraging and roosting birds during the nonbreeding season from pedestrian disturbance (Goodship and Furness, 2022).

The review of baseline information did not identify any previous records of Greenland white-fronted goose within the Site, and given that this species is highly faithful to its wintering quarters (Francis *et al.* 2011), it is considered very unlikely that it regularly occurs on or in the immediate vicinity of the Site. When taking into account the disturbance buffer zone of 500 – 1000 m, foraging goose flocks to the north-west of the Proposed Development could be subject to disturbance during construction, for example from vehicle movements, noise-generating activities and from workers in high visibility clothing. However, the presence of woodland (coniferous plantation) to the north of the Proposed Development would prevent a direct line of sight between known Greenland white-fronted goose foraging locations and the main construction areas, and also act to reduce any potential noise disturbance. Vehicle movements to/from the Site may still cause disturbance to Greenland white-fronted goose flocks outside of the Site, however in accordance with the Transport Statement and Outline Construction Traffic Management Plan (Royal HaskoningDHV, 2024), the main agreed access route for HGVs will be via an access track to the north-east, which would avoid passing

fields where Greenland white-fronted goose has previously occurred and therefore minimise any potential disturbance to the SPA population.

8.4.1.2 Greylag geese

Greylag geese prefer foraging in low-lying agricultural land (Balmer *et al.* 2013) and generally show more tolerance towards human disturbance compared with other geese, therefore are considered to be of medium sensitivity. However, this species will move away from areas that have high levels of human activity such as roads and human habitation (Goodship and Furness 2022). Keller (1991) found that overwintering greylag geese were heavily impacted by roads; in northeast Scotland, birds were not found within 100 m of the nearest road and the median distance was 400 m. Whilst there are no published buffer zones for greylag goose, from other studies on geese, a minimum buffer zone of 200-600 m is suggested to protect foraging and roosting birds during the nonbreeding season from pedestrian disturbance (Goodship and Furness, 2022).

Baseline information revealed evidence of greylag goose usage of the Site and adjacent habitats, including a flock of 400 approximately 250 m to the north in January 2018. Foraging geese could be subject to disturbance during construction, for example from vehicle movements, noise-generating activities and from workers in high visibility clothing. The presence of woodland (coniferous plantation) to the north of the Proposed Development would prevent a direct line of sight between known goose foraging locations and the main construction areas, and also significantly reduce any potential noise disturbance, but as a worst-case scenario it is assumed that up to 400 greylag geese foraging on or adjacent to the Site could be disturbed by construction activities. Since greylag geese show a degree of tolerance towards human disturbance and there is abundant alternative suitable habitat in the wider landscape, any disturbance effects are expected to be short-lived and not have a significant impact on the SPA population.

8.4.1.3 Whooper swan

Whooper swan shows a preference for wetland habitats on its wintering grounds, but will also forage in stubble fields and arable crops. Whooper swans are sensitive to human disturbance, but can habituate to some types of human activity, especially if the source of disturbance is predictable (Goodship and Furness, 2022). In Scotland birds have been shown to adapt their activity patterns and forage locations in response to disturbance (Brazil, 1981) but there are also suggestions that whooper swan can show less sensitivity if there is a high frequency of disturbance incidents (e.g. Rees *et al.* 2005). There are no published buffer zones for whooper swan, but from studies on geese, a minimum buffer zone of 200-600 m is suggested to protect foraging and roosting birds during the nonbreeding season from pedestrian disturbance (Goodship and Furness, 2022).

Baseline information included just a single record of whooper swan within the Site; there were no previous RSPB records within 1 km. This suggests that whooper swan is unlikely to occur on the Site on a regular basis. Whooper swans within the disturbance buffer zone of 200 – 600 m could be subject to disturbance during construction, for example from vehicle movements, noise-generating activities and from workers in high visibility clothing. However, the presence of woodland (coniferous plantation) to the north of the main development footprint would prevent a direct line of sight between foraging locations and the main construction areas, and also act to reduce any potential noise disturbance. Since whooper swans show a degree of habituation towards human disturbance and there is abundant alternative suitable habitat in the wider landscape, any disturbance effects are expected to be short-lived and not have a significant impact on the SPA population.

8.4.1.4 Mitigation

To minimise the risk of potential disturbance impacts to Greenland white-fronted goose, greylag goose and whooper swan, a Species Protection Plan will be prepared with measures also set out within a Construction Environmental Management Plan (CEMP). The construction phase should be initiated outside the mid-winter period (November to January) to avoid initiation of construction when a) daily movement onto or around the site by waterbirds is already occurring and b) movement and disturbance flights are most energetically costly to the birds. During construction, any aggregations of geese or whooper swans within or in proximity to the Site should be identified during routine Ecological Clerk of Works presence on Site and through daily vigilance for such aggregations by construction teams, in line with the prepared CEMP and Species Protection Plan. 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 (based on JNCC criteria for severe winter weather[7]).Where this cannot be avoided, alternative methods which make use of best available techniques to reduce noise, such as vibro piling, may be necessary.

8.4.2 Operational phase

During operation, traffic to and from the Site will be very low, and unlikely to exceed one or two vehicle movements per week. This is considered to be less than typical agricultural operations currently occurring on Site and therefore associated disturbance impacts would be imperceptible compared with existing levels. The presence of the BESS, substation compound and other permanent infrastructure may act to disturb/displace goose and swan populations from the immediate vicinity, however Greenland white-fronted goose is very unlikely to occur regularly within or adjacent to the Site and there is no direct line of sight to established wintering locations. Greylag goose has a very extensive foraging range, and the Site and immediate surrounds are not regularly used by whooper swan; both these species have access to abundant alternative suitable habitat in the wider landscape. Therefore, any impacts to the Caithness Lochs SPA population are predicted to be negligible.

8.5 Land use changes

The review of baseline information did not identify any previous records of Greenland white-fronted goose within the Site, and since this species is highly faithful to its wintering quarters (Francis *et al.* 2011) it is considered very unlikely that it regular occurs on or in the immediate vicinity of the Site. However, the possibility of small numbers of Greenland white-fronted goose occasionally using the Site cannot be excluded given the relative proximity to known wintering fields. As previously stated, existing data indicate that the Site and adjacent habitats are used by greylag geese, but not regularly by whooper swan (although small numbers of whooper swans may use the Site occasionally).

The Site covers 45.4 ha in total, of which 34.88 ha is considered to represent suitable goose and swan habitat (arable stubble). Remaining habitats on Site were either unsuitable for geese and swans (e.g. coniferous woodland, hedgerows) or were too enclosed or fragmented to represent usable habitat (e.g. neutral grassland, lowland fen). Only a proportion of the Site would be permanently developed, with an operational footprint of approximately 6.4 ha. However, the visual presence of the temporary and permanent infrastructure, vehicle movements and site workers during construction, operation and decommissioning may result in greater ‘effective’ habitat loss and could exclude birds from the remainder of the Site. Therefore, on a precautionary basis, the area of effective habitat loss is considered to be the total area of suitable habitat within the Site i.e. 34.88 ha.

