

20/05067/FUL: Strath Tirry Wind Farm

Supplementary Environmental Information

REG Strath Tirry Limited

August 2021



Document Information

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1. Introduction

1.1 Background

REG Strath Tirry Limited (hereafter referred to as the “Applicant”) is proposing a renewable energy development, Strath Tirry Wind Farm (hereafter referred to as the “Proposed Development”) on a site approximately 8 km north of Lairg, in rural Highlands. An application for planning permission was submitted to The Highland Council (THC) in December 2020 for the Proposed Development, described as:

‘Erection and operation of a wind farm for a period of 30 years, comprising of 4 wind turbines with a maximum blade tip height of 135m, access tracks, borrow pits, substation, control building, energy storage system, meteorological mast and ancillary infrastructure’.

The planning application (reference 20/05067/FUL) was supported by an Environmental Impact Assessment (EIA) Report prepared in accordance with *The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017*. The application was validated by THC on 18 December 2020.

The site is located within a single landholding at Shinness, which is part of the wider Dalchork Wood and covers an area of approximately 79 hectares (ha). The A836 runs along the western boundary of the site. The southern site boundary is bordered by a private forestry track which leads into the Dalnessie Estate. The site comprises mainly plantation commercial forestry and scrub birch interspersed with areas of open moorland. The site is centred on British National Grid (BNG) Easting: 257880, Northing: 914516. The site location and site boundary are shown in **Figure 1.1** of **Volume 2** of the **EIA Report** (and also appended to this **SEI Report**).

1.2 Purpose of the Supplementary Environmental Information (SEI)

This SEI has been produced to support the Ornithological Impact Assessment undertaken within the **EIA Report** due to some field surveys still being ongoing at the time of the application submission in December 2020. The SEI should therefore be read in conjunction with the **EIA Report**, in particular **Chapter 7** (Ornithology) and associated appendices and figures.

Subsequent to the production of the **EIA Report**, feedback has also been received from various statutory and non-statutory consultees and stakeholders. A summary of the responses received are provided within **Section 2** of this **SEI Report**. Discussions have also been held as appropriate, to provide clarification and responses to queries raised by NatureScot (NS) and the Royal Society for the Protection of Birds (RSPB).

The Applicant has also reduced the scale of the proposed energy storage facility from 6 Megawatts (MW) to 3 MW. The location of the energy storage facility is unaltered from that shown on the **EIA Report Figure 1.2** and there are no other changes to the Proposed Development. This non-material change to the scale of the energy storage facility has not required any further assessment through this **SEI Report**.

This **SEI Report** provides information with regard to the following topics:

- **Section 3** – Proposed Development (**EIA Report Chapter 3**);
- **Section 4** – Ornithology (**EIA Report Chapter 7**); and
- **Section 5** – Geology, Peat, Hydrology and Hydrogeology (**EIA Report Chapter 9**).

1.3 SEI Project Team

The Applicant can confirm that this SEI was undertaken by the ITP Energised Environmental Team supported by external consultants as shown in **Table 1.1** below. The SEI project team members have the appropriate level of experience, skills and expertise, and are therefore competent to carry out the assessment work.



Table 1.1 – SEI Team

Person	Role	Expertise
Anna Hudson (ITPEnergised)	SEI Project Manager Sections 1 (Introduction), 2 (Consultee Responses), 3 (Proposed Development) and 6 (Non-Technical Summary)	BSc (Hons), MSc, PIEMA Over 11 years' experience leading and undertaking EIAs across a range of sectors, including Scottish wind energy development.
Simon Herriot (Savills)	Town Planning consultant Section 1 (Introduction)	BSc (Hons), MRTPI Over 20 years' planning experience, with a focus on the renewable energy sector. Simon has contributed to and managed a large number of EIAs for Scottish renewable energy projects and has given evidence at public inquiries.
Adam Fitchet (Ramboll)	Ornithology and Ecology Lead. Section 4 (Ornithology) and 5 (Peat, in matters relating to Ecology)	BSc (Hons), MCIEEM Over 16 years' experience of professional ecological consultancy including Scottish wind farm developments.
Jenny Hazzard (ITPEnergised)	Geology and Hydrology Lead. Section 5 (Peat)	BSc (Hons), MSc, PIEMA 20 years' experience in environmental consultancy with a focus on the geoenvironment. Has completed numerous peat assessments for Scottish onshore wind developments.

1.4 Availability of the SEI

If you would like a copy of the **SEI Report**, please email Kirsty O'Brien at INVICTA PUBLIC AFFAIRS, quoting "Strath Tirry Wind Farm" in the subject header.

Email: kirsty.obrien@invictapa.co.uk

Hard copies of the SEI are available for £30 (including printing and postage) from the Applicant, or as a PDF (for screen viewing only) on a USB for £10.00 (including postage). Alternatively, all documents are available to download free of charge from THC planning portal under the planning reference number (20/05067/FUL).

Due to the COVID-19 Pandemic and in-line with *The Town and Country Planning (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020*, no physical copies are available for public viewing at the point of submission.

1.5 Representation to the SEI

Any representations to the application should be made by email, directly to THC at:

Email: eplanning@highland.gov.uk



2. Response to the Application

The responses received to date on the submission of the planning application are summarised in **Table 2.1** below and are provided in greater detail, along with the Applicant's response, in **Appendix 2A**.

Table 2.2 – Summary of Responses

Consultee	Response
HIAL Safeguarding 08/02/2021	No objection.
Historic Environment Scotland (HES) 12/02/2021	No objection.
Lairg Community Council * 23/02/2021	No objection - formal representation in support of the application.
NatureScot 10/03/2021 (ornithology & peatland), 28/04/2021 (landscape) and 20/05/2021 (peatland)	No objection on landscape, interim response(s) provided on ornithology and peat pending full assessment and clarifications respectively.
Ministry of Defence 05/02/2021	No objection.
RSPB 12/03/2021	Objection, subject to further clarifications.
SEPA 03/03/2021	No objection, subject to conditions.
Scottish Forestry 15/02/2021	No objection.
Scottish Water 18/01/2021	No objection.
THC – Access Officer 03/02/2021	No objection.
THC – D&I Flood Team 25/01/2021	No objection, subject to conditions.
THC – Environmental Health Team 18/02/2021	No objection, subject to conditions.
THC – Forestry 30/06/2021	No objection, subject to conditions.
THC – Historic Environment Team 05/07/2021 & 05/08/2021	No objection, subject to a condition.
THC – Landscape 28/05/2021	Concerns raised.
THC – Transport Planning 04/02/2021	No objection, subject to conditions.
Transport Scotland 22/01/2021	No objection, subject to conditions.

* No other public comments were received.



3. Proposed Development Amendments

The Proposed Development has been amended to reduce the overall capacity from approximately 22.8 MW to just under 20 MW. This is through the removal of approximately 3 MW from the energy storage facility (refer to **SEI Report Figure 3.7**, which replaces **EIA Report Figure 3.7**). No other changes to the Proposed Development have been made and the description in **Chapter 3** of the **EIA Report** remains applicable.

All other aspects and conclusions of the original application submission remain unchanged and should be read in conjunction with this **SEI Report**. With the exception of the updated sections and figures submitted as part of this **SEI Report**, the findings of the **EIA Report** are considered to remain applicable.



4. Updated Ornithology Assessment

4.1 Introduction

Following the submission of the **EIA Report** for the Proposed Development, consultation responses from NS and the RSPB highlighted the requirement for additional information to be provided. The updated ornithology assessment has been prepared following further discussion with both NS and the RSPB to agree the scope of information to be provided. This section provides an updated assessment of the ornithological effects of the Proposed Development based on information gathered during additional surveys between April and June 2021, focussed on gathering further information on black grouse (*Lyrurus tetrix*) and breeding raptors.

It also includes a review of consultation responses received in relation to the submission of the **EIA Report**.

The information set out below is intended to be read in conjunction with the **EIA Report** and the assessment procedure used in this report follows that of the **EIA Report**. Reference will be made to the **EIA Report** chapter, associated technical appendices and figures where the original remains applicable. Where any information in the **EIA Report** is superseded by the information presented in this **SEI Report**, this is made clear. Where identified impacts and significance of effects on Important Ornithological Features (IOFs) remain unchanged, this will be stated and no updated assessment is required.

4.2 Relevant Consultation Responses Received

Responses on natural heritage (ornithological and ecological) matters were received from NS and the RSPB on 10 March and 12 March 2021, respectively.

Matters related to ornithology from NS and RSPB interim responses are summarised in **Table 4.1** below.

Table 4.3 – Consultation Responses in Relation to Ornithology

Query/Comment	Applicants Response
NatureScot	
<ul style="list-style-type: none"> It is unlikely that the proposal will have a significant effect on any qualifying interests of the Lairg and Strath Brora Lochs Special Protection Area (SPA) either directly or indirectly. An appropriate assessment is therefore not required. 	Noted. No response required.
<ul style="list-style-type: none"> It is unlikely that the proposal will have a significant effect on any qualifying interests of the Strath Carnaig and Strath Fleet Moors SPA either directly or indirectly. An appropriate assessment is therefore not required. 	Noted. No response required.
<ul style="list-style-type: none"> The Applicant may need to consider specific mitigation to ensure that the habitats within the turbine keyholes are managed to deter foraging hen harrier (<i>Circus cyaneus</i>) and other raptor species that may be attracted to felled forestry. 	Noted. This is discussed further within Section 4.5 below of this SEI Report .
<ul style="list-style-type: none"> Advise that the Applicant provides further clarification on the location of the black grouse lek identified in the summer 2020 survey. 	Further field surveys have been undertaken in 2021 and data purchased from both RSPB and Forestry and Land Scotland.



Query/Comment	Applicants Response
<ul style="list-style-type: none"> Further comments will be provided on completion of the additional ornithology surveys. 	<p>Additional surveys have now been completed and further information is provided within the sections below and Appendix 4A of this SEI Report.</p>
RSPB	
<ul style="list-style-type: none"> Insufficient information and justification for the conclusion of no likely significant effect on the Lairg and Strath Brora Lochs SPA black-throated diver (<i>Gavia arctica</i>) population and that an appropriate assessment is not required. Object to the application until sufficient justification is provided as to why no likely significant effect has been concluded. Lack of black grouse and raptor surveys. Lack of black-throated diver, black grouse and raptor desk study information. Insufficient information included in the cumulative impact assessment with regards to the types of developments considered, the effect on Natural Heritage Zone (NHZ) 5 populations and a quantitative cumulative collision risk assessment. <p>Recommendations:</p> <ul style="list-style-type: none"> Provide a figure to show the general Vantage Points (VPs) and viewsheds used. Update the collision risk model once winter surveys have been completed. Undertake pre-felling and pre-construction surveys up to 500 m from the site boundary. Remove brash and felled trees from the site as soon as possible instead of utilising bird deterrent devices. Monitor black grouse, black-throated diver, greenshank (<i>Tringa nebularia</i>) and hen harrier, including appropriate protocols for reporting bird collisions, alongside the habitat monitoring. Removal of the southern temporary access track and switching station. 	<p>Further information is provided in Sections 4.3 and 4.4 below.</p> <p>Additional baseline information and surveys have now been completed and further details are provided within the sections below and Appendix 4A of this SEI Report.</p> <p>A further cumulative impact assessment has been undertaken and is presented within Section 4.7 below.</p> <p>Refer to Figure 7.7 of this SEI Report.</p> <p>Refer to Appendix 4A of this SEI Report.</p> <p>Refer to Section 4.5.1 below.</p> <p>Refer to Section 4.5.2 below.</p> <p>Refer to Section 4.5.4 below.</p> <p>The layout of the Propose Development was the result of a number of design iterations to secure the optimum location for the turbines and associated infrastructure given the known environmental constraints recorded at the site through survey work. The Applicant would welcome the opportunity to work with THC, SEPA and NS to agree on detailed designs and restoration plans prior to commencement of construction.</p>

A meeting with NS and the RSPB was held on 21 July 2021 to discuss RSPB's objection to the Proposed Development, where RSPB's response differed to that of NS and NS' comments on the completed further survey work. The meeting involved a discussion of each of the points in RSPB's objection and the information required for each point for RSPB to remove the objection.



4.3 Updated Baseline Conditions for Ornithology

This section summarises updated, or new, ornithological information obtained from baseline surveys conducted between January and June 2021. The **EIA Report** assessed results from surveys undertaken for the Proposed Development from April to August 2020 and from October to December 2020. The records from the desk study carried out for the **EIA Report**, including designated sites, remain unchanged and so are not presented here.

4.3.1 Information from Surrounding Developments

4.3.1.1 Creag Riabhach Grid Connection

The Overhead Line (OHL) grid connection for Creag Riabhach Wind Farm passes almost immediately to the east of the Proposed Development and continues to Dalchork Substation, approximately 4 km south of the Proposed Development. The Environmental Statement¹ (SSEN, 2020) was submitted in March 2020 and is available to be reviewed on the Highland Council Planning Portal². The appendices that contain the assessment of potential impacts on black-throated divers (**Appendices 8.4 and 8.5**) are both confidential and are unable to be reviewed, however **Appendix 8.2** details the baseline results of the ornithology surveys. VP surveys for Creag Riabhach were undertaken between May and September 2018 and in March and April 2019 and did not record any black-throated diver flights along the length of the OHL route.

Information from the Creag Riabhach surveys can be used to help define the ornithological baseline with some confidence as it is approximately three years old, which is recent enough to be of value. It also provides data from a separate breeding season to that surveyed for the Proposed Development (summer 2020). The lack of black-throated diver activity is in line with what was recorded during surveys for the Proposed Development.

4.3.1.2 Lairg to Loch Buidhe

The Lairg to Loch Buidhe 132 kV OHL³ runs from Dalchork Substation south to Loch Buidhe Substation. Bird surveys for this project were undertaken by Ramboll surveyors in summer 2014 (VP surveys) and in summer 2015 (black-throated diver loch surveys). Although much older, this data provides useful context of how and where black-throated divers were recorded flying. Eleven black-throated diver flights were recorded during the VP surveys and 21 were recorded during species-specific black-throated diver VPs in summer 2015 that watched Loch Dola, Loch Tigh na Creige and Loch Craggie (three constituent lochs of the Lairg and Strath Brora Lochs SPA). Of the flights recorded, none were recorded flying north in the direction of Loch Beannach and the Proposed Development. Flights recorded during the diver VPs were all heading between the three lochs or between an SPA loch and the southern end of Loch Shin. These lochs lie at least 5.5 km south of the Proposed Development.

A key conclusion from those surveys is that black throated divers are largely sedentary during the breeding season. Birds gather on Loch Shin in April then travel to their breeding loch. Once they reach their breeding loch, they only occasionally leave it to travel to Loch Shin to the west until the end of the breeding season. The behaviour corresponds with that recorded in an earlier study⁴ partially undertaken on the Lairg and Strath Brora Lochs SPA lochs. Increased flight activity at the end of the breeding season is also associated with the movement of non-breeding birds, likely juveniles, which are believed to be prospecting for potential future breeding opportunities.

¹ Scottish and Southern Energy Networks (SSEN) (2020). *Creag Riabhach Wind Farm 132 kV Grid Connection: Environmental Impact Assessment Report*. [Scottish Government - Energy Consents Unit - Application Details](#)

² The Highland Council (2021). *Planning – Simple Search*. Available at: <https://wam.highland.gov.uk/wam/>. Accessed on: 2nd August 2021.

³ SSEN (2019). *Lairg to Loch Buidhe 132 kV Overhead Line Reinforcement EIA Report*.

⁴ Jackson, D.B. (2003) *Between-lake differences in the diet and provisioning behaviour of Black-throated Divers Gavia arctica breeding in Scotland Ibis* **145**, 30–44



4.3.2 Additional Contextual Information

Based on the review of the reports described in the previous section and Ramboll's observations of diver species on multiple projects, not least the Lairg to Loch Buidhe 275 kV OHL, it is clear that these species tend to have extremely directional flight, taking the straightest and simplest route to move between locations, i.e. between lochs or between lochs and the coast. The Proposed Development does not lie on the path of any likely flights by SPA birds and other lochs. In particular, there is no reason for birds from Loch Beannach to deviate via the Proposed Development to reach Loch Shin, as there is no barrier to a direct flightline between Loch Beannach and Loch Shin (particularly now that much of the forestry in that area has been felled). Such a deviation could add approximately 1.5 km to each flight. All of this is supported by the absence of any recorded diver flightlines across a total of 72 hrs of breeding season observation of the Proposed Development site.

