



Chapter 8

Ecology

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- Figure 8.1: Designated Sites for Nature Conservation;
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- Figure 8.4: Phase 1 Habitat Survey Plan;
- Figure 8.5: National Vegetation Classification (NVC) Survey Plan;
- Figure 8.6: Bat Activity Survey Plan;
- Figure 8.7: Bat Roost Survey Plan; and
- Figure 8.8: Area of semi natural woodland along access track.

Technical Appendices (Volume 4)

- Technical Appendix 8.1: Terrestrial Mammals
- Technical Appendix 8.2: Fish Habitat Survey
- Technical Appendix 8.3: Habitats and Vegetation
- Technical Appendix 8.4: Bats
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Chapter 8

Ecology

8.1 Executive Summary

An assessment of the potential impacts upon ecological (non-avian) features as a result of the construction and operation of Earraghail Renewable Energy Development (RED) ('the proposed Development') has been undertaken in accordance with the Chartered Institute for Ecology and Environmental Management (CIEEM) guidance '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*'.

Baseline ecological conditions to inform the design and assessment of the proposed Development have been established through a desk study review of existing information and ecological field surveys, informed through consultation with NatureScot, species specialists and biological recording groups.

The Tarbert Woods Special Area of Conservation (SAC) and Tarbert to Skipness Coast Site of Special Scientific Interest (SSSI) are located adjacent to the Site. The evolution of a sensitive design together with embedded mitigation and good practice measures have ensured no infrastructure is located within any designated site for nature conservation and no indirect effects upon any such site will occur.

Habitats within the Site are predominantly comprised of coniferous plantation woodland of low ecological value, with areas of semi-improved and marshy grassland, blanket and modified bog and dry and wet dwarf shrub heath, intersected by a small number of watercourses. Scheme design has inherently sought to minimise the requirement for habitat losses within the Site, including sensitive blanket bog and heath communities identified. As such, overall direct and indirect habitat losses as a result of the proposed Development will not be significant and habitat restoration measures will be undertaken in accordance with a Construction Environmental Management Plan (CEMP). An outline CEMP is provided as **Technical Appendix 3.1**.

Baseline studies have established that the Site is not considered to represent a site of concern to bat collisions in accordance with current NatureScot guidance. Low levels of bat activity were recorded on-site, with habitats considered to provide very limited roosting and foraging opportunities. Sensitive design of the proposed Development has adopted minimum mitigation requirements for bats in accordance with current NatureScot guidance, maintaining appropriate stand-off buffer zones between wind turbines and key bat habitat features (woodland edges and watercourses). No significant effects upon bat species are therefore predicted to occur as a result of the proposed Development.

Baseline studies have also established the use of the Site by pine marten with evidence of badger, otter and red squirrel also recorded locally. Common reptile and amphibian species may also be present. Water vole and Scottish wildcat are considered to be absent from the Site. Watercourses within and intersecting the Site are also established to be of low importance for fisheries interests.

Due to the relative scale of the proposed Development within the context of the Site and the minimised number of watercourse crossings, potential significant effects upon the aquatic environment have been avoided. Good practice measures, including pre-construction surveys and the appointment of a suitably qualified Ecological Clerk of Works (ECoW), will also ensure the protection of protected species during the construction and operational phases of the proposed Development.

No significant residual effects upon any important ecological feature are therefore predicted to occur.

The proposed Development provides opportunity to deliver notable habitat improvements within the Site, including the peatland restoration and native woodland planting. A Habitat Management Plan (HMP), has therefore been prepared (**Technical Appendix 8.5**) which will be submitted to Argyll and Bute Council (A&BC) for approval.

8.2 Introduction

1. This Chapter describes and evaluates the baseline (non-avian) ecology interests of the Site and surrounding area.
2. It then presents an assessment of the potential effects of the proposed Development upon important ecological features and where necessary details mitigation and/or compensation measures required to offset any potentially significant adverse effects.
3. Where appropriate, enhancement proposals are also outlined to provide beneficial management for species and habitat interests within the Site as part of the proposed Development.
4. Baseline ornithological conditions and an assessment of the potential effects of the proposed Development upon ornithological (avian) features is presented separately in **Chapter 9**.
5. Baseline conditions and an assessment of potential effects in relation to hydrology, hydrogeology, geology and soils (including peat and Groundwater Dependent Terrestrial Ecosystems (GWDTEs)), is presented in **Chapter 10**, with baseline conditions and an assessment of potential effects in relation to Forestry presented in **Technical Appendix 15.1**.
6. Elements of the above Chapters overlap with Ecology and therefore, may be referred to within this Chapter.

8.3 Legislation, Policy and Guidance

7. In the preparation of this Chapter, reference has been made to the following key pieces of legislation, policy and guidance.

8.3.1 Legislation

- the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive');
- the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations)¹;
- Conservation of Habitats and Species Regulations 2017;
- the Wildlife and Countryside Act 1981;
- the Wildlife and Natural Environment (Scotland) Act 2011;
- the Nature Conservation (Scotland) Act 2004;
- the Protection of Badgers Act 1992; and
- the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.

8.3.2 Policy

- Scottish Planning Policy (SPP) 2014 - identifies that biodiversity is important because it provides natural services and products which we rely on, that it is an important element of sustainable development and makes an essential contribution to the economy and cultural heritage of Scotland. All Public Bodies in Scotland, including planning authorities, have a duty to 'further the conservation of biodiversity' under the Nature Conservation (Scotland) Act 2004 and the SPP highlights that this should be reflected in development plans and development management decisions;
- Scottish Government Planning Advice Note 60: Planning for Natural Heritage 2008 - provides details on how development and the planning system can contribute to the conservation, enhancement, enjoyment and understanding of Scotland's natural environment and encourages developers and planning authorities to be positive and creative in addressing natural heritage issues; and
- the Argyll and Bute Local Development Plan 2015 - provides the local planning framework for the Argyll and Bute Council (A&BC) area, excluding the Loch Lomond and Trossachs National Park area. It contains a number of policies relating to development and land use in Kintyre. Those relevant to this assessment include:
 - o Policy LDP3 - Supporting the Protection, Conservation and Enhancement of our Environment; and
 - o Policy LDP6 – Supporting the Sustainable Growth of Renewables.

¹ The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019.

- In addition to the LDP, A&BC have adopted Supplementary Guidance (March 2016) and additional Supplementary Guidance (December 2016) with respect to Renewable Energy. The following Supplementary Guidance policies are potentially relevant:
 - SG LDP Sustainable – Sustainable Siting and Design Principles;
 - SG LDP ENV7 – Water Quality and the Environment;
 - SG LDP ENV1 – Development Impact on Habitats, Species and our Biodiversity;
 - SG LDP ENV2 – Development Impact on European Sites;
 - SG LDP ENV4 – Development Impact on Sites of Special Scientific Interest (SSSIs) and National Nature Reserves;
 - SG LDP ENV5 – Development Impact on Local Nature Conservation Sites (LNCS); and
 - SG LDP ENV 6 – Development Impact on Trees/Woodland.

8.3.3 Guidance

- The Scottish Biodiversity List (SBL) (Scottish Government, 2013) - a list of animals, plants and habitats that the Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. Both scientific and social criteria have been used to define the SBL. Scientific criteria include all Priority Species and Priority Habitats included in the now superseded UK Biodiversity Action Plan (BAP) (UK Biodiversity Partnership, 2007 *et seq.* (Joint Nature Conservation Committee (JNCC), 2016)), which occur in Scotland. Social criteria are based on the results of an omnibus survey of the Scottish public carried out in 2006, so it should, therefore, be noted that not all SBL species and habitats are necessarily rare or protected;
- Argyll and Bute Biodiversity Action Plan 2010-2015 (Argyll and Bute Biodiversity Action Plan, 2010) - lists local priority habitats and species. Local priority habitats of most relevance to the Site include: purple moor grass and rush pastures, blanket bog, lowland dry acid grassland and lowland heathland. Local priority species potentially of most relevance to the Site include: adder *Vipera berus*, red squirrel *Sciurus vulgaris*, water vole *Arvicola amphibius*, otter *Lutra lutra*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long eared bat *Plecotus auritus*, noctule bat *Nyctalus noctula*, Atlantic salmon *Salmo salar*, river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*. A range of invertebrates including marsh fritillary butterfly *Euphydryas aurina* and freshwater pearl mussel *Margaritifera margaritifera*;
- Argyll and Bute Council (2017) A Biodiversity Technical Note for Planners and Developers;
- 'General Pre-application/scoping advice to developers of onshore wind farms' (NatureScot², 2020a);
- 'Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine' (CIEEM, 2018);
- 'Assessing the Cumulative Impact of Onshore Wind Energy Developments' (SNH, 2012);
- 'Standing Advice for Planning Consultations. Protected Species: Otter' (NatureScot, 2020b);
- 'Standing Advice for Planning Consultations. Protected Species: Badger' (NatureScot, 2020c)
- 'Standing Advice for Planning Consultations. Protected Species: Pine Marten' (NatureScot, 2020d);
- 'Standing Advice for Planning Consultations. Protected Species: Water Vole' (NatureScot, 2020e);
- 'Standing Advice for Planning Consultations. Protected Species: Red Squirrel' (NatureScot, 2020f);
- 'Standing Advice for Planning Consultations. Protected Species: Wildcat' (NatureScot, 2020g);
- 'Bats and onshore wind turbines: Survey, Assessment and Mitigation' (SNH, 2019); and
- 'Planning for development: What to consider and include in Habitat Management Plans' (SNH, 2016).

8.4 Scope and Consultation

8.4.1 Consultation and Scoping Responses

8. A request for pre-application advice and EIA Scoping Opinion was submitted to the ECU. Further details on scoping are provided in **Chapter 6**.
9. In addition, consultation with species specialist and biological recording groups was also undertaken to identify any existing ecological information for the Site and the surrounding area.
10. Consultation responses of relevance to ecology were received from the following:

² Formerly Scottish Natural Heritage (SNH).

- Argyll and Bute Council (A&BC);
- Tarbert and Skipness Community Council (TSCC);
- NatureScot;
- Royal Society for the Protection of Birds (RSPB);
- Scottish Environmental Protection Agency (SEPA);
- Marine Scotland Science (MSS);
- Argyll District Salmon Fishery Board (ADSFB);
- Argyll Biological Records Centre (ABReC) via Highland Biological Recording Group (HBRG);
- Saving Scotland's Red Squirrels (SSRS);
- Scottish Wildcat Action (SWA)³; and
- Scottish Beaver Trial.

11. Argyll Fisheries Trust were also consulted but no response was received.

Table 8.1 Summary of Consultation Responses

Consultee	Summary of Key Issues	Where addressed in Chapter
Argyll and Bute Council	The Council agrees that the ranges of surveys conducted and proposed, the approach to the surveys, and the approach to the assessment of effects are appropriate. The Council's Local Biodiversity Officer suggests keeping a watching brief for Red Squirrel, Wildcat and Beaver. An 'Aid Memoir' of signs of these species should be included in the Construction Environmental Management Plan (CEMP) toolbox talks. The council agrees that with the exception of Tarbert Woods SAC and Tarbert to Skipness Coast SSSI, significant adverse effects on designated sites can be scoped out;	A draft CEMP is provided as Technical Appendix 3.1 .
TSCC	The Tarbert to Skipness Atlantic Oak wood habitat is a very rare and fragile SSSI woodland. It is one of the last remaining fragments of truly native woodland that has survived some 10,000 years. These pristine woodlands now make up less than 1% of the designated woodland area of the UK. Any damage to this invaluable ecosystem will take over 200 years to repair itself. TSCC would like to know what measures will be taken to protect and preserve these woods. The proposed Development would also impact important peatland habitat - for which the UK has a global obligation and is vital for sequestering carbon. It can be argued that it is more important than establishing windfarms, which are located on upland sites for obvious reasons. Upland sites are also where our blanket bogs are.	Relevant to forestry and to be addressed in Chapter 15 . A draft CEMP is provided as Technical Appendix 3.1 . Considered in Chapter 10 . A draft CEMP is provided as Technical Appendix 3.1 .
NatureScot	NatureScot content with the proposed scope of surveys and assessment of ecological receptors and would be happy to provide further advice on	

³ Now Saving Wildcats.

