Chapter 8

Ecology and Biodiversity

SCOTTISHPOWER RENEWABLES

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Chapter 8
Ecology and Biodiversity

8.1 Introduction

1. This Chapter of the Hollandmey Renewable Energy Development (RED) (hereafter the 'proposed Development') Environmental Impact Assessment (EIA) Report has been prepared by Avian Ecology Ltd. (AEL) and describes and evaluates the baseline ecological conditions relating to the habitats and (non-avian) fauna present within the proposed Development and immediate surrounding environment. Particular attention has been paid to habitats and species of high vulnerability, conservation concern and those afforded a high level of legal protection.

2. The Chapter describes the methods, comprising desk-based review and recent ecological field surveys, used to characterise the ecological interest within the Site and a relevant zone of influence. The identified habitats and species comprising the ecological baseline are described, evaluated and assessed using recognised criteria, in accordance with industry guidelines (see **Section 8.2.3**). In line with the principles of proportionate EIA, embedded mitigation, including avoidance through the design process and application of industry standard good practice, is considered at the outset of the assessment. Important ecological feature status has only been assigned where there is still considered to be the potential for significant effects on the identified feature arising from the proposed Development after the application of embedded mitigation measures. Therefore, requirement for further assessment is 'scoped out' for some features in this Chapter, where appropriate, with justification given (see **Section 8.6.1**). Therefore, this Chapter identifies important ecological features based on the potential for ecological effects and impacts associated with the proposed Development after the application of embedded mitigation, presents an assessment of the potential effects of the proposed Development upon these 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. The Chapter is supported by the following Technical Appendices presented in **Volume 4** and the following Figures presented in **Volume 3a**:

- **Technical Appendix 8.1: Habitats and Vegetation**;
- **Technical Appendix 8.2: Terrestrial Mammals**;
- **Technical Appendix 8.3: Bats**;
- **Technical Appendix 8.4: Fish Habitat Survey**;
- **Technical Appendix 8.5: Deer Assessment;**
- **Technical Appendix 8.6: Draft Habitat Management Plan (HMP)**;
- **Figure 8.1: Designated Sites for Nature Conservation**;
- **Figure 8.2: Phase 1 Habitat Plan**;
- **Figure 8.3: National Vegetation Classification (NVC) Plan**;
- **Figure 8.4: Terrestrial Mammal Survey Plan**;
- **Figure 8.5: Fish Habitat Plan**;
- **Figure 8.6: Bat Activity Survey Plan**; and,
- **Figure 8.7: Bat Roost Survey Plan**.

5. Baseline ornithological conditions and an assessment of the potential effects of the proposed Development upon ornithological (avian) features is presented separately in **Chapter 9: Ornithology**.

6. 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: Hydrology, Hydrogeology, Geology and Soils**, with baseline conditions and an assessment of potential effects in relation to Forestry, presented in **Chapter 15: Other Issues**.

8.2 Legislation, Policy and Guidance

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

8. Where appropriate, further detail relating to specific legislation, guidance or policy is provided in the corresponding Technical Appendix for each specialist input supporting this Chapter (i.e. **Technical Appendices 8.1** to **8.5**).

8.2.1 Legislation

- the Electricity Act 1989
- the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora);
- the Wildlife and Countryside Act 1981 (as amended in Scotland);
- the Wildlife and Natural Environment (Scotland) Act 2011;
- the Nature Conservation (Scotland) Act 2004;
- the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland);
- the Protection of Badgers Act 1992 (as amended by the Nature Conservation Act 2004); and,
- the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.

8.2.2 Planning Policy

- Scottish Planning Policy (SPP) 2014;
- National Planning Framework 3 (NPF3) 2014;
- Scottish Government Planning Advice Note 60: Planning for Natural Heritage 2008;
- the Highland-wide Local Development Plan 2012;
- the Highland Council 'Onshore Wind Energy Supplementary Guidance' 2016; and
- the Caithness and Sutherland Local Development Plan (CASPlan) 2018.

8.2.3 Guidance

- The Scottish Biodiversity List (SBL) (Scottish Government, 2013);
- Highland Biodiversity Action Plan 2015-2020 (THC, 2015);
- 'General Pre-application/scoping advice to developers of onshore wind farms' (NatureScot[1], 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);
- 'Good Practice During Wind Farm Construction (Scottish Renewables, Scottish Natural Heritage, Scottish Environment; Protection Agency, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AECoW 2019); and
- 'Planning for development: What to consider and include in Habitat Management Plans' (SNH, 2016).

[1] SNH were renamed to NatureScot on 24 August 2020

8.3 Consultation

8.3.1 Consultation and Scoping Responses

9. A direct scoping exercise was undertaken because a prior pre-application consultation exercise was completed in 2019 in relation to the potential for a RED at Hollandmey.

10. A direct request for pre-application advice and EIA Scoping Opinion was submitted to The Highland Council (THC), statutory and non-statutory consultees on 30 July 2020 and which included an EIA Topic Information Sheet: Ecology. Further details on scoping are provided in **Chapter 6: Scoping and Consultation**.

11. 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.

12. Consultation responses of relevance to ecology were received from the following:

- NatureScot (formerly SNH);
- THC;
- Scottish Environment Protection Agency (SEPA);
- Highland Biological Recording Group (HBRG);
- Saving Scotland's Red Squirrels (SSRS);
- Saving Wildcats (formerly Scottish Wildcat Action);
- Caithness District Salmon Fishery Board (CDSFB); and,
- Royal Society for the Protection of Birds (RSPB).

13. Fisheries Management Scotland (FMS), the Flow Country Rivers Trust (FCRT) and Scottish Wildlife Trust (SWT) were also consulted for pre-application advice however, no responses were received.

Table 8.1: Summary of consultation responses.

Name of Stakeholder/Consultee	Key Concerns	Response
NatureScot Direct Scoping 26 August 2020 received 03 December 2020	Welcomed the undertaking of protected species surveys (as detailed within the EIA Topic Information Sheet: Ecology). Advised that where any protected species are recorded, species protection plans should be prepared and submitted with the EIA Report. Advised that the potential for impacts upon freshwater pearl mussel *Margaritifera margaritifera* could be scoped out of the EIA.I	Baseline surveys for protected and notable species have been undertaken in accordance with the scope of surveys detailed within the EIA Topic Information Sheet: Ecology. Where required mitigation measures in relation to legislation compliance with regards protected species is provided within this Chapter for inclusion within Species Protection Plans (SPPs) within the proposed Development's Construction Environmental Management Plan (CEMP), presented in outline in **Technical Appendix 3.1: Outline Construction Environmental Management Plan.**
NatureScot Further Consultation 03 December 2020	In subsequent consultation, advised that the level of bat activity surveys undertaken during 2020 together with existing data sources is robust enough to inform an assessment of impacts upon bats, as a result of the proposed Development upon bats.	Full details of bat activity surveys and existing data sources upon bats are presented in **Technical Appendix 8.3**.
THC Direct Scoping 17 September 2020	The EIA Report is to provide baseline information on species and habitat interests within the Site and establish the presence of any protected, rare or threatened or species, or species of nation or local importance. Habitat enhancement measures should be detailed, particularly with regards to blanket bog. The EIA Report should address where or not the proposed Development could assist or impede the delivery of the relevant local Biodiversity Action Plan. The EIA Report should address the likely impacts on the nature conservation interests of all the designated sites in the vicinity of the proposed Development. If wild deer are present,or would use the Site an assessment of the potential impacts on deer will be required. The EIA Report should also address the potential for impacts upon aquatic interests within local watercourses and should evidence consultation with the local fishery board.	Baseline surveys for habitats together with protected and notable species have been undertaken to inform the design and assessment of the proposed Development, in accordance with best practice industry standard guidelines. Full details are presented within this Chapter and associated Technical Appendices and Figures. A draft Habitat Management Plan (HMP), with particular focus on the enhancement of onsite blanket bog habitats is provided in draft as **Technical Appendix 8.6**. Consideration of whether the proposed Development could assist or impede in the delivery of the Caithness Biodiversity Action Plan (LBAP) through impacts upon LBAP species and habitat interests is also provided within this Chapter. The potential for impacts upon qualifying features of relevant statutory designated sites for nature conservation is assessed within this Chapter, providing adequate information for the undertaking of a Habitats Regulations Appraisal by the relevant Competent Authority; see **Section 8.8** at the end of this Chapter A deer assessment is presented in **Technical Appendix 8.5.** A fish habitat survey has been undertaken and is presented in **Technical Appendix 8.4** to inform the design and assessment of the proposed Development, presented within this Chapter. Consultation has also been undertaken with the CDSFB (as detailed herein).
SEPA Direct Scoping 26 August 2020	A National Vegetation Classification (NVC) survey should be undertaken to identify the likely extent of Groundwater Dependent Terrestrial Ecosystems (GWDTEs), within 100 m of proposed excavations of less than 1 m, and 250 m where excavations are greater than 1 m. Results should be submitted in the form of a clear plan and supporting report (including information on botanical richness), which should demonstrate how the results of the survey have informed the design of the proposed Development.	A Phase 1 habitat survey and NVC survey have been undertaken as detailed within **Technical Appendix 8.1**. A Phase 1 habitat plan is presented as **Figure 8.2** and an NVC Plan is presented as **Figure 8.3**. Further consideration on the extent of GWDTEs and the potential for impacts upon such as a result of the proposed Development is provided in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**. Details of the design evolution of the proposed Development with regards to the presence of sensitive habitats and GWDTEs are provided in **Chapter 2: Site Description and Design Evolution**.

Name of Stakeholder/Consultee	Key Concerns	Response
HBRG Direct Scoping 31 July 2020	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). 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.	Existing records of non-statutory designated sites, protected and notable species have been used to inform the scope of baseline ecological surveys and to inform the design and assessment of the proposed Development presented within this Chapter. Further details of information provided are presented within this Chapter and within relevant Technical Appendices.
SSRS Direct Scoping 31 July 2020	Advised that this Site is located outside the operation area of SSRS, with NatureScot (formerly SNH) likely to hold more information on the species.	A review of species sighting records available on the SSRS website has been undertaken to inform the scope of baseline ecology surveys and inform the design and assessment of the proposed Development presented within this Chapter.
Saving Wildcats Direct Scoping 04 August 2020	Advised that they held no wildcat sighting records within 10 km of the Site, with the nearest possibly sighting about 23 km south of the Site. Given the lack of information, targeted species survey effort through camera trapping is advised.	Terrestrial mammal surveys including targeted survey effort for wildcat have been undertaken with reference to NatureScot guidance (2020g) and which did not record the presence or potential presence of the species. Further consideration of the suitability of habitats within the Site for wildcat is provided in **Technical Appendix 8.2** and the species presence is considered highly unlikely. In accordance with NatureScot guidance (2020g) further detailed survey using camera trapping is required only where there is a need to check evidence of a potential wildcat den. In the absence of any possible den features for the species being recorded and the unlikely presence of the species locally on the basis of absence of existing data/records, camera trapping is not considered a requirement and has not been undertaken.
CDSFB Direct Scoping 01 August 2020	Noted that the Site does impinge on several small streams (the Hollandmey, Ormigill and Link Burns) that feed the Rattar Burn that enters the sea just to the west of Skarfskerry, but advised that the proposed Development has no implications for fisheries. Advised that the Board held no survey information on fish populations, for the above mentioned streams, but commented that they probably contain brown trout *Salmo trutta*, eels *Anquilla anguilla* and, perhaps, lamprey species *Lampetra spp*. None of the streams are likely to support salmon *Salmo salar*.	A fish habitat survey has been undertaken to identify the presence of any potentially important habitats for fish species within the Site. Full details are presented within **Technical Appendix 8.4**.
RSPB Direct Scoping 18 August 2020	Advised that the great yellow bumble *Bombus distinguendus* has been recorded in the area and advised that the Bumblebee Conservation Trust (BCT) should be contacted for further advice. Subsequently provided existing records of the great yellow bumble *Bombus distinguendus* from the wider surrounding area.	Existing records of the great yellow bumble bee listed were provided by the RSPB (and the HBRG) and have been reviewed to inform the requirement for species-specific survey and further advice from the BCT in relation to the potential for impacts upon the species as a result of the proposed Development. In review, no species records are identified within the Site or within the immediate surrounding area, with species records largely restricted to coastal areas along the north Caithness coast and which would be unaffected by the proposed Development. Habitats within the Site, predominantly comprising coniferous plantation woodland, are unsuitable for the species. A detailed consideration of the potential for impacts upon the great yellow bumble bee has therefore not been provided within this Chapter.