4.3.3 Survey Method Clarifications for EIA Report

4.3.3.1 Vantage Point Survey Coverage

An additional figure (**Figure 7.7** of this **SEI Report**) has been prepared showing the viewshed coverage of the VP surveys and the diver survey. This shows that the VP survey locations could observe a bird flight at collision risk height from any point of the Proposed Development and from outside the field survey buffer. The diver survey could observe any black-throated divers on Loch Beannach and any flights coming in and/or leaving the loch to the north, in the direction of the Proposed Development.

4.3.3.2 Survey Buffers Used

In **Appendix 7.3** of the **EIA Report**, the Method of Baseline Data Collection section states that breeding raptor surveys used a 1.5 km buffer around the site. This was an error. A buffer of 2 km was used as recommended by NS⁵.

4.3.3.3 Breeding Bird Survey

As stated in the **EIA Report**, a Breeding Bird Survey (BBS) was not undertaken for the Proposed Development in 2020/21. The ornithological suite of species recorded in 2013/14 was considered to represent the same suite of species in the baseline due to the lack of changes from habitat or land use. It is recognised that greenshank and wood sandpiper (*Tringa glareola*) have begun breeding outside the site, but not within potential disturbance distance of the Proposed Development. Common crossbill (*Loxia curvirostra*) and Scottish crossbill (*L. scotica*) also have potential to be present on the site. Mitigation for these species is presented in the **EIA Report** and clarified in **Section 4.5**.

4.3.4 Additional Survey Data

4.3.4.1 Purchased Data

Data purchased from the RSPB and Forestry and Land Scotland (FLS) included black grouse records from the surrounding area since 2000. The closest records were both recorded in 2009, with male black grouse recorded displaying approximately 1.1 km east of the Proposed Development and approximately 1.4 km south of the Proposed Development.

Black grouse records from the black grouse survey for the Creag Riabhach grid connection undertaken in summer 2018 were identified after reviewing the **EIA Report**. The closest lek was recorded approximately 1 km east of the Proposed Development, with three displaying males and a female in attendance. Another lek, approximately 1.5 km east of the Proposed Development, was recorded with one displaying male.

⁵ NatureScot (2017). *Guidance Note: Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Windfarms*. Available at: <https://www.nature.scot/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>. Accessed on: 30 September 2020.



4.3.4.2 Additional Black Grouse Survey

During surveys for the **EIA Report**, a black grouse was recorded calling, heard from VP location 1. The call was heard from the north, with no specific lek identified. Subsequent black grouse surveys in this area to inform the SEI failed to identify a lek, but records from the Creag Riabhach EIA indicate the presence of leks approximately 1 km east of VP location 2 and 2 km north of VP location 1. It is considered likely that the black grouse call heard during surveys for the **EIA Report** was associated with the lek 2 km north of VP location 1.

From the field survey and the desk study, no black grouse leks have been identified within 1 km of the Proposed Development. The upper limit for potential disturbance on black grouse is estimated to be 750 m, therefore the potential for disturbance effects at 1 km distance is considered to be negligible.

4.3.4.3 Additional Breeding Raptor Surveys

The programme of breeding raptor surveys did not identify any territories of breeding raptors within the 2 km survey buffer. These surveys are discussed in more detail in **SEI Report Appendix 4A: 2021 Bird Surveys**.

4.4 Updated Potential Effects

Potential impacts on the black-throated diver using the Lairg and Strath Brora Lochs SPA were assessed in **Technical Appendix 7.2** of the **EIA Report**. This concluded that likely significant effects were not considered possible from impacts on habitats, disturbance or collision risk. After considering the updated information provided in **Sections 4.3.1 and 4.3.2** this conclusion is unchanged. No likely significant effects are predicted on the Lairg and Strath Brora Lochs SPA as a result of the Proposed Development.

4.5 Additional Mitigation

The following mitigation has been requested by the RSPB. No further mitigation was considered to be required following the updated assessment.

4.5.1 Pre-construction Surveys

Pre-construction surveys are recommended in **Section 7.7.4** of the **EIA Report**. In addition to this, the RSPB recommended that these surveys are undertaken up to 500 m outside the site boundary to identify potential nesting bird constraints, including potential greenshank or wood sandpiper territories. Should any nests be identified, a suitable buffer distance would be established within which no work could be undertaken until the nest is no longer in use. The buffer distance would be determined by the Ecological Clerk of Works, who would also be responsible for confirming when the nest is no longer in use.

The 500 m is sufficiently large to cover any potential common or Scottish crossbill disturbance from construction activities, which is not expected at greater than 300 m distance.

It is recommended that felling be undertaken outside of the breeding bird season (**Section 7.7.3** of the **EIA Report**). The likely presence of breeding sparrowhawk (*Accipiter nisus*) within the site means that the breeding bird season should be extended to include February in addition to the usual March to August period. If felling is to be undertaken between February and March, pre-felling checks for bird nests would be required.

4.5.2 Felling Buffers for Nesting Birds

In addition to the Construction Environmental Management Plan (CEMP), it is proposed that, where felling is required, any brash would be removed and chipped. This is to prevent species such as greenshank nesting on the site as greenshank are known to nest in felled areas on the neighbouring Dalchork Wood.

4.5.3 Bird Deterrent Devices

Methods to prevent birds from nesting on ground where vegetation has been cleared are proposed in the **EIA Report** in **Section 7.7.5**, with these including devices that make intermittent loud noises. RSPB has requested that these are not used as they can provide disturbance impacts outside the site boundary and as such this measure would now not be followed.



4.5.4 Habitat Management Plan

Following the construction of the Proposed Development, the habitats within the site boundary would be managed following a Habitat Management Plan (HMP). An Outline HMP was prepared and was included in the **EIA Report as Technical Appendix 8.7**. This recommended that the felling required to clear the site prior to construction should be carried out by keyholing to remove the minimum volume of trees. This was the preferred option of THC as it would result in the least amount of peat and nutrient loss from the ground when felling. Following recommendations from NS and the RSPB, the final HMP needs to include measures to prevent greenshank, wood sandpiper and hen harrier from breeding within the Proposed Development. As discussed in **Section 4.5.2**, this would include removing any potential brash from the site as soon as it is felled. These measures would be delivered through condition in the final HMP, post-consent.

It is recommended that the site be returned to blanket bog across as much of the area as possible by removing trees and blocking drains to raise the water table. This would additionally decrease the suitability of the site for nesting hen harrier, which need dry ground with scrub within which to nest. Hen harrier numbers around the Proposed Development are increasing⁶ and, if trees are felled and scrub left to form, the habitat would be suitable for nesting harriers. This would increase the collision risk for hen harriers as they would be spending more time flying within the collision risk area. Creating these wetter habitats could create better habitat on the site for greenshank and wood sandpiper, but these species are less prone to collision from wind farms. Any increase to areas of proposed felling (beyond the key-holing currently proposed) would be discussed and agreed with THC, NS, RSPB and Forestry Scotland and confirmed through condition in the final HMP, post-consent.

It is also recommended that a programme of bird monitoring is undertaken as part of the final HMP. This would require agreement with NS prior to commencement of development, but would involve species specific surveys for greenshank, wood sandpiper, hen harrier and black grouse prior to commencement of development and again once the Proposed Development is operational, to record potential changes in how each species use the operational site. Any collision mortalities discovered by members of the operational staff should be reported to NS.

4.6 Updated Residual Effects

There are no changes to the residual effects presented within the **EIA Report**. No significant residual effects are predicted on ornithological features as a result of the Proposed Development.

4.7 Cumulative Assessment

A further cumulative impact assessment has been undertaken for greylag goose (*Anser anser*) and pink-footed goose (*A. brachyrhynchus*). It was requested that the wider zone of influence upon which the assessment is based be increased, with all developments within Natural Heritage Zone⁷ 5 being used. Baseline populations are provided in Wilson *et al.* (2015)⁸, with a baseline population for pink-footed goose of 2,070 birds used, however no estimate for greylag goose is available in that publication. The baseline population for greylag goose of 10,488 birds is taken from the Caithness and Sutherland Lochs Ramsar population⁹. The updated cumulative impact assessment has been undertaken using a spreadsheet prepared by NS, which is a sample of the master spreadsheet that NS has prepared to monitor cumulative collision risk impacts on key species.

Prior to considering impacts from the Proposed Development, the annual collision risk predicted for greylag geese is 27.73 birds per year from all developments with connectivity to the Caithness and Sutherland Lochs

⁶ Meeting with NatureScot and RSPB 28 July 2021, per Adam Rose.

⁷ <https://www.nature.scot/natural-heritage-zones-national-assessment-scotlands-landscapes>

⁸ Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). *Natural Heritage Zone Bird Population Estimates*. SWBSG Commissioned report number SWBSG_1504. pp72.

⁹ Mitchell, C. (2015). *Status and Distribution of Icelandic-Breeding Geese: Results of the 2014 International Census*. Wildfowl & Wetlands Trust Report, Slimbridge. 19pp.



Ramsar¹⁰. The predicted collision mortality from the Proposed Development on greylag goose is 0.94 birds per year (0.02 birds per summer and 0.92 birds per winter). This increases the cumulative annual collision risk to 28.67, with the percentage loss on the Caithness and Sutherland Lochs Ramsar remaining at 0.24%. This is not considered to be a significant cumulative impact as the predicted percentage change on the baseline has not changed and remains less than 1%. This is considered to be below the level at which significant changes to the population size would occur, particularly as the greylag goose population is increasing in the UK¹¹.

Prior to considering impacts from the Proposed Development, the annual collision risk predicted for pink-footed geese is 33.28 birds per year for developments in NHZ 5. The predicted collision mortality from the Proposed Development on pink-footed goose is 1.2 birds per year. This increases the cumulative collision risk to 34.48 birds per year, with the percentage loss on the NHZ 5 population increasing from 0.57% to 0.63%. This is not considered to be a significant cumulative impact as the predicted percentage change on the baseline population remains less than 1%. This is considered to be below the level at which significant changes to the population size would occur, particularly as the pink-footed goose population is increasing in the UK¹².

4.8 Summary

This SEI chapter updates the ornithological assessment within the **EIA Report**, when taking into consideration the results of the baseline surveys and additional surveys and desk study information for the Proposed Development. This update has not altered the overall conclusions of the **EIA Report**, which is no significant residual effects on ornithology.

¹⁰ This includes a predicted collision mortality of 0.02 associated with the proposed Ackron Wind Farm, for which the final Habitats Regulations Appraisal (HRA) and response is pending.

¹¹ <https://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme/species-accounts/british-greylag-geese/>

¹² <https://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme/species-accounts/pink-footed-geese/>



5. Peat and Peatland Habitats

5.1 Introduction

Following submission of the **EIA Report** in support of the planning application for the Proposed Development, consultation responses relating to the assessment of effects on peat and peatland habitats were received from SEPA and NS. The SEPA response raised no objection but proposed several relevant planning conditions, as summarised in Table 5.1 below.

The NS response raised a number of comments and queries which merited further engagement. ITP Energised engaged in correspondence with NS on the points raised, including an exchange of letters and a video-call, as summarised in the following timeline:

- **10 March 2021** – NS consultation response letter to THC.
- **27 April 2021** – ITP Energised response to NS’s consultation, on behalf of the Applicant.
- **20 May 2021** – NS letter to THC providing further comments.
- **23 June 2021** – ITP Energised response to NS’s further comments, on behalf of the Applicant.
- **21 July 2021** – Video-call among NS, ITP Energised and Ramboll, to discuss (among other topics) the above correspondence, potential effects on peat and peatland habitats and proposed mitigation and management measures.

5.2 Statutory Consultee Feedback and Applicant Responses

The points raised by SEPA and NS relating to peat and peatland habitats, and the responses provided, are summarised in **Table 5.1** below.

Table 5.1– NatureScot Consultation Responses in relation to Peat and Peatland Habitats

Query/Comment	Applicant Response
SEPA	
<p>No Objection. Subject to the following conditions (related to peat and peatland habitats):</p> <ul style="list-style-type: none"> ▪ removal of the temporary access track prior to commissioning; ▪ micrositing of up to 50 m is allowed, but not onto peat deeper than currently shown for the relevant infrastructure; ▪ a finalised HMP should be agreed with SEPA and NS; ▪ adherence to mitigation outlined within EIA and Appendices is required. 	Proposed conditions noted and agreed by the Applicant.
NatureScot	
<p>Track construction: Seeking clarification on whether site tracks would be excavated or floated.</p>	Clarification that all assessment works were carried out based on the worst-case assumption of all tracks being excavated, except the temporary construction-phase access track on the south side of the Feith Osdail watercourse. In the event that there is a decision taken to float any sections following detailed design works, then that would result in a reduction in the volume of excavated peat, but the habitat



Query/Comment	Applicant Response
	loss area would not change because even floated track would result in habitat loss across the footprint of the track and construction disturbance area.
<p>Turbine foundations: Noting a discrepancy between the turbine base diameter given in the project description (Chapter 3 of the EIA Report) versus that used in the calculation of excavated peat volume given in Appendix 9.2 Outline Peat Management Plan (of the EIA Report).</p>	<p>Discrepancy acknowledged and updated in revised calculations provided to NS on 27 April 2021. A full revised Outline Peat Management Plan is provided as Appendix 5A to this SEI Report incorporating corrected calculations.</p>
<p>Area of cut tracks: Noting an error in the calculation of volume of peat to be excavated to form new tracks, as presented in Appendix 9.2 Outline Peat Management Plan (of the EIA Report).</p>	<p>Error acknowledged and corrected in revised calculations provided to NS on 27 April 2021. A full revised Outline Peat Management Plan is provided as Appendix 5A to this SEI Report incorporating corrected calculations.</p>
<p>Temporary access track: Request for detailed restoration plan to be provided for the temporary track section south of the Feith Osdail watercourse, from the A836 to the switch station.</p>	<p>Reference to information provided in Chapter 9 of the EIA Report, noting that the detailed design of the temporary track has not yet been finalised. A number of options are under consideration for track composition, level and drainage provision, which require to be informed by detailed flood modelling and therefore are proposed to be confirmed during the detailed design stage post-determination.</p> <p>This work will need to be undertaken to confirm and agree the final design of the temporary track, drainage provision, and restoration proposals. However, given that there are a number of suitable options available and under consideration, it is not considered proportionate to require detailed engineering design works to be finalised pre-determination. Other aspects of the site design, including turbine foundations and detailed design of the substation, energy storage facility, tracks and drainage will be completed post-determination with suitable control secured by planning conditions, and it is considered reasonable for the detailed design of the temporary track to follow a similar approach.</p> <p>Confirmation that the Applicant would welcome the opportunity to work with THC, SEPA and NS to agree on detailed designs and restoration plans prior to commencement of construction.</p>
<p>Habitat Loss Calculations: Query regarding habitat loss calculations, given the above-noted discrepancies in the Outline Peat Management Plan (Appendix 9.2 of the EIA Report).</p>	<p>Confirmation that the habitat loss calculations as presented in Appendix 9.2 of the EIA Report were correct and are unaffected by updates/corrections to estimated excavated peat volume calculations.</p>
<p>Effects on carbon-rich soils, deep peat and priority peatland: Comment that some of the Proposed Development area would be considered '<i>Class 1 Carbon Rich Soils, Deep Peat and Priority Peatland Habitat</i>'. Developers are required to demonstrate that any significant effects on the qualities of carbon-rich soils, deep peat and priority</p>	<p>Reiteration that the Proposed Development layout entirely avoids any infrastructure being sited where peat depth is greater than 50 cm, with the exception of T1. At T1, the average peat depth recorded was 53 cm and laboratory results of a peat sample suggested it should more likely be classified as peaty/organic soil, rather than peat. None of the site survey findings suggest that any of the soils at proposed turbine and infrastructure locations could reasonably be considered deep peat or priority peatland habitat.</p>