	<p>any variations to the best practice guidance and survey methodologies if required.</p> <p>NatureScot understand that summer and autumn bat surveys were undertaken in 2019 in accordance with the 2019 Bats and Onshore Wind Turbines Guidance. NatureScot would accept 2021 spring survey data to inform the EIA.</p> <p>Stated that ecological surveys are also required on the proposed access route to the Site and should be presented within the EIA Report.</p> <p>In addition to the construction and operational effects of the proposed Development on protected species and habitats, the assessment will also need to consider potential direct and indirect impacts from the solar array, battery storage and aviation lighting aspects.</p> <p>The eastern boundary of the Site encompasses part of the Tarbert to Skipness Coast Site of Special Scientific Interest (SSSI), designated for its upland oak woodland and bryophyte assemblage features. This SSSI also forms part of the Tarbert Woods Special Area of Conservation (SAC) for which the Western Acidic Oak Woodland is the notified feature. NatureScot understand that no renewable energy development infrastructure is proposed within the designated site; however, are pleased the EIA Report will include sufficient information to inform a Habitats Regulation Appraisal upon the Tarbert Woods SAC as well as an assessment of the impacts on the features of the Tarbert to Skipness Coast SSSI.</p> <p>NatureScot are available to discuss potential habitat enhancement measures for the Tarbert to Skipness Coast SSSI. The most recent site condition monitoring indicates that the key pressures on the site include overgrazing by woodland herbivores and the presence of <i>Rhododendron ponticum</i>.</p> <p>The Site is unlikely to support beaver populations and no specific surveys are required; however, if evidence of beaver activity (or any other scoped out species) is recorded during other European Protected Species (EPS) surveys, NatureScot can advise further.</p> <p>If wild deer are present on or would use the Site, an assessment of the potential impacts on deer</p>	<p>Surveys were undertaken of the proposed access route and the results are presented in the technical appendices and figures appended to this Chapter.</p> <p>The Assessment of Effects section (Section 8.6) considers potential impacts from the solar array, the battery energy storage system (BESS) and aviation lighting aspects.</p> <p>Information to inform a HRA is provided in Section 8.7.6.1.</p> <p>No evidence of beaver activity recorded during surveys. Species is scoped out of assessment.</p> <p>Deer are managed by landowner (FLS). As such, there will be commitment to liaise with FLS to ensure that ongoing deer management activities account for</p>
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	welfare, habitats, neighbouring and other interests should be presented as part of the EIA Report.	the construction and operation phases of the proposed Development.
RSPB	<p>RSPB recommend that the layout (turbines and tracks etc) of the windfarm avoids open habitats/planted deep peat as far as possible - siting turbines within the forestry would minimise biodiversity impacts. The open upland areas support important breeding species assemblages. There is potential for peatland restoration and also native woodland expansion/restoration of nearby SAC and SSSIs.</p> <p>With woodland SAC and SSSIs nearby RSPB advise that full consideration is given to delivering for these important habitats in terms of compensatory planting and habitat/species mitigation.</p> <p>The Site includes/adjoins the Tarbert Woods SAC and the Tarbert to Skipness Coast SSSI which hold important lichen and bryophyte assemblages within Atlantic oak woodland (temperate rainforests). Although no direct work is planned within these sites, this proposed Development provides a fantastic opportunity to deliver for this internationally important habitat. The habitat is incredibly rare on a global scale; it has the greatest concentration of oceanic bryophytes and lichens in Europe and there is a responsibility to conserve it through Scotland's Biodiversity Strategy. As with all habitats, climate change and other issues impact upon it and this project provides the ideal opportunity to deliver positive long-term management.</p> <p>Being predominantly coniferous forestry, the SNH Peatlands map shows the Site as class 5 which is already impacted due to forestry. However, consideration of peat depths is vitally important to avoid deep peat and so a detailed peat mapping exercise is required. The design process should ensure peat impacts are avoided and should promote opportunities for restoration and positive management.</p> <p>Carbon calculations for the proposed Development should be based on the latest version of the Scottish Government's carbon calculator and should clearly show the carbon payback period for the proposed scheme.</p> <p>Habitat Management/Mitigation – Including Forestry Compensatory Planting</p>	<p>Noted.</p> <p>Compensatory planting is considered in Chapter 15. Habitat/species mitigation is addressed in the Assessment of Effects section (Section 8.6) as well as in the Habitat Management Plan (HMP) (Technical Appendix 8.5).</p> <p>Considered in Chapter 10.</p> <p>Carbon calculations included in Chapter 15.</p> <p>Compensatory Planting is unrelated to Habitat Management and Mitigation, and is addressed in Technical Appendix 15.1. Habitat/species mitigation is addressed in the Assessment of Effects section</p>

	<p>The EIA should include details of proposals for mitigation/enhancement in relation to priority habitats and species.</p> <p>RSPB would welcome the restoration of suitable areas to bog/peatland habitat and would expect that this represents an opportunity to substantially benefit the surrounding woodland designated sites through planting of native tree species in suitable areas to benefit biodiversity. This would help to deliver benefits for priority species (golden eagles, black grouse etc) as well as achieving aims within the Argyll and Bute Woodland and Forestry Strategy and Scottish rainforests. Ideally, any compensatory planting should be included as part of the EIA and its focus by on native oak woodland and scrub to benefit designated sites. A detailed HMP should be submitted with any application and should include detailed ecological justification for any proposals.</p>	<p>(Section 8.6) as well as in the Habitat Management Plan (HMP) (Technical Appendix 8.5). Habitat/species mitigation is addressed in the Assessment of Effects section (Section 8.6) as well as in the Habitat Management Plan (HMP) (Technical Appendix 8.5). Compensatory Planting is unrelated to Habitat Management and Mitigation, and is addressed in Chapter 15.</p>
<p>SEPA</p>	<p>Advised that Ground Water Dependent Terrestrial Ecosystems (GWDTE) are protected under the Water Framework Directive and therefore the layout and design of the development must avoid impact on such areas.</p> <p>Require the following information to be included in the submission:</p> <p>a) A map demonstrating that all GWDTE are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey needs to extend beyond the site boundary where the distances require it.</p> <p>b) If the minimum buffers above cannot be achieved, a detailed site specific qualitative and/or quantitative risk assessment will be required.</p> <p>Commented that they are likely to seek conditions securing appropriate mitigation for all GWDTE affected.</p>	<p>Noted.</p> <p>NVC survey methods and results are included in Section 8.5.3.2, presented within Table 8.6 and shown on Figure 8.5.</p> <p>GWDTE status and proposed mitigation are considered in Chapter 10.</p>
<p>MSS</p>	<p>MSS have compiled generic scoping guidelines (https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/Freshwater/Research/onshoreren) for developers to consult. In line with these guidelines, MSS recommend that the developer carries out site characterisation surveys of the water quality and fish populations to determine what species of fish are present and their</p>	<p>Fish surveys have been undertaken and the results are presented in Technical Appendix 8.2 and on Figures 8.3a and 8.3b.</p> <p>Argyll Fisheries Trust was contacted for information on 17 April 2020 regarding local fish populations. Argyll Fisheries Trust stated that they do not have survey data for fish or fish habitats within application</p>

	<p>abundance in the watercourses within and downstream of the proposed development area. Information from the surveys will enable the developer to carry out a full assessment of the potential impacts of the proposed development on the fish populations as required under the Electricity Works (Environmental Impact Assessment) (Scotland) (EIA) Regulations (2017).</p> <p>The results of the site characterisation surveys should be presented in the EIA report along with proposed mitigation measures and details of an integrated water quality and fish population monitoring programme to be carried out before, during and after construction. Further details regarding survey/monitoring programmes can be found at the above website.</p>	<p>boundary, but do have survey data from the main River Skipness channel out of the application boundary collected in 2012.</p>
ADSFB	<p>Argyll District Salmon Fishery Board welcome the commitment to undertake fish habitat surveys as part of the EIA.</p> <p>The proposed location of the Site includes the Skipness River and numerous coastal streams which are host to migratory salmonids and upland streams and lochs which are likely to host multiple populations of brown trout.</p> <p>The developer should consider mitigation for stream crossings to allow free passage of fish and put in place stringent controls on silt management during the construction phase of the project. Where habitat surveys identify important spawning habitat, fish surveys should be carried out both pre and post development to ensure there are no loss or damage to habitat as a result of the development.</p>	<p>Fish surveys have been undertaken and the results are presented in Technical Appendix 8.2 and on Figures 8.3a and 8.3b.</p>
ABReC via HBRG	<p>Provided existing records of non-statutory designated sites, protected and notable species within 2 km of the Site (extended to 10 km for bat species).</p> <p>Commented that they do not generally comment on development proposals, but act as a data provider. As such, no further comment on the proposed Development is provided.</p>	<p>Records are included within the relevant Technical Appendices and considered in the assessment.</p>
SSRS	<p>Provided existing records of red squirrel within 2 km of the Site.</p>	<p>Records are included within the relevant Technical Appendices and considered in the assessment.</p>
SWA	<p>Advised that the nearest record of wildcat <i>Felis silvestris</i> is from the Taynish NNR to the north. Recommend precautionary survey in the winter, using a baited camera trap.</p>	<p>Terrestrial mammal surveys, including for wildcat, have been undertaken and the results are presented in Technical Appendix 8.1 and Figure 8.2.</p>
Scottish Beaver Trial	<p>Advised that the Knapdale beaver population is unlikely to have spread and that the Site is</p>	<p>Noted.</p>

	unlikely to support beavers and that additional survey is not necessary.	
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8.4.2 Effects Scoped Out

15. CIEEM guidelines (2018) stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological features that are sufficiently widespread, unthreatened and/or resilient to impacts of a development proposal. NatureScot guidance (2020a) similarly advises that there are some species which, with standard mitigation measures, are unlikely to experience a significant environmental effect as a result of the construction and/or operation of onshore renewable energy developments. These species do not require surveys to inform the EIA but may require appropriate mitigation to ensure legislative compliance.
16. As such, the assessment presented within this Chapter considers the effects upon designated sites for nature conservation and ecological features which are considered 'important' on the basis of relevant guidance and professional judgement.
17. Where ecological features are not considered so important as to warrant a detailed assessment or where they would not be significantly affected on the basis of baseline information, these are 'scoped out' of the assessment. Mitigation measures for such features may however, still be outlined as appropriate, to reduce and/or avoid any potentially adverse effects, or to ensure legislative compliance.

8.4.2.1 Designated Sites for Nature Conservation

18. In review of Sitelink⁴, the Site is located within 10 km of seven statutory designated sites for nature conservation (see **Table 8.5** and **Figure 8.1**), including Tarbert Woods SAC and Tarbert to Skipness Coast SSSI which are located adjacent to the eastern extent of the Site.
19. Design evolution of the proposed Development and reduction in the application eastern boundary has ensured that no infrastructure is located within Tarbert Woods SAC or Tarbert to Skipness Coast SSSI and there would be no direct impacts upon these designated sites or any other statutory designated site for nature conservation with ecological qualifying interests. The assessment presented within this Chapter will however, consider the potential for significant indirect effects upon the Tarbert Woods SAC and Tarbert to Skipness Coat SSSI qualifying interests.
20. The potential for indirect effects upon the ecological qualifying interests of any statutory designated site for nature conservation, located greater than 2 km from the Site is scoped out of the assessment, by virtue of the static nature of the sites qualifying habitats interests, spatial separation and/or absence of hydrological pathways of connectivity.
21. The potential for impacts upon the following statutory designated sites is therefore scoped out of assessment:
- Artilligan and Abhainn Srathain Burns SSSI;
 - Glen Ralloch to Baravalla Woods SSSI;
 - Ardpatrik and Dunmore Woods SSSI;
 - Arran Northern Mountains SSSI; and
 - Claonaig Wood SSSI.
22. In a review of information provided by ABReC, there are no non-statutory designated sites for nature conservation with ecological qualifying interests located within 2 km of the Site. Due to the spatial separation of the Site from such designations and the absence of any likely pathways for connectivity, potential effects upon non-statutory designated sites for nature conservation are scoped out of the assessment.
23. Sites with ornithological qualifying interests are considered separately in **Chapter 9** and sites with geological and hydrological qualifying interests considered in **Chapter 10**.