8.4 Approach and Methods

8.4.1 Study Areas

17. The study areas within which baseline ecological information to inform the design and assessment of the proposed Development has been collected comprised land within the application boundary, extended to appropriate distances in accordance with relevant good practice guidance.

18. The study area used for habitats and vegetation surveys is shown in **Figures 8.2** and **8.3** (with further detail provided in **Technical Appendix 8.1**) 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 allowed. The offsite area and an appropriate buffer (110 m) were surveyed in October 2021 to inform impact assessment for any road widening or modification which may be necessary to accommodate abnormal loads.

19. This in accordance with advice provided by SEPA (**Table 8.1**) as per their current guidance (SEPA, 2017) which stipulate survey of a 250 m buffer from excavations deeper than 1 m, and a 100 m buffer for excavations less than 1 m.

20. The study areas for relevant faunal species are summarised below and described in more detail within **Technical Appendices 8.2** to **8.5**, **Figures 8.6** to **8.9**, and vary in accordance with current NatureScot guidance (SNH, 2019 and NatureScot 2020b-g).

8.4.2 Desk Study

21. 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.

22. The following key sources were consulted:

- Sitelink;
- Scotland's Environment Map;
- HBRG;
- CDSFB;
- SSRS;
- SWA; and,
- RSPB

23. In addition, publicly available EIA documentation for the following adjacent windfarms was also reviewed, together with additional peer reviewed literature and publicly available sources where relevant and referenced where appropriate:

- Lochend Windfarm (THC Planning Ref. 3/02682/FUL);
- Stroupster Windfarm (THC Planning Ref. 05/00273/FULCA);
- Slickly Windfarm (THC Planning Ref. 19/05624/FUL); and,
- Lyth Windfarm (THC Planning Ref. 3/01832/FUL).

24. No publicly available relevant documentation is available for the refused Tresdale Windfarm located to the north east of the Site.

8.4.3 Field Surveys

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

26. The following field surveys have been completed:

- Phase 1 habitat survey;
- NVC survey;
- terrestrial mammal surveys;
- bat activity surveys;
- bat roost surveys; and,
- fish habitat survey.

27. 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).

8.4.3.1 Phase 1 Habitat Survey

28. A Phase 1 habitat survey was undertaken between 26 and 27 May 2020. The survey was undertaken in accordance with the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010).

29. The study area included coverage of all habitats within the Site and out to 250 m, as show in **Figure 8.2**, and as access permissions allowed.

30. Full details are provided in **Technical Appendix 8.1**.

8.4.3.2 NVC Survey

31. A NVC survey was subsequently undertaken between on 10 June and 10 July 2020 following the guiding principles detailed in the National Vegetation Classification: Users' handbook (Rodwell, 2006).

32. The study area included coverage of all habitats within the Site and out to 250 m as shown in **Figure 8.3**, 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 GWDTEs.

33. Full details are provided in **Technical Appendix 8.1**.

8.4.3.3 Supplementary Phase 1 Habitat and NVC Survey

34. From the A836 to the Site, there are two local routes which form part of an offsite area of the application boundary and have been assessed for their suitability: C1033 Everley-Crockster Toll Road, U1633 East Lodge Road, and Charleston Farm Road (not a public road), which are within the offsite area. Full details are provided in **Chapter 12: Access, Traffic and Transport**.

35. A supplementary Phase 1 habitat and NVC survey was undertaken on 18 and 19 October 2021. The study area covered these local routes plus a 110 m buffer to either side, with focus on those habitats likely to represent habitat types listed on Annex 1 of the Habitats Directive or comprising potential GWDTEs. The survey was extended to include noting of signs of and/or suitability for protected species.

36. Full details are provided in **Technical Appendix 8.1.**

8.4.3.4 Terrestrial Mammal Surveys

37. Surveys for terrestrial mammals were undertaken between May and July 2020 in accordance with NatureScot guidance (2020b-g). Surveys comprised walkover searches to record the location and distribution of field signs identifying the presence or potential presence of terrestrial mammal species.

38. Target species for survey included otter *Lutra lutra*, water vole *Arvicola amphibius*, pine marten *Martes martes*, badger *Meles meles*, red squirrel *Sciurus vulgaris* and wildcat *Felis sylvestris*.

39. The study area comprised all areas within the Site for all species, extended out to 250 m for some species (e.g. pine marten and wildcat) as shown in **Figure 8.4**, and as access permissions allowed.

40. Full details are provided in **Technical Appendix 8.2**.

8.4.3.5 Bat Roost Surveys

41. 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 six structures (**Figure 8.6**), for which bat roost surveys were undertaken in July and August 2020 in accordance with NatureScot guidance (SNH, 2019) and Bat Conservation Trust (BCT) guidance (Collins, 2016).

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

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

8.4.3.6 Bat Activity Surveys

44. Bat activity surveys were undertaken in 2020 in accordance with NatureScot guidance (SNH, 2019) comprising the use of 12 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 ten-turbine scheme in accordance with NatureScot guidance (SNH, 2019).

45. Monitoring effort sought to sample bat activity over 10 consecutive nights in suitable weather for bat activity, in the spring, summer and autumn bat activity periods. Due to COVID-19 restrictions on movement at the commencement of surveys in May 2020 and an unforeseen data processing issue, only a partial sample of bat activity during the spring 2020 bat activity period was possible and for which the data could be retrieved.

46. Automated monitoring stations were subsequently deployed for an extended monitoring period in the summer and autumn activity periods as agreed appropriate in consultation with NatureScot (see **Table 8.1**), due to the limitations of the Site with regards appropriate weather conditions for bat activity and in light of COVID-19 restrictions. NatureScot guidance (SNH, 2019) advises a minimum of 10 consecutive monitoring nights for each activity period and which has been far exceeded at the minimum number of monitoring stations required for the proposed Development.

47. Detectors were re-deployed in April and May 2021 to capture a spring period.

48. 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 8.3**.

8.4.3.7 Fish Habitat Survey

49. A Fish Habitat Survey was undertaken in July 2020 to assess the potential watercourses within and intersecting the Site to support fish species of conservation concern and identify the following:

- spawning habitat for salmonid and lamprey species;
- nursery habitat for lamprey species;
- areas of habitat important for juvenile salmonids (fry and parr); and,
- areas of habitat important for adult holding areas.

50. A walkover survey of each watercourse was undertaken and data on physical characteristics were collected at different locations along each watercourse in accordance with Scottish Fisheries Coordination Centre (SFCC) guidance (SFCC, 2017). Any potential blockages to fish migration were also noted.

51. The study area (see **Figure 8.5**) has comprised all watercourse sections within the Site and which is considered adequate to assess the impacts upon fish habitats potentially directly and potentially indirectly affected by the proposed Development.

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

8.4.4 Ecological Impact Assessment Methodology

53. The assessment presented within this Chapter has been undertaken in accordance with the Chartered Institute of Ecology and Environmental Management 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.

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

55. 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.

8.4.4.1 Determining Importance

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

57. In addition, importance has also been determined using professional judgement and taking account of the results of baseline surveys and desk study, and the importance of features within the context of the appropriate geographic area. Embedded mitigation measures built in to the proposed Development have also been considered in determining importance, based on the likelihood of impacts occurring following avoidance through design and application of good practice.

58. 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**.

59. 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.

60. 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. Special Area of Conservation (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. Site of Special Scientific Interest (SSSI), or area meeting criteria for national level designations. Significant extents of a priority habitat identified in the 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 Highland LBAP. Areas of habitat or species considered to appreciably enrich the ecological resource within the local context e.g. species-rich flushes or hedgerows.
< Local	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.

63. For the purposes of this assessment, those features which are assigned a less than local value are scoped out of further assessment, with justification for the assigned value level given (see **Table 8.10** and **Table 8.11**).

8.4.4.2 Characterising Impacts

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

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

65. 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: 1-5 years;
- Medium-term: 5-10 years;
- Long-term: 10-30 years; and
- Permanent: >30 years.

66. 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'**, '**Highly Unlikely'** or 'U**ncertain'**.

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

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.

8.4.4.3 Determining Significance

70. 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.

71. 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.

72. 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*."

73. For the purposes of this assessment, significant effects are primarily expressed with reference to an appropriate geographical scale.

74. 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.

75. 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.

76. 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: Effect significance.

Effect 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.
Not 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.

8.4.4.4 Avoidance, Mitigation, Compensation and Enhancement

78. 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 of the proposed Development;
- 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.

8.4.4.5 Cumulative Effects

79. Potentially significant ecological effects can result from individually insignificant but collectively significant actions of developments taking place over a period of time or concentrated in a near location.

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

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

82. The assessment considers the potential for significant cumulative effects upon ecological features in-combination with other windfarm 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.

8.4.5 Limitations to Assessment

83. No limitations considered likely to significantly affect the assessment presented within this Chapter are identified.

84. 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). Due to the timing of the changes to the application boundary, the habitat surveys for the offsite area were not undertaken during the optimal time period for this part of Scotland of June to August, to maximise the likelihood that indicator plant species are in full growth, to aid habitat identification. However, given the unambiguous nature of the habitats recorded and the limited nature of the construction works required (i.e., limited widening at discrete locations around the access route) fine-scale identification between different NVC sub-communities is not needed and so this timing does not represent a constraint to the validity of the data to inform the required work.

85. Access permissions beyond the application boundary were not provided for the purposes of field surveys. 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.

86. During bat activity surveys in 2020, only data from the summer (June to mid-August) and autumn (mid-August to October) activity periods was obtained. Full details are provided within **Technical Appendix 8.3**. Survey effort beyond minimum NatureScot guidance (SNH, 2019) requirements was however completed during the 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. In consultation NatureScot agreed that the level of bat activity surveys undertaken in 2020 and for which data is available, together with existing sources is robust enough to consider the potential impacts upon bats as a result of the proposed Development (see **Table 8.1**). Notwithstanding, additional surveys were undertaken in spring (April to May) 2021 for at least 10 nights. Although completed over two years this is not considered to be a limitation to the assessment in recognition of the extended survey periods undertaken in 2020 and Site locale.