Query/Comment	Applicant Response
<p>peatland can be substantially overcome by siting, design or other mitigation.</p>	<p>Peat depth and condition, and peatland habitats, have been taken into account in design iteration. The areas in the west and northeast of the site, where localised deep peat was recorded (as was blanket bog habitat), have been avoided in siting any infrastructure. It is therefore contended that the requirement as noted by NS has been achieved and the tests set by Scottish Planning Policy have been addressed, i.e. significant effects on this Group 2 interest have been ‘substantially overcome’.</p>
<p>Peatland Restoration: Comment that the peatland restoration set out in the Outline Habitat Management Plan (HMP) (Appendix 8.7 to the EIA Report) is insufficient, noting that the total area of peat (peatland) to be lost by the proposal is 2.59 ha.</p> <p>Additional comments and suggestions with respect to peatland restoration were made by NS during the 21 July 2021 video-call with ITP Energised and Ramboll, summarised below:</p> <ul style="list-style-type: none"> ▪ Given the potential lack of suitable local areas for compensatory woodland planting (due to much of the local area being moorland/ peatland habitat), consider whether peatland restoration could be undertaken instead of compensatory planting. ▪ Where on-site woodland areas are to be felled for construction of the development, consider restoration of these areas to peatland/ bog habitat. ▪ Consider the potential for counteracting habitat fragmentation through promoting connectivity of peatland habitats. 	<p>Note that the total estimated area of peatland to be permanently lost for the Proposed Development is 0.46 ha, not 2.59 ha. The larger area, as quoted by NS, is the total combined footprint of all permanent infrastructure at the site, taking into account all habitats (i.e. the sum of all area values given in Table 2 of SEI Appendix 5A). Although a thin covering of peat or peaty soil may be present across much of the site (but not all – noting that nearly 10% of peat probes recorded no peat), it cannot be considered that the entire site is defined as ‘peatland habitat’. Most of the development footprint is within coniferous plantation woodland, with only a minor proportion within bog or heath habitats. It is not considered proportionate to consider coniferous plantation woodland or marshy grassland as ‘peatland habitat’.</p> <p>The proposed minimum 0.46 ha area of peatland restoration is based on compensating for the permanent loss of and impact to peatland habitats, i.e. bog and heath habitats (H10a, M15c, M17a and M17b). It does not seek to mitigate for the direct loss of other habitats such as coniferous plantation woodland, acid grassland (U4a) or marshy grassland (M23b and M25a). The loss of wet woodland (W4c) is mitigated separately to the peatland habitats within the Outline HMP.</p> <p>Reiteration that the Outline HMP presents a <i>minimum</i> proposed peatland restoration area and that, ideally, a larger area of peatland habitat than the area lost would be restored. This would be confirmed in the final HMP following ground truthing and topographical surveys. Confirmation that the Applicant would be happy at this stage to commit to increasing the minimum targeted peatland restoration area to include temporary loss and impact to peatland habitats (M15c, M17b, M25b and M27a). The Applicant further commits to continuing effort, in consultation with NS, to increase this area further following additional survey work as noted above.</p> <p>NS’s additional comments and suggestions with respect to habitat restoration are welcomed and are captured, together with the above considerations, in a revised Outline HMP, presented as Appendix 5B to this SEI Report.</p>

5.3 Potential Effects, Mitigation and Residual Effects

Chapter 9 Geology, Peat, Hydrology and Hydrogeology, **Section 9.9** of the **EIA Report** provides an assessment of potential effects arising from the construction, operation and decommissioning of the Proposed Development. The assessment remains unchanged, with no significant potential effects identified.



5.4 Mitigation and Enhancement

No significant potential effects were identified, therefore no further mitigation is required beyond standard mitigation measures set out in **Section 9.7** of the **EIA Report**. However, as noted in **Section 9.10** of the **EIA Report**, additional mitigation and enhancement measures are proposed by the Applicant to further minimise potential effects and provide environmental benefit where possible. The proposed mitigation and enhancement measures remain unchanged.

5.5 Residual Effects

Section 9.11 of the **EIA Report** provides an assessment of residual effects, taking account of committed mitigation measures. The assessment remains unchanged, with no significant residual effects identified.

5.6 Cumulative Assessment

With no significant effects on geological, hydrological and hydrogeological receptors assessed as arising from the construction, operation or decommissioning of the Proposed Development itself, there is not considered to be any potential for significant cumulative effects to arise in relation to other developments further afield, which may be within the River Shin Catchment. This assessment remains unchanged from the **EIA Report**.

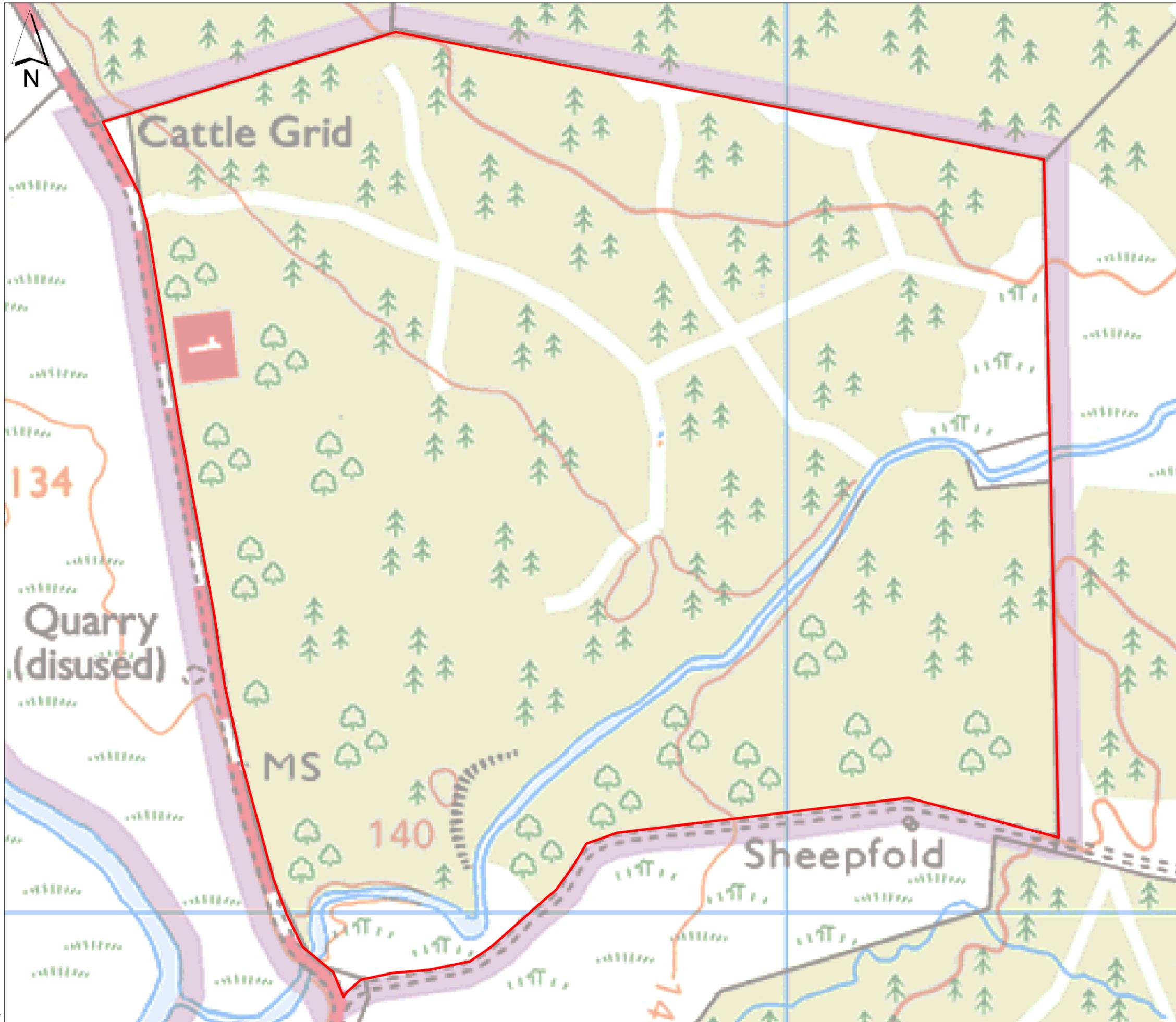
5.7 Summary

This SEI chapter updates the peat and peatland assessment within the **EIA Report**. While some discrepancies in figures presented in the **EIA Report** are acknowledged, these are addressed in this SEI and associated Appendices. The revised assessment correcting these discrepancies has not altered the overall conclusions of the **EIA Report**, which is no significant residual effects upon peat and peatland.



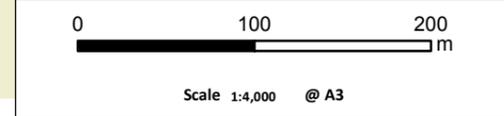
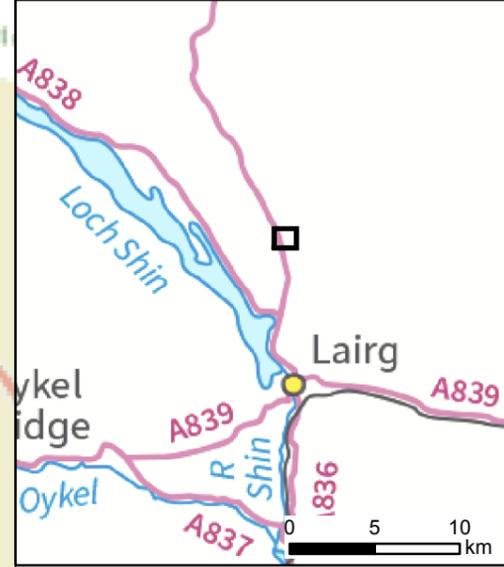
Figures

- Figure 1.1** Site Location Plan
- Figure 3.7** Indicative Energy Storage Elevations
- Figure 7.6** 2021 Vantage Point Flights
- Figure 7.7** Bird Survey Viewsheds



KEY

Site Boundary



REG POWER MANAGEMENT

Falck Renewables
SUSTAINABLE DEVELOPMENT

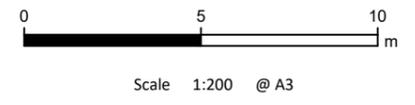
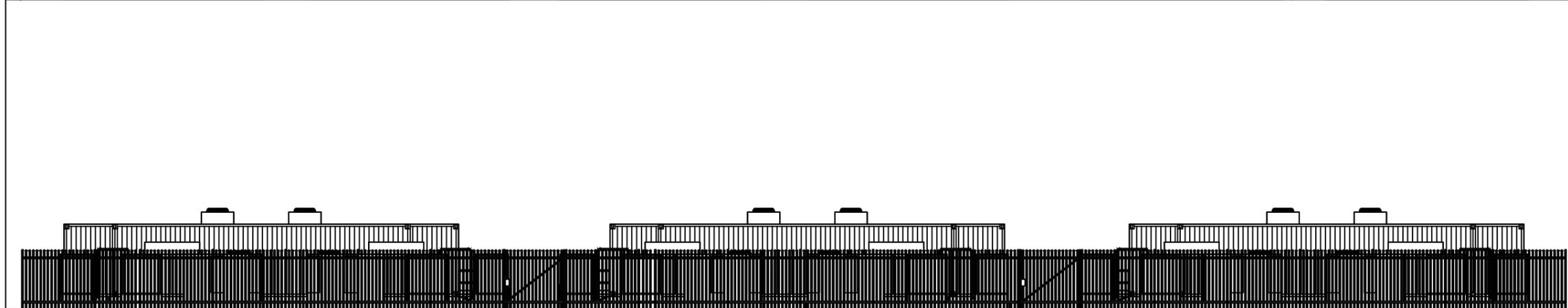
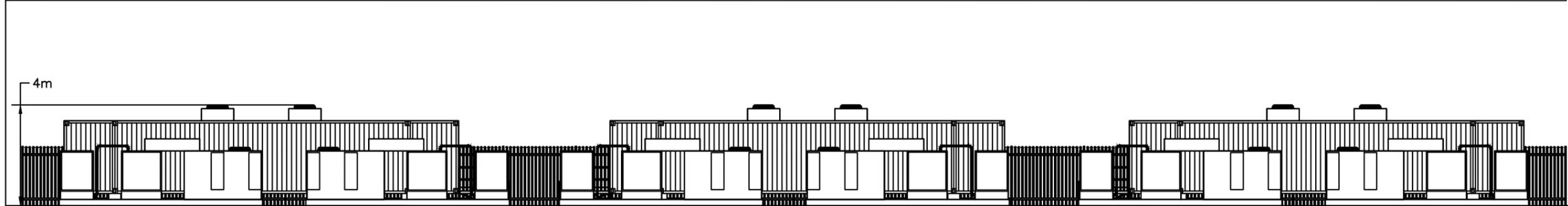
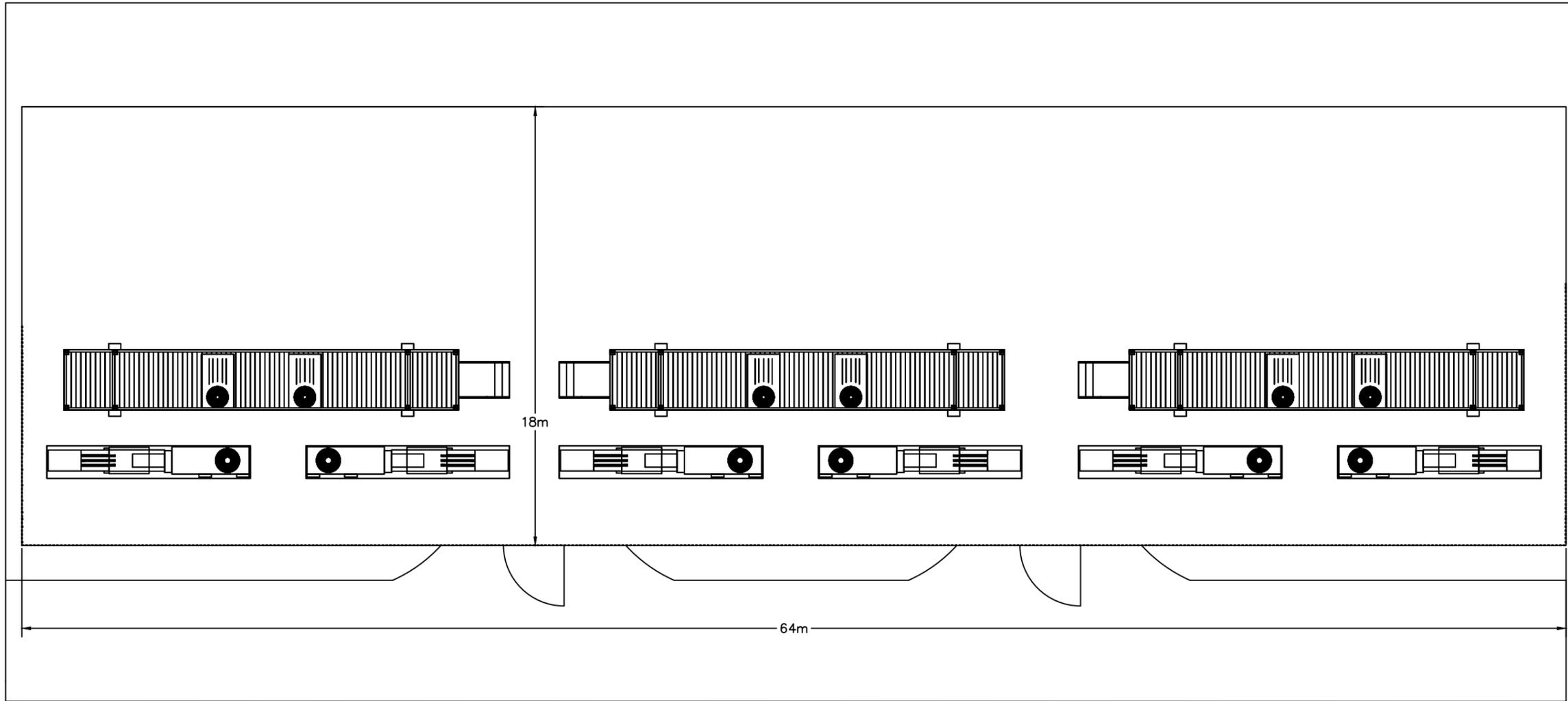
Strath Tirry Wind Farm
SEI Report

Figure 1.1

Site Location Plan

Date: 27/08/2021	Drawn by: SMC	Checked by: AH	Version: V5
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Project Number: 3225