8.4.2.2 Habitats and Vegetation

⁴ <https://sitelink.nature.scot/home>.

24. The following habitats which are of less than Local ecological value (see **Table 8.9**), which are not potential GWDTs, are relatively widespread, and/or would not be impacted by the proposed Development, have been scoped out of the assessment. This includes:

- coniferous plantation woodland (further consideration of forestry interests is provided in **Chapter 15**);
- recently felled coniferous woodland;
- bracken;
- bare rock; and
- track.

8.4.2.3 Species

25. As outlined, NatureScot guidance (2020a) advises that “*there are some species that with standard mitigation, are unlikely to experience a significant environmental effect during construction/ operation of onshore wind farms (e.g., moths and other invertebrates, reptiles, amphibians, etc.). Such species do not require surveys to inform the EIA.*”

26. The guidance does however, clarify that “*this advice is not likely to apply where the potentially affected species are European Protected Species (EPS), or where there could be effects on protected species that are interests/features of protected areas.*”

27. In consideration of the nature of the proposed Development and in accordance with NatureScot guidance (2020a), the following species and/or species groups have been scoped out of the assessment:

- Invertebrates: no designated site for nature conservation, designated by virtue of its invertebrate qualifying interests, is located within 2 km of the Site and no existing records of any invertebrate species listed as an EPS or afforded special protection under the provisions of the Wildlife and Countryside Act 1981 (were identified during the desk study within 2 km of the Site. On this basis and due to the relatively small footprint of the proposed Development within the wider context of the Site, and the availability of similar habitats remaining unaffected within the Site, immediate and wider surrounding area, significant negative effects upon other invertebrate populations are also considered unlikely. Invertebrates are therefore scoped out of the assessment.
- Reptiles and amphibians: in accordance with NatureScot guidance (2020a) field surveys for reptiles and amphibians have not been undertaken. Existing records of common toad *Bufo bufo* and adder *Vipera berus*, were however identified during the desk study within 2 km of the Site. No designated site for nature conservation, designated by virtue of its reptile or amphibian qualifying interests, is located within 2 km of the Site. No records of any reptile or amphibian species listed as an EPS were identified during the desk study within 2 km of the Site. This included no records of great crested newt *Triturus cristatus* with the species considered to be absent from this area (McInerney and Minting, 2016). Due to the relatively small footprint of the proposed Development and the availability of similar habitats remaining unaffected within the Site, immediate and wider surrounding area, significant negative effects upon amphibian and reptile populations are considered unlikely. The potential for impacts upon reptiles and amphibians is therefore scoped out of assessment, but consideration is afforded to the provision of mitigation to ensure legislative compliance during the construction phase of the proposed Development, with regards to the protection afforded to common reptile and amphibian species under the Wildlife and Countryside Act 1981.

28. Baseline information collected through desk study, consultation with specialist recording groups and terrestrial mammal surveys, have identified the Site as not being important for the following protected terrestrial mammal species:

- Badger *Meles meles*;
- Otter *Lutra lutra*;
- Pine marten *Martes martes*;
- Red squirrel *Sciurus vulgaris*;
- Water vole *Arvicola amphibius*; and
- Wildcat *Felis silvestris*.

29. Survey methods and results for terrestrial mammals are provided in **Technical Appendix 8.1**. No designated site for nature conservation, designated by virtue of its terrestrial mammal interests, is located within 2 km of the Site and no existing records of badger, pine marten, water vole or wildcat were identified during the desk study within 2 km of the Site. Evidence of badger, otter and pine marten within the Site was limited and did not include any breeding or resting places. No field signs for red squirrel, water vole or wildcat were found within the Site. Due to the relatively small footprint of the proposed

Development in the wider context of the Site, and the availability of similar habitats remaining unaffected within the Site, immediate and wider surrounding area, significant negative effects upon these terrestrial mammal species are considered unlikely. These species are therefore scoped out of the assessment. Consideration is, however, afforded to the provision of precautionary mitigation to ensure legislation compliance with regards the protection afforded to these species under the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations)) and the Wildlife and Countryside Act 1981, as relevant.

30. The proposed Development has the potential to directly impact on fish habitats at watercourse crossings. Survey methods and results for fish are provided in **Technical Appendix 8.2**. The desk study identified that Skipness River supports brown trout, European eel and migratory salmonids. However, functional fish habitat is relatively restricted within watercourses of the Site and is considered to be of low sensitivity. There is potential for indirect effects upon fish populations downstream of the proposed Development, where unmitigated works could result in sedimentation or the escape of other pollutants. Embedded mitigation, including the adoption of culverts which allow free passage, together with good practice construction measures and pollution prevention controls (as detailed within **Chapter 10**) are however considered adequate to avoid any potentially significant adverse effects upon local fish populations. Fish are therefore scoped out of the assessment.
31. The landowner (FLS) actively manage deer within the Site. Correspondence with FLS will be undertaken to ensure the construction and operation of the proposed Development are considered in the deer management protocol. The proposed Development is anticipated to result in some loss of shelter and foraging opportunities for deer, but measures proposed such as native woodland planting and heath restoration (as detailed in the HMP, **Technical Appendix 8.5**) will provide alternative shelter and foraging habitat for deer. Potential for displacement is therefore considered to be limited and unlikely and so deer are scoped out of further assessment within this chapter.

8.5 Approach and Methods

8.5.1 Study Area

32. The study areas within which baseline ecological information, to inform the design and assessment of the proposed Development, has been collected comprising of the Site and extended to appropriate distances in accordance with relevant good practice guidance.
33. The study area used for habitats and vegetation surveys is shown in **Figures 8.4** and **8.5** (with further detail provided in **Technical Appendix 8.3**) and includes all areas within the Site, extended to include coverage of potential wetland habitats, or habitats listed on Annex 1 of the Habitats Directive within 250 m of the proposed Development infrastructure, where access permissions were allowed. This is considered to be in accordance with current guidance (SEPA, 2017) which stipulates survey of a 250 m buffer from excavations deeper than 1 m, and a 100 m buffer for excavations less than 1 m.

The study areas for relevant faunal species are summarised in **Section 8.5.3** and are described in more detail within **Technical Appendices 8.1, 8.2 and 8.4, Figures 8.2, 8.3, 8.6 and 8.7**, and vary in accordance with current NatureScot guidance (SNH, 2019 and NatureScot 2020b-g).

8.5.2 Desk Study

34. A desk study was undertaken to obtain existing information on the presence of designated sites for nature conservation, protected and notable habitats and faunal species within proximity to the Site as follows:
- statutory Designated Sites for Nature Conservation: within 10 km of the Site;
 - non-statutory Designated Sites for Nature Conservation: within 2 km of the Site; and
 - existing records of protected and notable faunal species; within 2 km of the Site, extended to 10 km for bat species.
35. The following key sources were consulted:
- Sitelink;
 - Scotland's Environment Map⁵;

⁵ <https://www.environment.gov.scot/maps/scotlands-environment-map/>.

- ABRcC via HBRG;
- ADSFB;
- SSRS;
- SWA; and
- RSPB.

36. In addition, publicly available EIA documentation for the Sheirdrim Renewable Energy Development (Argyll and Bute Planning Ref. 19/02424/S36), which is located approximately 5 km south west, was also reviewed, together with additional peer reviewed literature and publicly available sources where relevant and referenced where appropriate.

8.5.3 Field Surveys

37. Detailed knowledge of habitats and vegetation, the presence or likely presence of protected and notable faunal species has been derived from field surveys.

38. The following field surveys have been completed:

- Phase 1 habitat survey;
- National Vegetation Classification (NVC) survey;
- terrestrial mammal surveys;
- bat activity surveys;
- bat roost surveys; and
- fish habitat survey.

39. All field surveys have been undertaken within the most recently available 18-month survey window prior to submission, in accordance with current NatureScot guidance (NatureScot, 2020a).

8.5.3.1 Phase 1 Habitat Survey

40. A Phase 1 habitat survey was undertaken between 16 and 17 July 2019 and then updated in September 2020. The survey was undertaken in accordance with the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010).

41. The study area included coverage of all habitats within the Site and out to 250 m, as show in **Figure 8.4**, and as access permissions allowed.

42. Full details are provided in **Technical Appendix 8.3**.

8.5.3.2 NVC Survey

43. A National Vegetation Classification (NVC) survey was subsequently undertaken between 21st and 25th September 2020 following the guiding principles detailed in the National Vegetation Classification: Users' handbook (Rodwell, 2006).

44. The study area included coverage of all habitats within the Site and out to 250 m as shown in **Figure 8.5**, and as access permissions allowed, with focus on those habitats likely to represent habitat types listed on Annex 1 of the Habitats Directive or comprising potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs).

45. Full details are provided in **Technical Appendix 8.3**.

8.5.3.3 Bat Roost Surveys

46. A review of aerial imagery was undertaken to identify any structures located within 200 m of the Site (plus blade length), with the potential to support maternity roosts and/or significant hibernation or swarming sites. This identified four structures (**Figure 8.7**), for which bat roost surveys were undertaken in September 2020 in accordance with NatureScot guidance (SNH, 2019) and Bat Conservation Trust (BCT) guidance (Collins, 2016).

47. Surveys comprised a ground-level preliminary roost assessment in accordance with appropriate survey effort applicable to the level of roost suitability provide by each structure in accordance with BCT guidance (Collins, 2016).

48. Full details are provided in **Technical Appendix 8.4**.

8.5.3.4 Bat Activity Surveys

49. Bat activity surveys were undertaken in 2019 and 2020 in accordance with NatureScot guidance (SNH, 2019) comprising the use of 10 automated monitoring stations distributed within the Site at representative turbine locations, and habitat features (see **Figure 8.6**). This represents more than the minimum number of monitoring stations required for a fourteen-turbine scheme in accordance with NatureScot guidance (SNH, 2019).

50. NatureScot guidance (SNH, 2019) advises a minimum of 10 consecutive monitoring nights for each activity period (spring, summer and autumn) and which has been far exceeded at the minimum number of monitoring stations required for the proposed Development.

51. All sonogram data obtained from activity surveys was uploaded to the online *Ecobat* tool in order to quantify bat activity in accordance with NatureScot guidance (SNH, 2019), with full results presented in **Technical Appendix 8.4**.

8.5.4 Assessment Methodology

52. The assessment presented within this Chapter has been undertaken in accordance with the CIEEM guidelines (CIEEM, 2018) and considers the following main potential impacts upon ecological features associated with the construction and operation of the proposed Development:

- designated sites - potential direct and indirect impacts upon designated sites for nature conservation;
- habitat loss / deterioration - direct and indirect loss and deterioration of habitats;
- mortality / injury - incidental loss of life or injury to species; and,
- disturbance / displacement of Species - disturbance and displacement of faunal species; loss, damage or disturbance to their breeding and/or resting places.

53. The potential effects are considered as a result of the proposed Development alone and cumulatively, in-combination with other similar developments.