8.5 Baseline Conditions

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

8.5.1 Statutory Designated Sites for Nature Conservation

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

89. There are 13 statutory designated sites for nature conservation designated by virtue of their ecological qualifying interests located within 10 km of the Site, with the Phillips Mains Mire SSSI located within the north-eastern extent of the Site.

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

91. 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 site infrastructure to the designation boundary at its nearest point.

92. Those sites with ornithological interests, including Special Protection Areas are considered separately in **Chapter 9: Ornithology** and sites with geological and hydrological features considered in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**.

Table 8.5: Statutory designated sites for nature conservation.

Site	Distance and direction to proposed Development (including potential offsite works)	Ecological Qualifying Interests
Phillips Mains Mire SSSI	0.3 km	Blanket Bog.
Stroupster Peatlands SSSI	0.8 km south	Blanket Bog. Oligotrophic Loch.
Caithness and Sutherland Peatlands SAC	0.8 km south	Acid peat-stained lakes and ponds. Blanket Bog*. Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels. Depressions on peat substrates. Very wet mires often identified by unstable quaking surface.
		Wet heathland and cross-leaved heath. Marsh saxifrage *Saxifraga hirculus.* Otter. **indicates priority habitat*
Caithness and Sutherland Peatlands Ramsar Site	0.8 km south	Blanket bog.
Loch of Mey SSSI	1.2 km north west	Transition grassland.
Loch Heilen SSSI	2 km west	Mesotrophic Loch.
Dunnet Links SSSI	2.7 km west	Sand dunes.
Dunscanby Head SSSI	4.9 km north west	Maritime cliff.
Stroma SSSI	5.6 km north east	Maritime cliff.
Dunnet Head SSSI	7.80 km south west	Maritime cliff.
Loch of Durran SSSI	8.8 km east	Transition grasslands. Vascular plant assemblage.
Loch of Wester SAC	9 km south	Naturally nutrient-rich lakes or lochs which are often dominated by pondweed.
Loch of Wester SSSI	9 km south	Mesotrophic Loch.

8.5.2 Non-Statutory Designated Sites for Nature Conservation

95. There are no non-statutory designated sites for nature conservation identified within 2 km of the Site.

96. The proximity of the Site to areas of ancient woodland is considered within **Chapter 15: Other Issues**.

8.5.3 Habitats and Vegetation

97. This Section should be read with reference to **Technical Appendix 8.1** and **Figures 8.2** and **8.3**.

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

99. The Site is predominantly covered by commercially managed coniferous woodland (JNCC code: A1.2.2), comprised of a mix of Sitka spruce *Picea sitchensis* and lodgepole pine *Pinus contorta*, varying from 5-25 m tall, and with a dense needle layer understorey.

100. Between the woodland compartments, habitats primarily comprise marshy grassland (B5), with areas of dry modified bog (E1.8) which are lacking most sphagnums and dominated by common heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix* and bilberry *Vaccinium myrtillus*, and small areas of wet modified bog (E1.7) dominated by soft rush and purple moor-grass *Molinia caerulea* found towards the boundaries of the Site. E1.7 is also present along the C1033 Everly-Crockster Toll Road forming a mosaic with the blanket bog habitat where peat cutting has taken place. It also occurs on deep peat, where it is drier than the adjacent E.1.6.1 blanket bog. The vegetation is dominated by dense tussocks of *Molinia caerulea* with a mix of some *Erica tetralix* and *Potentilla erecta* with a few hypnoid mosses or *Sphagnum capillifolium*.

101. A single large area of blanket bog (E1.6.1) occurs within the north eastern extent of the Site, comprising the Phillips Mains Mire SSSI, which also contains several areas of mid-range size bog pools. Two further areas of blanket bog are also found within the south eastern extent of the Site. Within the wider study area, outwith the Site, blanket bog is more extensive. The blanket bog habitat within the study area is dominated by common heather and hare's-tail cottongrass *Eriophorum vaginatum* and is often rich in sphagnums and other bog specialists including sundew *Drosera* spp. and bog asphodel *Narthecium ossifragum*. In the offsite area, the C1033 Everly-Crockster Toll Road crosses areas of blanket bog, including the Moss of

West Mey. This habitat shows evidence of peat cutting in the past giving the bog a rather uneven surface, though it remains fairly wet. The vegetation here is dominated by *Calluna vulgaris* and *Eriophorum vaginatum* with some *Empetrum nigrum* and *Erica tetralix* with some herbs and grasses such as *Molinia caerulea*, *Potentilla erecta*, *Tricophorum germanicum* and mosses like *Rhytidiadelphus triquetrus* and *Racomitrium lanuginosum*.

102. Other habitats within the Site include scrub (A2) dominated by gorse *Ulex* sp. mostly along the western edge of the Site and along the roadway to the north, as well as several patches of willow *Salix* spp. scrub towards the southern end of the Site. Improved and semi-improved pastures and arable fields (B1.2, B4 and J1.1) are also found within the south eastern extent of the Site and either side of the roads within the offsite area. The roads within the offsite area are bordered by unimproved neutral grassland (B2.1) (B2.1 areas are too narrow to show on **Figure 8.2**), which also occurs as a non-dominant component of habitat mosaics throughout the offsite area, principally as an MG9 *Deschampsia cespitoda* dominated community. MG9 has the potential to be moderately groundwater dependent depending on hydrogeological setting. Intact beech and hawthorn hedges (J2.1) were also noted in places along field margins.

103. Further stands of woodland within the Site included broadleaved plantation woodland (A1.1.2) dominated by hawthorn *Crataegus monogyna*, birch *Betula* sp. and sycamore *Acer pseudoplatanus.* There are a few small areas of planted alder *Alnus glutinosa* and downy birch *Betula pubescens*, <5 m tall, along the road within the offsite area of the application boundary. Within the Site, there are areas of mixed plantation woodland (A1.3.2) where patches of Sitka spruce have interspersed with broadleaved species, mostly within the northern part of the Site. In addition, towards the eastern end of the Site, there is a large area of recently felled coniferous plantation woodland (A4.1), to the north of the Phillips Mains Mire SSSI. There is an area of semi-natural broadleaved woodland (A1.1.1) growing along the northern edge of the A836, in the buffer of the offsite area. It is predominantly a mix of alder, sycamore and birch, c.10 m tall, with an understory of *Deschampsia cespitosa* tussocks and a dense cover of *Dryopteris dilitata* ferns.

104. Oligotrophic (G1.3) pools are also located at a few scattered localities around the Site and Dystrophic bog pools (E1.6.1) of mid-range size are found towards the east of the Site. The Site is drained by a number of small Dystrophic watercourses (G2.4), and the two main watercourses that cross the offsite area (the Burn of Rattar and the Burn of Horsegrow) are also characterised as G2.4.

105. Within the survey buffer of the offsite area of the application boundary, several other habitat types were also recorded, including swamp (F1), corresponding to NVC community S4 and tall herb and fen (C3) in a few extensive areas within roadside ditches. Scattered pockets of wet heath (D2) were also recorded in places either side of the C1033, corresponding with mosaics of NVC habitats including M23b and M25, and also M15 over peat less than 50 cm deep. These habitats are dominated by *Tricophorum germanicum* with ericoids like *Erica tetralix* and *Calluna vulgaris* being common and other herbs such as *Potentilla erecta* and *Narthecium ossifagum*, and have potential to be moderately or highly dependent on groundwater depending on hydrogeological setting.

8.5.3.1 Blanket bog and bog pools

106. The best quality blanket bog habitat within the Site is located within the Phillips Main Mire SSSI in the north east of the Site. This bog is surrounded by forestry and appears to have be unaffected by drainage or peat cutting activities, as has the area of bog located to the east of the Site, towards Upper Gills.

107. The best NVC community match for blanket bog within the Site and wider study area is M18a *Erica tetralix -sphagnum papillosum* raised and blanket mire. *Sphagnum magellanicum-Andromeda polifolia* subcommunity. However, the frequency of *Cladonia* spp. and variable amounts of *S. papillosum* suggest a possible mosaic with the M18b *Empetrum nigrum - Cladonia* subcommunity, a lowland raised or blanket bog.

108. The bog pools present are classified as M2a *Sphagnum cuspidatum / recurvum* bog pool community which is characteristically associated with M18 blanket bogs. The best community match for these areas is M19a *Calluna vulgaris - Eriophorum vaginatum blanket mire, Erica tetralix* subcommunity. The Sphagnum is mostly limited to *S. capillifolium* but has formed into small to medium sized hummocks. There are no signs of historical peat cutting or drainage cuts, grazing appears to be very limited and only a small amount of Sitka spruce have self-seeded from the surrounding forestry.

109. All blanket bog communities are listed as on Annex 1 of the Habitats Directive and correspond to habitats listed on the SBL.

110. As rain-fed communities they have a low dependence on groundwater.

8.5.3.2 Modified bog

111. Further areas of blanket bog within the Site are of a much more degraded quality and are classified as wet and dry modified bog. These smaller areas of habitat on deeper peat around woodland planting within the Site have been influenced by tree growth, grazing and numerous drainage cuttings. The wet modified bog vegetation still shows predominantly blanket bog communities, but with much reduced sphagnum diversity (mainly *S. capillifolium*), and a lack of pools or hummocks. The presence of blanket bog vegetation, especially sphagnums, indicated that this habitat may still be capable of peat formation, at least on a small scale.

112. Dry modified bog areas within the Site also show much reduced presence of sphagnums overall. In some areas *Molinia caerulea* has become more dominant, a typical feature of modified bogs.

113. The best NVC community match for wet modified bog areas within the Site is M19a *Calluna vulgaris - Eriophorum vaginatum* blanket mire, *Erica tetralix* subcommunity. Features present included *Sphagnum capillifolium* as a constant, often at good levels of cover, along with key species *Calluna vulgaris* and *Eriophorum angustifolium*.

114. The best community match for the dry modified bog areas within the Site is M15d *Trichophorum cespitosum - Erica tetralix* wet heath, *Vaccinium myrtillus* subcommunity. As this vegetation is on deeper peat in an area of forestry, this NVC community is likely to represent a modified and somewhat dried-out bog community rather than a genuine wet heath. These areas generally occurred where deep and dense furrows have been cut, but not planted with trees, although in most areas they are being colonised by trees self-seeding from the surrounding plantations.

115. M15d is the driest subcommunity of M15 and key features present in the Site include the abundant *Calluna vulgaris*, *Deschampsia flexuosa* and *Pleurozium schreberi*, along with a greatly reduced presence of sphagnums.

116. Other modified bog communities within the Site are dominated by marshy grassland habitats, dominated by soft rush *Juncus effusus* or purple moor grass *Molinia caerulea*. The *Juncus* dominated areas occurred on pockets of peat within wider habitat areas corresponding to M23b *Juncus effusus-Galium palustre* rush pasture as described further below.