[7] *https://jncc.gov.uk/our-work/severe-weather-scheme/*

Greenland white-fronted goose has a core foraging range of up to 8 km around roosts (SNH, 2016). Applying this buffer to the Loch of Mey incorporates approximately 12,000 ha of land across north-east Caithness. A significant proportion of this area comprises peatlands, blanket bogs, forestry plantations and other habitats which are unsuitable for Greenland white-fronted goose, however the landscape is predominantly agricultural (mainly improved grassland and arable) which is potentially suitable habitat, particularly to the east, west and south-west of Loch of Mey. Based on aerial photography, it is estimated that a minimum of 50% of land within the 8 km buffer comprises suitable agricultural habitat (i.e. 6,000 ha). The loss of 34.88 ha for the Proposed Development would represent a 0.58% loss of potential foraging habitat for Greenland white-fronted goose. However, this is considered precautionary as it assumes that the species would use all suitable foraging habitat within the 8 km range, whereas it has been established that Greenland white-fronted goose shows high fidelity to wintering haunts close to Loch of Mey and is very unlikely to regularly occur on Site. On this basis, any impacts to the Caithness Lochs SPA Greenland white-fronted goose population from land use changes associated with the Proposed Development would be negligible.

Greylag goose has a core foraging range of up to 20 km around roosts (SNH, 2016). Applying this buffer to the component lochs of Caithness Lochs SPA encompasses a vast area covering most of Caithness – approximately 160,000 hectares. A significant proportion of this area comprises peatlands, blanket bogs, forestry plantations and other habitats which are unsuitable for greylag geese, however away from these areas the landscape is predominantly agricultural (mainly improved grassland and arable) which is potentially suitable habitat for greylag geese. Based on aerial photography, it is estimated that a minimum of 30% of land within the buffer comprises suitable agricultural habitat (i.e. 48,000 ha). The loss of 34.88 ha for the Proposed Development would represent a loss of 0.07% of potential foraging habitat for greylag geese, and the effect on the overall SPA population would be negligible.

Whooper swan has a core foraging range of less than 5 km around roosts (SNH, 2016). Applying this buffer to Loch of Mey and Loch Heilen incorporates approximately 11,800 ha of land across north-east Caithness. A significant proportion of this area comprises peatlands, blanket bogs, forestry plantations and other habitats which are unsuitable for whooper swans, however the landscape is predominantly agricultural (mainly improved grassland and arable) which is potentially suitable habitat. Based on aerial photography, it is estimated that a minimum of 50% of land within the 5 km buffer comprises suitable agricultural habitat (i.e. 5,900 ha). The loss of 34.88 ha for the Proposed Development would represent a 0.59% loss of potential foraging habitat for whooper swan. However, this is considered precautionary as it assumes that the species would use all suitable foraging habitat within the 5 km range, whereas whooper swan is shown to favours habitats in closer proximity to Loch of Mey and Loch Heilen and is unlikely to regularly occur on Site. On this basis, any impacts to the Caithness Lochs SPA whooper swan population from land use changes associated with the Proposed Development would be negligible.

8.6 Water quality / hydrological changes

Best practice pollution prevention measures and drainage solutions will be implemented throughout the pre-construction, construction, operation and decommissioning phases of the Proposed Development. This will be presented within a Pollution Prevention Plan as part of the CEMP; the Plan will be written with due consideration of guidance from SEPA (2024). These measures would prevent pollution of the minor watercourse that links the Site to the Loch of Mey (Burn of Horsegrow) and eliminate potential risks to Caithness Lochs SPA. 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.

8.7 In-combination assessment

The following developments have been identified that may contribute to in-combination effects with the Proposed Development on Greenland white-fronted goose, greylag goose and whooper swan associated with Caithness Lochs SPA (as shown in **Figure 8**, **Figure 9** and **Figure 10**):

- Hollandmey Renewable Energy Development (application reference ECU00003353). Construction and operation of 10 onshore wind turbines with a generating capacity of around 50 MW, around 15 MW of ground-mounted solar arrays, and approximately 15 MW of battery energy storage. This development was consented on 16 September 2024.
- Mey BESS (ECU00004838). Construction and operation of a BESS with installed capacity of up to 300 MW, and associated/ancillary works and development. The application for this development is currently pending a decision.
- Gills Bay Substation (21/05536/FUL). Construction and operation of a 132 kV switching station and associated infrastructure. The application for this development has been granted.
- Slickly Wind Farm Connection (ECU00005075). The primary requirement for this project is to address the need to connect the Slickly Wind Farm into the electricity transmission network via trident wood poles (approximately 8.5 km in length). A scoping opinion has been issued.
- Gills Bay 132kV Overhead Transmission Line. 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. Planning permission for this scheme has now lapsed, however the developer has confirmed that they will be seeking to re-consent this scheme.

8.7.1 Land use changes

Slickly Wind Farm Connection and Gills Bay Overhead Transmission Line would not contribute to in-combination effects from land use changes, as the land take would be very low and there would be no effective loss of habitat suitable for Greenland white-fronted goose, greylag goose and whooper swan. The remaining three developments contain areas of suitable habitats that would be potentially lost:

- Hollandmey Renewable Energy Development: 53 ha (excluding overlap with the Proposed Development)
- Mey BESS: 10.65 ha
- Gills Bay Substation: 2 ha (excluding overlap with the Proposed Development)

Assuming that all of these developments are all consented and brought forward along with the Proposed Development, the total loss of potential Greenland white-fronted goose, greylag goose and whooper swan habitat is 100.39 ha. These developments are within the Greenland white-fronted goose 8 km core foraging range around Loch of Mey, in which it has been estimated that a minimum of 50% of land comprises suitable agricultural habitat (i.e. 6,000 ha). The loss of 100.39 ha would represent a 1.67% loss of potential foraging habitat for Greenland white-fronted goose. However, this is considered to be precautionary as it assumes that the species would use all suitable foraging habitat within the 8 km range, whereas it has been established that Greenland white-fronted goose shows high fidelity to wintering haunts close to Loch of Mey, and is very unlikely to regularly occur on Site or within the other developments considered in the in-combination assessment.

These developments are also within the 20 km foraging range for greylag goose, in which it has been estimated that a minimum of 30% of land comprises suitable agricultural habitat (i.e. 48,000 ha). The loss of 100.39 ha would represent a 0.21% loss of potential foraging habitat for greylag geese, and the effect on the overall SPA population would be negligible.

These developments are also within the 5 km core foraging range for whooper swan around Loch of Mey and Loch Heilen, in which it has been estimated that a minimum of 50% of land comprises suitable agricultural habitat (i.e. 5,900 ha). The loss of 100.39 ha would represent a 1.7% loss of potential foraging habitat for whooper swan associated with Caithness Lochs SPA. However, this is considered precautionary as it assumes that the species would use all suitable foraging habitat within the 5 km range, whereas it has been established that whooper swan prefers habitats in close proximity Loch of Mey and Loch Heilen and is unlikely to regularly occur on Site (or within the other developments described).

8.7.2 Disturbance and displacement

The two developments considered most likely to give rise to in-combination disturbance effects with the Proposed Development are the Mey BESS and the Hollandmey Renewable Energy Development. However, the shadow HRAs for these developments did not predict that an adverse effect on integrity would occur in respect of Caithness Lochs SPA (ITP, 2023; NRP, 2021). Any disturbance effects are likely to be greater during construction (and possibly decommissioning) compared with the operational phase. However considering the limited duration and anticipated low magnitude of disturbance effects from the Proposed Development, the differing project timelines of the other developments considered, and that the Mey BESS and Hollandmey shadow HRAs did not predict an adverse effect on integrity alone or in-combination, a significant in-combination disturbance effect on Caithness Lochs SPA is considered to be unlikely.