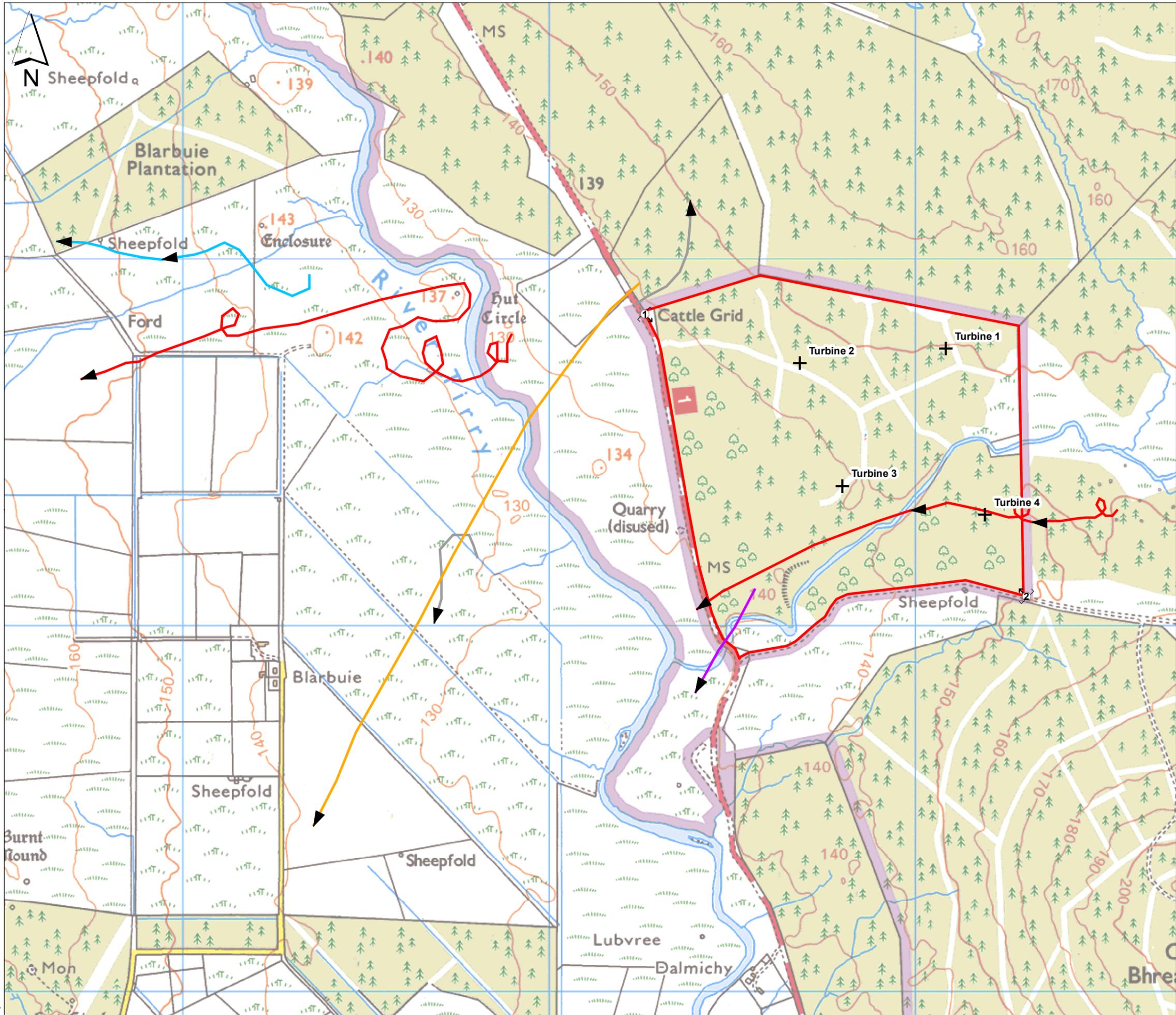


Strath Tirry Wind Farm
SEI Report

Fig 3.7

Typical Energy Storage System Elevation

Date: 27/07/2021	Drawn by: CN	Checked by: SCM	Version: V1
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Key

- Site Boundary
- Vantage Point Locations
- + Turbine Locations

Species

- Greylag Goose
- Golden Plover
- Hen Harrier
- Red Kite
- White-tailed Eagle



Scale 1:10,000 @ A3

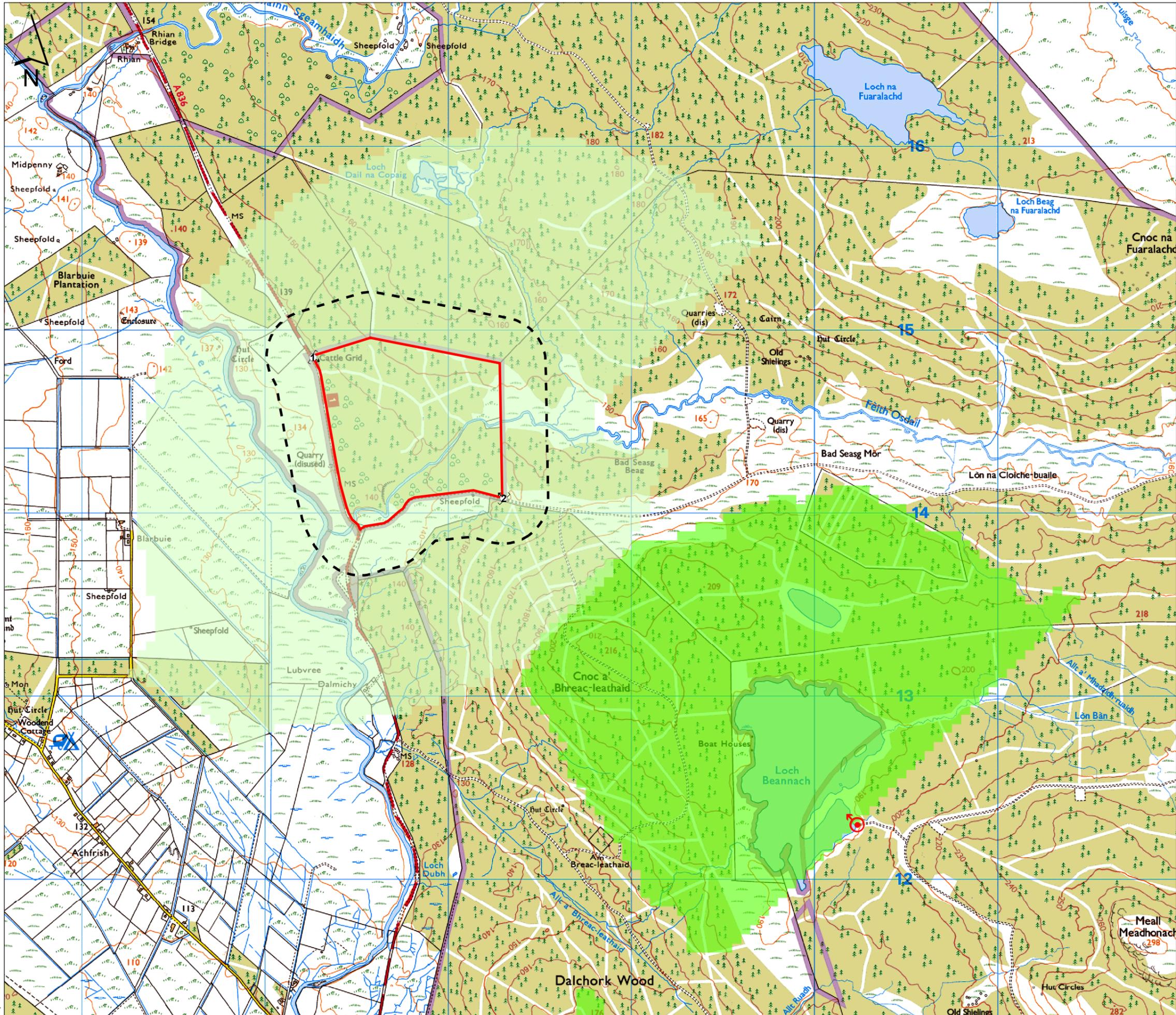


Strath Tarry Wind Farm
SEI Report
Figure 7.6

2021 Vantage Point Flights

Date: 30/06/2021	Drawn by: DO	Checked by: AF	Version: V1
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Project Number: 3225



Key

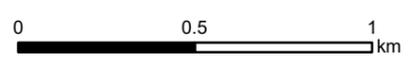
- Site Boundary
- ⬆ Vantage Point Locations
- ⬆ Loch Beannach Diver VP
- Field Survey Area (250 m)

Vantage Point Viewshed

- Not Visible
- Visible

Diver Survey Viewshed

- Not Visible
- Visible



Scale 1:20,000 @ A3



Strath Tully Wind Farm
SEI Report
Figure 7.7

Bird Survey Viewsheds

Date: 03/08/2021	Drawn by: DO	Checked by: AF	Version: V1
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Project Number: 3225



Appendix 2A - Summary of Response to the Application





Table 2A – Detailed Summary of Responses to the Application

Consultee	Summary of Consultee Response	Applicants Response
HIAL Safeguarding 08/02/2021	No Objection. It is confirmed that HIAL calculations show that, at the given position and height, the Proposed Development would not impact the safeguarding criteria for Inverness Airport.	No response required.
Historic Environment Scotland (HES) 12/02/2021	No Objection. The Proposed Development does not raise historic environment issues of national significance and therefore we do not object.	No response required.
Lairg Community Council 23/02/2021	No Objection. A letter of formal representation in support of the application was received. The Lairg Community Council consider that the Proposed Development has the potential to provide much needed investment to the immediate Blairbuie and wider Shinness area as well as the wider community in and around Lairg. The Proposed Development will have limited visibility and Lairg Community Council believe the scale of the Proposed Development is also sensitive to the landscape and surrounding areas. This is a community that welcomes investment and has worked positively with the Applicant over the years and Lairg Community Council are happy to assist in moving Scotland towards its net zero targets. The Proposed Development has been well communicated throughout Lairg and the extensive consultation undertaken by the Applicant since 2015 through several meetings and exhibitions has been welcomed within the community.	No response required.
NatureScot 10/03/2021, 28/04/2021 and 20/05/2021	Landscape There are natural heritage interests of national importance close to the Proposed Development, but these will not be significantly affected. Natural Heritage There are natural heritage interests of international importance close on the site, but these will not be affected by the Proposed Development. The ornithology chapter is incomplete as bird surveys for the Proposed Development are still underway and therefore ornithology impacts have not been fully assessed.	Landscape No response required. Natural Heritage No response required. Further surveys have been completed and an updated assessment provided with Section 4 and Appendix 4A of this SEI Report.



Consultee	Summary of Consultee Response	Applicants Response
	<p>NS advise that otter, pine marten and wildcat surveys are repeated prior to any construction work commencing to ensure that there are no changes to the level or type of activity within the site.</p> <p>Peat Clarifications around discrepancies within the Outline Peat Management Plan sought which are also applicable to peatland restoration areas noted within the Outline Habitat Management Plan.</p> <p>NS also advise that detailed restoration plan for the temporary access track should be provided with the EIA Report and should not be reinstated until decommissioning.</p>	<p>Proposed conditions noted and agreed by the Applicant.</p> <p>Peat Clarifications provided (Section 5), revised Outline Peat Management Plan (Appendix 5A) and Outline Habitat Management Plan (Appendix 5B) provided. No change to assessment of potential effects, proposed mitigation and enhancement measures, or assessment of residual effects.</p> <p>The Applicant would welcome the opportunity to work with THC, SEPA and NS to agree on detailed designs and restoration plans prior to commencement of construction.</p>
<p>Ministry of Defence 05/02/2021</p>	<p>No Objection. If planning permission is granted, the MoD would like to be advised on the date construction starts and ends, the maximum height of construction equipment and the latitude and longitude of every turbine.</p> <p>The Proposed Development should be fitted with MOD accredited aviation safety lighting.</p>	<p>The Applicant is happy to advise the MOD on these details prior to the commencement of construction. The turbines will be fitted with the requested lighting.</p>
<p>RSPB 12/03/2021</p>	<p>Objection until further evidence can be provided as to why no likely significant effect has been concluded on the Lairg & Strath Bora Lochs SPA.</p> <p>RSPB advises that the desk study for black grouse and raptors be updated with Forestry and Land Scotland (FLS) and RSPB records and that further surveys be undertaken in 2021.</p> <p>They request that a figure is provided to show the general VPs and viewsheds used and that the collision risk model (CRM) be updated once surveys are complete.</p> <p>A revised cumulative assessment should also be undertaken.</p> <p>The section of track between the main road and temporary construction compound should be removed and the compound and switching station should be relocated to avoid the wet woodland completely.</p>	<p>Further data and assessment provided within Section 4 of this SEI Report.</p> <p>Further surveys have been undertaken and data purchased to support the assessment. These are provided within Section 4 of this SEI Report.</p> <p>The figure is provided as Figure 7.7 within this SEI Report, and an updated CRM and cumulative assessment are presented in Section 4.7 and Appendix 4A of this SEI Report respectively.</p> <p>The layout of the Propose Development was the result of a number of design iterations to secure the optimum location for the turbines and associated infrastructure</p>



Consultee	Summary of Consultee Response	Applicants Response
	<p>Details of the 'standard mitigation' noted at EIA Report 8.9.19 should be provided. Support was given to the outline Habitat Management Plan, but there was scope for improvement.</p>	<p>given the known environmental constraints recorded at the site through survey work. The Applicant would welcome the opportunity to work with THC, SEPA, NS and RSPB to agree on the detailed designs and restoration plans prior to commencement of construction, as well as finalising the HMP.</p>
<p>SEPA 03/03/2021</p>	<p>No Objection. Subject to the following conditions:</p> <ul style="list-style-type: none"> ▪ removal of the temporary access track prior to commissioning; ▪ marking of a 50 m buffer to Feith Osdail during construction; ▪ the crossing of Feith Osdail should be designed to accommodate the 1 in 200-year flood event. Other crossings should be oversized bottomless arched culverts or traditional style bridges; ▪ micro-siting of up to 50 m is allowed, but not onto peat deeper than current shown for the relevant infrastructure or to within 50 m of a watercourse; ▪ a finalised HMP should be agreed with SEPA and NS; ▪ all felled forest material with greater than 7 cm diameter shall be removed from the site and any proposal to make use of waste wood on site should be detailed in the HMP; ▪ adherence to mitigation outlined within EIA and Appendices is required; and ▪ the finalised Decommissioning & Restoration plan should be in line with SEPA guidance. 	<p>Proposed conditions noted and agreed by the Applicant.</p>
<p>Scottish Forestry 15/02/2021</p>	<p>No Objection. Subject to the condition of compensatory planting being undertaken. No tree felling is permitted before an appropriate compensatory planting plan is approved by the Planning Authority in consultation with Scottish Forestry.</p>	<p>Proposed conditions noted and agreed by the Applicant.</p>
<p>Scottish Water 18/01/2021</p>	<p>No Objection.</p>	<p>No response required.</p>
<p>THC – Access Officer</p>	<p>No Objection.</p>	



Consultee	Summary of Consultee Response	Applicants Response
03/02/2021	<p>The Proposed Development site is not used by the public for recreational access. The NCN 1 however does pass close to the Proposed Development and impact of the Proposed Development on this route should be included in the assessments.</p> <p>Any permanent paths and tracks constructed as part of this Proposed Development will, subject to some limited areas, be available for public recreational access during the operation of the Proposed Development. A basic recreational access management plan will be required to ensure these public rights can be exercised.</p>	<p>Assessment of the potential effects on NCN 1 and local footpaths are assessed within the EIA Report paragraph 13.9.12 and 13.9.13 respectively. Any effects will be managed through the implementation of the Construction Traffic Management Plan.</p> <p>Proposed conditions noted and agreed by the Applicant.</p>
THC – D&I Flood Team 25/01/2021	<p>No Objection.</p> <p>Subject to the condition that the crossings and access tracks in the vicinity of the Feith Osdail are designed to convey a 1 in 200 year plus climate flow without affecting floodplain capacity or conveyance.</p>	Proposed condition noted and agreed by the Applicant.
THC – Environmental Health Team 18/02/2021	<p>No Objection.</p> <p>Subject to the standard wind farm condition attached to any consent which limits operational noise to no more than 2 dB above predicted levels as per Table 10.13 of the EIA Report.</p> <p>The developer should employ the best practicable means at all times to reduce the impact of construction noise.</p>	Proposed condition noted and agreed by the Applicant
THC – Forestry 30/06/2021	<p>No Objection.</p> <p>Subject to the following conditions:</p> <ul style="list-style-type: none"> ▪ no felling is to commence until detailed Compensatory Planting Plan is submitted and approved; ▪ the area of planting shall be no less than 14.2 ha in size and within the Highlands; and ▪ the compensatory planting plan should be prepared by suitably qualified forestry consultant and in accordance with Annex 6 of Scottish Government's Policy on Woodland Removal. 	Proposed conditions noted and agreed by the Applicant.
THC – Historic Environment Team	<p>No Objection.</p> <p>July Response: THC cannot discern from the submitted info if the FEITH OSDAIL BRIDGE has been recognised or even considered as an issue. Asks the case officer to clarify.</p>	<p>The design of the Proposed Development has taken the Feith Osdail Category C- listed bridge into consideration. The Proposed Development has two proposed site access</p>