117. Larger discrete areas of *Molinia* dominated modified bog on deep peat are found in the south east of the Site, corresponding to M25a *Molinia caerulea - Potentilla erecta* mire, *Erica tetralix* sub-community. These areas have mostly wet ground and are relatively undisturbed. They are all on deep peat and represent modified blanket bog vegetation.

118. As modified blanket bog, all these areas are likely to have a low dependence on groundwater.

8.5.3.3 Marshy grassland

119. Marshy grassland occupies large swathes of the open areas of the Site, in wide woodland rides and in large sections of the north and south of the Site. B5 marshy grassland is also located in wet and damp areas within enclosed fields and along the banks of watercourses within the survey area for the offsite area.

120. Within the Site and the offsite area, the best NVC community match for the majority of the marshy grassland is the M23b *Juncus effusus - Galium palustre* rush pasture, *Juncus effusus* subcommunity. Many areas are used for grazing sheep and cattle and the ground is often heavily poached.

121. It is noted that M23 marshy grassland tends to have a high dependency on groundwater. However, within the Site, some of the M23 community is located on deeper peat, alongside other habitats developed on modified blanket bog, and in these cases the groundwater dependency is likely to be lower.

8.5.3.4 Other communities

122. A number of other very small areas of habitat were noted across the Site, these were not surveyed using NVC methodology either due to their size or because they were not Annex 1 or SBL habitat (and so areas for these are not given in the tables below), but likely communities are described in **Technical Appendix 8.1** and summarised in **Table 8.6 and 8.7**.

Table 8.6: Summary of corresponding NVC communities within the Site.

Phase 1 Habitat Type	NVC Community/Sub-community	Area within/ percentage of the Site	Principal Corresponding Habitat Types listed on Annex 1 of the Habitats Directive	Corresponding SBL Habitat	Likely Groundwater Dependency 1=High, 2=moderate, 3=low
Blanket bog (E1.6.1)	M2a *Sphagnum cuspidatum /recurvum* bog pool community	2.27 ha / 0.2%	Natural dystrophic lakes and ponds (bog pools)	Blanket bog	3
Blanket bog (E1.6.1)	M3 *Eriophorum angustifolium* bog pool community (suggested only)	n/a	Natural dystrophic lakes and ponds (bog pools).	Blanket bog	3
Blanket bog (E1.6.1)	M14 *Schoenus nigricans – Narthecium ossifragum* mire (suggested only)	n/a	None directly applies.	Upland, flushes, fens and swamps	1
Blanket bog (E1.6.1)	M18a *Erica tetralix -sphagnum papillosum* raised and blanket mire	116.72 ha / 10.2%	Active blanket bog.	Blanket bog	3
Blanket bog (E1.6.1)	M29 *Hypericum elodes– Potamogeton polygonifolius* soakaways (suggested only)	n/a	Transition mires and quaking bogs. Depressions on peat substrates.	Blanket bog	1
Dry modified bog (E1.8)	S9 *Carex rostrata* swamp (suggested only) within a wider area of modified bog	n/a	None directly applies.	Lowland fen	3
Dry modified bog (E1.6.1)	M15d *Trichophorum cespitosum – Erica tetralix* wet heath, *Vaccinium myrtillus* subcommunity.	64.04 ha / 5.6%	Blanket Bog - considered to represent a modified blanket bog rather than wet heath, but capable of restoration.	Blanket bog	3
Wet modified bog (E1.7)	M19a *Calluna vulgaris - Eriophorum vaginatum* blanket mire	61.91 ha / 5.4%	Blanket bog, modified but capable of restoration.	Blanket bog	3
Wet modified bog (E1.7)	M23b *Juncus effusus–Galium palustre* rush pasture, *Juncus effusus* subcommunity.	1.48 ha / 0.13%	Blanket bog, modified but capable of restoration.	Blanket bog	3
Wet modified bog (E1.7) Dry modified bog (E1.8) Marsh/marshy grassland (B5)	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix* sub-community.	55.29 ha / 4.8%	Blanket bog, modified but capable of restoration.	Blanket bog	3 (on deep peat)
Marsh/marshy grassland (B5)	M23b *Juncus effusus–Galium palustre* rush pasture, *Juncus effusus* subcommunity.	105.06 ha / 9.3%	None directly applies.	Purple moor-grass & rush pastures	1 (where not on deep peat)
Marsh/marshy grassland (B5)	M28 *Iris pseudacorus – Filipendula ulmaria* mire (suggested only)	n/a	None directly applies.	Lowland fen	3
Swamp (F1)	S10 *Equisetum fluviatile* swamp (suggested only)	n/a	None directly applies.	Lowland fen	3

Table 8.7: Summary of corresponding NVC communities within the offsite area.

Phase 1 Habitat Type	NVC Community/Sub-community	Area within/ percentage of the offsite area	Principal Corresponding Habitat Types listed on Annex 1 of the Habitats Directive	Corresponding SBL Habitat	Likely Groundwater Dependency 1=High, 2=moderate, 3=low
Wet Dwarf Shrub Heath (D2)	M15c *Trichophorum germanicum – Erica tetralix* wet heath, *Cladonia* subcommunity	0.006 ha / <0.01%	North Atlantic Wet Heath	Wet Heath	2
Marsh/marshy grassland (B5)	M23b *Juncus effusus–Galium palustre* rush pasture, *Juncus effusus* subcommunity.	0.001 ha / 0.02%	None directly applies.	Purple moor-grass & rush pastures	1 (where not on deep peat)
Wet modified bog/blanket bog (E1.7/E1.6.1)	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix*	0.132 ha / 1.52%	Blanket bog, modified but capable of restoration.	Blanket bog	3

Phase 1 Habitat Type	NVC Community/Sub-community	Area within/ percentage of the offsite area	Principal Corresponding Habitat Types listed on Annex 1 of the Habitats Directive	Corresponding SBL Habitat	Likely Groundwater Dependency 1=High, 2=moderate, 3=low
	sub-community/ M19a *Calluna vulgaris - Eriophorum vaginatum* blanket mire				
Wet modified bog (E1.7)	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix* sub-community / M23b *Juncus effusus–Galium palustre* rush pasture, *Juncus effusus* subcommunity	0.163 ha / 1.88%	Blanket bog, modified but capable of restoration.	Blanket bog	3
Swamp (F1)	S4 *Phragmites australis swamp*	n/a	None directly applies-	Reedbeds	3

8.5.4 Terrestrial Mammals (excl. Bats)

135. A summary of baseline terrestrial mammal conditions, recorded through desk study and field surveys is provided in **Table 8.8** and should be read with reference to **Figure 8.4** where relevant.

136. Full details of the desk study and field surveys to establish baseline terrestrial mammal conditions are provided in **Technical Appendix 8.2**.

Table 8.8: Baseline terrestrial mammal conditions.

Species	Summary
Badger	The Site and wider study area is considered to provide some suitable sett creation and foraging opportunities for badger. No signs indicative of badger presence were recorded during baseline field surveys and no existing records for the species were identified within 2 km of the Site during the desk study. The species is considered likely to be absent locally.
Red squirrel	The coniferous plantation woodlands of the Site provide suitable foraging and drey building opportunities for red squirrel. No signs indicative of red squirrel were however recorded during baseline field surveys and no existing records for the species were identified within 2 km of the Site during the desk study. The distribution of red squirrels in Caithness is understood to remain relatively restricted and there are no existing records for the species, indicating that the species is likely absent locally.
Pine marten	The woodland habitats of the Site provide suitable opportunities for the establishment of pine marten den sites, with pockets of open moorland and grassland habitats also providing a mix of foraging habitat. No signs indicative of pine marten were recorded during field surveys and no existing records for the species were identified during the desk study within 2 km of the Site suggest species absence locally.
Otter	Evidence of otter was recorded within the Site during baseline field surveys, with single spraints recorded along the Link Burn and Burn of Hollandmey (**Figure 8.4**). Watercourses within the application boundary provide suitable commuting opportunities for otter, but are considered to provide poor foraging opportunities due to their low importance for fish (see **Technical Appendix 8.4**). The dubh lochans within the Phillips Mains Mire SSSI are likely to provide increased foraging opportunities, particularly for amphibians. Suitable habitats for otter are considered extensive within the Caithness and Sutherland Peatlands SAC and within the surrounding wider area and for which use by local otter populations was identified during the desk study.
Water vole	Evidence of water vole, including characteristic droppings, latrines and clipped vegetation, were recorded along a small number of ditches and watercourse sections within the Site during baseline field surveys (**Figure 8.4**). The known presence of water vole within and adjacent to the Site was also identified during the desk study. The majority of ditches and watercourse sections within the Site are choked with a poor diversity of bankside vegetation, often with poorly defined water channels and limited shallow flows. Whilst water voles will occupy such habitats, they are considered suboptimal (Dean *et al*., 2016). The more permanent dubh lochans of the Phillips Mains Mire SSSI, where a high number of existing species records were identified, are likely to provide more stable habitat features for the water vole and support a more diverse food source. It is therefore likely that the watercourses within the application boundary primarily provide suitable commuting opportunities for water vole as they disperse through the wider environment.
Wildcat	The homogenous woodland habitats that predominantly cover the Site are considered to provide suboptimal opportunities for the species, with more favourable habitats such as mosaics of deciduous woodland, scrub and grasslands, generally absent from the immediate surrounding area. No signs indicative of wildcat were recorded during baseline field surveys and no existing records for the species were identified during the desk study within 2 km of the Site. The species presence locally is considered unlikely.

8.5.5 Bats

139. Existing records of the following bat species were identified during the desk study:

- Common pipistrelle *Pipistrellus pipistrellus*; and
- *Pipistrellus* sp.

140. 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 and Daubenton's bat *Myotis daubentoni*.

141. Whilst beyond the general distribution range of Nathusius' pipistrelle *Pipistrellus nathusii* and brown-long eared bat *Plecotus auritus*, 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).

142. Baseline bat activity surveys recorded activity characteristic of the following species (see **Technical Appendix 8.3**):

- Common pipistrelle;
- Soprano pipistrelle;
- Myotis spp;
- Noctule; and
- Brown long-eared bat.

143. Overall, activity was generally higher in the summer months with low activity consistently recorded in late autumn. Bat activity was found to be slightly higher at MS3 (**Figure 8.5**) which is located on the edge of plantation woodland adjacent to Philip Mains SSSI, and likely offers increased foraging value compared to other forested or open monitoring locations.

144. Common pipistrelle was the most frequently recorded species representing up to 94.7% of all recordings, with the species being recorded on 438 nights out of 1,078 and representing 2.46 passes per night for the entire survey period.

145. Common pipistrelle was the only species recorded in spring 2021. Activity levels were consistent with early summer and autumn, with activity slightly increasing in late summer.

146. When compared with activity at other sites (*Ecobat* reference range and percentiles) common pipistrelle activity was concluded by the *Ecobat* tool to be moderate at the 32nd percentile. Other species activity was concluded 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 noctule and soprano pipistrelle was considered to be low to moderate and Myotis species and brown long-eared bat was considered to be low.

147. 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 common pipistrelle is low to moderate and activity of all other species is low.

148. 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, soprano pipistelle, *Myotis* and noctule bat may be present within close proximity to the Site, based on the recording of species activity within species-specific emergence times.