54. The assessment includes the following stages:

- determination and evaluation of important ecological features;
- identification and characterisation of impacts;
- outline of mitigating measures to avoid and reduce significant effects;
- assessment of the significance of any residual effects after such measures;
- identification of appropriate compensation measures to offset significant residual effects; and
- outline of appropriate opportunities for ecological enhancement.

8.5.4.1 Determining Importance

55. Relevant European, national and local guidance has been referred to in order to determine the importance of ecological features.

56. In addition, importance has also been determined using professional judgement and taking account of the results of baseline surveys, desk study and the importance of features within the context of the appropriate geographic area.

57. For the purposes of this assessment the importance of ecological features is considered within a defined geographical context from Local to International, as outlined in **Table 8.2**.

58. It should be noted that importance does not necessarily relate to the level of legal protection that a feature receives and ecological features may be important for a variety of reasons, such as their connectivity to a designated site, rarity or the geographical location of species relative to their known range.

59. Similarly, whilst a particular feature may be associated with a nearby internationally designated site, the feature is not automatically assigned a value of 'International' importance.

Table 8.2: Geographical Scale of Ecological Feature Importance

Importance	Definition
International	An internationally designated site i.e., SAC and/or Ramsar site or candidate site (cSAC). Large areas of priority habitat listed under Annex I of the Habitats Directive, and smaller areas of such a habitat that are essential to maintain the viability of that ecological resource. A regularly occurring, nationally significant population of any internationally important species, listed under Annex II or Annex IV of the Habitats Directive.
National	A nationally designated site e.g., SSSI, or area meeting criteria for national level designations. Significant extents of a priority habitat identified in the Scottish Biodiversity List (SBL), or smaller areas which are essential to maintain the viability of that ecological resource. A regularly occurring, regionally significant population of any nationally important species listed as a SBL priority species and species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
Regional	Small but viable areas of key semi-natural habitat identified in the SBL. A regularly occurring, locally significant population of any nationally important species listed on the SBL and species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive. Sites which exceed the local authority-level designations but fall short of SSSI selection guidelines, including extensive areas of semi-natural woodland.
Local	Nature conservation sites selected on local authority criteria. Other species of local conservation, specifically those listed within the Argyll and Bute Biodiversity Action Plan (LBAP). Areas of habitat or species considered to appreciably enrich the ecological resource within the local context e.g., species-rich flushes or hedgerows. All other species and habitats that are widespread and common and which are not present in locally, regionally or nationally important numbers or habitats which are considered to be of poor ecological value.

8.5.4.2 Characterising Impacts

62. Once identified, potential impacts are described making reference to the following characteristics as appropriate:

- adverse or beneficial;
- extent;
- magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

63. The assessment only makes reference to those characteristics relevant to understanding the nature of an impact and determining the significance of effect. For the purposes of this assessment the temporal nature of potential impacts are described as follows:

- negligible: <12 months;
- short-term: for 1-5 years;
- medium-term: for 5-10 years;
- long-term: 10-30 years; and
- permanent: >30 years.

64. The criteria used to determine the magnitude of impact are set out in **Table 8.3**.

65. The likelihood or probability that an impact would occur is also described as far as possible based on best available information and is referred to using the following terms: certain, likely, unlikely or highly unlikely.

Table 8.3: Impact Magnitude

Magnitude	Definition
Very High	The impact may result in the permanent total or almost complete loss of a site, a habitat and/or species status or productivity.
High	The impact may adversely affect the conservation status of a site and/or species population, in terms of the coherence of its ecological structure and function (integrity), across its whole area, that enables it to sustain the habitat, complex of habitats and/or the population levels of species of interest.
Medium	The impact would not adversely affect the conservation status of a site and/or species, but some element of the functioning might be affected and impacts could potentially affect its ability to sustain some part of itself in the long term.
Low	Neither the above or below applies, but some observable adverse effect is evident on a temporary basis or affects extent of habitat/species abundance in the local area.
Negligible	A very slight (indiscernible) reduction in a site and/or species status or productivity and/or no observable effect.
Beneficial	The impact is considered to be beneficial to a species or sites nature conservation status.

8.5.4.3 Determining Significance

68. For the purposes of assessment, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important features' or for biodiversity in general.
69. Significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) and are identified on the basis of magnitude of impact, professional judgement and best available evidence.
70. CIEEM guidelines (2018) note that "*A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures.*"
71. For the purposes of this assessment, significant effects are primarily expressed with reference to an appropriate geographical scale.
72. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect has been assumed as a precautionary approach. Where uncertainty exists, this is acknowledged.
73. Where the ecological assessment proposes measures to mitigate adverse effects on ecological features, a further assessment of residual ecological effects, taking into account any ecological mitigation recommended, has been undertaken.
74. CIEEM guidelines (2018) do not recommend the sole use of a matrix table as commonly set out in EIA Report Chapters to determine 'significant' and 'non-significant' effects. For the purposes of this assessment presented herein, **Table 8.4** sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations.

Table 8.4: Thresholds of Significance

Thresholds of Significance		
Significant	Major Adverse/Beneficial	A medium or high, medium or long-term adverse or beneficial effect upon the integrity of an ecological feature at a National (Scottish) or International level.
	Moderate Adverse/Beneficial	A high or very high, long-term or permanent adverse or beneficial effect upon the integrity of an ecological feature at a Regional level (or suitable alternative) or above.
Non-significant	Minor Adverse/Beneficial	A low or medium, short-term or long-term adverse or beneficial effect upon the integrity of an ecological feature at a Regional level (or suitable alternative) or below.
	Negligible Adverse/Beneficial	A negligible or low adverse or beneficial effect upon the integrity of an ecological feature, typically at a site level or below.

8.5.5 Avoidance, Mitigation, Compensation and Enhancement

76. The mitigation hierarchy has been adopted to avoid, mitigate and compensate for potential ecological impacts as a result of the proposed Development:

- Avoidance is used where an impact has been avoided e.g., through changes in design;
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact *in situ*;
- Compensation describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible; and
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

8.5.6 Cumulative Effects

77. Potentially significant ecological effects can result from individually insignificant but collectively significant actions of multiple developments taking place over a period of time or concentrated in close proximity to one another.

78. The assessment presented within this Chapter, considered the potential for significant cumulative effects with other onshore renewable energy developments located within 10 km of the Site, depending upon the regular range of mobile species e.g. bats.

79. For aquatic features, potentially cumulative effects are however, only likely to be significant where other similar developments are located in closer proximity (2 km) and within the same hydrological catchment.

80. The cumulative assessment includes consideration of:

- existing wind energy developments, either operational or under construction;
- consented wind energy developments, awaiting implementation; and
- wind applications awaiting determination within the planning process with design information in the public domain.

81. Those developments which have been withdrawn and/or refused are not considered, unless an appeal is currently in progress and information is available.

82. Small wind turbine developments, including those with three turbines or less, have also been scoped out as applications for such developments do not generally consider the potential for impacts upon ecological receptors in sufficient detail.

83. The assessment considers the potential for significant cumulative effects upon ecological features in-combination with other wind developments, which are operational, under construction, consented (but for which construction works may not yet have started) and those for which planning applications have been submitted.

84. Other non-wind energy developments are not considered in the cumulative assessment. This includes Inveraray to Crossaig Overhead Power Line and formation of a borrow pit for extraction of hard rock and siting of ancillary infrastructure for the Port Ann-Crossaig overhead line project (21/01154/MIN) in the north of the Site.
85. For the Inveraray to Crossaig Overhead Power Line construction works commenced in May 2021, forestry works are due for completion in October 2021 and project completion is anticipated in November 2023. Given construction works are due for completion in the short-term construction works associated with the development are not considered in the cumulative assessment.
86. A decision is pending the borrow pit development, but it is understood that if granted, construction phases will not clash with the proposed Development. The works for the borrow pit are considered localised and inconsequential so are not considered in the cumulative assessment.
87. Furthermore, the BESS and proposed solar array areas for the proposed Development are small-scale elements and instead of considering each element alone, it is appropriate to consider the proposed Development in its entirety for the purposes of the assessment.

8.5.7 Limitations to Assessment

88. No limitations considered likely to significantly affect the assessment, presented within this Chapter, are identified. All efforts were made to minimise limitations to the survey and assessment ensuring for example, that sufficient areas were covered for survey. This was despite constraints being encountered, such as restricted access outside the application boundary (as detailed below).
89. It is acknowledged that changes to land management practices, or wider issues such as climate change, could affect habitats and species distribution or abundance over time. Whilst future changes cannot be accurately predicted, reasonable effort has been made to take potential future changes into consideration during the assessment (see **Section 8.6.6**).

The original application boundary (as shown on **Figure 9.4**) considered during ecology surveys was more extensive than the application boundary presented in this EIA Report (as shown in **Figures 8.1 to 8.7**), with the southern boundary extending out by approximately 1 km to include a larger area of commercial conifer plantation. The previous boundary in the north extended out to a maximum of approximately 2 km to the west from the access track, and the eastern extreme included Tarbert Wood SAC and Tarbert to Skipness Coast SSSI. The Site was subsequently reduced to the application boundary as shown in **Figures 8.1 to 8.7**. Although the application boundary has altered over the course of the survey period (reduced in extent in June 2021), the study areas for all ecology surveys were covered, given the application boundary was at its greatest extent when these were undertaken.

90. The fish habitat survey was completed in January 2021, and thus outside the optimal survey period (mid-May to September) as recommended in SFCC guidance (2007). This is not considered a substantive limitation however, given the survey was completed within the normal range of flows for watercourses in the geographical area, as defined by Scottish Environmental Protection Agency (SEPA). Furthermore, the vegetation recorded is considered to provide valid indicative evidence of the flora (e.g., riparian trees and macrophytes) which would also be present in the main growing season (May-September).
91. Due to detector malfunctions, bat activity data captured at 2 monitoring stations (MS11 and MS17) during the autumn 2019 survey could not be retrieved. The isolated nature and rough terrain of the Site coupled with poor autumnal weather conditions following the survey meant that it was not possible to re-deploy these detectors in autumn 2019. Failures were also encountered at 3 monitoring stations (MS7, MS9 and MS11) during the spring 2020 survey and no bat data could be retrieved. Due to the Covid-19 restrictions in 2020, it was not possible to re-deploy these detectors to record during the same survey window. Full details are provided within **Technical Appendix 8.4**. Survey effort beyond minimum NatureScot guidance (SNH, 2019) requirements was however completed during the spring, summer and autumn activity periods, with data obtained considered fully representative of bat activity levels at the locale, and upon which to inform the design and assessment of the proposed Development. As such the bat detector equipment failures encountered are not considered to represent a limitation to the assessment.
92. Access permission beyond the application boundary was not provided for the purposes of field surveys, despite continued effects requesting permission. Extensive existing data sources are however, available for the local and immediate surrounding area, and field surveys have provided comprehensive coverage of the proposed Development footprint together

with appropriate buffers within which to inform an assessment of potential impacts upon important ecological features presented within this Chapter.

93. All field surveys have been undertaken within the most recent available 18-month window prior to the undertaking and submission of the assessment, in accordance with current NatureScot guidance (2020a).

8.6 Baseline Conditions

94. This Section provides a summary of baseline ecological conditions obtained through desk study, consultations and field surveys.

8.6.1 Statutory Designated Sites for Nature Conservation

95. This Section should be read with reference to **Figure 8.1**.

96. There are four statutory designated sites for nature conservation designated by virtue of their ecological qualifying interests located within 10 km of the Site, with the Tarbert Woods SAC and Tarbert to Skipness Coast SSSI located within the eastern extent of the Site.

97. No sites with bat species as qualifying interests are located within 10 km of the Site.

98. A summary of statutory designated sites for nature conservation with ecological interests located within 10 km of the Site is provided in **Table 8.5**. Distances specified within **Table 8.5** are from the application boundary to the designation boundary at its nearest point.