8.7.3 Water quality / hydrological changes

The other developments will be required to ensure appropriate pollution prevention measures are implemented, therefore there is no risk of an in-combination effect on Caithness Lochs SPA in respect of water quality / hydrological changes.

9 Stage 5: Adverse Effect on Integrity test, and conclusion

In light of the Appropriate Assessment, it is considered that there would be no Adverse Effect on Integrity on Caithness Lochs SPA and Ramsar site for the impact pathways considered, assuming the following mitigation measures are implemented in respect of potential disturbance and water quality / hydrology impacts. These mitigation measures will be set out in the Species Protection Plan and CEMP:

- The construction phase should be initiated outside the mid-winter period (November to January) to avoid initiation of construction when a) daily movement onto or around the site by waterbirds is already occurring and b) movement and disturbance flights are most energetically costly to the birds.
- During construction, regular surveillance should be undertaken for aggregations of SPA qualifying species within or in proximity to the Site (within potential disturbance distance), as part of routine duties of an Ecological Clerk of Works on Site and through daily vigilance for such aggregations by construction teams.
- 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 to reduce noise, such as vibro piling, may be necessary.

- Best practice pollution prevention measures and drainage solutions will be implemented throughout the pre-construction, construction, operation and decommissioning phases of the Proposed Development. This will be presented within a Pollution Prevention Plan as part of the CEMP. The plan will be written with due consideration of guidance from SEPA (2024). These measures would prevent pollution of the minor watercourse that links the Site to the Loch of Mey (Burn of Horsegrow) and eliminating potential risks to Caithness Lochs SPA. 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.

The shadow Habitats Regulations Appraisal is summarised in **Table 9-1**.

Table 9-1: Summary of shadow Habitats Regulations Appraisal

Designated site	Potential impact pathways considered	Risk of likely significant effect	Adverse effect on integrity test
Caithness Lochs SPA	Greenland white-fronted goose (non-breeding)	Yes	No adverse effect on integrity predicted
	Greylag goose (non-breeding)	Yes	No adverse effect on integrity predicted
	Whooper swan (non-breeding)	Yes.	No adverse effect on integrity predicted
Caithness Lochs Ramsar site	Greenland white-fronted goose (non-breeding)	Yes	No adverse effect on integrity predicted
	Greylag goose (non-breeding)	Yes.	No adverse effect on integrity predicted
	Whooper swan (non-breeding)	Yes	No adverse effect on integrity predicted
	Ruff (migration)	No	N/A
North Caithness Cliffs SPA	Guillemot (breeding)	No	N/A
	Razorbill (breeding)	No	N/A
	Puffin (breeding)	No	N/A
	Fulmar (breeding)	No	N/A
	Kittiwake (breeding)	No	N/A
	Peregrine (breeding	No	N/A
Caithness and Sutherland Peatlands SPA	Red-throated diver (breeding)	No	N/A
	Black-throated diver (breeding)	No	N/A
	Hen harrier (breeding)	No	N/A
	Golden eagle (breeding)	No	N/A
	Merlin (breeding)	No	N/A
	Short-eared owl (breeding)	No	N/A
	Golden plover (breeding)	No	N/A
	Wood sandpiper (breeding)	No	N/A
	Dunlin (breeding)	No	N/A
	Greenshank (breeding)	No	N/A
	Common scoter (breeding)	No	N/A

Designated site	Potential impact pathways considered	Risk of likely significant effect	Adverse effect on integrity test
	Wigeon (breeding)	No	N/A
Caithness and Sutherland Peatlands SAC	Clear-water lakes/lochs	No	N/A
	Natural dystrophic lakes/ponds	No	N/A
	Blanket bogs	No	N/A
	North Atlantic wet heaths	No	N/A
	Transition mires and quaking bogs	No	N/A
	Depressions on peat substrates	No	N/A
	Otter	No	N/A
	Marsh saxifrage	No	N/A
Caithness and Sutherland Peatlands Ramsar site	Blanket bogs	No	N/A
	Wetland plants and animals	No	N/A
	Dunlin (breeding)	No	N/A