149. Full details of bat activity and roost surveys are provided within **Technical Appendix 8.3**, 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).

8.5.6 Fish

150. No existing fish records were identified from within the Site during the desk study however, in consultation the CDSFB advised that the watercourses within the Site probably contain brown trout, eels and perhaps lampreys, but that none of the watercourses are likely to support salmon.

151. The Site is primarily intersected by a series of small shallow burns, with the most substantial watercourse comprising the Link Burn, whose headwaters include the Burn of Hollandmey. Functional fish habitat recorded within the Site during the baseline fish habitat survey is relatively restricted and is considered to be of low sensitivity given the short extents and low-quality habitat recorded. The majority of watercourses are choked by emergent and bankside vegetation, resulting in low flow conditions.

152. No significant areas of high calibre salmonid spawning habitat were recorded, with habitat suitability where present, limited to juvenile fish. No significant areas of spawning or nursery habitat for lamprey species were noted and suitable habitat for eel is also limited.

153. Full details are provided in **Technical Appendix 8.4** and **Figure 8.5**.

8.5.7 Additional Species

154. Observations of common frog, common toad and palmate newt were made within the Site during baseline habitat and vegetation surveys (see **Technical Appendix 8.1**), with existing records of common toad and palmate newt identified within 2 km of the Site during the desk study. Bog pools and the dubh lochans of the Phillips Mains Mire SSSI within the Site are considered to provide suitable habitats for common amphibians and which are also extensive within the immediate and surrounding wider area.

155. Observations of adder and common lizard were also made during baseline habitat and vegetation surveys (see **Technical Appendix 8.1**), with existing records of the species also identified within 2 km during the desk study.

156. The desk study also identified a number of records of additional widespread terrestrial mammals including brown hare and hedgehog listed on the SBL and the Highland LBAP. The closed canopy coniferous woodlands of the Site are considered to provide suboptimal habitats for these species however, drier, agricultural habitats to the north east of the Site are likely to provide a preferable mosaic of breeding and foraging opportunities for such species. The desk study also identified a number of records of marine mammals, for which the Site is of no importance and suitable habitats are considered sufficiently distant from the proposed Development to preclude the consideration of effects upon.

157. Occasional observations of roe deer *Capreolus capreolus* were also made during baseline surveys.

8.5.8 Cumulative Developments

158. 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.

159. Other windfarm developments considered within the cumulative assessment are presented in **Table 8.9**.

Table 8.9: Other windfarm developments considered for cumulative effects.

Development	Status	Distance from the proposed Development (nearest turbine)	No. of Turbines
Lochend Windfarm	Operational	0.8 km west	4
Slickly Windfarm	Application	2.6 km south west	11
Stroupster Windfarm	Operational	3.4 km south west	13

8.5.9 Future Baseline

164. 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.

165. 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 **Chapter 15: Other Issues**.

166. In the short-term there may be some localised small-scale variability in the distribution of protected species, including otter and water vole however, the potential for establishment of species including badger, red squirrel, pine marten and wildcat is considered unlikely given the absence of existing local records and generally restricted species ranges in this area of Caithness. 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.

167. 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.

168. Areas of modified bog and marshy grasslands within the Site are likely to remain present but may continue to deteriorate through the effects of forestry and drainage. The blanket bog interests of the Phillips Mains Mire SSSI, currently assessed as being of favourable conservation status will be maintained with the proposed HMP felling the surrounding forestry and restoring the underlying bog, removing drying pressures from the forestry and extending the area of bog present.

169. In summary, in the absence of the proposed Development baseline ecological conditions within the Site are unlikely to change significantly during the operational lifetime of the proposed Development.

8.5.10 Embedded Mitigation

170. 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: Site Description and Design Evolution** for further details). Important ecological feature status has only been assigned where there is still

considered to be the potential for significant effects to integrity of the feature at the assigned value level arising from the proposed Development, after the application of embedded measures.

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

- design of the proposed Development has strictly avoided the location of infrastructure within the Phillips Mains Mire SSSI, adopting a 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 designations blanket bog qualifying interests;
- track length and the number of watercourse crossings has been minimised as far as possible to minimise land take;
- design of the proposed Development has avoided the location of infrastructure within other areas of higher quality blanket bog within the south of the Site 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, minimising the potential for impacts to habitat types with greater future restoration potential;
- With the exception of Turbine 8 (T8), 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. T 8 is c.10 m from the nearest watercourse (identified as a drainage ditch), measures to prevent impacts on this watercourse associated with the construction of T8 are included in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**, and in the outline CEMP (**Technical Appendix 3.1**);
- a minimum 20 m buffer has been included around all mapped watercourses for solar arrays (except for watercourse crossings);
- the eight new regulated watercourses crossings and any minor watercourse crossings 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). The conceptual crossing designs are provided in **Technical Appendix 10.5: Drainage Impact and Watercourse Crossing Assessment**;
- a minimum 79.91 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 99.53 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 event bat roost establishment may occur between baseline surveys and the commencement of operation.

8.5.10.1 Good Practice Measures

Mitigation Measures

172. Full details of construction phase mitigation measures for the proposed Development will be contained within a CEMP. The CEMP will include all good practice construction measures, pollution prevention controls and monitoring to be implemented during construction of the proposed Development in line with current industry and statutory guidance.

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

174. Good practice measures to protect flora and fauna during construction works, including the careful storage of potentially dangerous substances or materials within construction compounds, would also be implemented as outlined within **Technical Appendix 3.1.**

Pre-construction Surveys

175. 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 as stated within **Technical Appendix 3.1.**

176. This would cover all areas within 250 m of the proposed Development infrastructure and associated working areas.

177. 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.

Reptiles and Amphibians

178. To ensure compliance with the provisions of the Wildlife and Countryside Act 1981 (as amended in Scotland) measures to avoid and reduce the potential for inadvertently killing or injuring individual reptiles and amphibians during construction works would be implemented.

179. Given the low numbers of reptiles and amphibians likely to be present, the large areas of suitable habitat that would remain unaffected by the works and given also the spatial scale of the works, fencing and translocation are not considered appropriate. Proposed mitigation, would therefore involve vegetation management and the identification/ controlled removal of potential refugia and hibernacula if present.

180. Where appropriate and safe to do so, potentially suitable habitats for reptiles located within construction working areas would be hand-cut, under the supervision of the ECoW, prior to construction works commencing in that area, in order to encourage reptiles and amphibians to leave the area. Suitable habitat within working areas would also be searched by the ECoW prior to construction commencing and any potentially suitable refuges would be removed. These works would take place during the active season for reptiles and amphibians (typically April to October, although this is dependent upon the weather conditions in any one year).

181. Measures to prevent a breach of compliance pertaining to protected species will be described in **Technical Appendix 3.1.**

8.6 Assessment of Effects

182. 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: Proposed Development** for the operational lifetime of the proposed Development, in the absence of non-embedded mitigation and following the implementation of industry standard good practice measures.

8.6.1 Effects Scoped Out

183. 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 windfarms. These species do not require surveys to inform the EIA but may require appropriate mitigation to ensure legislative compliance.

184. 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.

185. 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 and are not considered further within this Chapter. 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.

8.6.1.1 Designated Sites for Nature Conservation

186. In review of Sitelink, the Site is located within 10 km of 13 statutory designated sites for nature conservation (see **Table 8.5** and **Figure 8.1**), including the Phillips Mains Mire SSSI which is located within the north eastern extent of the Site.

187. Design evolution of the proposed Development has ensured that no infrastructure is located within the Phillips Mains Mire SSSI and there would be no direct impacts upon this designated site or any other statutorily 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 Phillips Mains Mire SSSIs qualifying blanket bog interests and implications for its currently 'Favourable Maintained' conservation status.

188. The potential for indirect effects upon the ecological qualifying interests of any statutorily 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.

189. The potential for impacts upon the following statutory designated sites are therefore scoped out of assessment:

- Loch Heilen SSSI;
- Dunnet Links SSSI;
- Dunscanby Head SSSI;
- Stroma SSSI;
- Dunnet Head SSSI;
- Loch of Durran SSSI; and
- Loch of Wester SAC/SSSI.

190. The southern extent of the proposed Development (Turbine 4 (T4); see **Figure 10.5**), enters into the Burn of Lyth Hydrological Catchment Area, and within which the Caithness and Sutherland Peatlands SAC/Ramsar and Stroupster Peatlands SSSI are also partially located. By virtue of spatial proximity and the potential for indirect impacts upon these designations habitat interests as a result of hydrological connectivity, impacts upon these designations are considered within this Chapter.

191. Existing records of otter within proximity to the Site were identified during the desk study and signs of otter activity were recorded within the Site during baseline terrestrial mammal surveys (**Technical Appendix 8.2**). Individual otters using the Site are therefore considered likely to comprise part of the Caithness and Sutherland Peatlands SAC qualifying population, and as such the potential for impacts upon the otter qualifying interests of the Caithness and Sutherland Peatlands SAC is also assessed within this Chapter.

192. The Site also has direct hydrological connectivity with the Loch of Mey SSSI and as such the potential for effects upon this designation are considered within this Chapter and within **Chapter 10: Hydrology, Hydrogeology, Geology and Soils.**

193. There are no statutory designations, with bat species listed as qualifying interests, located within 10 km of the Site and as such the potential for impacts upon such sites are not considered within this Chapter.

194. In a review of information provided by the HBRG, 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.

195. Sites with ornithological qualifying interests are considered separately in **Chapter 9: Ornithology** and sites with geological and hydrological qualifying interests considered in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**.

8.6.1.2 Habitats and Vegetation

196. The following habitats which are of less than 'Local' ecological value (see **Table 8.10**), which are not potential GWDTEs, are relatively widespread, and/or would not be impacted by the proposed Development have been scoped out of the assessment. This includes:

- broad-leaved plantation woodland;
- coniferous plantation woodland (further consideration of forestry interests is provided in **Chapter 15**: **Other Issues**);
- mixed plantation woodland;
- scrub (dense and scattered);
- recently felled coniferous woodland;
- arable;
- improved grassland;
- swamp;
- hedgerows; and
- buildings and bare ground.

8.6.1.3 Species

197. 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*."

198. 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*."

199. 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: in consultation, the HBRG and the RSPB provided existing records for the great yellow bumble bee, a species listed on the SBL and featured on the Caithness and Sutherland Local Biodiversity Action Plan (LBAP). No records were returned from within the Site, with records largely originating from areas of the Caithness coast, to the far north of the Site. The coniferous plantation woodlands which predominantly cover the Site are unfavourable and of no importance for the great yellow bumble bee. Impacts upon the species as a result of the proposed Development are therefore **'Unlikely'** to occur. 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 a EPS or afforded special protection under the provisions of the Wildlife and Countryside Act 1981 (as amended in Scotland) 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 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*, palmate newt *Lissotriton helveticus*and adder *Vipera berus*, were however identified during the desk study within 2 km of the Site, with observations of adder, common lizard *Zootoca vivipara*, common toad, common frog *Rana temporaria* and palmate newts also made within the Site during baseline habitat surveys (see **Technical Appendix 8.1**). 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 of Caithness (McInerny 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 (as amended in Scotland).