99. Those sites with ornithological interests, including SPA, are considered separately in **Chapter 9** and sites with geological and hydrological features considered in **Chapter 10**.

Table 8.5: Statutory Designated Sites for Nature Conservation

Site	Distance and Orientation	Ecological Qualifying Interests
Tarbert Wood SAC	Adjacent to the Site	Old sessile oak woods.
Tarbert to Skipness Coast SSSI	Adjacent to the Site	Upland oak woodland (unfavourable, declining condition). Bryophyte assemblage (favourable, maintained condition).
Glen Ralloch to Baravalla Woods SSSI	554 m north west	Upland oak woodland (unfavourable, declining condition). Bryophyte assemblage (favourable, maintained condition). Lichen assemblage (unfavourable, no change in condition).
Claonaig Wood SSSI	4.69 km south west	Upland oak woodland (unfavourable, declining condition).
Artilligan and Abhainn Srathain Burns SSSI	6.18 km north	Upland oak woodland (favourable, recovered condition).
Ardpatrick and Dunmore Woods SSSI	6.68 km west	Upland oak woodland (unfavourable, recovering condition).
Arran Northern Mountains SSSI	9.28 km south	Upland habitat assemblage (favourable, maintained condition).

Site	Distance and Orientation	Ecological Qualifying Interests
		Upland birch woodland (unfavourable, declining condition). Vascular plant assemblage (favourable, maintained condition). Breeding bird assemblage (favourable, maintained condition). Dragonfly assemblage (favourable, maintained condition). Beetle assemblage (favourable, maintained condition).

8.6.2 Non-Statutory Designated Sites for Nature Conservation

100. There are no non-statutory designated sites for nature conservation identified within 2 km of the Site.
101. The proximity of the Site to areas of ancient woodland is considered within **Chapter 15**.

8.6.3 Habitats and Vegetation

102. This Section should be read with reference to **Technical Appendix 8.3** and **Figures 8.4** and **8.5**.
103. The Site is predominantly covered by commercially managed coniferous woodland (A1.2.2), comprised of a range of coniferous species and with a limited understorey. Areas of recently felled plantation (A4) are largely restricted to the southern part of the Site and consist of a mosaic of bracken *Pteridium aquilinum*, rush species *Juncus spp* and Yorkshire fog *Holcus lanatus*. Access tracks are present at the Site, serving the forestry.
104. Semi-natural broadleaved woodland inhabits several small pockets along the northern and north-eastern edges of the Site boundary. These pockets are dominated by sessile oak *Quercus petraea* with hazel *Corylus avellana*, downy birch *Betula pubescens* and willow *Salix spp* also present. The understorey is typically wood sorrel *Oxalis acetosella*, bracken and pleurocarpous moss species. The majority of these small woodland pockets are also listed in the ancient woodland inventory.
105. Between the woodland compartments, habitats comprise a mosaic of semi-improved acid grassland (B1.2), bracken (C1), marshy grassland (B5), dry and wet dwarf shrub heath (D1/D2), bare rock (I4), wet and dry modified bog (E1.7/E1.8), flush and spring (E2) and standing water (G1).
106. No protected or non-native plant species listed on Schedule 8 and 9 of the Wildlife and Countryside Act (1981) respectively were recorded within the Site or were identified from within the Site during the desk study.

8.6.3.1 Blanket bog (E1.7)

107. The best community match for blanket bog within the study area is M19b *Calluna vulgaris-Eriophorum vaginatum* blanket mire, *Empetrum nigrum* sub-community. This community, distinguished by underlying peat depths of >0.5 m, is typically dominated by *Calluna vulgaris* and *Eriophorum vaginatum* with *Eriophorum angustifolium* and straggling shoots of *Vaccinium myrtillus* and clumps of *Empetrum nigrum*. *Sphagnum capillifolium* and *S. subnitens* are the commonest sphagnums whilst other bryophytes include a patchwork of *Hypnum jutlandicum*, *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Pleurozium schreberi*.
108. M19b *Calluna vulgaris-Eriophorum vaginatum* blanket mire is common in the west of Scotland (Averis et al. 2004), with examples found within the study area considered to be in moderate health due to reduced sward diversity, likely as a result of overgrazing by deer.
109. All blanket bog communities are listed as on Annex 1 of the Habitats Directive and correspond to habitats listed on the SBL.

8.6.3.2 Dry heath (D1)

110. The best community match for heath within the study area is H12b *Calluna vulgaris-Vaccinium myrtillus* heath, *Vaccinium vitis-idaea-Cladonia impexa* sub-community. This comprises a dry heath community typically developed on shallow peats less than 0.5 m deep, and dominated by *Calluna vulgaris* and *Vaccinium myrtillus* with large patches of *Empetrum nigrum* and *Vaccinium vitis-idaea*. Mosses are dominated by *Hypnum jutlandicum*, *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Pleurozium schreberi*, whilst the *Vaccinium vitis-idaea-Cladonia impexa* sub-community includes scattered *Cladonia sp.* lichens. Sphagnums are rare, but when they do occur the commonest is *Sphagnum capillifolium*. *Erica cinerea* occurs in this community which along with the sparsity of *Erica tetralix* and *Trichophorum germanicum* differentiate it from the wet heath communities.

111. H12b *Calluna vulgaris-Vaccinium myrtillus* heath forms a large proportion of the total extent of heather moorland in the British uplands. Very little of this type of heath is thought to be natural and it exists due to woodland clearance and grazing. Grazing by deer is considered to be essential in maintaining the structural and floristic diversity of the community (Averis *et. al.* 2004).

8.6.3.3 Flush (E2)

112. Two flush communities are represented within the study area, developed on peat depths of around 1 m or deeper:

- M23a *Juncus effusus / acutiflorus-Galium palustre* rush-pasture, *Juncus acutiflorus* sub-community. This species poor community is greatly dominated by *Juncus acutiflorus* and has an understorey which typically consists of *Galium palustre*, *Holcus lanatus*, *Lotus pendunculatus* and *Potentilla erecta*.
- M25a *Molinia caerulea-Potentilla erecta mire, Erica tetralix* sub-community. A species poor community usually greatly dominated by *Molinia caerulea* with *Potentilla erecta* common in the understorey. *Erica tetralix* is frequent and *Calluna vulgaris* occasional as well as some *Eriophorum angustifolium*.

113. Both communities are common across the uplands of Scotland, as part of wider heathland expanses.

114. **Table 8.6** provides a summary of Phase 1 habitat types and corresponding NVC community types, together with likely groundwater dependency (where applicable) recorded within the Site.

Table 8.6: Summary of Corresponding NVC Communities

Phase 1 Habitat Type	NVC Community/Sub-community	Principal Corresponding Habitat Types listed on Annex 1 of the Habitats Directive	Corresponding SBL Habitat	Likely Groundwater Dependency 1=High, 2=moderate, 3=low
E1.7 Wet modified bog	M19b <i>Calluna vulgaris-Eriophorum vaginatum</i> blanket mire, <i>Empetrum nigrum</i> sub-community.	Blanket bog.	Blanket bog.	3
E2 Flush and spring (E1.7 Wet modified bog)	M23a <i>Juncus effusus / acutiflorus-Galium palustre</i> rush-pasture, <i>Juncus acutiflorus</i> sub-community.	Purple Moor grass and Rush pasture.	Upland flushes, fens and swamps.	1
E2 Flush and spring (E1.7 Wet modified bog)	M25a <i>Molinia caerulea-Potentilla erecta</i> mire, <i>Erica tetralix</i> sub-community.	Purple Moor grass and Rush pasture.	Upland flushes, fens and swamps.	2
D1 Dry dwarf shrub heath	H12b <i>Calluna vulgaris-Vaccinium myrtillus</i> heath, <i>Vaccinium vitis-idaea-Cladonia impexa</i> sub-community.	Upland heathland.	Upland Heathland.	3

8.6.4 Bats

115. Existing records of the following bat species were identified during the desk study:
- Common pipistrelle *Pipistrellus pipistrellus*; and
 - Natterer's bat *Myotis nattererii*.
116. In review of the UK Habitats Directive Article 17 Report 'Habitats Directive Report 2019: Species Conservation Status Assessments 2019' the Site is also within the known UK distribution range for common pipistrelle, brown long-eared bat *Plecotus auritus* and Daubenton's bat *Myotis daubentonii*.
117. Whilst beyond the general distribution range of Nathusius' pipistrelle *Pipistrellus nathusii*, species records are known from the area of Wick, with brown-long eared bat records in northern Scotland also known from Orkney (Swift, 2004). Similarly, whilst beyond the general distribution range of soprano pipistrelle *Pipistrellus pygmaeus*, species records are known from the area of Thurso. The Site is beyond the range of Noctule bat *Nyctalus noctula* however, specimen records are known from Orkney (Swift, 2004).
118. Baseline bat activity surveys recorded activity characteristic of the following species (see **Technical Appendix 8.4**):
- Common pipistrelle;
 - Soprano pipistrelle;
 - Pipistrelle spp;
 - Myotis spp.; and
 - Brown long-eared bat.
119. Soprano pipistrelle was the most frequently recorded species representing 47.2 % of all recordings. The species was recorded on 367 nights out of 930, representing 7.61 passes per night for the survey period. When compared with activity at other sites (Ecobat reference range and percentiles) soprano pipistrelle activity was concluded to be moderate at the 52nd percentile.
120. Common pipistrelle represented 33.9 % of the activity, recorded on 300 nights and 5.64 passes per night for the survey period. Common pipistrelle activity was also concluded to be moderate at the 52nd percentile.
121. Pipistrellus species represented 17.3 % of all recordings, identified on 22 nights, representing 6.15 passes per night. This indicates high activity at the 88th percentile.
122. Myotis species and brown long-eared activity was considered to be low with less than 1 bat pass recorded per night. When compared with activity at other sites (Ecobat reference range and percentiles) activity of these species was considered to be low to moderate and low respectively.
123. In recognition of the *Ecobat* tool output but also considering the limitations of the tool and the numbers of nights excluded in the calculations which will inflate pass rates (nights when no bat passes are recorded are excluded), overall, it is concluded that activity of soprano and common pipistrelle is moderate and activity of all other species is low.
124. Overall, activity was generally higher in the spring months with low activity consistently recorded in autumn. Bat activity was higher at MS 17, 18 and 19 (see **Figure 8.6**) which are located on the edge or within plantation woodland in the southern part of the Site, and likely offer increased foraging value compared to other forested or open monitoring locations.
125. Bat roost surveys did not record the presence of roosting bats at any structures located within 200 m of the Site (plus blade length) however, the *Ecobat* output suggests that roosts of common pipistrelle and soprano pipistrelle may be present within close proximity to the Site, based on the recording of species activity within species-specific emergence times.
126. Full details of bat activity and roost surveys are provided within **Technical Appendix 8.4**, together with the full *Ecobat* output and a detailed assessment of the potential risks to bats as a result of the proposed Development in accordance with NatureScot guidance (SNH, 2019).

8.6.5 Cumulative Developments

127. The assessment presented within this Chapter considers only those operational, under construction, consented and application stage developments which could potentially contribute to significant cumulative effects in-combination with the proposed Development including:

- cumulative effects on aquatic features within the same sub-catchment and within 2 km of the Site; and
- cumulative effects on bat populations, which are possible in-combination with windfarms within 10 km of the Site.

128. Windfarm developments considered within the cumulative assessment are presented in **Table 8.7**.

Table 8.7: Other Developments Considered for Cumulative Effects

Development	Status	Distance from the Site (km)	No. of Turbines
Freasdail Windfarm	Operational	5.8 km south west	11
Eascairt Windfarm	Consented	7.3 km south west	13

8.6.6 Future Baseline

129. In the absence of the proposed Development, assuming a 'do-nothing' scenario or gap between baseline surveys and the commencements of construction activities for the proposed Development, changes in baseline ecology conditions (i.e., distributions and populations) are most likely to result from habitat modifications within or surrounding the Site due to local land management practices, principally comprising forestry workings and agricultural activities.