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Figures

Figure 1: Indicative Site Layout Plan

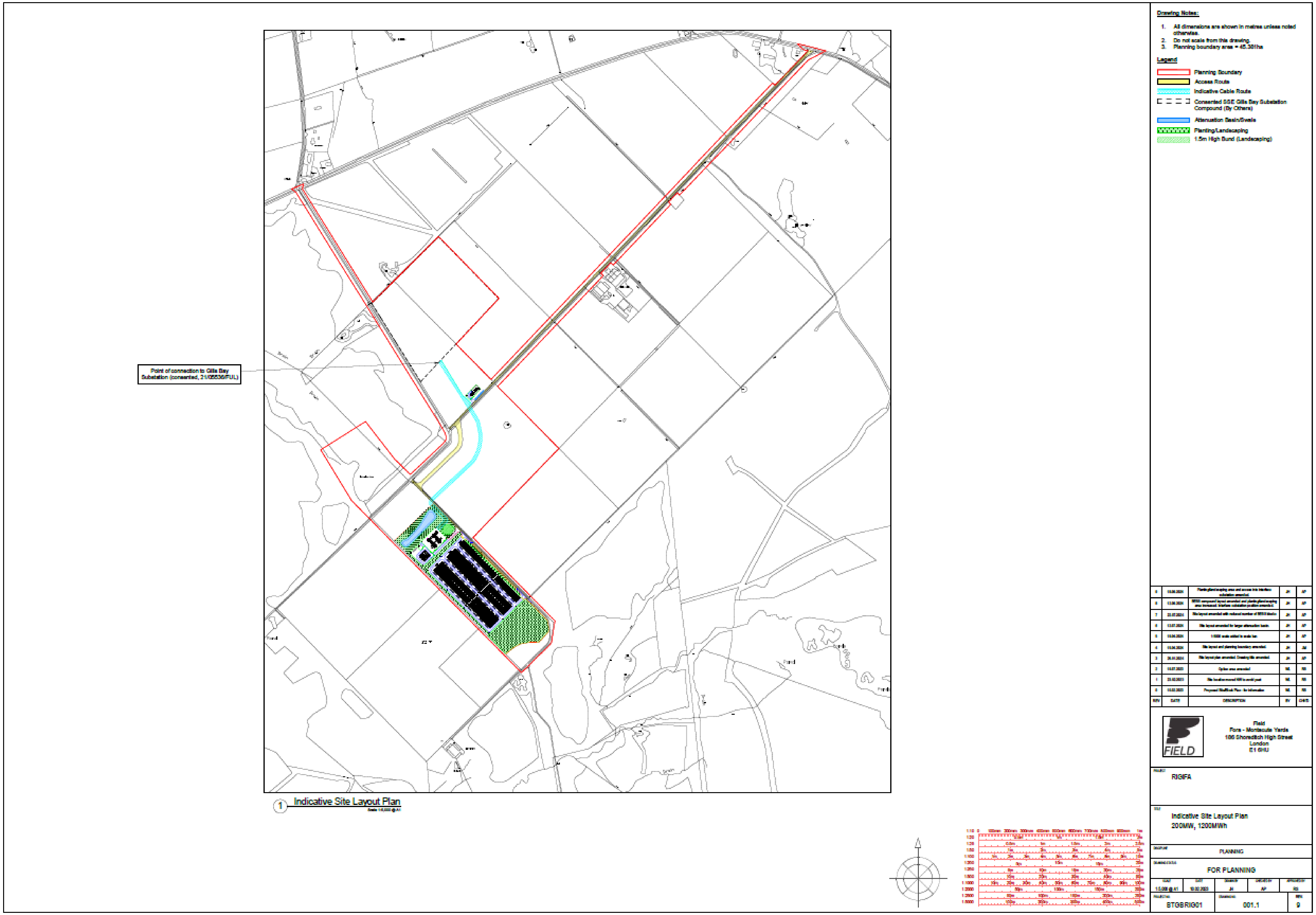

Drawing Notes:
1. All dimensions are shown in metres unless noted otherwise.
2. Do not scale from this drawing.
3. Planning boundary area = 45.361ha
Legend
Planning Boundary
Access Route
Indicative Cable Route
Consented SSE Gills Bay Substation Compound (By Others)
Attenuation Basin/Swale
Planting/Landscaping
1.5m High Bund (Landscaping)
Point of connection to Gills Bay Substation (consented, 21/05536/FUL)
1 Indicative Site Layout Plan
Field
Fora - Montacute Yards
186 Shoreditch High Street
London
E1 6HU
FIELD
RIGIFA
Indicative Site Layout Plan
200MW, 1200MWh
PLANNING
FOR PLANNING
JH
AP
BTGBRIG01
001.1
9

Figure 2: Caithness Lochs SPA map (SNH, 2011)

Caithness Lochs

Special Protection Area

EC Site Code: UK9001171

Site boundary

0 1.25 2.5 5 km

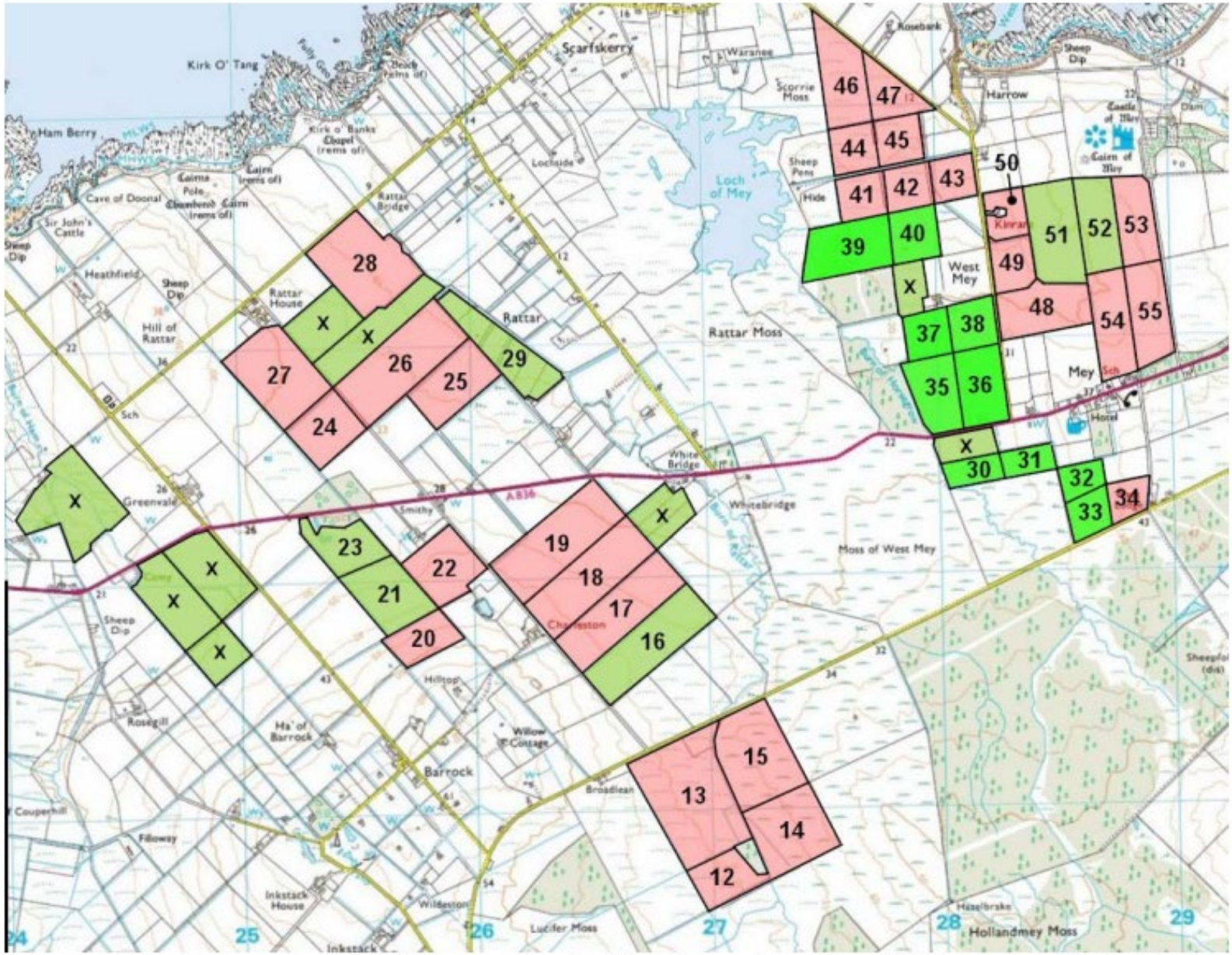
0 1,250 2,500 5,000 m

Scale 1:125,000

This is an updated representation of the classified site boundary. Any apparent small differences are due to changes to the OS backdrop.