200. Baseline information collected through desk study, consultation with specialist recording groups and terrestrial mammal surveys has not identified the Site as being important for the following protected terrestrial mammal species, with their local presence also not identified:

- Wildcat;
- Badger;
- Pine marten; and
- Red squirrel.

201. 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) (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended in Scotland), as relevant.

202. The desk study did not identify any existing fish records for the Site and in consultation the CDSFB advised that the proposed Development would not have any implications for fisheries, and Atlantic salmon is unlikely to be present. Baseline field surveys recorded very restricted suitable habitats for fish, with no high calibre salmonid spawning habitat recorded (see **Technical Appendix 8.4**). Scheme design and evolution has inherently minimised the requirement for near watercourse working and the number of watercourse crossings to facilitate access tracks. As such, and providing the implementation of good practice construction measures, detailed herein (and in the CEMP, outline provided as **Technical Appendix 3.1: Outline Construction Environmental Management Plan**) it is agreed that significant effects upon fisheries interests would not occur and such species are scoped out of the assessment.

203. A deer assessment is presented in **Technical Appendix 8.5**. In summary, roe deer and red deer *Cervus elaphus* are the principal deer species occurring in the Caithness area, with sika deer *Cervus nippon* also recently reported as present. The Site and majority of the surrounding Caithness area does not comprise part of a Deer Management Area (DMA) and is not covered by any Deer Management Group (DMG). The proposed Development is not anticipated to result in loss of shelter and foraging opportunities. Potential for displacement is also considered to be limited and '**Unlikely'** and so deer are scoped out of further assessment within this Chapter.

204. In consultation NatureScot advised that impacts upon freshwater pearl mussel could be scoped out of the assessment (**Table 8.1**). In addition, no records are identified for the species within the surrounding local area and watercourses within the Site considered to be unsuitable for the species (see **Technical Appendix 8.4**).

205. In consultation, the HBRG also provided existing records for brown hare *Lepus europaeus* and hedgehog *Erinaceus europaeus* within 5 km of the Site. Both species are listed on the SBL. Habitats within the Site may provide some opportunities for brown hare and hedgehog; however, such habitats would remain extensive within the Site and the local and surrounding wider area despite the construction and operation of the proposed Development. As such, the potential for significant adverse effects upon these species is considered '**Highly Unlikely'** and the species are scoped out of the assessment.

8.6.2 Evaluation of Ecological Features

206. An evaluation of scoped in ecological features established during baseline studies is provided in **Table 8.10** (habitats and vegetation) and **Table 8.11** (faunal species).

Table 8.10: Evaluation of ecological features – habitats and vegetation.

Phase 1 Habitat Type	Corresponding NVC Community Type(s)	Conservation Status	Likely Groundwater Dependency (see Table 8.6)	Evaluation	Justification
Broadleaved plantation woodland (A1.1.2)	n/a	n/a	-	Local	A small extent planted broad-leaved woodland stands primarily supporting sycamore, some birch and hawthorn, with rough grass and *Juncus* understories and providing some local ecological value due to its increased species diversity relative to surrounding coniferous dominance.
Coniferous planation woodland (A1.2.2)	n/a	n/a	-	<Local	The predominant habitat type within the Site and comprising homogenous species-poor stands of non-native Sitka spruce and lodgepole pine. The understory supporting a dense needle layer, with no prevalence of blanket bog or wet heath communities upon which they were likely planted. Due to the species poor nature of the habitat type, owed to its commercially managed nature, and its generally widespread abundance, it is of limited ecological value and so is scoped out of further assessment.
Mixed plantation woodland (A1.3.2)	n/a	n/a	-	Local	A small extent mixed woodland established through encroachment of Sitka spruce into broadleaved planting. Due to its broadleaved element providing increased species diversity relative to surrounding coniferous dominance, is considered to provide some limited local ecological value.
Dense scrub (A2.1)	n/a	n/a	-	<Local	Areas of gorse and occasional willow *Salix* scrub., providing limited ecological interest due to their small size and homogenous species diversity, and so scoped out of further assessment.
Scattered scrub (A2.2)	n/a	n/a	-	<Local	Areas of gorse and occasional willow *Salix* scrub., providing limited ecological interest due to their small size and homogenous species diversity, and so scoped out of further assessment.
Recently felled coniferous woodland (A4.1)	n/a	n/a	-	<Local	Area of recently felled coniferous plantation woodland, likely to be restocked with a further commercial crop. Due to the species poor nature of the habitat type, owed to its commercially managed nature, and its generally widespread abundance, it is of limited ecological value and so is scoped out of further assessment.
Marsh/marshy grassland (B5)	M23b *Juncus effusus–Galium palustre* rush pasture, *Juncus effusus* subcommunity.	SBL LBAP	1 (where not on deep peat)	Regional	Areas of wet grassland which have developed between woodland compartments and within the Site are used to some extent for livestock grazing, often being heavily poached. Habitat variability is provided across its extent, often due to underlying peat depths and lesser grazing pressured. Due to the habitats extent and association with adjacent blanket mire communities, species composition, the habitat is considered of higher than local importance.
	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix* sub-community.	Annex 1 SBL LBAP	3 (on deep peat)	Regional	Areas of wet grassland which have developed between woodland compartments and within the Site are used to some extent for livestock grazing, often being heavily poached. Habitat variability is provided across its extent, often due to underlying peat depths and lesser grazing pressured. Due to the habitats extent and association with adjacent blanket mire communities, species composition, the habitat is considered of higher than local importance.
	M28 *Iris pseudacorus – Filipendula ulmaria* mire (suggested only).	SBL LBAP	3	Local	Areas of wet grassland which have developed between woodland compartments and within the Site are used to some extent for livestock grazing, often being heavily poached. Habitat variability is provided across its extent, often due to underlying peat depths and lesser grazing pressured. Due to the communities very limited extent, is considered of local value.
Improved grassland (B4)	n/a	n/a	-		Improved agricultural grasslands of limited sward diversity and of limited ecological value.
Blanket bog (E1.6.1)	M2a Sphagnum cuspidatum /recurvum bog pool community	Annex 1 SBL LBAP	3	National	Blanket bog is one of Scotland's most common semi-natural habitats, covering approximately 1.8 million hectares and representing 23% of the land area. Blanket bog is scarce globally and as such Scotland holds a significant amount of the European and world resources of this habitat type. The Caithness and Sutherland Peatlands SAC supports the largest and most intact area of blanket bog in Europe. The large intact areas of M18a blanket mire within the Site is located within the Phillips Mains Mire SSSI and showed no signs of influence from surrounding forestry, erosion or grazing, with
	M3 *Eriophorum angustifolium* bog pool community (suggested only)	Annex 1 SBL LBAP	3	Local	

Phase 1 Habitat Type	Corresponding NVC Community Type(s)	Conservation Status	Likely Groundwater Dependency (see Table 8.6)	Evaluation	Justification
	M14 *Schoenus nigricans – Narthecium ossifragum* mire (suggested only)	SBL LBAP	1	Local	the latest assessed condition for the blanket bog feature 'Favourable Maintained'. The habitat area is considered to be of National importance and is supported within the Site in its entirety. Additional areas of M18a within the Site, are considered to be of some lesser quality than the habitat extent within the SSI although are relatively undisturbed, with extensive areas of similar undesignated habitats located within the immediate and surrounding wider area, as such are assigned Regional importance. Similarly the extent of M25a within the Site which forms a continuous area across adjacent modified bog and marshy grassland habitats is considered evidently degraded, but the presence of bog plants suggest the community is still of a quality capable of peat forming. All other blanket bog communities are present within the Site in very small extents, not comprising any continuous areas and as such are considered to be of Local importance.
	M18a *Erica tetralix -sphagnum papillosum* raised and blanket mire	Annex 1 SBL LBAP	3	National (SSSI) Regional	
	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix* sub-community.	Annex 1 SBL LBAP	3	Regional	
	M29 – *Hypericum elodes–Potamogeton polygonifolius* soakaways (suggested only)	Annex 1 SBL LBAP	1	Local	
	S9 – *Carex rostrata* swamp (suggested only)	SBL LBAP	3	Local	
Wet modified bog (E1.7)	M19a *Calluna vulgaris - Eriophorum vaginatum* blanket mire	Annex 1 SBL LBAP	3	Regional	Away from the Phillips Mains Mire SSSI, other areas of blanket bog atop deeper peat within the Site (in the east) are of more of a degraded quality. Showing influence by coniferous planting and drainage, but still predominantly supporting blanket bog communities, with much reduced sphagnum diversity (mainly *S. Capillifolium*) and a lack of pools or hummocks, relatively to communities found within the SSSI. Whilst compartmented by forestry plantations, habitat areas are sizeable and connectivity is largely retained, but in the absence of favourable management intervention are not afforded national value due to their poor species diversity and quality.
	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix* sub-community.	Annex 1 SBL LBAP	3	Regional	
Dry modified bog (E1.8)	M15d *Trichophorum cespitosum – Erica tetralix* wet heath, *Vaccinium myrtillus* subcommunity.	Annex 1 (restorable) *Communities considered to represent a modified blanket bog rather than wet heath, but capable of restoration* SBL LBAP	3	Regional	Away from the Phillips Mains Mire SSSI, other areas of blanket bog atop deeper peat within the Site (in the east) are of more of a degraded quality. Showing influence by coniferous planting and drainage, but still predominantly supporting blanket bog communities, with much reduced sphagnum diversity (mainly *S. Capillifolium*) and a lack of pools or hummocks, relatively to communities found within the SSSI. Whilst compartmented by forestry plantations, habitat areas are sizeable and connectivity is largely retained, but in the absence of favourable management intervention are not afforded national value due to their poor species diversity and quality.
	M25a *Molinia caerulea – Potentilla erecta* mire, *Erica tetralix* sub-community.				
Swamp (F1)	S4 *Phragmites australis* swamp	SBL LBAP	3	<Local	Small areas of swamp habitat outwith the Site, adjacent to waterbodies and with limited species diversity, forming transitions to adjacent blanket mire and marshy grassland habitats within the wider area and likely to be extensive locally, associated with such and so scoped out of further assessment.
	S10 *Equisetum fluviatile swamp (suggested only)*	SBL LBAP	3	<Local	
Standing water (Dystotrophic) (G1.4)	n/a	Annex 1 SBL LBAP	3	Local	Scattered standing water pools, likely mostly man-made but providing local ecological interest, particularly for amphibians.
Standing water (Oligotrophic) (G1.3)	n/a	SBL LBAP	3	Local	Scattered standing water pools, likely mostly man-made but providing local ecological interest, particularly for amphibians.
Arable (J1.1)	n/a	n/a	-	<Local	Agriculturally managed habitats. Widespread and of limited to no ecological value and so scoped out of further assessment.