Consultee	Summary of Consultee Response	Applicants Response
05/07/2021 & 05/08/2021	<p>Exceptionally large/heavy traffic related to the proposal may have an adverse impact upon this 206-year old structure; this must be fully assessed by conservation-engineers and transport engineers prior to any works commencing.</p> <p>We would not have any particular concerns regarding the aesthetic impact from the turbines upon the contextual setting of the bridge.</p> <p>August Response: THC are content that the listed bridge has been considered in the EIA Report and that the majority of the construction traffic will not be using it but the temporary southern access.</p>	<p>points one temporary during construction (southern access point) and the second permanent (northern access point). The temporary access is located to the south of the Feith Osdail Bridge and will allow all loaded HGV traffic to enter the site at this location to avoid loaded vehicles crossing the bridge.</p> <p>The Applicant's team also consulted with THC on the matter of the Feith Osdail bridge prior to submission of the planning application and has committed to further discussion regarding the proposed mitigation measures outlined within the EIA Report.</p>
THC – Landscape	<p>Concerns Raised.</p> <p>THC have been through the visuals and the principal landscape and visual concerns are in relation to the impact on the Lone Mountains and Rounded Hills LCTs and receptors. Viewpoints 1, 2, 3, 9 and 15 raise the most significant concerns. The turbines will appear as a dominate feature in the landscape, resulting in the prominence and scale of the lone mountains / rounded hills being diminished as a feature in the landscape by the presence of moving turbine blades dominating the landscape.</p> <p>The turbines appear in 2 pairs in a lot of the VPs so the removal of one without reconfiguring the layout would not work.</p>	<p>THC's concerns are noted.</p> <p>The effects of the Proposed Development on the Lone Mountains and Rounded Hills LCTs are assessed and described in Chapter 6 of the EIA Report (Table 6.3 and paragraphs 6.10.27 - 6.10.103 respectively).</p> <p>The effects of the Proposed Development on Viewpoints 1, 2, 3, 9 and 15 are assessed within Chapter 6 of the EIA Report in paragraphs:</p> <ul style="list-style-type: none"> ▪ 6.12.5 - 6.12.19 (Viewpoint 1); ▪ 6.12.20 - 6.12.35 (Viewpoint 2); ▪ 6.12.36 - 6.12.50 (Viewpoint 3); ▪ 6.12.132 - 6.12.149 (Viewpoint 9); and ▪ 6.12.240-6.12.256 (Viewpoint 15). <p>It is noted that the turbines may be considered to appear in two pairs at two of the 20 LVIA viewpoints (Viewpoints 9 and 10), with a looser 'paired' configuration at a further two locations (Viewpoints 12 and 13). In all other viewpoints, a configuration of two distinct pairs of turbines is not apparent.</p>



Consultee	Summary of Consultee Response	Applicants Response
THC – Transport Planning 04/02/2021	<p>No Objection. Subject to the following conditions:</p> <ul style="list-style-type: none">▪ all traffic and transport related works being undertaken in accordance with the submitted documents (EIA Report Chapter 12, Transport Assessment, Appendix A, B &C);▪ A836 road mitigation/improvement works similar to those agreed for Creag Riabhach are required between the proposed southern and northern site access junctions;▪ the full extent of all mitigation/improvement works for general construction traffic and abnormal load movements shall be agreed through the Construction Traffic Management Plan. Early contact with the road operations manager on this is recommended;▪ a detailed construction programme with expected traffic flows should be made available to THC;▪ further detailed assessment work will be required prior to delivery of AIL's;▪ structural assessment of bridges, culverts and any other affected structures along the route shall be undertaken, as necessary, in consultation with the Council's Structures Section. Early contact with the Structures Section is recommended; and▪ it is recommended that a registered Wear and Tear agreement is established in respect of the Proposed Development.	Proposed conditions noted and agreed by the Applicant.
Transport Scotland 22/01/2021	<p>No Objection. Subject to the following conditions:</p> <ul style="list-style-type: none">▪ The proposed route for any abnormal loads on the trunk road network must be approved by the trunk roads authority prior to the movement of any abnormal load. Any accommodation measures required including the removal of street furniture, junction widening, traffic management must similarly be approved; and▪ any additional signing or temporary traffic control measures deemed necessary due to the size or length of loads being delivered must be undertaken by a recognised Quality Assured traffic management consultant, to be approved by the trunk road authority before delivery commences.	Proposed conditions noted and agreed by the Applicant.



Appendix 4A - 2021 Bird Surveys



Appendix 4A – 2021 Bird Surveys

Appendix 4A 2021 Bird Surveys

Introduction

This appendix presents details of the methodology and results for the assessment from the ornithology field surveys undertaken in 2021 for the Proposed Development, including references to best practice. These surveys were undertaken following the preparation of the ornithological impact assessment in December 2020. The programme of Vantage Point surveys, which commenced in April 2020, was completed in March 2021. The results for January, February and March 2021 are described below.

A programme of Breeding Raptor surveys and Black Grouse surveys were also undertaken between April and June 2021, following consultation with NatureScot (NS) and RSPB.

Method of Baseline Data Collection

Field Surveys

Winter VP Surveys

A further season of winter VP surveys was undertaken following consultation with NS. These surveys commenced in October 2020 and ran until March 2021, with six hours of survey undertaken in each month. The same two VP locations as used in 2014 were reused. These locations lie close to the south-western and north-western corners of the Proposed Development boundary, as shown on **Figure 7.7** of this **SEI Report** (and **Figure 7.2** of the **EIA Report**).

Surveys followed best practice guidance (SNH, 2017), with 36 hours completed during the winter period. Flights were recorded as per SNH guidance (NS, 2017). If a bird is identified by a surveyor, it would be observed until it lands or is no longer visible. The height band used in the survey were:

- A: 0 to 15m
- B: 15 to 135 m; and
- C: 135 m and above.

The target species during the VP surveys included any species for which the Lairg and Strath Brora Lochs or Caithness and Sutherland Special Protection Areas (SPA) are classified and any for which the Loch Shin and Nearby Lochs Important Bird Area (IBA) is designated. Target species also included any non-passerine listed on Schedule 1 of the Wildlife and Countryside Act 1981. Target species are listed in **Table 1**. Secondary species included all other species, including raven (*Corvus corax*) and buzzard (*Buteo buteo*).

Table 1 – VP Target Species

Target Species	
Black-throated diver	Golden plover
Red-throated diver	Greenshank
Hen harrier	Wood sandpiper
Golden eagle	Curlew
Merlin	Pink-footed goose
Short-eared owl	Greylag goose

Black Grouse Survey

Black grouse surveys were undertaken within the site and a 2 km buffer around the site, which is more than the recommended 1.5 km buffer (NS, 2017). Three visits were undertaken, one on 30 April 2021 (4.20am to 7.20am), one on 7 May 2021 (4.15am to 7.15am) and one on 12 May 2021 (4.35am to 7.05am). Each visit involved walking as much of the survey area as possible and listening and watching for black grouse (*Lyrurus tetrix*). This methodology follows best practice guidance (Gilbert *et al*, 1998).

Breeding Raptor Survey

Breeding Raptor surveys were undertaken within the site and a 1.5 km buffer around the site, as recommended in NS (2017) guidance. Three months of survey were undertaken, in April, May and June 2021. More detail on the dates of these visits is provided in **Table 3**. These surveys searched for signs of breeding raptors, following best practice guidance (Hardey *et al*, 2009). Surveys involved a combination of walking over the site and surrounding area with regular short stops to watch for bird activity, particularly territorial activity such as circling or calling.

Detailed Results

The following section contains the detailed results field surveys undertaken in 2021 for the baseline data collection.

Field Surveys

Black Grouse Surveys

No black grouse sightings or leks were recorded during the black grouse surveys.

VP Surveys

All flights recorded during the VP surveys between January and March 2021 are summarised in **Table 2**. These flights are shown on **Figure 7.6**. The only flights recorded crossing the site at collision risk height were a single red kite recorded in February and a single flight of two golden plovers recorded in March.

No further flights of pink-footed goose or black-throated diver (both target species with potential to be severely impacts by the Proposed Development) were recorded. A flight of greylag geese was recorded, but off-site to the west.

Table 2 – Winter Vantage Point Flight Results

Flight	Date and Time	Species	Number of Birds	Time at Height (seconds)	Band Derived	Crossing Derived?	VP Number	VP Type	Wind Speed	Wind Direction	Surveyor	Comments
74	04/01/2021 13:46	Hen harrier	1	42	A		1	Day	1	NW	NR	Male, perched on fence post
75	02/02/2021 12:29	Red kite	1	180	B	1	2	Day	4	E	NR	
76	02/02/2021 10:31	Red kite	1	315	B		1	Dawn	4	SE	NR	
77	03/02/2021 15:13	White-tailed eagle	1	81	B		1	Dusk	5	E	NR	Landed
78	12/03/2021 11:22	Golden plover	2	28	B	1	2	Day	6	SW	NR	
79	12/03/2021 08:49	Hen harrier	1	114	A		1	Day	4	SW	NR	Male, hunting
80	03/03/2021 12:36	Greylag goose	11	135	B		1	Day	2	E	NR	

Breeding Raptor Surveys

Table 3 – Breeding Raptor Survey Results

Survey Visit	Date	Time	Surveyor	Raptors Recorded	Other Records
1	22/04/21	10:30 - 14:30	JM	Buzzard pair observed circling together	None
2	23/04/21	12:30 - 14:30	JM	None	None
3	29/04/21	11:00 - 15:00	JM	None	Lapwing pair, greenshank
4	30/04/21	10:55 - 12:55	JM	None	None
5	05/05/21	08:05 - 14:05	NR	Buzzard hunting	Snipe, curlew, greylag pair, 2 teal pairs and male teal
6	07/05/21	09:15 - 10:15	JM	Buzzard pair and male sparrowhawk	None
7	10/05/21	09:50 - 15:50	NR	5 red kite flights (4 single birds and 1 pair) and a female hen harrier	25 golden plover
8	13/05/21	11:25 - 14:55	JM	2 buzzard flights	None
9	14/05/21	11:20 - 12:50	JM	Buzzard pair and goshawk	None
10	20/05/21	12:10 - 15:10	JM	Red kite flight	None
11	21/05/21	06:00 - 09:00	JM	None	None
12	03/06/21	16:00 - 18:00	JM	Buzzard flight	None
13	04/06/21	07:30 - 11:30	JM	None	Wood sandpiper displaying at Loch Dail na Copaig
14	06/06/21	10:30 - 16:30	NR	6 buzzard flights and one peregrine flight	None
15	10/06/21	10:45 - 13:45	JM	Buzzard flight	None
16	11/06/21	09:30 - 11:30	JM	Buzzard flight	None
17	16/06/21	14:15 - 20:15	GR	Sparrowhawk flight and buzzard flight.	None
18	18/06/21	05:45 - 06:45	JM	2 Buzzard flights	None

Further Assessment

Collision Risk Assessment

The Collision Risk Assessment (CRA) has been updated following the completion of the 12 month period of VP surveys. This was undertaken for greylag goose and whooper swan; the species for which winter collision risk was assessed in **paragraphs 7.9.9 to 7.9.12 and 7.9.17 and 7.9.19** of the **EIA Report**. The updated collision risk for these three species is provided in **Table 4**.

Table 4 – Updated Collision Risk Assessment

Species	Previous Collision Risk	Updated Collision Risk
Greylag goose	0.87	0.92
Whooper swan	0.02	0.03

These slight increases are due to the hourly transits number of the CRA being extrapolated over a longer period (six months as opposed to three months). However, the increase is not considered to be a significant increase, and no change in conclusion from the assessment undertaken within the **EIA Report**.

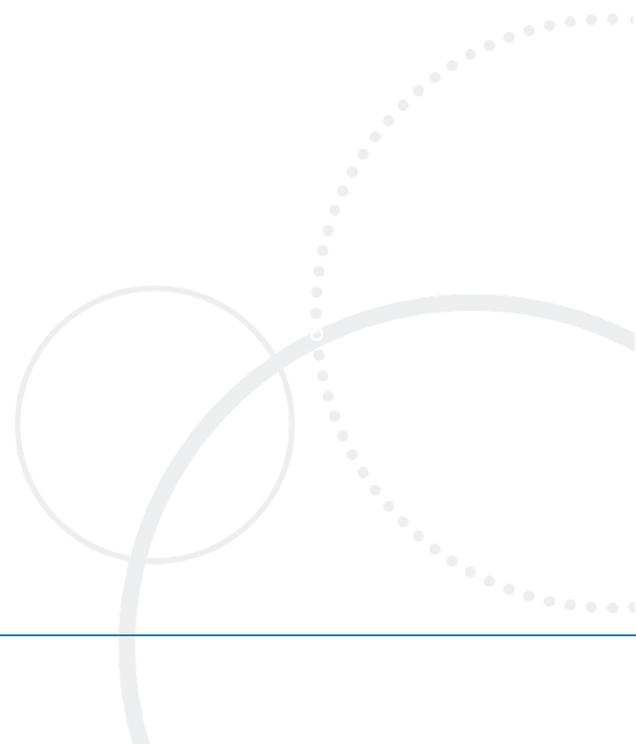
Neither golden plover or red kite have previously been recorded crossing the site at collision risk height and the level of flight activity for each species (one transit for red kite and two transits for golden plover) is considered to be low. Subsequently, the potential for significant collision risk impacts on either species is considered low and for this reason, no collision risk calculations have been undertaken for these species.

References

- Band, W. (2018) Calculating the Probability of Collision. SNH Guidance. Available at: <https://www.nature.scot/wind-farm-impacts-birds-calculating-probability-collision>. Accessed on: 18 November 2020.
- Brown, A.F. and Shepherd, K.B. (1993) A Method for Censusing Upland Breeding Waders. *Bird Study* 40: 189 – 195.
- Gilbert, G., Gibbons, D. and Evans, J., (1998). *Bird Monitoring Methods: A Manual of Techniques for Key UK Species*. Pelagic Publishing.
- Ratcliffe, D. (1977). *A Nature Conservation Review*. Cambridge University Press.
- SNH (2017). Citation for Special Protection Area (SPA): Caithness and Sutherland Peatlands (UK9001151). Available at: <https://www.nature.scot/sites/default/files/2017-07/Publication%202005%20-%20The%20Peatlands%20of%20Caithness%20and%20Sutherland%20-%20Management%20Strategy%202005%20-%202015.pdf>. Accessed on: 18 November 2020.
- SNH (2017). Guidance Note: Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Windfarms. Available at: <https://www.nature.scot/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>. Accessed on: 30 September 2020.
- SNH (2018) Avoidance Rates for the onshore SNH Wind Farm Collision Risk Model. SNH Guidance.



Appendix 5A - Revised Outline Peat Management Plan



Appendix 5A Revised Outline Peat Management Plan

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Introduction

This Revised Outline Peat Management and Restoration Plan (PMP) document has been prepared by ITPenergised (ITPE) on behalf of the Applicant for the construction of the Proposed Development, located approximately 8 km to the north of Lairg and 4 km to the east of Loch Shin in the Highland region. This document is an update and revision to the original Outline PMP presented as **Appendix 9.2** to the **EIA Report** for Strath Tirry Wind Farm (December 2020), following feedback from NatureScot (formerly Scottish Natural Heritage (SNH)), which identified some discrepancies with respect to calculation of estimated volume of peat to be excavated for construction of the Proposed Development.

This Revised Outline PMP will be updated to a Detailed PMP by the Applicant and the contractor following pre-construction site investigation works and will be agreed with The Highland Council (THC), the Scottish Environment Protection Agency (SEPA) and NatureScot.

The site comprises mainly plantation forestry and scrub birch interspersed with areas of open moorland. Areas of potentially regenerating woodland are observed on the banks of Feith Osdail. The site is currently used primarily by the landholder for deer stalking.

The infrastructure of the Proposed Development comprises four wind turbines and associated crane hardstanding and laydown areas, one permanent substation and associated energy storage compound, two temporary entrance compounds and one main temporary construction compound, a meteorological mast, and three borrow pit search areas. With respect to access, the development would include approximately 255 m of new track, of which 730 m would be reinstated post-construction. Existing rides through the forestry have been used to route tracks where possible, to limit felling requirements.

The design of the Proposed Development has been undertaken as an iterative process to avoid areas of deep peat as much as possible to limit peat excavation and to limit the potential for peat slide, as presented in **EIA Report, Chapter 2: Site Selection and Design**, and **Chapter 9: Hydrology, Hydrogeology and Geology**.