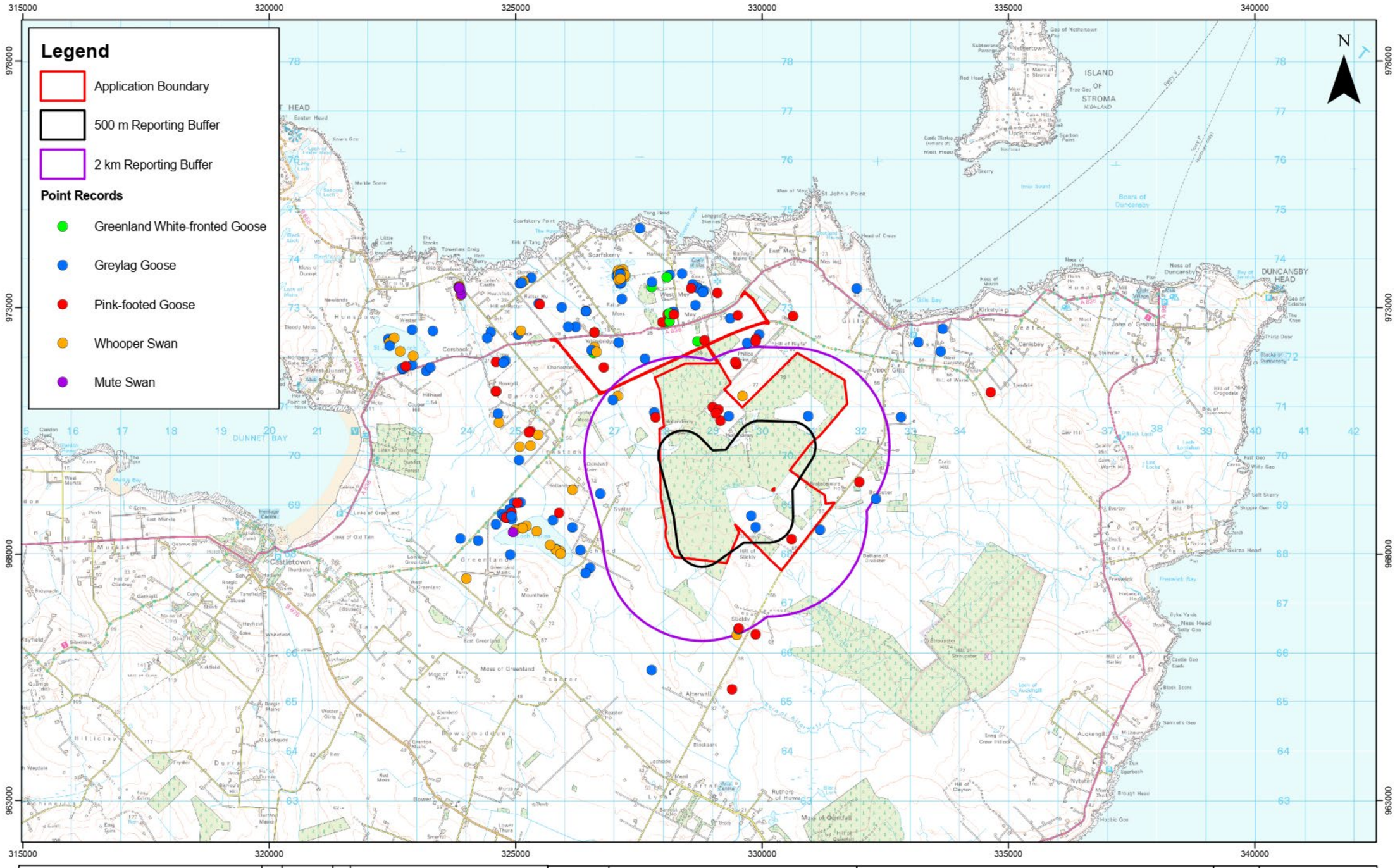
OS backdrop map is 1:50,000

Figure 3: Areas used by Greenland white-fronted goose (Francis *et al.* 2011)



Areas most frequently used by Greenland White-fronts (green) and fields surveyed (pink)

Figure 4: Hollandmey Renewable Energy Development - goose and swan point records (NRP, 2021)



SCOTTISHPOWER RENEWABLES

Rev	Date	By	Comment
E	10/11/2021	AA	Fifth Issue.
D	12/10/2021	BU	Fourth Issue.
C	05/10/2021	BU	Third Issue.