130. The coniferous plantation woodlands of the Site are likely to be felled once they reach maturity and would be restocked with further commercial crops in accordance within the existing forestry plan discussed further in **Technical Appendix 15.1**.

131. In the short-term there may be some localised small-scale variability in the distribution of protected species, including badger, red squirrel, pine marten and otter however, the potential for establishment of species including water vole and wildcat is considered unlikely given the absence of existing local records and field signs and generally restricted wildcat ranges in this area of Scotland. The suitability of the Site for bats is unlikely to change significantly, with a limited range of species likely to continue to forage and commute through the Site in low numbers.

132. The suitability of watercourses within the Site for fisheries interests is also unlikely to alter favourably in the absence of targeted management however, the creation of additional drainage channels may occur in relation to forestry management.

133. Areas of modified bog and heath within the Site are likely to remain present but may continue to deteriorate through the effects of forestry and drainage. The woodland interests of the Tarbert Woods SAC and Tarbert to Skipness Point SSSI, currently assessed as being of unfavourable conservation status, and the bryophyte assemblage of favourable conservation status are likely to be maintained.

134. In summary, in the absence of the proposed Development baseline ecological conditions within the Site is considered unlikely to change significantly within the next 30 years.

8.6.7 Evaluation of Ecological Features

135. An evaluation of ecological features established during baseline studies is provided in **Table 8.8** (habitats and vegetation) and **Table 8.9** (faunal species).

Table 8.8: Evaluation of Ecological Features – Habitats and Vegetation⁶

Phase 1 Habitat Type	Corresponding NVC Community Type(s)	Conservation Status	Likely Ground- water Depend- ency	Evaluation of Importance	Justification
Broadleaved woodland – semi-natural (A.1.1.1)	n/a	SAC SSSI Ancient Woodland SBL, LBAP	n/a	International Part of an SAC.	<p>These woodlands occur in several small pockets in the north and north east of the Site. Together they form part of the Tarbet woods SAC, with qualifying interest <i>Old sessile oak woods with Ilex and Blechnum in the British Isles</i>.</p> <p>The wider area including these woods, located on the steeply sloping ground in the eastern side of the Site, is within the Tarbet to Skipness Coast SSSI, designated for upland oak woodland and the related rich bryophyte assemblage.</p> <p>This mostly lies outside the surveyed area of the Site.</p>
Semi- improved acid grassland (B1.2)	n/a	n/a	3	Local Widespread and common.	Small areas of semi improved acid grassland are present across the Site, often with other habitats including broad- leaved woodland, bracken and wet dwarf shrub heath.
Marsh/marshy grassland (B5)	n/a	n/a	1	Local Widespread and common.	This habitat has very restricted occurrence on the Site, mainly as component of mosaic habitats, including forest rides. It is not extensive or well-developed.
Wet dwarf shrub heath (D2)	n/a	Annex 1 SBL, LBAP	2 (3 if on deeper peat)	Regional Small but viable areas of key semi- natural habitat identified in the SBL.	There are only a few small areas formed exclusively of this habitat, in the north east and south of the Site. It forms a mosaic component with blanket bog habitats in many of the forest rides, especially in the south east, and also forms a mosaic with dry dwarf shrub heath in the north of the site. This habitat is not located within the buffer zone for any of the proposed infrastructure (buffer zones used are presented in Section 8.7.3.2).

⁶ Key to Table 8.8

Annex 1 corresponding habitat listed on Annex 1 of the Habitats Directive;

SBL – listed on the Scottish Biodiversity List and considered by the Scottish Ministers to be of principal importance for biodiversity conservation; and

LBAP – listed as a priority species within the Argyll and Bute Biodiversity Action Plan (2010 – 2015).

Phase 1 Habitat Type	Corresponding NVC Community Type(s)	Conservation Status	Likely Ground- water Depend- ency	Evaluation of Importance	Justification
Dry dwarf shrub heath (D1)	H12b	Annex 1 SBL, LBAP	3	Regional Small but viable areas of key semi- natural habitat identified in the SBL.	This habitat is present within large areas of the northern and central parts of the Site, including within the infrastructure buffer zone. It also forms mosaics within this area, with marshy grassland, coniferous woodland, bracken and bare rock. H12b <i>Calluna vulgaris-Vaccinium myrtillus</i> heath forms a large proportion of the total extent of heather moorland in the British uplands. Very little of this type of heath is thought to be natural and it exists due to woodland clearance and grazing. Grazing by deer is considered to be essential in maintaining the structural and floristic diversity of the community (Averis <i>et. al.</i> 2004).
Wet modified bog (E1.7)	M19b, M23a	Annex 1 SBL, LBAP	3	Regional Small but viable areas of key semi- natural habitat identified in the SBL.	Although modified by deer grazing, the majority of this habitat was found to correspond to an NVC blanket bog community. It is considered to be in moderate health, with sward diversity reduced by the deer. As such it is clearly an Annex 1 and SBL blanket bog habitat. It is found within the proposed infrastructure buffer zone.
Dry modified bog (E1.8)	n/a	Annex 1 SBL, LBAP	3	Regional Small but viable areas of key semi- natural habitat identified in the SBL.	Very small areas of this habitat are present to the east of the Site, outside the proposed infrastructure buffer zone (further details of buffer zones is provided in Section 8.7.3.2). With ericoids and purple-moor grass it likely approximates to dry heath vegetation and as such would form an Annex 1 and SBL habitat.
Flush and spring (E2)	M23a, M25a	Annex 1 SBL, LBAP	1-2 (3 where on deep peat)	Regional Small but viable areas of key semi- natural habitat identified in the SBL.	These two flush communities are found centrally within the site, associated with wet modified bog habitats and often on deep peat. These rush or purplemoor grass dominated communities are common across the uplands of Scotland. Due to the deep peat, association with adjacent blanket bog communities, and the presence (although limited) of sphagnum mosses, these habitat is considered to be of regional importance.

Phase 1 Habitat Type	Corresponding NVC Community Type(s)	Conservation Status	Likely Ground-water Depend-ency	Evaluation of Importance	Justification
Standing water (G1)	n/a	SBL, LBAP	n/a	Local Widespread and common.	Likely to provide local ecological interest, particularly for amphibians.

Table 8.9: Evaluation of Ecological Features – Faunal species⁷

Ecological Feature	Legislative Protection / Conservation Status	Evaluation	Justification
Bats	HabReg-Sch2, WACA-Sch5, SBL ⁸ , LBAP ⁹	Local Widespread and common.	Overall low levels of bat activity recorded and which is considered representative of the low value of habitats within the Site for bats and immediate surrounding area. No bat roosts were confirmed within the Site, but it is considered likely these may be present within the surrounding area. Levels of activity recorded are also considered to be comparable to adjacent windfarm sites and concerning a very narrow range of species.

⁷ Key to Table 8.9

HabReg-Sch2 – listed as a European Protected Species (EPS) of animal;

WACA-Sch5 – listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended);

SBL – listed on the Scottish Biodiversity List and considered by the Scottish Ministers to be of principal importance for biodiversity conservation;

LBAP – listed as a priority species within the Argyll and Bute Biodiversity Action Plan (2010 – 2015); and

WACA-Sch5 – 9(5): listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), protected against selling, offering or advertising for sale, possessing or transporting for the purposes of sale.

⁸ Common pipistrelle, soprano pipistrelle and brown long-eared bat

⁹ Soprano pipistrelle and brown long-eared bat.

8.7 Assessment of Effects

136. This Section presents the assessment of effects upon designated sites for nature conservation and important ecological features, based on the information outlined in **Chapter 3** for a 40-year operational life, in the absence of non-embedded mitigation and following the implementation of industry standard good practice measures.

8.7.1 Embedded Mitigation

137. The proposed Development has been subject to a number of design iterations and evolution in response to constraints identified as part of the baseline studies, intended to reduce environmental effects (see **Chapter 2** for further details).

138. The following design considerations have been incorporated to avoid or minimise adverse effects upon ecological features:

- the eastern application boundary has been reduced and has meant that the location of infrastructure has strictly avoided Tarbert Wood SAC and Tarbert to Skipness Point SSSI, adopting a minimum 250 m buffer from the designation boundary for the purposes of siting any turbine foundations, tracks or ancillary infrastructure requiring excavations to avoid the potential for direct and/or indirect effects upon the designation's woodland qualifying interests;
- track length and the number of watercourse crossings has been minimised as far as possible to minimise land take;
- design has avoided the location of infrastructure within areas of higher quality blanket bog, upland heath and purple moor grass and rush pasture and in so far as has been possible avoiding areas of modified bog. It has however, not been possible to entirely avoid areas of wet and dry modified bog habitats within the Site, due to the distribution of these habitat types within the Site. The layout of infrastructure (e.g., solar arrays, wind turbines, tracks and substation) has however, sought to avoid areas of deeper peat as far as possible, minimising the potential for impacts to habitat types with greater future restoration potential;
- a minimum 50 m buffer has been included around all mapped watercourses for turbine hardstandings and associated access tracks, except for watercourse crossings, for which the requirement has been minimised as part of sensitive scheme design;
- a minimum 20 m buffer has been included around all mapped watercourses for solar arrays (except for watercourse crossings);
- the four new watercourses crossings (further details in **Chapter 10**) required will be of a design so as to maintain hydraulic connectivity and allow the free passage of fish and other wildlife beneath. Watercourse crossings will also be of sufficient size so as not to restrict or concentrate flows downstream and to convey flows during periods of heavy rainfall (e.g., 1 in 200-year event plus climate change allowance);
- a minimum 76 m buffer between turbine locations and watercourses has additionally been included to achieve a minimum 50 m 'standoff' from bat habitat features (watercourses) and turbine blade tips in accordance with current good practice mitigation outlined in NatureScot guidance (SNH, 2019);
- a minimum 106 m radius key-holing requirement around turbine locations has been incorporated into felling and restocking plans for the proposed Development, to achieve a minimum 50 m 'standoff' from bat habitat features (woodland edge) and turbine blade tips in accordance with current good practice mitigation outlined in NatureScot guidance (SNH, 2019); and,
- a minimum 50 m buffer (from blade tip) from all buildings has been maintained, in the unlikely event bat roost establishment may occur between baseline surveys and the commencement of operation.

8.7.2 Good Practice Measures

8.7.2.1 Mitigation Measures

139. Full details of construction phase mitigation measures for the proposed Development will be contained within a draft Construction Environmental Management Plan (CEMP). The draft CEMP will include all good practice construction measures, pollution prevention controls and monitoring to be implemented over the course of the construction and operation of the proposed Development in line with current industry and statutory guidance.

140. Good practice measures in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards construction in peatlands and near watercourses that would be adopted during the construction and operation phases are detailed in **Chapter 10** and a draft CEMP is provided as **Technical Appendix 3.1**.

Storage of hazardous materials, including fuel, during the construction phase will utilise industry best practice e.g. storage in bunded areas, to minimise the potential for spills / leakages to impact soil and groundwater.

141. Good practice measures to protect retained habitats during the construction works would also be implemented including the sensitive demarcation of working areas, which would be overseen by an Ecological Clerk of Works (ECoW) as outlined within the draft CEMP.
142. Good practice measures to prevent harm to faunal species, would also include the careful storage of potentially dangerous substances or materials within construction compounds. All excavations greater than 1 m depth would either be temporarily covered at night or designed to include a ramp to allow animals (such as protected mammals) a means of escape should they fall in.
143. Good practice habitat reinstatement measures would also be adopted and implemented, on areas subject to disturbance during construction works as soon as it is practical to do so. Further details of habitat reinstatement measures to be implemented are provided within the draft CEMP and **Chapter 10**.