Phase 1 Habitat Type	Corresponding NVC Community Type(s)	Conservation Status	Likely Groundwater Dependency (see Table 8.6)	Evaluation	Justification
Hedge and trees, species poor (J2.3.1)	n/a	n/a	-	Local	Linear habitat features outside the Site, although species poor, likely to provide some local ecological value as wildlife corridors.
Intact hedge species poor (J2.1.1)	n/a	n/a	-	Local	Linear habitat features outside the Site, although species poor, likely to provide some local ecological value as wildlife corridors.
Building (J3.6)	n/a	n/a	-	<Local	In-use and derelict agricultural buildings of stone construction, often overgrown by ruderal species but of very limited ecological value (absence of bats) and so scoped out of further assessment.
Bare ground (J4)	n/a	n/a	-	<Local	Roadways and yard areas adjacent to agricultural buildings. Widespread and of limited to no ecological value and so scoped out of further assessment.

Key to Table 8.10

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 habitat within the Highland Biodiversity Action Plan (2015 – 2020).

Table 8.11: Evaluation of ecological features – faunal species.

Ecological Feature	Legislative Protection / Conservation Status	Evaluation	Justification
Badger	Protection of Badgers Act, 1992	<Local	No existing records for the species identified within 2 km of the Site and no signs indicative of species presence during baseline surveys. Species considered likely to be absent locally and is scoped out of the assessment.
Red squirrel	WACA-Sch5, SBL LBAP	<Local	No existing records for the species identified within 2 km of the Site and no signs indicative of species presence during baseline surveys. Species considered likely to be absent locally and is scoped out of the assessment.
Pine marten	HabReg-Sch2, WACA-Sch5, SBL LBAP	<Local	No existing records for the species identified within 2 km of the Site and no signs indicative of species presence during baseline surveys. Species considered likely to be absent locally and is scoped out of the assessment.
Otter	HabReg-Sch2, WACA-Sch5, SBL, LBAP	Local	Otter activity, albeit limited, was recorded along the Link Burn and Burn of Hollandmey. No potential holts or resting places were recorded. Existing records identified during desk study identify the use of extensive habitat locally by the species and whilst comprising a qualifying feature of the adjacent Caithness and Sutherland Peatlands SAC, the watercourses of the Site are largely considered to be of limited value for the species.
Water vole	WACA-Sch5, SBL LBAP	Local	Species activity recorded along a small number of watercourses within the Site and desk study records identify its presence within the local surrounding area. Watercourses within the Site are primarily considered sub-optimal for water vole, but likely to be used for commuting and the Phillips Mains Mire provided more stable and favoured habitats.
Wildcat	HabReg-Sch2, WACA-Sch5, SBL LBAP	<Local	No existing records for the species identified within 2 km of the Site and no signs indicative of species presence during baseline surveys. Species considered likely to be absent locally and is scoped out of the assessment.
Other Terrestrial Mammals	SBL, LBAP[2]	<Local	Species considered to be widespread locally with abundant habitats within the Site, the immediate and surrounding area and so scoped out of further assessment.
Bats	HabReg-Sch2, WACA-Sch5, SBL LBAP[3]	Local	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.
Fish	SBL[4], LBAP[5], SFF	<Local	No existing records of fish species were identified within the Site, with functional fish habitat relatively restricted and habitat suitability where present largely limited to that for juvenile fish. No significant areas of spawning or nursery habitat for lamprey was noted and suitable habitat for eel is also limited. Atlantic salmon are unlikely to be present and so fish species are scoped out of further assessment.
Amphibians and Reptiles	WACA-Sch5 – 9(5), SBL[6], LBAP[7]	<Local	Species considered to be widespread locally with abundant habitats within the Site and the immediate and surrounding area. No records of EPSs returned locally and so scoped out of further assessment.
Invertebrates	SBL, LBAP[8]	<Local	Species considered to be widespread locally with abundant habitats within the Site and the immediate and surrounding area. Records of great yellow bumble identified from the wider surrounding area, but habitats within the Site considered unsuitable. No records of EPSs returned locally and so scoped out of further assessment.

Table Key: status

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; and,
LBAP – listed as a priority species within the Highland Biodiversity Action Plan (2015 – 2020).
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.

[2] Hedgehog and otter.
[3] Soprano pipistrelle and Noctule bat.
[4] European eel, river lamprey *Lampetra fluviatilis*, brook lamprey *Lampetra planeri*, sea lamprey *Petromyzon marinus*, Atlantic salmon and brown/sea trout.
[5] European eel, river lamprey, Atlantic salmon and brown/sea trout.
[6] Common toad.
[7] Common toad, adder and common lizard.
[8] Great yellow bumble bee.

217. Potential impacts on Important Ecological Features of Local or greater value are described below for the construction and operational phases of the proposed Development. Cumulative impacts with other relevant developments are also considered.

8.6.3 Potential Effects – Construction

8.6.3.1 Designated Sites

218. 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 design of the proposed Development inherently avoiding the location of infrastructure within any such site.

219. 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.

220. The Stoupster Peatlands SSSI and Caithness and Sutherland Peatlands SSSI, Caithness and Sutherland Peatlands SAC/Ramsar site are located adjacent to the Site and within the same hydrological catchment as the proposed Development (T4) and as such, there is potential for indirect effects upon these sites qualifying aquatic and terrestrial habitat to occur.

221. 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: Hydrology, Hydrogeology, Geology and Soils**, will however serve to adequately control pollution risks to statutory designated sites reducing the potential for indirect effects.

222. 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.

223. The potential for impacts upon otter, a qualifying interest of the Caithness and Sutherland Peatlands SAC, is provided subsequently within the species assessment.

8.6.3.2 Habitats and Vegetation

224. 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 the proposed Development; and
- Indirect loss – calculated for blanket bog and modified blanket bog 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.

225. For the purposes of assessment, a precautionary approach has been taken which assumes that direct habitat loss and indirect loss of blanket bog and modified bog habitats represents a permanent, irreversible adverse effect. In practice some areas indirectly/temporarily affected may be able to be restored if following construction in accordance with the proposed Development's CEMP.

226. A precautionary approach has also been used when assessing the impact with respect to the solar array with total habitat loss beneath the array 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.

227. **Table 8.12** details the estimated direct and indirect/ temporary habitat losses as a result of the construction of the proposed Development This excludes areas of forestry plantation, which are considered separately in **Chapter 15: Other Issues**. It also excludes losses associated with the small areas to be lost for road widening in the offsite area, as these will be restricted to scrub (A2/W23), improved grassland (B4/MG6), and road/track (J3.6) and so not considered important ecological features.

228. Adopting a precautionary approach for the purposes of this assessment, the proposed Development would result in the direct loss of 1.19 ha of dry modified bog (M15d communities), 0.81 ha of wet modified bog (M19a communities), 15.4 ha of marshy grassland (M23b communities) and a further 0.48 ha of such habitat mosaics (M25a communities).

229. Also adopting a precautionary approach, the proposed Development would result in the indirect loss of an additional 2.62 ha of dry modified bog (M15d communities), 3.28 ha of wet modified bog (M19a communities), 20.03 ha of marshy grassland (M23b) and a further 1.67 ha of such habitat mosaics (M25a).

230. The direct and indirect loss of up to 10.05 ha of regionally important blanket bog communities (M15d, M19a and M25a), given their modified form and remaining availability within the Site, immediate and surrounding wider area 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.

231. The direct and indirect loss of up to 35.43 ha of marshy grassland communities (M23b) is also 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.

232. Eight regulated watercourse crossings and a number of minor watercourse crossings are proposed to facilitate access tracks. Six minor watercourse were found on the Site, each requiring an unregulated crossing, which have been included in the habitat loss calculations in **Table 8.12**; however, it is possible there are more minor watercourses on the Site that have not been identified and could require an unregulated watercourse crossing. It is considered that given the small area of each water crossing and the low ecological value of the majority of the watercourses that there would be **'No Significant'** effect on watercourses within the Site. With the exception of T8, all other infrastructure is situated a minimum of 50 m away from watercourses. Assuming that best practice pollution prevention measures are adopted (see **Chapter 10: Hydrology, Hydrogeology, Geology and Soils** for further details), **'No Significant'** effect is predicted upon the aquatic environment.

233. An assessment of effects to otter is provided separately.

Table 8.12 Summary of habitat losses.

Phase 1 Habitat	NVC Community	Infrastructure	Habitat Losses (ha, unless where otherwise stated)		
			Direct	Indirect	Total
Dry modified bog (E1.8)	M15d	All.	1.19	2.62	3.81
Wet modified bog (E1.7)	M19a	All.	0.81	3.28	4.09
Marshy grassland (B5)	M23b	All.	15.4	20.03	35.43
Wet modified (E1.7)/Dry modified bog (E1.8), Marshy grassland (B5)	M25a	All.	0.48	1.67	2.15
Running water	n/a	Watercourse crossings (14 no.)	115.7 m	48 m	163.7 m

GWDTE Communities

241. **Table 8.12** illustrates habitat losses (direct and indirect/ temporary) for all potential groundwater dependent terrestrial ecosystems (GWDTE) communities (M23b and M25a where it occurs over shallow peat).

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

Terrestrial Mammals (excl. Bats)

Otter

243. Otters using habitats within the Site are considered part of the Caithness and Sutherlands SAC population, but also utilise the extensive networks of watercourses and lochans within the SAC and surrounding area. Otter activity recorded within the Site was also limited, restricted to the identification of two spraints along the Link Burn and Burn of Hollandmey.

244. The death or injury of an otter during construction works is considered '**Highly Unlikely'**, following the implementation of the good practice measures outlined as part of the proposed Development's CEMP, including the careful storage of potentially dangerous substances or materials.

245. Direct increases in vehicle movements within and to the Site, may result in a temporary increase in risk to otters from road traffic collisions. However, given the general nocturnal nature of otter activity, such risks would be small and restricted to the occurrence of construction works taking place during darkness or winter months should these occur, and upon which the appointed ECoW would advise. Potentially significant effects upon otters as a result of death or injury are therefore '**Highly Unlikely'** to occur.

246. The majority of construction works associated with the proposed Development would affect terrestrial habitats, with the potential for impacts upon watercourses which may be used by otter minimised through embedded mitigation. As such, there would be a very small loss in the availability of watercourse habitats for otter within the Site (115.7 m) as a result of the construction of 14 new watercourse crossings. Watercourses within the Site are also largely considered sub-optimal for foraging otter on account of their limited value for fish.

247. Good practice measures in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards construction in peatlands and near watercourses, to be adopted during the construction and operation phases and serving to protect the aquatic environment, are detailed in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**.

248. Watercourse crossings would also be of a design to allow for the free passage of wildlife beneath, as such, it is considered that otters would become adapted to crossings in the long-term, without any significant barriers to movement. Habitat losses for otter are therefore considered to represent an effect of **'Negligible'** magnitude, of **'Minor Adverse'** significance and which is **'Not Significant'** in the context of the EIA Regulations.

249. Construction works as a result of increased noise and human presence have the potential to result in temporary disturbance to otters using the watercourses within the Site, and which may result in a disruption to foraging and community activities. Disturbance is most likely to occur during works in close proximity to watercourses, primarily associated with new watercourse crossings. Otters are known to occupy large home ranges and are able to adapt to some levels of human disturbance (e.g. Chanin, 2003), their use of watercourses within the wider surrounding areas of the Site is also established. As such, given the minimum requirement for construction works within close proximity to watercourses, the potential for disturbance to otter would occur within a very small area of suitable habitats available locally for the species.