The Revised Outline PMP provides details on the approximate predicted volumes of peat that would be excavated during construction, the characteristics of the peat that would be excavated, and the principles of how and where this excavated peat would be stored, reused and managed. This Revised Outline PMP would be further developed and implemented subsequent to the Proposed Development receiving consent. Further details and specific plans would be determined during the detailed design process and once further pre-construction site investigations have been undertaken. These details would then be included in a detailed PMP as part of the detailed Construction Environment Management Plan (CEMP). The responsibility for the implementation of the PMP would be with the Principal Contractor.

The potential volumes of peat extracted and re-used has been calculated based on an area specific or infrastructure specific basis using a modelled peat contour plan developed on probing surveys where excavations would be undertaken. This has allowed high levels of confidence in the estimation of the volumes of peat that would be excavated and that would then require appropriate re-use.

Objectives

The Revised Outline PMP outlines the overall approach of minimising disruption to peatland, and it aims to ensure that all further opportunities to minimise peat disturbance and extraction would be taken during detailed design and construction of the development.

The Revised Outline PMP has been developed to demonstrate that peat has been afforded significant consideration during the construction phase of the Proposed Development, should consent be granted. It aims to propose mitigation measures that would minimise any impacts and the long-term habitat restoration and management plans.

The Revised Outline PMP seeks to identify that appropriate proposals to re-use excavated peat can be accommodated within the Proposed Development and associated Habitat Management Plan (HMP) proposals

(presented in outline in **Appendix 5B** to the **SEI Report**), without significant environmental or health and safety implications, to minimise risk in terms of carbon release and human health.

Layout

The layout of the Revised Outline PMP is as follows:

- summary of relevant policy and guidance;
- definition of peat, details of peatland characteristics and peat conditions at the site;
- potential impacts on peat and an overview of peat excavation principles;
- estimate of peat volumes to be excavated and reinstated;
- classification of the peat characteristics present at the site;
- peat excavations and handling methods/controls and temporary peat storage; and
- reuse in infrastructure construction restoration and habitat management proposals.

Tables are included showing:

- a summary of peat depth data;
- locations and quantities of excavated peat that would be generated, with summary information on interpreted peat depth, dimension and area details of the infrastructure areas;
- locations and available volumes for re-use of excavated peat; and
- a summary of the peat extraction and re-use balance.

Policy and Guidance for Peat Management

This Revised Outline PMP has been compiled in accordance with the following policy and best practice guidance:

- Good Practice during Windfarm Construction (Scottish Renewables, SNH, SEPA & Forestry Commission Scotland, 4th Edition 2019);
- Guidance on Developments on Peatland: Site Surveys (Scottish Government, Scottish Natural Heritage and SEPA, 2017);
- SEPA Regulatory Position Statement – Developments on Peat (SEPA, 2010);
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste (Scottish Renewables and SEPA, 2012);
- Peat Landslide Hazard and Risk Assessments. Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2017); and
- Developments on Peat and Off-Site Uses of Waste Peat (SEPA, 2017).

Peat Conditions

Definitions of Peat

The Scottish Government Peat Landslide Hazard Best Practice Guide (2017) uses the following Joint Nature Conservation Committee (JNCC) report 455 'Towards an Assessment of the State of UK Peatlands' definition for classification of peat deposits:

- **Peaty (or organo-mineral) soil:** a soil with a surface organic layer less than 0.5 m deep;
- **Peat:** a soil with a surface organic layer greater than 0.5 m deep which has an organic matter content of more than 60 %; and
- **Deep Peat:** a peat soil with a surface organic layer greater than 1.0 m deep.

Peat Conditions at the Site

Desk Study

A desk study has been undertaken to review published geological conditions, based on British Geological Survey (BGS) mapping, the SNH Carbon and Peatlands Map (2016), and aerial photography.

Site Survey

Following on from the desk study, field surveys were undertaken, to measure the peat depth and provide additional observations relating to slopes, general topography and ground cover. Peat survey work undertaken at the site is summarised below and further detail is provided in **EIA Report, Appendix 9.1: Peat Slide Risk Assessment**.

An initial 'Stage 1' peat survey was undertaken in 2015 as part of earlier work relating to a proposed development at the site. The surveys were undertaken by a team of suitably qualified and experienced surveyors, and provided a 100 m spaced grid, as per the above-noted guidance.

The Stage 1 survey identified relatively shallow peat across the site, with the deepest peat located in the north-east site area, as well as along the A836 in the western site area. Following re-start of the project in 2020, including review and revision of the site layout and design, Stage 2 peat surveys were required to confirm and expand on Stage 1 findings, targeting the proposed infrastructure locations.

The Stage 2 peat depth probing exercise included probes at and around proposed turbine and hardstanding locations, the substation and energy storage compound, temporary entrance and construction compounds, the met mast, and along access tracks (with offset probes either side of the proposed track centre to identify potential variations in peat depth and allow track alignment to be amended to minimise the requirement for peat excavation),

Following this Stage 2 survey work, some changes were made to the "design chill" layout, reducing the extent of infrastructure sited on areas of deeper peat. An area of track which would have crossed an area of peat with depths locally >1 m was removed from the design, and another section of road was realigned to avoid deep peat. Other road alignments were slightly amended for design reasons unrelated to peat, but within areas where minimal peat depths had been recorded. An ongoing dialogue with SEPA was maintained to confirm suitability of the survey programme in response to design proposals.

In total, data has been obtained from 605 peat probe locations across the site area.

Peat samples were extracted using a hand auger at seven locations, and were subject to laboratory testing for moisture content, carbon content, and bulk density to help characterise the nature of the peat and/or peaty soil.

Peat Survey Results

The peat depth survey identified shallow or absent peat across much of the site, with approximately 70% of probes recording peat depths less than 0.5 m (defined as peaty or organo-mineral soil). Less than 9% of probes identified deep peat (>1.0 m depth), largely in the west and north-east of the site.

Peat thicknesses recorded at the site, from Stage 1 and Stage 2 surveys combined, are summarised in **Table 1**.

Laboratory testing results from samples of peat taken during peat depth surveys identified moisture contents generally within or slightly below the typical values for peat of 85 to 95% for most of the samples. Carbon contents were recorded as being substantially below the typical value of 55% for peat in most samples. This suggests that materials across the site may be considered peaty or organo-mineral soils, rather than peat.

Full details of the peat depth survey, together with a Peat Slide Risk Assessment, are provided in **EIA Report, Appendix 9.1**.

Table 1 – Distribution of Peat Depth Recorded at the Site

Peat Depth Interval (m)	Number of Occurrences	% of Probes
Nil	58	9.59
0.01 to 0.49	363	60.09
0.50 to 0.99	130	21.49
1.00 to 1.49	30	4.96
1.50 to 1.99	14	2.31
2.00 to 2.49	8	1.32
2.50 to 2.99	1	0.165
3.0 or more	1	0.165
Total	605	100.09

Potential Impacts on Peat During Construction

The initial construction phase for wind energy projects will often include soil and peat stripping and excavation activities associated with constructing the foundations for turbine bases, crane pads, access tracks, control compound and substation, temporary construction compounds, and borrow pits.

There are four main types of impact on peat which can occur during construction. These are:

- Loss of structural integrity and peat strength, due to stripping off or damaging the surface vegetation turf, excavation, handling and transporting peat (particularly wet, subsurface peat);
- Erosion and gulying, caused by exposure and desiccation of bare peat surfaces primarily caused by water erosion, due to surface runoff after rainfall;
- Contamination, caused by leaks, spillages or inappropriate laydown of materials; and
- Peat slide, caused by laying wet peat on top of wet peat, laying other heavy materials (including excavated mineral soil or other construction materials) on top of wet peat or by inappropriate stockpiling, such as attempting to create stockpiles of peat that are too high, without bunding, engineering or geotechnical support.

A range of methods and control measures are described below which are designed to prevent these impacts from occurring.

General Excavation Principles

The Proposed Development design required to take account of a number of environmental and technical constraints. The design has avoided areas of deep peat, and has largely avoided any areas where peat depth is greater than 0.5 m, i.e. the majority of proposed infrastructure is sited in areas underlain by peaty or organo-mineral soils rather than peat. Only the proposed T1 location is within an area where the average depth of peat recorded by probes is marginally over 0.5 m.

During the construction of the Proposed Development, all reasonable measures will be taken to avoid or minimise excavations and minimise disturbance to peat and peatland habitats. For example, with probes around

the T1 location recording an average depth of 0.53 m, and a number of the probes in the immediate vicinity of the turbine centre location recording peat depths less than 0.5 m, there is considered to be good opportunity for micro-siting following detailed pre-construction site investigations, to reduce the requirement for excavation of peat even further than is estimated in this assessment.

Ground disturbance areas around excavations will be kept to a minimum and will be clearly defined on-site. Access to working areas during construction will be restricted to specified routes, comprising constructed tracks.

Cable routes will in general follow access tracks. Any peat excavated will be replaced. Therefore, this has not been included within the excavation volumes; however, it will still need to be managed on-site and the details of this will be provided within the Detailed PMP for the Proposed Development, which will be prepared by the Applicant and the contractor and agreed with THC, SEPA and NatureScot.

Peat and topsoil excavated at the temporary construction compounds and the temporary stretch of access road south of the Feith Osdail watercourse will be stored and also reinstated. Therefore, peat generated from these areas has not been included within the excavation volumes; however, it will still need to be managed on-site. The details of site-specific storage methodology and locations will be provided within the Detailed PMP, which will be produced following preconstruction investigative works at site.

Estimation of Peat Volumes to be Excavated

The construction period for the Proposed Development would be approximately 12 months on-site. The programme, phasing and nature of construction activities are described in **EIA Report** Chapter 3. Those activities which would generate volumes of peat are as follows:

- establishment of the temporary entrance and construction compounds and temporary access road, which would include stripping of topsoil and peat/peaty soils and careful stockpiling of the material for later reinstatement in accordance with the CEMP which would be prepared in advance by the appointed Principal Contractor;
- formation of cut track, which would involve the removal and temporary storage of turves, as appropriate, followed by excavation down to formation level;
- construction of the turbine foundations and crane hardstandings, which would require the excavation of peat and subsoil to expose underlying bedrock or other suitable founding stratum, and in some cases excavation of rock to form a suitable level platform for construction. The depth of the excavation in superficial soils would be dependent on the ground conditions and depth to bedrock, but it has been assumed that the full depth of peat would be excavated from the full development area of each turbine and hardstanding;
- excavation of trenches for underground cabling between the turbines and the substation, which would typically be 0.5 m deep and 1 m wide. These would be carefully reinstated with the stored peat once the cables have been laid; and
- construction of the permanent substation and energy storage compound and one permanent met mast.

Table 2 provides an estimate of peat volumes to be excavated, as well as assumptions used in developing the estimates. It also provides an estimate of volumes of acrotelmic and catotelmic peat to be disturbed, with further information on the classification of materials provided below **Table 2**.

Table 2 – Calculated Peat Volumes to be Excavated (note – figures which have been revised from the **EIA Report** are in italics)

Infrastructure	Area (m ²)	Peat depth (m)	Total Volume (m ³)	Acrotelm (m)	Catotelm (m)	Volume Acrotelm (m ³)	Volume Catotelm (m ³)	Assumptions
T1 - base	398	0.53	210.7	0.40	0.13	159.0	51.7	Assumes 22.5m diameter, full depth of peat excavated.
T2 - base	398	0.32	127.2	0.32	0	127.2	0.0	
T3 - base	398	0.39	155.1	0.39	0	155.1	0.0	
T4 - base	398	0.28	111.3	0.28	0	111.3	0.0	
T1 hardstanding	1976.6	0.46	909.2	0.40	0.06	790.6	118.6	Assumes 1650m ² hardstanding plus 314m ² laydown area, plus 3.6m x 3.5m external transformer, full depth of peat excavated.
T2 hardstanding	1976.6	0.30	593.0	0.30	0	593.0	0.0	
T3 hardstanding	1976.6	0.42	830.2	0.40	0.02	790.6	39.5	
T4 hardstanding	1976.6	0.32	632.5	0.32	0	632.5	0.0	
Storage and control room compound	2000	0.26	520.0	0.26	0	520.0	0.0	Assumes 100m x 20m storage and control room compound
Met mast	16	0.45	7.2	0.40	0.05	6.4	0.8	Assumes 4m x 4m base, full depth of peat excavated.
Cut Tracks (1925m)	9,625	0.41	3,946.3	0.40	0.01	3,850.0	96.2	Assumes 1925m length x 5m width. Does not include temporary track which will be reinstated after construction.
Borrow Pit N	1,600	0.35	560.0	0.35	0	560.0	0.0	Entire borrow pit search areas, full depth of peat to be excavated (conservative estimate as less than full area anticipated to be required).
Borrow Pit C	1,600	0.34	544.0	0.34	0	544.0	0.0	
Borrow Pit S	1,600	0.32	512.0	0.32	0	512.0	0.0	
Total			9,658.7			9,351.8	306.9	

Classification of Excavated Material

There are two distinct layers within peat, the upper acrotelm and the lower catotelm. The acrotelm is the fibrous surface to the peatland, which exists between the growing peat surface and the lowest position of the water table in dry summers.

Peat soil generally below 0.5 m to up to 1 m in depth is classified as the catotelm, moderately decomposed with a high fibrous content and moderate water content. There are various stages of decomposition of the vegetation as it slowly becomes assimilated into the body of the peat.

The excavation volumes of acrotelm and catotelm presented in Table 2 are based on a simple assumption of the upper 0.4 m of peat being acrotelm and any deeper peat being catotelm.

It should be noted that laboratory testing results from samples of peat taken during peat depth surveys identified that most samples recorded moisture contents generally within or slightly below the typical values for peat of 85 to 95%, but carbon contents substantially below the typical value of 55% for peat. This suggests that materials across much of the site may be considered peaty or organo-mineral soils, rather than peat. The assumption of all peat deeper than 0.4 m at the site being catotelm is therefore considered to be quite conservative, with much of the volume of peat to be excavated actually likely to be drier, denser, exhibiting higher shear strength, and with lower carbon content than catotelmic peat. It should, however, be noted that the state of decomposition will increase as depth increases. It is also noted that the estimate of catotelmic peat to be excavated, even based on the above conservative assumptions, is very limited.

Peat Management Measures

Peat Protection Ahead of Soil Stripping

The development layout has already taken into account constraints relating to sensitive areas, including ecological, ornithological and archaeological receptors, forestry, and geology/peat characteristics. The Proposed Development layout, including working areas and access track routes, would be marked on an Access Plan and would be demarcated on the ground as appropriate. Off-road tracking of heavy plant would not be permitted outside the marked area.

The Access Plan and the route of the access tracks would provide a designated controlled route and a permissible corridor within which service vehicles and plant can operate prior to peat and topsoil stripping. The purpose of the Access Plan would be to protect in situ peat in areas that are not affected by the development and to prevent unnecessary vehicle and plant tracking across these areas. The following rules would apply to the Access Plan:

- There would be no vehicle access to site areas outside the area marked on the Access Plan and demarcated as appropriate on the ground;
- There would be no stopping of vehicles outside the area marked on the Access Plan;
- Servicing or refuelling activities would only take place within clearly designated areas within the Access Plan, identified in the CEMP; and
- Laydown of materials (either construction materials or waste materials) would take place only within designated areas within the Access Plan. There would be no laydown, unless identified in the construction drawings, of any type of materials either within the access route corridors or anywhere outside of designated areas. All laydown areas not already considered would be subject to a peat slide risk assessment prior to their designation.

Access routes and working areas would be clearly delimited throughout the construction phase to ensure that peat compaction and damage in areas not directly involved in the works would be avoided. The construction works would be phased to ensure that peat was stripped in each part of the site ahead of mineral subsoil (if present).

Handling of Excavated Material

Excavation of soils would be undertaken in such a manner as to avoid cross-contamination between distinct acrotelmic and catotelmic horizons, where possible and if applicable (i.e. where catotelmic peat is present). The different horizons would be kept and stored separately for use at a later date.

During and after excavation, the storage, haulage and reuse of excavated material would be planned to minimise material movement around the site. Where possible, immediate reuse is preferred to temporary storage. For example, excavated peat to form access tracks will be used to form verges alongside the new tracks, thereby minimising the need for stockpiling and storage. The detailed construction works programme, setting out excavation and reuse proposals for each element of the build, will be set out by the Principal Contractor but will adhere to the principles presented in this PMP and the Outline CEMP (**Appendix 3.2 of the EIA Report**).

Turves would be stripped and handled with care and stored with the vegetation side upward, such that damage to the living vegetation mat would be prevented or minimised as far as possible.

To ensure the minimum amount of damage to peat during stripping activities, strict procedures would be adopted for heavy plant access, stripping and handling/transport of surface, intact, peaty turf, and subsurface wetter peat (where present). Antecedent moisture conditions are critical for this and peat stripping, and handling would not take place if there are heavy rainfall conditions.