8.7.2.2 Pre-construction Surveys

144. There is some potential for a change in the distribution of protected terrestrial mammal species within the Site, between the completion of baseline surveys presented herein and the commencement of construction activities for the proposed Development. Pre-construction surveys for protected terrestrial mammals including otter, water vole, badger, pine marten, wild cat and red squirrel would therefore be undertaken, prior to the commencement of construction works and as outlined within the draft CEMP.
145. This would cover all areas within 250 m of the proposed Development infrastructure and associated working areas.
146. The results of the pre-construction surveys would inform the need for further mitigation (if required) in respect of sensitive working practices, species protection plans (SPPs) and/or the requirement to consult with NatureScot, in relation to protected species licencing.

8.7.2.3 Ecological Clerk of Works

147. A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to ensure ecological interests are safeguarded, although this may not necessarily be a full-time role throughout. The role of the ECoW would include the following tasks:
- provide toolbox talks to all staff onsite, so staff are aware of the ecological sensitivities within the Site and the legal implications of not complying with agreed working practices;
 - agree and monitor measures designed to minimise damage to retained habitats;
 - undertake pre-construction surveys and advise on ecological issues and working restrictions where required; and
 - complete site-supervision works as required, in relation to sensitive habitats and protected species.
148. The ECoW would also undertake additional roles such as assisting with water quality monitoring or checking for nesting birds (see **Chapter 9**).

8.7.3 Potential Effects – Construction

8.7.3.1 Designated Sites

149. No direct effects upon any statutory designated site for nature conservation with ecological qualifying interests would occur as a result of the proposed Development, with sensitive and careful design inherently avoiding the location of infrastructure within, or adjacent to, any such site.
150. The potential for indirect effects on/in statutory designated sites for nature conservation located within 2 km of the Site (see **Table 8.5**) has also been inherently avoided and minimised through embedded mitigation measures including watercourse buffers and minimisation of watercourse crossings, reducing pathways for changes in hydrology to the aquatic and terrestrial habitat qualifying interests of such designations.
151. Tarbert Woods SAC and Tarbert to Skipness Coast SSSI are located adjacent to the Site and as such, there is potential for indirect effects upon these sites qualifying aquatic and terrestrial habitat to occur. Information to inform an HRA has been included in **Section 8.7.6.1**.

152. The use of floating roads, where necessary, minimisation of tree felling and the implementation of good practice measures through the delivery of a draft CEMP for the proposed Development including measures for monitoring and controlling pollution risks to watercourses, as detailed within **Chapter 10**, will however serve to adequately control pollution risks to statutory designated sites reducing the potential for indirect effects.
153. The undertaking of habitat restoration works as soon as practicable after habitat disturbance in accordance with the proposed Development's draft CEMP, would also ensure the rapid stabilisation of sensitive habitats and minimising of potential sedimentation risks.
154. Potential construction effects to statutory designated sites for nature conservation are therefore considered to be of no more than of Short-Term, Negligible magnitude, of Minor Adverse significance and which is Not Significant in the context of the EIA Regulations.

8.7.3.2 Habitats and Vegetation

155. There are two main ways by which habitats and vegetation may be affected as a result of the construction phase of the proposed Development:
- **Direct loss** – the loss of habitats and vegetation under the footprint of new infrastructure for the proposed Development; and
 - **Indirect loss** – calculated for modified blanket bog, wet dwarf shrub heath and flush and spring habitats which are located within 10 m of direct habitat loss areas, to account for potential changes in habitat vegetation structure drying effects as a result of construction works. For all other habitats, a temporary loss is calculated within 2 m of direct habitat loss areas, to include for additional habitat disturbance during construction works.
156. For the purposes of assessment, a precautionary approach has been taken which assumes that direct habitat loss and indirect loss of wet modified bog habitats represents a permanent, irreversible adverse effect. In practice, some areas indirectly/temporarily affected may be able to be restored i.e., during habitat reinstatement following construction in accordance with the proposed Development's draft CEMP and HMP.
157. A precautionary approach has also been used when assessing the impact with respect to the solar array and BESS with total habitat loss beneath the array and BESS footprint being assumed and similar indirect habitat losses accounted for. In practice some habitats considered to be directly lost are likely to be retained beneath and between the array panel rows.
158. **Table 8.10** details the estimated direct and indirect/ temporary habitat losses as a result of the construction of the proposed Development, and potential effects on GWDTE communities. This excludes areas of plantation woodland, which are considered separately in **Chapter 15**.

Table 8.10: Summary of Habitat Losses

Phase 1 Habitat	NVC Community	Total Area on Site (ha, unless where otherwise stated)	Habitat Losses (ha, unless where otherwise stated)		
			Direct	Indirect	Total
Flush and spring (E2)	M25a	37.88	n/a	0.03	0.03
Dry dwarf shrub heath (D1)	H12b	101.78	0.02	0.04	0.06
Wet dwarf shrub heath (D2)	n/a	0.34	0.01	0.04	0.05
Wet modified bog (E1.8)	M19a, M23a	82.84	0.02	0.31	0.34
Broad-leaved semi-natural	n/a	34.77	0.27	0.36	0.63

Phase 1 Habitat	NVC Community	Total Area on Site (ha, unless where otherwise stated)	Habitat Losses (ha, unless where otherwise stated)		
			Direct	Indirect	Total
woodland (A1.1.1)					
Habitat mosaic ¹⁰	n/a	109	0.47	1.91	2.38

159. The direct loss of flush and spring, dry dwarf shrub heath and broad-leaved semi-natural woodland (all of which is located outside of Tarbert Woods SAC and Tarbert to Skipness Point SSSI) is less than 1 % of the overall area of habitats present within the Site. These losses are therefore considered inconsequential. Despite the perceived direct loss of 3.3% of wet dwarf shrub heath habitat, this is a very small area (0.01 ha) and is minimal when taking into consideration the presence of this habitat is more extensive within the habitat mosaics across the Site, for which direct habitat losses are less than 1%.

160. The indirect loss of 0.07 % wet modified bog and 1.73% of habitat mosaic containing wet modified bog will be offset by proposed peatland restoration, as detailed within the HMP, which will return areas of lower quality modified bog into pristine blanket bog habitat.

161. The direct and indirect loss of the above habitats is considered to constitute an effect of Low/Medium adverse magnitude, of Minor adverse significance, and which is Not Significant in the context of the EIA Regulations.

8.7.3.3 GWDTE Communities

162. **Table 8.10** illustrates habitat losses (direct and indirect/ temporary) for all potential GWDTE communities.

163. A detailed assessment of the groundwater dependency of these habitats is provided in **Chapter 10**.

8.7.3.4 Bats

164. No potential bat roosting habitat would be affected by the proposed Development, with no direct effect upon roosting bats.

165. Bat activity surveys have demonstrated that the turbine area of the proposed Development is subject to low to moderate levels of bat usage and by a narrow range of species. The predominant coniferous woodland coverage of the Site is of low foraging and commuting interests to bats, although woodland edges offer some foraging and commuting potential.

166. Overall habitat losses for bats as a result of the proposed Development are considered small relative to the availability of comparable habitats remaining within the Site and surrounding areas. Potential effects are therefore considered to be a Negligible, of Low adverse significance, which is Not Significant in the context of the EIA Regulations.

167. Noise, lighting and dust generation during the construction period, could potentially result in disturbance and reduced foraging opportunities for bats, particularly if night-time work is undertaken. Extensive night-time working is not anticipated during the core bat activity period, April to September, due to available daytime working hours.

168. Good practice construction measures implemented by the proposed Development's draft CEMP, limiting the potential for dust and contaminant generation within suitable bat habitats adjacent to construction areas. As such, any effect of on-site disturbance to bat species would be Negligible and would not be significant or affect the favourable conservation status of any bat species.

8.7.3.5 Cumulative Effects

169. No significant effects as a result of the construction of the proposed Development are predicted to occur.

170. Freasdail Windfarm (see **Table 8.8**), which is already operational, is not likely to give rise to significant cumulative effects during the construction phase of the proposed Development due to the very low levels of operational activities which would

¹⁰ This comprises areas with a mix of habitats which are too complex to separate into defined habitat types. These are shown on **Figure 8.4**. Those included within **Table 8.10** are any areas containing dry and wet dwarf shrub heath and wet modified bog.

reasonably be expected to occur at this site. As such, the assessment presented has been restricted to the potential for cumulative effects as a result of those of the proposed Development and the Eascairt Windfarm.

171. The ecological assessment presented within the Eascairt Windfarm EIA Report concludes that the development would affect habitats primarily of low interest to bats, with very low levels of bat activity recorded during baseline surveys and which is considered representative of the locale. As such it is considered that potentially significant cumulative construction phase effects to bats would not occur and would not result in an adverse impact upon the conservation status of any bat species.

8.7.3.6 Mitigation, Compensation and Enhancement

172. Embedded mitigation and good practice measures are detailed in **Section 8.7.1** and **8.7.2**, as well as in the draft CEMP and **Chapter 10**.

173. No significant adverse effects upon any important ecological feature are predicted as a result of the construction of the proposed Development and no additional mitigation measures are therefore required or proposed.

174. The HMP for the proposed Development (**Technical Appendix 8.5**) details enhancement measures to compensate for the adverse effects of habitat loss associated with the proposed Development. This includes peatland restoration and native woodland planting.

8.7.3.7 Residual Effects

175. No significant residual effects are predicted to occur upon any important ecological feature as a result of the construction of the proposed Development.

8.7.4 Potential Effects – Decommissioning

176. Decommissioning phase effects are considered to result in no greater scope and magnitude of effects upon ecological features than as would occur during the construction phase, albeit occurring over a shorter timescale.

177. As such, decommissioning phase effects upon ecological features are not considered explicitly within this assessment.

8.7.5 Potential Effects – Operation

8.7.5.1 Designated Sites for Nature Conservation

178. The potential for operational effects upon statutory designated sites may arise as a result of maintenance activities. Such activities would however, adhere to good practice measures outlined within the proposed Development's CEMP including those in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards construction in peatlands detailed in **Chapter 10**.

179. As such, the operation of the proposed Development would not result in the potential for any direct or indirect impacts to any statutory designated site for nature conservation.

8.7.5.2 Habitats

180. During the operational phase, no significant effects upon retained habitats are predicted. Infrastructure would be in place and only occasional service vehicles would be present on the Site, with the potential for pollution incidents affecting sensitive habitats considered to be very low. Good practice measures in accordance with **Chapter 10** would be implemented further reducing the risk of a pollution incident occurring.

181. Operational effects are therefore considered to be a long-term, but Negligible effect, of Negligible adverse significance and which is Not Significant in the context of the EIA Regulations.

8.7.5.3 Bats

182. The proposed solar arrays and battery energy storage are not predicted to have any significant effect upon bats during the operational phase of the proposed Development. There is little substantiating evidence for potential collision risks associated for solar developments, and modern solar panel designs typically support black frames and grid lines, which breaks up the flat, smooth panel surface (further details in **Chapter 3 – Proposed Development**).