1:70,000 Scale @ A3

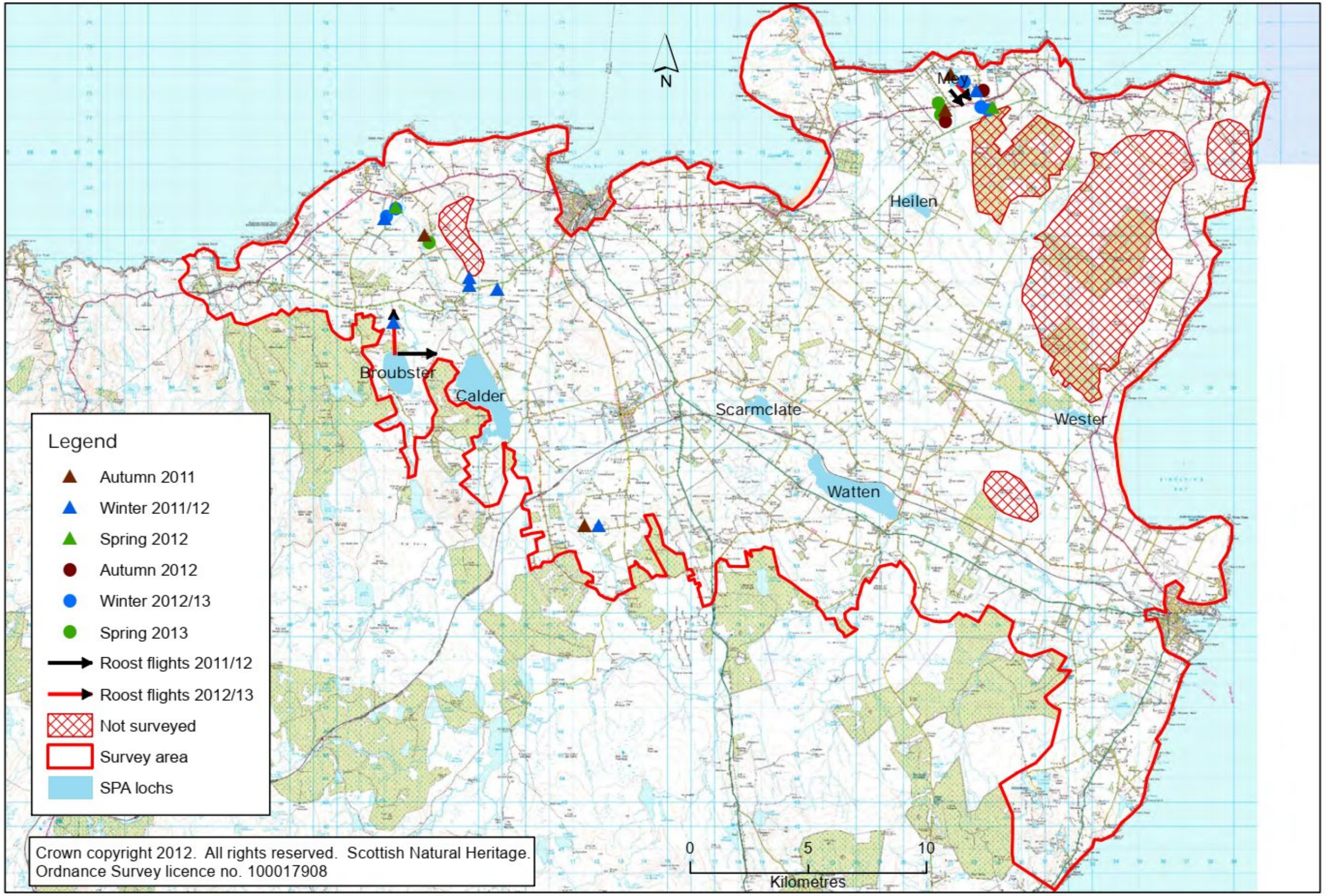
0 2 4 Km

Hollandmey Renewable Energy Development

Figure 9.1.6: Swan and Goose Areas

Drg No	6	
Rev	E	Datum: OSGB36
Date	10/11/2021	Projection: TM
Figure	9.1.6	

Figure 5: Distribution of Greenland white-fronted geese around Caithness Lochs 2011 – 2013 (Patterson *et al.* 2013)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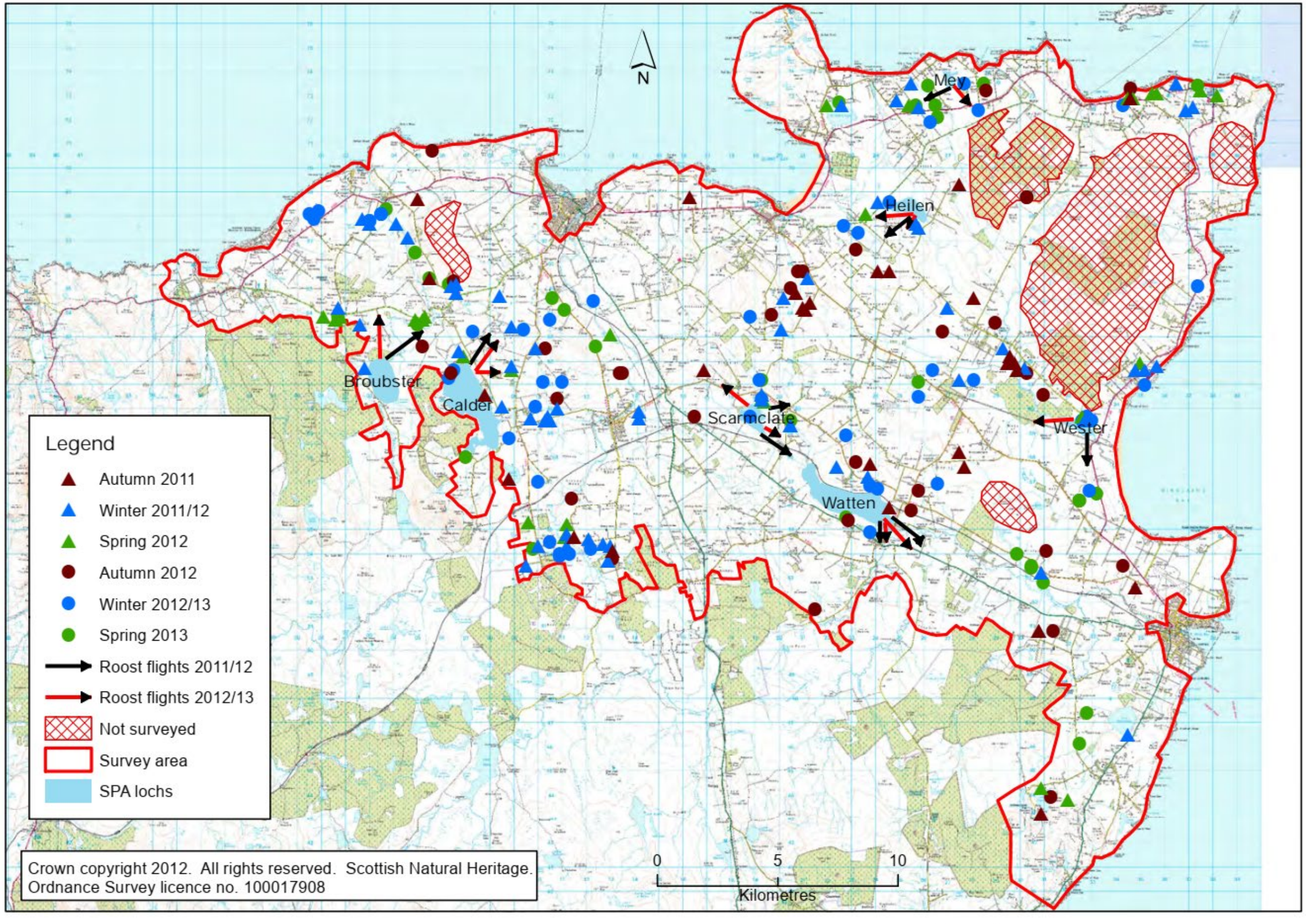
Heilen
Broubster
Calder
Scarmclate
Wester
Watten
Legend
Autumn 2011
Winter 2011/12
Spring 2012
Autumn 2012
Winter 2012/13
Spring 2013
Roost flights 2011/12
Roost flights 2012/13
Not surveyed
Survey area
SPA lochs
Crown copyright 2012. All rights reserved. Scottish Natural Heritage.
Ordnance Survey licence no. 100017908
0
5
10
Kilometres

Figure 6: Distribution of greylag geese around Caithness Lochs 2011 – 2013 (Patterson *et al.* 2013)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Broubster
Calder
Scarmclate
Wester
Watten
Legend
Autumn 2011
Winter 2011/12
Spring 2012
Autumn 2012
Winter 2012/13
Spring 2013
Roost flights 2011/12
Roost flights 2012/13
Not surveyed
Survey area
SPA lochs
Crown copyright 2012. All rights reserved. Scottish Natural Heritage.
Ordnance Survey licence no. 100017908
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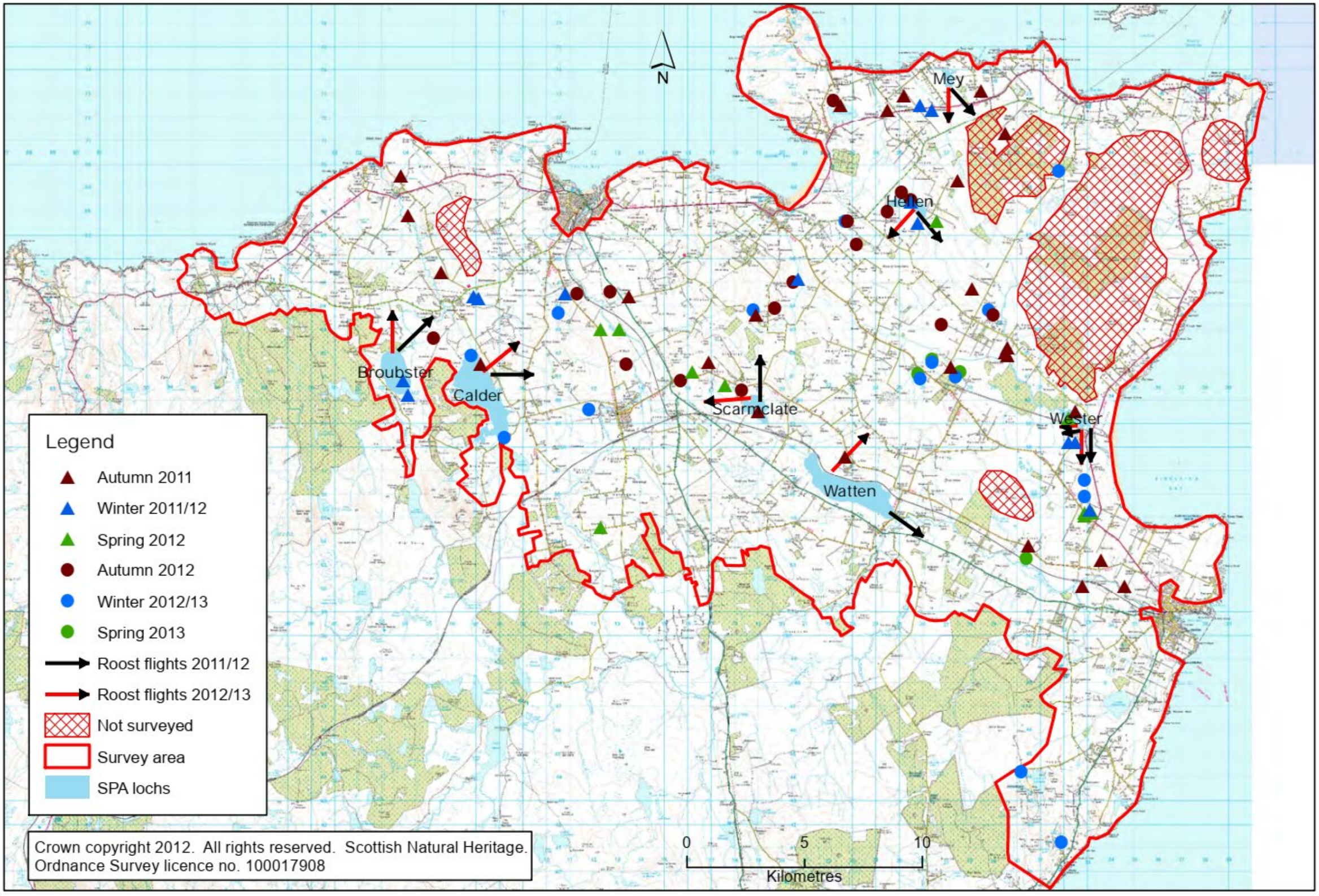
Kilometres