Peat stripping and excavation would generally follow the methodologies recommended for mineral soil by MAFF (2000) and Defra (2009). However, peat is a very different material from mineral topsoils and subsoils. For example, it is recognised that subsurface wet peat lacks strength and its consistency in many cases is that of a slurry. Hence, the stripping and excavation method(s) to be used in each part of the site would be agreed in advance with the Environmental Clerk of Works (ECoW) and Geotechnical Engineer, taking account of the recorded peat depths and characteristics both from surveys undertaken to date, and from detailed pre-construction site investigation works.

Wherever possible, a 360° excavator would be used to permit stripping of large-scale peat turves, with their vegetation intact. Ideally these should be a minimum of 0.5 m deep and up to 1 m². However, the depth and scale would depend on the depth, consistency and condition of the surface peat at each location and the plant used for stripping. Where practicable, the largest possible turves that allow for the turves to remain intact would be stripped. This assists in maintaining the structural integrity of each excavated turf.

Temporary Storage

Temporary storage may be required where material is not needed for immediate reinstatement. Best practice measures for temporary and permanent peat storage during construction would be followed, in accordance with guidance including *Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste* (Scottish Renewables and SEPA, 2012).

To minimise handling and haulage distances, where possible, excavated material would be stored local to the site of excavation and/or local to the end-use site where it would be required for re-profiling, landscaping or structural purposes. The exact storage locations would be agreed with the Geotechnical Engineer and ECoW prior to commencement of the main phase of works. Details would be provided on a plan to accompany the PMP and relevant Method Statements, for agreement with NatureScot and SEPA.

Any temporary peat storage locations would be appropriately located and designed to minimise impact to sensitive habitats and species, prevent risks from material instability and runoff into watercourses.

Stripped materials would be carefully separated to keep peat and other soils apart and stored in appropriately designed and clearly defined separate piles. Peat would be excavated as turves which would be as large as possible and kept wet in order to minimise desiccation during storage.

Stockpiles would be isolated from any surface drains and a minimum of 50 m away from watercourses, and stockpiles would not be located on areas of deep peat, in order to avoid peat slide risks associated with additional loading. Stockpiles would include appropriate bunding to minimise any pollution risks where required. Excavated topsoils would be stored on geotextile matting to a maximum of 1 m thickness.

The maximum height of any peat stockpiles would be carefully controlled in accordance with peat slide risk assessment considerations and nature of the material being stored, under the supervision of the ECoW and

Geotechnical Engineer. Turf would be stockpiled separately. Peat would not be stockpiled for more than six months, unless otherwise agreed with SEPA.

Turves would be stored turf side up and would not be allowed to dry out. The condition of stored turves would be monitored by the ECoW.

Estimation of Peat Volumes to be Reinstated

Excavated peat from the construction process will be reused in the following ways:

- Reinstatement of temporary infrastructure (temporary construction compound, temporary laydown areas, temporary access road section);
- Appropriate landscaping and bunding of new infrastructure e.g. track sides, turbine base batters, and substation compound batter;
- Reinstatement of the borrow pit excavation areas;
- Use in restoration of peatland habitat at the proposed Habitat Management Plan area(s) as required and appropriate, i.e. re-use of excavated peat excavated in areas of felling, to create deeper areas of peat.

More information on the above-noted peatland restoration proposals is provided in the Revised Outline Habitat Management Plan, **Appendix 5B** to the **SEI Report**.

Table 3 shows estimated volumes of peat that can be used to reinstate infrastructure and provide appropriate landscaping, in line with the current best practice listed above. This also provides an indicative breakdown of estimated volumes of acrotelmic and catotelmic peat.

The calculations provided in **Table 3** illustrate that there are clearly sufficient opportunities to utilise the total volume of excavated peat for reinstatement on-site following methods described in best practice guidance. The calculations suggest that there could be a small excess of excavated acrotelmic peat. Given the conservatism employed in assumptions regarding peat versus peaty or organo-mineral soils, and the opportunities to micro-site infrastructure away from deeper peat following detailed pre-construction site investigations, it is considered that an excess of excavated acrotelm is very unlikely to be realised in practice, and there will be sufficient opportunity to reuse all excavated peat in site restoration.

It should also be noted that these calculations do not include for the potential use of peat in proposed habitat management measures.

Table 3 - Calculated Restoration Volume Available for Reuse of Excavated Peat (note – figures and details which have been revised from the EIA Report are in italics)

Infrastructure	Total Area (m ²)	Average Depth (m)	Total Volume (m ³)	Max Catotelm depth (m)	Remainder (acrotelm) (m)	Volume Catotelm (m ³)	Volume Acrotelm (m ³)	Assumptions
Turbine - base batters	282.8	0.5	141.4	0.0	0.5	0.0	141.4	Assumes base circumference of 70.7m x 0.5m high (average) x 1m wide. <i>All acrotelm.</i>
Hardstanding landscaping batters	2040.0	0.3	612.0	0.0	0.3	0.0	612.0	Assumes 3m wide batter x 1m high at highest end, grading down to ground level (0.3m average height). All acrotelm given limited depth.
Storage and control room compound landscaping batter	240.0	0.5	120.0	0.0	0.5	0.0	120.0	Assumes base circumference of 240m x 0.5m high x 1m wide. <i>All acrotelm.</i>
Permanent track verges	9625.0	0.5	4812.5	0.0	0.5	0.0	4812.5	Verge either side of 1,925m of tracks. Assumes 2.5m wide verge x max. 1m high, grading down to ground level. <i>All acrotelm (turves).</i>
Borrow Pits	4800.0	1.0	4800.0	0.25	0.75	1200.0	3600.0	Assumes maximum fill of 1m given generally shallow peat depth in surrounding area. <i>Maximum of 0.25m catotelm, remainder acrotelm.</i>
Total volume of excavated peat that could be reused			9658.7			306.9	9351.8	
Total reinstatement volume available for reusing excavated peat			10485.9			1200.00	9285.9	
Remaining Excavated Peat			-827.2			-893.1	65.9	

Monitoring and Inspection

There would be frequent, routine and regular inspections of peat in all stockpiles and temporary storage areas as part of the PMP audit process. Inspections would assess in situ peat physical conditions, integrity of containment and temporary drainage conditions, and they would seek to confirm that stockpile design and management was adequate to prevent erosion and peat slide. These inspections would take place weekly during stockpile creation and storage.

Should any problems be observed during regular visual inspections of peat stockpiles, this would invoke implementation of an appropriate corrective action which would be recorded and monitored for effectiveness. Types of corrective actions would include, but would not necessarily be limited to: modification of temporary drainage, additional or modified bunding, incorporating of sediment fencing if required, light re-grading to correct any areas of surface erosion, etc.

Regular, frequent inspections of peat conditions during construction and restoration phases of work would be carried out by the Geotechnical Engineer and ECoW as follows:

- Peat surface, peat profile and peat consistency conditions would be carried out as part of ground investigations prior to the start of construction. This information would provide detailed information on the baseline conditions for each part of the infrastructure footprint.
- Restored peat conditions would be inspected immediately after restoration to ensure that the methods detailed in the PMP had been correctly implemented and to inform any corrective actions should they be required.
- The physical condition of peats would be retained as carefully as possible both at the peat storage and the peat restoration stages. This is particularly important for vegetation establishment.

Conclusion

This Revised Outline PMP provides the guiding principles which would be applied to the detailed PMP for the Proposed Development. The detailed PMP would be prepared for agreement with SEPA and NatureScot and would form part of an overarching CEMP.

This Revised Outline PMP addresses the following peat-related issues:

- the volumes of peat that are predicted to be excavated;
- the capacity to reuse the peat on-site for restoration and landscaping;
- peat handling and temporary storage; and
- restoration and monitoring of peatland habitat.

The calculations provided above illustrate that there are sufficient opportunities to utilise arising peat for reinstatement on-site and potentially for habitat management measures if required and appropriate, following methods described in best practice guidance.

The various calculations presented here would be updated and expanded upon as part of detailed design works, taking account of pre-construction site investigations and micro-siting, to confirm actual quantities of arising peat. The Applicant would achieve an actual balance between arising peat and reinstatement by prioritising the areas for reinstatement, following advice from the project ECoW and Geotechnical Engineer. It is anticipated that a detailed, construction phase PMP would be conditioned, and maintenance and updating of this plan in conjunction with an updated geotechnical (peat) risk register by a Geotechnical Engineer would also be conditioned.

The implementation of the detailed PMP would ensure a robust commitment to excavating, storing and reinstating peat in a manner that follows best practice and ensures the protection of peat throughout the construction and post-construction phases. The detailed PMP and the CEMP for the Proposed Development would also include detailed Construction Method Statements and a 'live' Geotechnical Risk Register. These

documents and the associated management and monitoring onsite would ensure the active consideration and protection of peat in all aspects of the construction process.

References

Joint Nature Conservation Committee. (2011). Towards an Assessment of the State of UK Peatlands. Available at: <https://data.jncc.gov.uk/data/f944af76-ec1b-4c7f-9f62-e47f68cb1050/JNCC-Report-445-FINAL-WEB.pdf>

NERC. (2012). Geology of Britain. Available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
Accessed most recently in May 2020.

Scottish Government, SNH and SEPA. (2017). Guidance on Developments on Peatland - Site Surveys. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument/Guidance%2Bon%2Bdevelopments%2Bon%2Bpeatland%2B-%2Bpeatland%2Bsurvey%2B-%2B2017.pdf>

Scottish Natural Heritage (2016). Carbon and Peatland Map. Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map>

Scottish Renewables and SEPA (2012). Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2014/07/assessment-of-peat-volumes-reuse-of-excavated-peat-and-minimisation-of-waste-guidance/documents/guidance-on-the-assessment-of-peat-volumes-reuse-of-excavated-peat-and-the-minimisation-of-waste/govscot%3Adocument/Guidance%2Bon%2Bthe%2Bassessment%2Bof%2Bpeat%2Bvolumes%252C%2Breuse%2Bof%2Bexcavated%2Bpeat%252C%2Band%2Bthe%2Bminimisation%2Bof%2Bwaste.pdf>

Scottish Renewables, SNH, SEPA & Forestry Commission Scotland (2019). Good Practice during Windfarm Construction, 4th Edition. Available at: <https://www.nature.scot/sites/default/files/2019-05/Guidance%20-%20Good%20Practice%20during%20wind%20farm%20construction.pdf>

SEPA (2010). SEPA Regulatory Position Statement – Developments on Peat. Available at: https://www.sepa.org.uk/media/143822/peat_position_statement.pdf

SEPA (2017). Developments on Peat and Off-Site Uses of Waste Peat. Available at: <https://www.sepa.org.uk/media/287064/wst-g-052-developments-on-peat-and-off-site-uses-of-waste-peat.pdf>



Appendix 5B - Revised Outline Habitat Management Plan



Appendix 5B: Revised Outline Habitat Management Plan

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Appendix 8.7 Outline Habitat Management Plan

Introduction

This Revised Outline Habitat Management Plan (OHMP) sets out proposed measures for habitat restoration and enhancement within the Proposed Development site. The site is the area within the site boundary, as shown on **EIA Report** Figure 8.2. This document is an update and revision to the original Outline HMP presented as **Appendix 8.7** to the **EIA Report** for Strath Tirry Wind Farm (December 2020), following feedback from NatureScot (NS) (formerly Scottish Natural Heritage (SNH)).

The site is dominated by coniferous woodland plantation, M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire and M25a *Molinia caerulea-Potentilla erecta* marshy grassland. Significant effects are predicted on M15c *Scirpus cespitosus-Erica tetralix* wet heath, M27a *Filipendula ulmaria-Angelica sylvestris* mire and W4c *Betula pubescens-Molinia caerulea* wet woodland from habitat loss and modification as part of the Proposed Development. Mitigation is required to restore areas of previously active/inactive mire habitat, as discussed in the **EIA Report Chapter 8**.

The conditions on the site are favourable for the active regeneration of peatland habitats as most of the site shows signs of past drainage, with mire areas being drier and modified. Purple moor-grass (*Molinia caerulea*) dominated habitats are common on the site, indicating a shift towards marshy grassland from a more diverse functional mire. This is particularly notable within and adjacent to the coniferous woodland plantation, where the trees have further influenced the water table. Areas along rides within the coniferous woodland plantation are all predominantly M25a marshy grassland in 2020, in comparison to blanket bog in 2014 and 2017, indicating the area has been drained, lowering the water table and leading to the development of M25a. These habitats are shown on **EIA Report Figure 8.2**.

Offset woodland planting will also be required to mitigate for the loss of coniferous woodland plantation and broadleaved woodland, including W4c wet woodland, as detailed in **EIA Report** Chapter 8 and Chapter 16. NS has suggested that off-site restoration of peatland habitat may be more appropriate than offset woodland planting, given the open moorland nature of the local area. This will be discussed with stakeholders to agree the most suitable approach, as noted in the Woodland Offset Planting section below.

Opportunities exist to restore peatland in felled areas containing peaty soil, such as in the keyholing areas around proposed turbines, and to enhance the woodland habitat present on the site through riparian planting along the Feith Osdail. Opportunities also exist for enhancement of the habitats for species such as pine marten (*Martes martes*), and reptiles and amphibians.

A final Habitat Management Plan (HMP), which would include specific prescriptions and confirmation of the peatland restoration location(s), will be agreed with The Highland Council (THC), in consultation with the landowner and NS, prior to the commencement of construction of the Proposed Development.

Objectives of Outline Habitat Management Plan

This Revised OHMP has been completed following best practice guidance from NS (SNH, 2016). The purpose of the plan is:

- To restore and enhance a minimum of 0.74 ha of peatland habitat within the site, within five years of commissioning of the Proposed Development. This area (0.74 ha) is the amount being lost to the Proposed Development, plus temporary loss and impact to peatland habitats (M15c, M17b, M25b and M27a), and the restoration and enhancement of a comparable area is intended to offset its loss and potential temporary disturbance. This will increase the quality and extent of an Annex I (UK Government, 1994) habitat and compensate for habitat loss and modification incurred as a result of the Proposed Development.

- To work in conjunction with the deer management plan provided as Appendix 8.6 to reduce deer grazing pressure, where required, and improve the quality of mire habitat and protect new woodland areas on the site.
- To offset woodland habitat loss through replanting of a minimum of 14.42 ha, including a minimum of 0.89 ha of broadleaved woodland, within five years of commissioning of the Proposed Development. This will compensate for the loss of coniferous and broadleaved woodland incurred as a result of the Proposed Development. In further consultation with stakeholders, it may be determined that peatland restoration is more appropriate in the local area than offset woodland planting. If there is a change to the 'base case' proposal of offset woodland planting, based on further stakeholder engagement, this will be confirmed in the final HMP.
- To further enhance the site through the use of artificial pine marten den boxes, the creation of artificial refugia for reptiles and amphibians, and the control of American mink (*Neovison vison*) to make the Feith Osdail more suitable for water vole (*Arvicola amphibius*).

The implementation of the final HMP will also take into account the existing land management practices undertaken on the site and will work in tandem with these practices.

The design and implementation of the final HMP will be managed by the Applicant in consultation with the landowner and statutory consultees. Detailed method statements will be developed for the specific measures of the final HMP, such as restoration methods that would encourage the abundance of bog-moss.

Peatland Restoration

Suitable areas for peatland restoration will comprise areas of felled woodland on peat and areas of M25a marshy grassland that, based on factors such as the detailed NVC survey and surveyor observations of their context in relation to remaining bog areas, were previously blanket bog or wet modified bog. An area such as this occurs in the south of the site, as shown on **EIA Report Figure 8.4**. The extent of these areas will be subject to refinement prior to completion of the final HMP, and the objective will be to restore peatland habitat within all felled areas, where possible and appropriate. The area identified for restoration will be no less than 0.74 ha to account for the peatland habitat permanently lost and potentially temporarily disturbed as a result of the Proposed Development. This area is identified as the minimum, however the Applicant commits to continuing effort, in consultation with NS, to increase this area further following additional survey work. As noted above, the aim will be to restore peatland habitat within all areas where woodland is to be felled for constructing the Proposed Development, where possible and appropriate. The detailed design of peatland habitat restoration proposals will also consider how best to promote connectivity of peatland habitats and prevention of conifer regeneration. Ideally, there will be an overall gain of improved peatland habitat on the site. The confirmed peatland restoration areas will be shown on a figure in the final HMP.

Peat management and reinstatement during and following construction are detailed in the Outline Construction Environmental Management Plan (CEMP) and the Revised Outline Peat Management Plan (PMP) in **EIA Report Appendix 3.3**, and **Appendix 5A** of the **SEI Report**, respectively.