183. The assessment of operational phase impacts upon bats therefore focusses on potentially significant effects resulting from the operation of the proposed wind turbines. Operational wind turbines can affect bats in a number of ways, although the main concerns relate to collision mortality, barotrauma (i.e., injury caused by a change in air pressure) and other injuries resulting from collision with, or flying in very close proximity to, moving turbine blades (SNH, 2019).
184. The assessment of potential impacts on bats resulting from the operation of the proposed wind turbines has been based on the two-stage methodology set out in current NatureScot (2019) guidelines using the *Ecobat* tool. Full details are presented in **Technical Appendix 8.4**.
185. In accordance with NatureScot guidance (SNH, 2019) a Stage 1 'Initial Site Risk Assessment' of the potential risk level of the proposed Development, has been undertaken based on a consideration of site habitat and development-related features. This has concluded that based on a Site 'Habitat Risk' of Low and Site 'Project Size' of Medium, the Site is assessed as having an overall 'Site Risk' of 2, representing a Low/Lowest Site Risk.
186. Stage 2 'Overall Risk Assessment' of the two-stage process detailed within NatureScot guidance (SNH, 2019) has then subsequently been completed to provide an overall assessment of risk to bat species, by considering the conclusions of Stage 1 in relation to relative levels of bat activity obtained through using the *Ecobat* tool and considering the vulnerability of species recorded, at the population level.
187. In accordance with NatureScot guidance (SNH, 2019), Stage 2 has been carried out separately for all high collision risk species recorded, which includes the following species recorded during bat activity surveys in 2019 and 2020 for the proposed Development:
- Common pipistrelle;
 - Soprano pipistrelle; and
 - Pipistrelle species.
188. The calculated Stage 2 'Overall Risk Assessment' per species, both temporally and spatially is presented in **Technical Appendix 8.4**.
189. It is highlighted that the *Ecobat* tool is in its infancy and given current limitations in available reference data on the database for many renewable energy developments, definitive bat activity for regions are not generated and bat activity representations for regions are instead considered to be indicative. On this basis, the conclusions of the Stage 2 'Overall Risk Assessment' concludes that there is a Low/Medium likelihood of the proposed Development resulting in significant impact on bat species populations.
190. In summary, the Overall Risk Assessment for common pipistrelle and soprano pipistrelle is considered to fall under "Low/Medium Site Risk" and "Medium Site Risk" for pipistrelle species, but given the current limitations of the *Ecobat* tool, these conclusions are likely precautionary and should be treated with caution.
191. The risk of operational mortality to bats is generally acknowledged to be lowest at locations with low bat activity. Activity of common and soprano pipistrelle and pipistrelle species was consistently low to moderate across all monitoring stations, with the highest activity for both species recorded at MS18, located in coniferous plantation and which likely provides increased foraging habitat interests.
192. No maternity roosts and/or significant swarming or hibernation roosts for any bat species were confirmed within the Site.
193. NatureScot guidance (SNH, 2019) advises that to reduce potential impacts upon bats, resulting from operational wind turbine developments, a 50 m 'stand-off' distance should be maintained around bat habitat features, into which no part of the turbine intrudes. The guidance provides a formula for calculating this 'stand-off' distance.
194. The layout of the proposed Development has adopted a minimum 106 m key-hole felling radius of plantation woodland habitat around all 13 turbines, which satisfies NatureScot guidance (SNH, 2019) in relation to maintaining a 50 m 'stand-off' distance between turbine blade tips and the nearest potential woodland edge features for bats. This is based on the calculation provided within NatureScot guidance (SNH, 2019) adopting a precautionary top tree height for surrounding

woodland of 31 m over lifespan of the proposed Development. As such the proposed Development provides a 50 m 'stand-off' distance for all turbine locations from woodland edge features.

195. Re-planting within 106 m of proposed turbine locations, would not be undertaken within the felled area.

196. The layout of the proposed Development has also adopted a minimum 76 m 'stand-off' distance between proposed wind turbine locations and all watercourses and which satisfies NatureScot guidance (SNH, 2019) in relation to maintaining a 50 m 'stand-off' distance between wind turbine blade tips and the nearest watercourse features that may be used by bats. This is based on the calculation provided within NatureScot guidance (SNH, 2019) adopting a precautionary watercourse feature height of 2 m over lifespan of the proposed Development. As such the proposed Development provides a minimum 50 m 'stand-off' distance buffer for all wind turbine locations from potential watercourse features for bats.

197. The bat population on the Site has been valued at Local importance due to the species recorded being widespread and common. Based on activity levels recorded and subsequent analysis as outlined, death or injury levels for bat species are considered to be low. The proposed Development is not considered to represent a site of concern to bat collision risks following the approach to assessment set out in NatureScot guidance (SNH, 2019). It is however, acknowledged that low risk sites can still result in bat casualties, but for which embedded 'stand-off' distances from habitat features in accordance with NatureScot guidance (SNH, 2019) is considered adequate mitigation to avoid potentially significant operational mortality risks to bats at most low-risk locations.

198. Impacts of bat collision risk mortality are subsequently considered to be of no more than a long-term, Low adverse effect of Minor adverse significance and which is Not Significant in the context of the EIA Regulations.

8.7.5.4 Cumulative Effects

199. Only the potential for significant cumulative operational effects upon bat species are considered within this assessment.

200. The assessment upon bat species presented within the EIA documentation for Freasdail Windfarm was undertaken prior to the publication of current NatureScot guidance (SNH, 2019). As such, it is not possible to undertake a meaningful cumulative assessment, with this development, due to the differences in baseline survey and assessment methodologies used.

201. Baseline bat activity levels for all developments considered within **Table 8.8**, were however found to be low and limited to the recording of pipistrelle species, with habitats within the sites concluded as being of generally low quality for bats.

202. In review of the information available for each development and detailed further in **Technical Appendix 8.4**, and on the basis of the overall low levels of bat activity reported across all the sites, significant cumulative effects are considered unlikely.

8.7.5.5 Mitigation, Compensation and Enhancement

203. No significant adverse effects upon any important ecological feature would occur as a result of the operation of the proposed Development. As such, no additional mitigation measures are required.

204. Enhancement measures, provided as part of the HMP would however remain in place throughout the operational phase, subject to periodic review in accordance with any emerging best practice management advice.

8.7.5.6 Residual Effects

205. No significant residual effects are predicted to occur upon any important ecological feature as a result of the operation of the proposed Development.

8.7.6 Further Survey Requirements and Monitoring

8.7.6.1 Habitat Monitoring

206. In line with the developed HMP, the following habitat monitoring would be implemented to assess the progress and success of each of the highlighted Aims against the set of defined Objectives:

- Bog Monitoring: would be undertaken on a set of permanent 1 m radial samples set on a grid throughout the first treatment cohort. At each 1 m radial sample, information regarding target species and their presence or absence, would be collected;
- Frequency Assessment: identifying the frequency of habitat species within the subject area;

- General Cover Assessment: recording sphagnum, peat, grass and *Calluna/Eriophorum/Tricophorum* cover;
- *Calluna* height and offtake: recording height of representative *Calluna* plant;
- Dipwells; permanent and installed at each sample plot, would facilitate the measurement of water quantity within the bog; and
- Pin hits: used to record any living plant species, litter or bare peat within foliar and basal vegetation samples.

207. Additional information regarding Habitat Monitoring contained within Technical Appendix 8.5 – Habitat Management Plan.

8.7.7 Summary of Predicted Effects

208. **Table 8.11** provides a summary of effects upon important ecological features as a result of the proposed Development, together with mitigation, compensation and enhancement measures and a conclusion of residual effects.

Table 8.11: Summary of Effects Upon Important Ecological Features

Feature	Predicted Effects	Good Practice Measures	Magnitude and Significance	Additional Mitigation / Compensation	Residual Significance
Construction					
Statutory designated sites	Direct effects via loss to windfarm footprint	Avoidance via design of the proposed Development.	No effects	None required	Not Significant
	Indirect effects via pollution and/or changes to hydrology	Avoidance via design, delivery of a CEMP detailing construction phase good practice measures including pollution monitoring and control measures, and habitat restoration.	Negligible, Minor Adverse, Not Significant.	None in addition to embedded mitigation.	Not Significant
Habitats & vegetation	Direct effects via loss to windfarm footprint and Indirect effects via disturbance due to construction, pollution, and/or changes to hydrology.	Avoidance via design, delivery of a CEMP detailing construction phase good practice measures including pollution monitoring and control measures, and habitat restoration.	Low/Medium, Minor Adverse, Not Significant.	Restoration of heath and bog habitats, and planting of native woodland (as detailed in the HMP).	Not Significant
Bats	Loss of habitat	Avoidance via design of the proposed Development.	Negligible, Low Adverse, Not Significant	None in addition to embedded mitigation.	Not Significant

Feature	Predicted Effects	Good Practice Measures	Magnitude and Significance	Additional Mitigation / Compensation	Residual Significance
	Disturbance (noise, lighting and dust generation)	Avoidance of night time working. Good practice construction measures implemented by the proposed Development's CEMP, limiting the potential for dust and contaminant generation within suitable bat habitats.	No effects	None in addition to embedded mitigation.	Not Significant
Operation					
Statutory designated sites	Indirect effects via pollution.	Operational (maintenance) activities will adhere to measures in the CEMP.	No effects	None in addition to embedded mitigation.	Not Significant
Habitats	Indirect effects via pollution	Operational (maintenance) activities will adhere to measures in the CEMP.	Negligible, Negligible Adverse, Not Significant	None in addition to embedded mitigation.	Not Significant
Bats	Mortality from collision/barotrauma	Mitigation by design – 'stand-off distance between turbines and edge features/watercourses.	Low, Minor Adverse, Not Significant	None in addition to embedded mitigation.	Not Significant
Cumulative					
All features	Direct and Indirect effects	Design of the proposed Development and embedded mitigation.	No effects	None in addition to embedded mitigation	Not Significant

8.7.7.2 Information to Inform a Habitats Regulations Appraisal

This section summarises information relating to the potential for Likely Significant Effects upon ecological qualifying features of the Tarbert Woods SAC (and Tarbert to Skipness Coast SSSI) as a result of the proposed Development.

The potential for Likely Significant Effects upon other European sites and Ramsar sites, is screened out on the basis of spatial separation of the Site from additional designations in accordance with NatureScot guidance (SNH, 2016).

Tarbert SAC (and SSSI) is designated by virtue of its oak woodland habitat and bryophyte assemblages (**Table 8.2**) and is located adjacent to the Site.

The Conservation Objectives of Tarbert Woods SAC are (NatureScot, 2020i):

1. To ensure that the qualifying feature of Tarbert Woods SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status;
2. To ensure that the integrity of Tarbert Woods SAC is restored by meeting objectives 2a, 2b and 2c for the qualifying feature;
 - 2a. Maintain the extent and distribution of the western acidic oak woods habitat within the site;
 - 2b. Restore the structure, function and supporting processes of the western acidic oak woods habitat; and,
 - 2c. Restore the distribution and viability of typical species of the western acidic oak woods habitat.

No direct effects upon Tarbert Woods SAC would occur as a result of the proposed Development, with sensitive and careful design inherently avoiding the location of infrastructure within this designation.

The potential for indirect effects on Tarbert Woods SAC has also been inherently avoided and minimised through embedded mitigation measures including watercourse buffers and minimisation of watercourse crossings, reducing pathways for changes in hydrology to the aquatic and terrestrial habitat qualifying interests of such designations.

The use of floating roads, minimisation of tree felling and the implementation of good practice measures through the delivery of a CEMP for the proposed Development including measures for monitoring and controlling pollution risks to watercourses detailed within **Chapter 10**, will serve to adequately control pollution risks to Tarbert Woods SAC, further reducing the potential for indirect effects.

The undertaking of habitat restoration works as soon as practicable after habitat disturbance in accordance with the proposed Development's draft CEMP, would also ensure the rapid stabilisation of sensitive habitats and minimising of potential sedimentation risks.

The proposed Development will therefore not affect the conservation objectives of the Tarbert Woods SAC (and SSSI) and subsequently there will be no adverse effects on European site integrity.

8.8 Statement of Significance

219. The evolution of sensitive and careful design together with embedded mitigation and good practice measures have avoided the potential for significant effects upon important ecological features as a result of the proposed Development.
220. The proposed Development also provides opportunity to compensate for unavoidable sensitive habitat losses and incorporate notable habitat improvements including peatland restoration and native woodland planting, delivered by an HMP.
221. Given the demonstrable confidence of success detailed within the HMP, habitat and species protection measures to be delivered as part of a draft CEMP, the proposed Development will lead to a net positive impact upon ecological features in the long term.

8.9 References

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