Figure 7: Distribution of whooper swans around Caithness Lochs 2011 – 2013 (Patterson *et al.* 2013)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Autumn 2011
Winter 2011/12
Spring 2012
Autumn 2012
Winter 2012/13
Spring 2013
Roost flights 2011/12
Roost flights 2012/13
Not surveyed
Survey area
SPA lochs
Crown copyright 2012. All rights reserved. Scottish Natural Heritage.
Ordnance Survey licence no. 100017908
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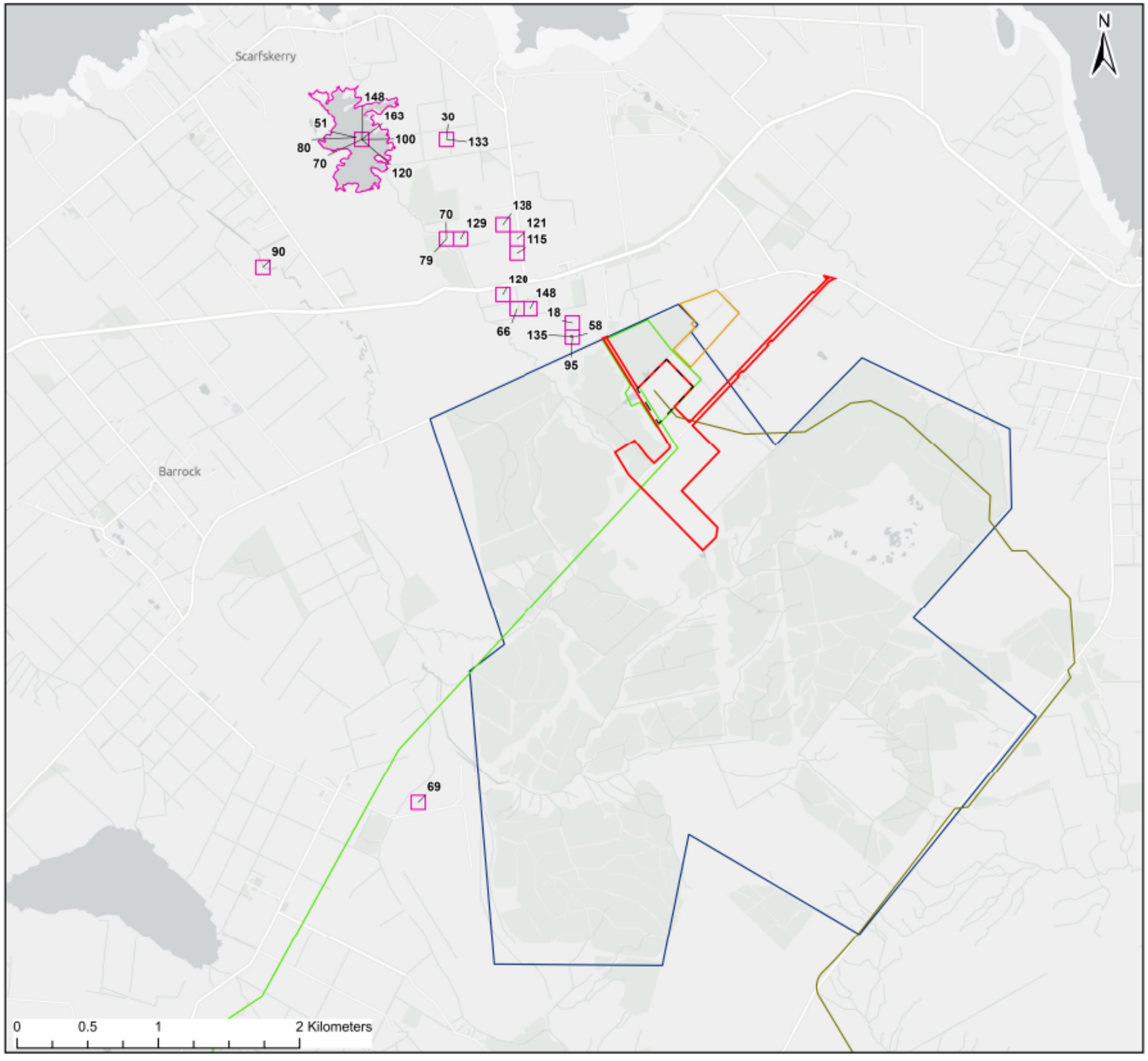
Kilometres

Figure 8: RSPB records – Greenland white-fronted goose



Legend:
- Planning Boundary
- Consented SSE Gills Bay Substation (By others)
- Recorded Sighting

In-Combination Developments
- Gills Bay Overhead Line
- Slickly Wind Farm Cable Route
- Gills Bay Substation
- Hollandmey Wind Farm
- Mey BESS

Report: Field Rigifa Ltd – Breeding Bird Appraisal

Title: RSPB records for Greenland white-fronted goose (Anser albifrons flavirostris) and in-combination developments considered.

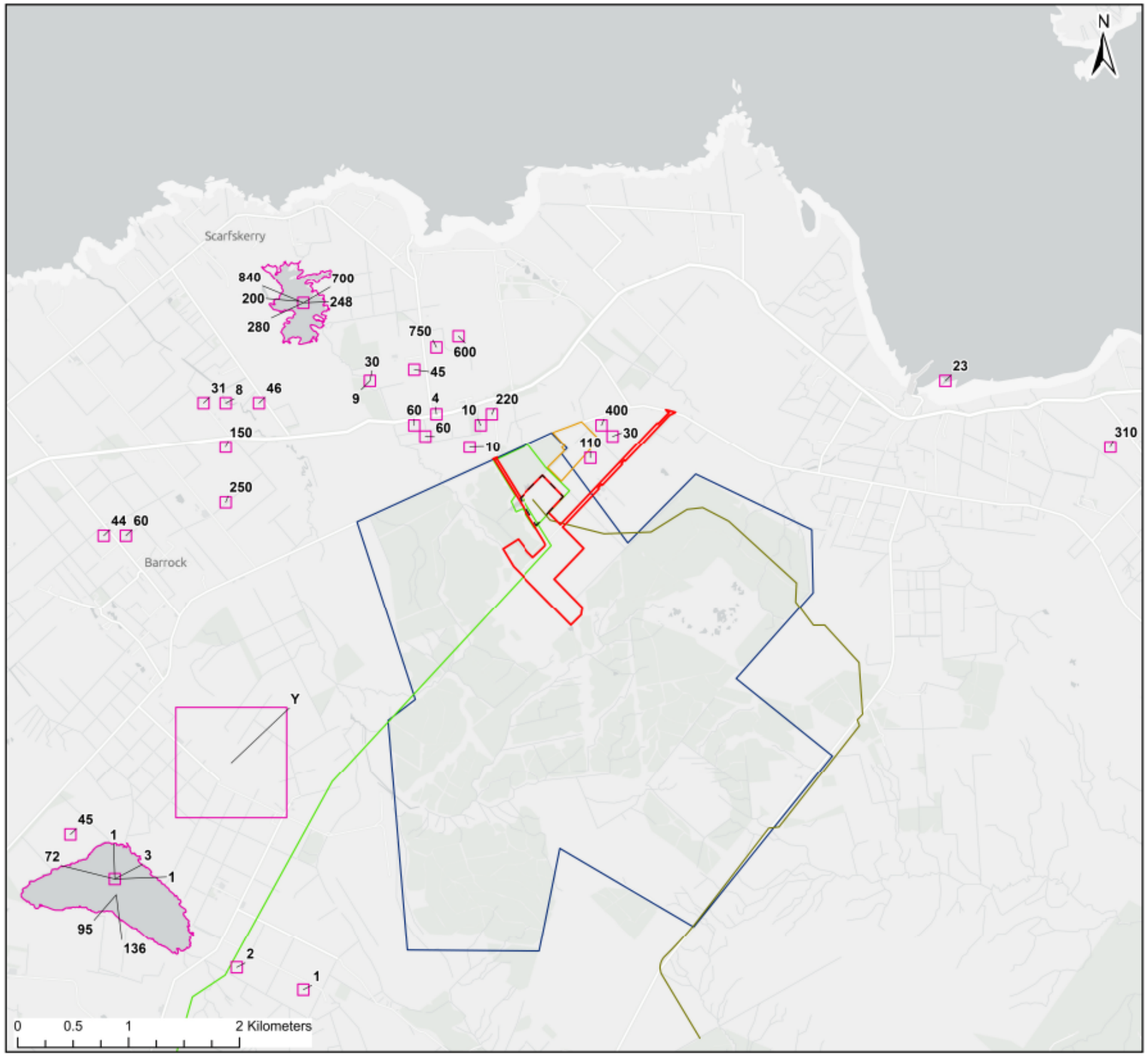
Figure: | Drawing No: PC3506-RHD-07-XX-DG-Z-0018