Management Prescriptions

The following measures will be undertaken to encourage the regeneration of peatland habitats:

- Raise the water table by blocking forest drains and managing any conifer regeneration on the restoration areas. Mapping of drains to be blocked and determination of the most appropriate method of blocking will take place in year 1 of the implementation of the final HMP with brash from felled areas potentially used in that process. A survey will be carried out prior to blocking to identify the number, location and spacing of artificial dams required. Drain blocking will take place in agreement with the landowner. Work will occur between September and March to avoid disturbing breeding birds, amphibians and reptiles. Management of conifer regeneration will be as required.

- It is assumed that the modified peatland under the coniferous woodland plantation was once classifiable as M17 and M15 and that these habitats are likely to regenerate following tree removal. However, it is likely that before reaching such plant communities, there would be periods of rush (*Juncus sp.*), and purple moor-grass dominance as typically seen on previous deforested sites and on drained areas of this site. In order to minimise the dominance of these species and to encourage peatland restoration, peat excavated as a result of the Proposed Development will be re-used in areas of felling to create deeper areas of peat. Peat for restoration will need to be removed in such a way as to ensure that catotelmic (lower level, non-living layers of peat) and acrotelmic (surface living layer of peat) are removed and stored separately. However, as detailed in the PMP, the volume of peat predicted to be excavated is likely to be peaty soil/acrotelm (approximately 1112.5 m³) rather than true saturated catotelmic peat. In areas of felling, it is likely that the brash and tree stumps will need to be removed to provide a suitable surface for the laying of the excavated peat. Determination of the most appropriate method and locations will take place in year 1 of the implementation of the final HMP.
- Increase the abundance and distribution of bog-moss (*Sphagnum sp.*), particularly red bog-moss (*S. capillifolium*), blunt-leaved bog-moss (*S. palustre*) and compact bog-moss (*S. compactum*). If suitable habitat conditions are recreated, this could occur through natural regeneration. Active measures will be considered in the unlikely event that natural regeneration is unsuccessful.
- Increase the abundance of other bog species, particularly heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), hare's-tail cottongrass (*Eriophorum vaginatum*) and bog myrtle (*Myrica gale*). If suitable habitat conditions are recreated, this could occur through natural regeneration. Active measures will be considered in the unlikely event that natural regeneration is unsuccessful.
- Manage deer grazing pressure through fencing and/or a reduction in deer numbers as agreed with the landowner. Deer numbers will be managed in accordance with the deer management plan for the Proposed Development, provided as **EIA Report Appendix 8.6**.

Woodland Offset Planting

All woodland offset planting will be undertaken off-site at a location to be determined post-consent, as discussed in **Chapter 16** or the **EIA Report**. The extent of these planting areas will be subject to refinement prior to completion of the final HMP but the area identified for restoration will be no less than 14.42 ha, which is the area to be felled as a result of the Proposed Development, as discussed in **EIA Report Chapter 16**. Restoration will aim to restore an area of at least the same size as the area lost as a result of the Proposed Development. Ideally, there will be an overall gain of improved woodland habitat off-site. The confirmed woodland offset planting areas will be shown on a figure in the final HMP.

It has been suggested by NS that, due to the local area being dominated by open moorland and peatland habitat, it may be difficult to identify a suitable compensatory planting area and it may be preferable to undertake off-site peatland habitat restoration rather than woodland planting. Given the loss of woodland required to construct the development, and in line with Policy on the Control of Woodland Removal (Scottish Government, 2009), it is considered that the 'base case' for appropriate compensation is to identify a suitable area for woodland planting. The management prescriptions and monitoring proposals given below reflect this 'base case'. However, the Applicant is open to alternative options such as peatland habitat restoration instead of compensatory planting, if considered acceptable to stakeholders including THC, SEPA and Scottish Forestry. It is noted that the above-noted policy document refers to the potential for woodland removal without a requirement for compensatory planting to be appropriate where it would contribute significantly to enhancing priority habitats and their connectivity. If it is determined that some or all of the woodland offset planting areas would be replaced by peatland habitat restoration areas, then this would be confirmed, described, and shown on a figure in the final HMP.

Management Prescriptions

The following measures will be undertaken to offset the woodland lost as a result of the Proposed Development in order to provide woodland that is of a higher ecological value than the woodland removed from the site:

- Where possible, replanting areas will incorporate broadleaved woodland and mixed woodland, instead of a simple 'like for like' replacement of coniferous woodland plantation and broadleaved woodland. Broadleaved woodland will include species such as downy birch (*B. pubescens*) and alder (*Alnus glutinosa*), which were recorded on the site. As the planting is occurring off-site and is not restricted by the soil conditions on-site, other broadleaved species could also be planted, such as silver birch (*Betula pendula*) and sessile oak (*Quercus petraea*), depending on soil conditions at the planting locations. Where possible, mixed areas will be planted and will include the aforementioned broadleaved species plus species such as Scots pine (*Pinus sylvestris*). Coniferous woodland areas will include species such as lodgepole pine (*Pinus contorta ssp. latifolia*) and Sitka spruce (*Picea sitchensis*), which were recorded on the site, but will also include Scots pine, where possible, to enhance the coniferous species recorded on the site with a native species.
- Woodland creation will follow Forestry Commission Scotland Bulletin Guidance (Rodwell & Patterson, 1994). Planting densities will be between 200 and 400 stems per hectare in blocks rather than narrow strips. Individual tree species should be planted in groups, with trees planted a minimum of 2 m apart. However, these planting guidelines will be dictated by the character of the site and can be used flexibly. The species of tree to be planted will be determined further to ground investigation in year 1 of the implementation of the final HMP. Woodland planting will take place in agreement with landowners. Planting will not take place in frozen or waterlogged ground. Where possible, new woodland will be planted next to an existing woodland as larger areas support more species and the existing woodland will provide a source for the natural colonisation of ground flora in the new woodland. New woodland should contain equal proportions of trees and shrubs, such as hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*), to provide a diverse habitat structure and increase the ecological value. If the new woodland area is larger than 2 ha, approximately 20-30% of the area will be left unplanted to form open glades and rides within the woodland. Rides should be at least as wide as the height of the surrounding trees once they reach maturity. Tree shelters/guards or fencing will be used to protect immature trees from grazing.
- To compensate for the loss of W4c *Betula pubescens*–*Molinia caerulea* wet woodland (*Sphagnum sp.* sub-community), riparian planting of birch, alder and willow species, such as goat willow (*Salix caprea*) and eared willow (*S. aurita*), will occur along the Feith Osdail. This will also have the added benefit of providing shelter for fish, aquatic invertebrates and otter (*Lutra lutra*). Riparian woodland acts as corridors to enhance connectivity by creating links within and between woodland habitats, providing routes for dispersing or migrating mammals, such as otter as well as foraging or commuting bats. Trees help prevent bank erosion and give shelter and shade for salmonid fish. Riparian vegetation also increases biodiversity and provides habitat for water vole. The creation and management of riparian vegetation will follow the Scottish Environment Protection Agency (SEPA) good practice guide (SEPA, 2009).

Enhancement Measures

Pine Marten

Pine marten are often forced to build dens in man-made structures or in marginal habitats, such as scrub and heath, in response to a lack of other denning opportunities in the human-influenced landscape (Twining *et al.*, 2020). In the short-term, the use of artificial den boxes may mitigate the main source of human conflict with this species and encourage breeding success in area where pine martens are known to be present. A moderate level of pine marten activity was recorded on the site through the presence of scat, though no dens were recorded.

As such, an opportunity for enhancement exists through the deployment of den boxes within the coniferous woodland plantation on the site.

Management Prescriptions

The following measures will be undertaken to enhance the coniferous woodland plantation for use by pine marten:

- A minimum of two den boxes will be installed on suitable trees on the site. Installation will follow good practice guidance (Croose *et al.*, 2016), with the boxes installed in areas of long-term woodland retention away from public roads. Each box will be fitted to a tree at a minimum height of 4 m to avoid disturbance.

Reptiles and Amphibians

Although no signs of reptiles or amphibians were recorded on the site, the open habitats, such as the areas of mire in the east and west of the site, are considered to be suitable for these groups. Tree felling for the Proposed Development is also likely to provide more open habitats for these groups. As a result, an opportunity for enhancement exists through the creation of artificial refugia from the brash present after felling.

Management Prescriptions

The following measures will be undertaken to encourage the use of suitable habitats by reptiles and amphibians:

- Five rock piles will be created in mire habitat and felled areas to attract common lizard (*Zootoca vivipara*) by providing shelter and an area for basking. The piles will be scattered throughout the habitat and created using a variety of rock sizes, including larger flat rocks for basking. They will be placed in open, sunny locations.
- Three artificial refugia will be created for amphibians and invertebrates by building small piles of deadwood from the brash created by felling. The refugia will be a minimum of 1 m wide and 50 cm high.

American Mink

American mink are a non-native invasive species that first became established in the UK in the 1930s when animals escaped from fur farms (NS, 2020). The species is an introduced predator that has an adverse effect on native wildlife, particularly water vole and ground-nesting birds. American mink may also result in salmonid mortality in some river systems (NS, 2020).

Two probable American mink scats were recorded on the Feith Osdail in 2014, although no signs were recorded in the 2017 and 2020 surveys. It is likely that mink are still present due to the absence of water vole despite the presence of suitable habitat to support this species. As a result, an opportunity for enhancement exists through mink control to encourage water vole to return to the site with the removal of this introduced predator.

Management Prescriptions

The following measures will be undertaken to control American mink and encourage water vole to recolonise the Feith Osdail:

- The installation of a mink monitoring raft on the Feith Osdail, such as those provided by the Scottish Invasive Species Initiative (SISI) (SISI, 2020). The raft will be deployed on the edge of the Feith Osdail so that it floats close to the bank. The raft can be installed anywhere on the Feith Osdail where it occurs within the site. This raft is used to confirm the presence of mink with a wooden tunnel containing a clay pad to capture footprints.
- As soon as American mink are confirmed to be present from mink footprints in the clay pad, a live capture trap will be installed in the raft's tunnel, replacing the clay pad (SISI, 2020). Any mink captured in the live trap will be culled humanly. This will be done by a suitably qualified person, such as the deer manager for the site, or by SISI project staff. Any other species captured in the trap, such as voles or mice, will be released unharmed.

Work Programme

A detailed work programme will be developed in consultation with THC and the landowner as part of the development of the final HMP.

Funding and Duration

The final HMP and implementation will be funded in full by the Applicant and will continue for the lifetime of the Proposed Development i.e. approximately 30 years.

Monitoring

Peatland Restoration

Vegetation surveys undertaken by suitably qualified ecological professionals will monitor the success of peatland restoration and highlight the need for any further management measures. Surveys will collect data on the structure and composition of the vegetation, and plant species abundance and diversity from permanent quadrats in the restored areas. Monitoring will commence in summer of year 1 of the implementation of the final HMP (during the first year of operation of the Proposed Development) and will be repeated during the operational life of the Proposed Development i.e. following initial baseline surveys in year 1, surveys will also occur in at least years 3, 5, and 10. The requirement for longer-term monitoring, e.g. in years 15, 20 and 25, will be subject to ongoing review of the results and agreement with statutory consultees.

If vegetation surveys record significant trampling or grazing by deer affecting the success of peatland restoration areas then deer culling and/or fencing will be completed in line with the deer management plan provided in **EIA Report** Appendix 8.6. Culling numbers may need to be increased if deer are having an adverse effect on the restored habitats.

Monitoring of restoration activities, e.g. ditch/drainage blocking will also be undertaken to record progress in the completion of the physical works to install, maintain and, where necessary, repair those features. This monitoring will be completed by windfarm operations staff over the course of the first five years of operation of the Proposed Development. Any faults or issues identified during this monitoring will be addressed as soon as possible.

Woodland Offset Planting

New areas of woodland will require monitoring and management, particularly in the first 2-3 years when immature trees are establishing themselves. New trees will be inspected once a year to ensure they are not being choked by other vegetation, such as grass species, until tree shelters/guards are removed. Tree guards will be removed when the base of the tree reaches 7-10 cm in diameter, typically 3-5 years after planting.

Vegetation surveys undertaken by suitably qualified ecological professionals will monitor the success of woodland offset planting and highlight the need for any further management measures. Surveys will collect data on the structure and composition of the vegetation, and plant species abundance and diversity from permanent quadrats in the planted areas. The success or failure of tree planting will be noted during each survey. If more than 25% of planted trees in an area of new woodland have failed, additional planting will be required. Monitoring will commence in summer of year 1 of the implementation of the final HMP (during the first year of operation of the Proposed Development) and will be repeated during the operational life of the Proposed Development i.e. following initial baseline surveys in year 1, surveys will also occur in year 5. The requirement for longer-term monitoring, e.g. in years 10, 15, 20 and 25, will be subject to ongoing review of the results and agreement with statutory consultees.

If vegetation surveys on the site record significant trampling or grazing by deer affecting the success of the wet woodland planting along the Feith Osdail then deer culling and/or fencing will be completed in line with the deer management plan provided in **EIA Report** Appendix 8.6. Culling numbers may need to be increased if deer are having an adverse effect on the new area of wet woodland within the site.

Long-term management of new woodland areas will be undertaken by landowners in consultation with THC and NS, where required. Management may include deer control, selective thinning, replanting, rotational mowing

to maintain open rides and glades, and the control of invasive non-native species, such as rhododendron (*Rhododendron ponticum*).

Pine Marten Den Boxes

Pine marten den boxes will be monitored, by suitably qualified ecological professionals under licence from NS, once per year in May, when breeding females are occupying natal den sites with their dependent kits. Boxes will initially be checked for signs of use by observing them from a distance using binoculars. Following an initial inspection, a licensed surveyor will access the box using a ladder.

Monitoring will commence in May of year 1 of the implementation of the final HMP (during the first year of operation of the Proposed Development) and will be repeated during the operational life of the Proposed Development i.e. following initial baseline surveys in year 1, surveys will also occur in year 2, 3, 4 and 5. The requirement for longer-term monitoring, e.g. in years 6, 7, 8, 9 and 10, will be subject to ongoing review of the results and agreement with statutory consultees.

American Mink

The monitoring raft will be checked for American mink footprints every one to two weeks. As soon as a live capture trap is installed, the raft will be checked daily for captured mink. Monitoring will be undertaken by the deer manager of the site and/or by SISI project staff, where applicable.

Summary

The methodology for all monitoring surveys will be agreed with THC and NS. Reports will be submitted to THC and NS no later than six months following the survey in each monitoring year. The reports will highlight the management measures completed to date, the results of the surveys and any measures proposed for the next reporting period. The results will be regularly reviewed by the HMP management team, in consultation with the landowner, to ensure the HMP objectives are being met and to determine any appropriate amendments, where practicable.

Amendments

The final HMP will be a live document and will be updated following monitoring results, unexpected events or changes in guidance. Approval by THC and NS will be sought for any amendments before revised measures are implemented.

References

- Croose, E., Birks, J.D.S and Martin, J. (2016). *Den boxes as a tool for pine marten *Martes martes* conservation and population monitoring in a commercial forest in Scotland*. Conservation Evidence (13), pp. 57-61.
- NS (2020). *American Mink*. Available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/american-mink>. Accessed on: 04 November 2020.
- Rodwell, J.S. and Patterson, G.S. (1994). *Creating New Native Woodlands*. Forestry Commission Bulletin 112. Her Majesty's Stationary Office, London.
- SISI (2020). *Mink Control Project*. Available at: <https://www.invasivespecies.scot/mink-control-project>. Accessed on: 04 November 2020.
- SEPA (2009). *Engineering in the Water Environment Good Practice Guide: Riparian Vegetation Management*. Second edition. WAT-SG-44.
- SNH (2016). *Planning for Development: What to Consider and Include in Habitat Management Plans*. Available at: <https://www.nature.scot/sites/default/files/2019-01/Guidance%20-%20Planning%20for%20development%20-%20-%20What%20to%20consider%20and%20include%20in%20Habitat%20Management%20Plans.pdf>. Accessed on: 29 September 2020.
- Twining, J.P., Montgomery, W.I., Reid, N., Marks, N., Tosh, D.G. and Scantlebury, D.M. (2020). *All forests are not equal: population demographics and denning behaviour of a recovering small carnivore in human modified landscapes*. Wildlife Biology (4).
- UK Government (1994). *The Conservation (Natural Habitats Etc.) Regulations (as amended)*. Available at: <http://www.legislation.gov.uk/uksi/1994/2716/contents/made>. Accessed on: 29 September 2020.



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