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	26/09/2024	JH	WS	A3	1:27,500
P01	19/09/2024	JH	WS	A3	1:27,500

Co-ordinate system: British National Grid

Royal HaskoningDHV
Enhancing Society Together

Figure 9: RSPB records – greylag goose



Legend:

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

In-Combination Developments

- Gills Bay Overhead Line
- Slickly Wind Farm Cable Route
- Gills Bay Substation
- Hollandmey Wind Farm
- Mey BESS

Report: Field Rigifa Ltd – Breeding Bird Appraisal

Title: RSPB records for greylag goose (Anser anser) and in-combination developments considered.

Figure: | Drawing No: PC3506-RHD-07-XX-DG-Z-0016

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	27/09/2024	JH	WS	A3	1:35,000
P01	19/09/2024	JH	WS	A3	1:35.000

Co-ordinate system: British National Grid

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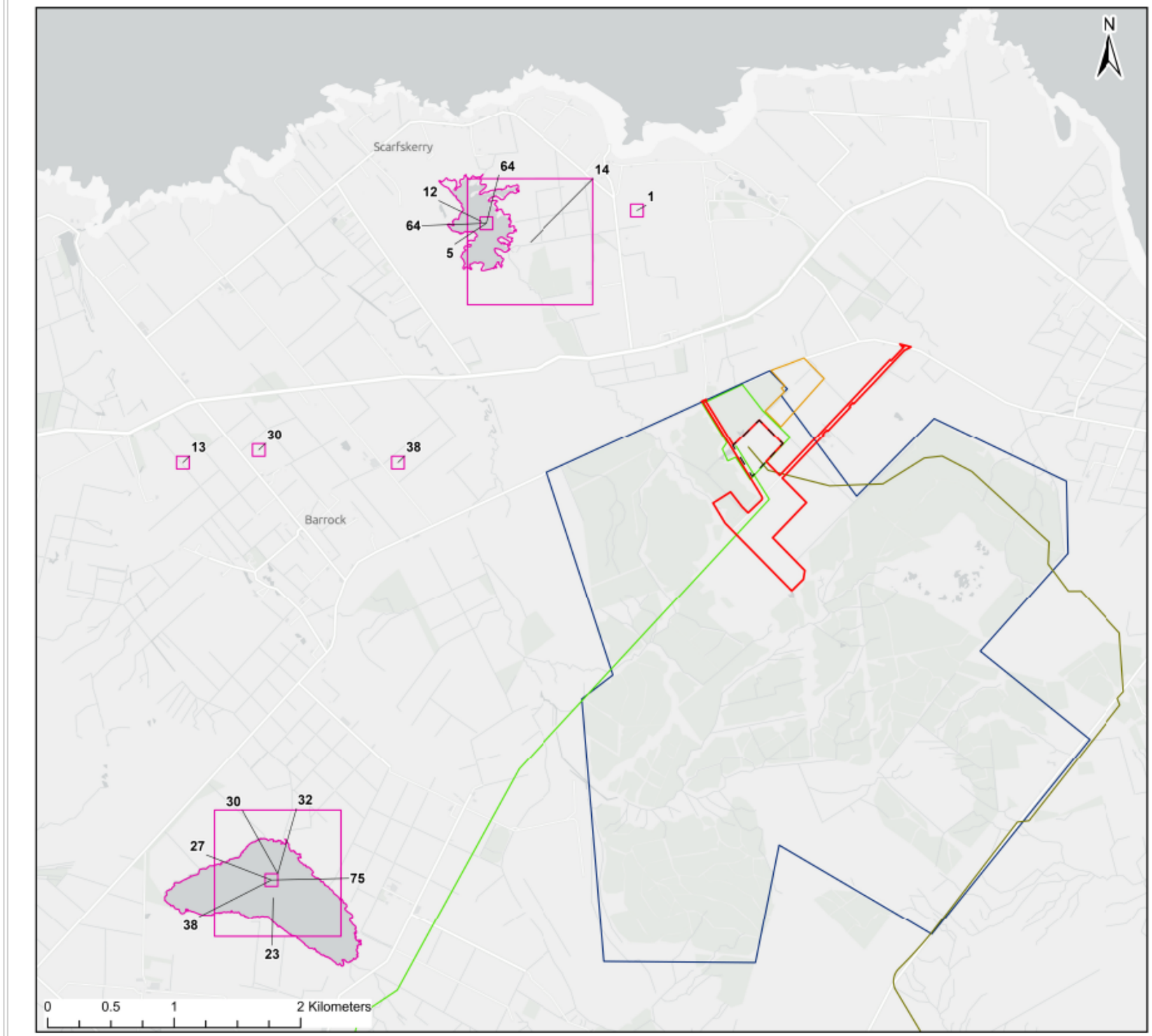
Figure 10: RSPB records – whooper



Legend:
- Planning Boundary
- Consented SSE Gills Bay Substation (By others)
- Recorded Sighting

In-Combination Developments
- Gills Bay Overhead Line
- Slickly Wind Farm Cable Route
- Gills Bay Substation
- Hollandmey Wind Farm
- Mey BESS

Report: Field Rigifa Ltd – Breeding Bird Appraisal

Title: RSPB records for whooper swan (Cygnus cygnus) and in-combination developments considered

Figure: | Drawing No: PC3506-RHD-07-XX-DG-Z-0017

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	27/09/2024	JH	WS	A3	1:30,000
P01	19/09/2024	JH	WS	A3	1:30,000

Co-ordinate system: British National Grid

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