250. Overall potential disturbance risks to otter are considered to comprise no more than a **'Low'** magnitude effect, of **'Minor Adverse'** significance and which is considered **'Not Significant'** in the context of the EIA regulations.

251. No holts or potential otter resting places were recorded within the Site however, it is possible that breeding or resting places may be established prior to the commencement of construction activities for the proposed Development. Pre-construction surveys would therefore be undertaken to ascertain any changes in baseline otter conditions within the Site to identify the requirement for additional species-specific mitigation.

Water vole

252. Signs indicative of water vole presence has been established at several locations along drainage ditches, watercourses and the dubh lochans of the Phillips Mains Mire SSSI within the Site. No burrows were observed during field surveys, with the majority of watercourses intersected by the proposed Development considered sub-optimal for water vole.

253. The spatial extent over which construction works associated with the proposed Development would be highly localised, restricted to 14 new watercourse crossings and as such is only likely to potentially impact upon a small number of individual water vole territories.

254. The construction of watercourse crossings would require the permanent loss of watercourse bank habitat available for potential use by the established local water vole population within and surrounding the Site. In the context of remaining available and suitable habitat for water voles within the Site and locally, this is considered to represent no more than a **'Low'** magnitude effect, of **'Minor Adverse'** significance and which is considered **'Not Significant'** in the context of the EIA Regulations. The design of watercourse crossings would retain free passage of water voles and other wildlife beneath and as such, given the small number of crossings required, the fragmentation of water vole habitat within the Site would not occur.

255. The construction of watercourse crossings has the potential to result in the killing, injuring or disturbance of individual water voles and/or damage or destruction to water vole burrows, should these be established within working areas. Construction works at watercourse crossings would however, be restricted to defined working areas, subject to pre-construction surveys. As such, together with the mobility of the species allowing for escape, the construction of watercourses is '**Highly Unlikely'** to result in the death or injury of individual water voles. Potential effects are therefore considered to be **'Negligible'**, of **'Minor Adverse'** significance, which is **'Not Significant'** in the context of the EIA Regulations.

256. Noise and visual disturbances are also generally considered '**Unlikely'** to have any significant effects upon water voles (Dean *et al*., 2016) however should disturbances occur to the point at which a water vole may potentially abandon its burrow this would constitute a breach of the provisions of the Wildlife and Countryside Act 1981 (as amended in Scotland).

Bats

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

258. Bat activity surveys have demonstrated that the turbine area of the proposed Development is subject to low 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.

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

260. 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.

261. Good practice construction measures implemented by the proposed Development's 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 Significant'** or affect the favourable conservation status of any bat species.

8.6.3.3 Cumulative Effects

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

263. Other windfarm developments considered for the purposes of a cumulative assessment presented within this Chapter (see **Table 8.9**), which are already operational, are **'Unlikely'** 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 reasonably be expected to occur at these sites. 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 Slickly Windfarm.

264. The ecological assessment presented within the Slickly Windfarm EIA Report does not consider the potential for impacts to water vole, as the species was not recorded during baseline surveys and assumed to be absent. As such, the potential for significant construction cumulative effects to water vole would not occur. Similarly, the potential for significant operational cumulative effects to water vole are not subsequently considered in-combination with the Slickly Windfarm.

265. The assessment presented within the Slickly Windfarm EIA Report concludes that the development has the potential to impact upon a small number of otters during the construction phase, likely to comprise part of the Caithness and Sutherland Peatlands SAC population. Even where the two developments are undertaken simultaneously, construction works would result

in the loss and temporary disturbance of a very small extent of suitable habitats available for otter locally. As such, potentially significant cumulative effects to otter are considered **'Unlikely'** to occur.

266. The assessment presented within the Slickly Windfarm EIA Report, similarly 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.

8.6.3.4 Mitigation, Compensation and Enhancement

267. Embedded mitigation and good practice measures are detailed in **Section 8.5.10.1**, as well as in the outline CEMP (see **Technical Appendix 3.1**) and **Chapter 10**.

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

269. The HMP for the proposed Development will however detail enhancement measures to compensate for the adverse effects of habitat loss associated with the proposed Development. A Draft HMP is provided in **Technical Appendix 8.6**. The Draft HMP aims to create and restore underlying conditions for modified blanket bog and improve the quality of blanket mire habitat within the Site. The proposed HMP area comprises 168 ha of commercial forestry enclosing the Phillips Mains Mire SSSI, situated on predominantly >1 m deep peat. While the SSSI is currently assessed as being in favourable condition, it has been noted that the long-term condition of the site depends on the future of the surrounding forestry. Removal of trees and blanket bog restoration may be expected to benefit the condition of the SSSI, in addition to providing positive effects associated with a net increase in total area of blanket bog within the Site.

Water Vole

270. Water voles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended in Scotland), which makes it an offence to:

- damage, destroy or obstruct access to a water vole burrow; or
- disturb a water vole whilst it is using its burrow.

271. The layout of the proposed Development has been optimised in so far as has been possible to avoid construction activities occurring in close proximity to watercourses and the requirement for watercourse crossings.

272. Twelve watercourse crossings are however required to facilitate the access tracks of proposed Development on the Site with a further two potentially required as part of offsite road works. These watercourse crossings may result in the damage or destruction of water vole burrows and/or disturbance of water voles within their burrows, should these be established within construction working areas.

273. A site-specific water vole Species Protection Plan (SPP) would therefore be prepared for the proposed Development in accordance with Dean *et al.* (2016) and NatureScot (2020e) guidance, with an appropriate licence obtained from NatureScot where required.

274. Water vole populations are highly dynamic with the potential for individual water voles to establish or abandon territories in relatively short spaces of time. As such, the SPP would be prepared and finalised in consultation with NatureScot and THC following a pre-construction water vole survey undertaken in accordance with species specific survey guidance applicable at the time of construction commencement.

8.6.3.5 Residual Effects

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

8.6.4 Potential Effects – Operation

8.6.4.1 Designated Sites for Nature Conservation

276. 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 Environmental Management Plan (EMP) including those in relation to pollution risk.

277. 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.

8.6.4.2 Habitats

278. 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 relating to pollution prevention in accordance with those detailed within the proposed Development's CEMP (see **Technical Appendix 3.1**) and **Chapter 10** would be further implemented via an EMP during the operational phase, further reducing the risk of a pollution incident occurring.

279. 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.

8.6.4.3 Terrestrial Mammals (excl. Bats)

Otter

280. Maintenance activities during the operational phase of the proposed Development, would comprise occasional service vehicle movements and personnel presence within the Site. Such activities would be highly localised, infrequent and restricted to access tracks and the vicinity of infrastructure. Vehicle speeds would also be restricted. There would be no storage of potentially dangerous substances or materials within the Site associated with the proposed Development. Any excavations required during the construction phase would also be closed.

281. The implementation of good practice measures to reduce the risk of a pollution incident, including those detailed within the proposed Development's Environmental Management Plan (EMP) and **Chapter 10**, would ensure adequate protection of the surrounding aquatic environment from such events.

282. Due to the infrequency and localised nature of operational activities, effects upon otter are considered to represent no more than a long term but **'Negligible'** effect, of **'Negligible Adverse'** significance and which is **'Not Significant'** in the context of the EIA Regulations.

283. The HMP for the proposed Development outlines the felling of commercial plantation forestry and restoration of 168ha of blanket bog, a habitat known to be used by otter. Commercial conifer plantation does not represent high quality habitat for otter; the restoration of natural wetland habitat, with the associated increase in biodiversity and so foraging opportunities, is expected to benefit otters in the long-term.

Water vole

284. Due to the infrequency and localised nature of operational activities, effects upon water vole are similarly considered to represent no more than '**Negligible**', of '**Negligible adverse'** significance and which is '**Not Significant'** in the context of the EIA Regulations.

285. The implementation of good practice measures to reduce the risk of a pollution incident, including those detailed within the proposed Development's EMP and **Chapter 10**, would also ensure

286. Streams associated with the fringes of blanket bog can be an important habitat for water vole, and areas heavily shaded by dense cover of commercial conifer are sub-optimal for this species. The HMP for the proposed Development proposes the felling of commercial plantation forestry and restoration of 168 ha of blanket bog. The removal of tree cover and restoration of natural wetland habitat is expected to benefit water voles in the long-term.

Bats

287. The proposed solar arrays 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.

288. The assessment of operational phase impacts upon bats therefore focusses on potentially significant effects resulting from the operation of 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).

289. 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 8.3**.

290. 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 habitats 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.

291. 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.

292. 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 2020 for the proposed Development:

- Noctule bat;
- Common pipistrelle; and,
- Soprano pipistrelle.

293. The calculated Stage 2 'Overall Risk Assessment' per species, both temporally and spatially is presented in **Technical Appendix 8.3**.

294. It is highlighted that the *Ecobat* tool is in its infancy and given current limitations in available reference data on the database for many 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.

295. In summary, the Overall Risk Assessment for common pipistrelle and soprano pipistrelle is considered to fall under 'Low/Medium Site Risk' and 'Low Site Risk' for noctule, but given the current limitations of the *Ecobat* tool, these conclusions are likely precautionary and should be treated with caution.

296. The risk of operational mortality to bats is generally acknowledged to be lowest at locations with low bat activity. Activity of common pipistrelle was consistently low to moderate across all monitoring stations, with the highest activity recorded at MS3, located adjacent to the Phillips Mains Mire SSSI and which likely provides increased foraging habitat interests.

297. Soprano pipistrelle activity was largely low to moderate across the monitoring stations at which it was recorded, with highest activity recorded at MS2, but which represented moderate. Noctule activity was consistently low across all monitoring stations at which it was recorded.

298. No maternity roosts and/or significant swarming or hibernation roosts for any bat species were confirmed within the Site.

299. NatureScot guidance (SNH, 2019) advises that to reduce potential impacts upon bats, resulting from operational wind turbine development, 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.

300. The layout of the proposed Development has adopted a minimum 100 m key-hole felling radius of plantation woodland habitat around all proposed turbine locations, 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 27.4 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.

301. Re-planting within 99.53 m of proposed turbine locations, would not be undertaken within the felled area, over the lifetime of the proposed Development.

302. The layout of the proposed Development has also adopted a minimum 79.91 m 'stand-off' distance between proposed turbine locations and all watercourses and which satisfies NatureScot guidance (SNH, 2019) in relation to maintaining a 50 m 'stand-off' distance between 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 50m 'stand-off' distance buffer for all turbine locations from potential watercourse features for bats.

303. 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.

304. 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.

8.6.4.4 Cumulative Effects

305. Only the potential for significant cumulative operational effects upon bat species are considered within this assessment, with the potential for significant cumulative effects to otter and water vole not predicted due to the very small area of suitable habitats affected by other windfarm developments considered in **Table 8.9** and the infrequency of operational activities associated with such developments.

306. The assessments upon bat species presented within the EIA documentation for those windfarm developments considered for cumulative effects in-combination with the proposed Development, were undertaken prior to the publication of current NatureScot guidance (SNH, 2019). As such, it is not possible to undertake a meaningful cumulative assessment, with these developments, due to the differences in baseline survey and assessment methodologies used.

307. Baseline bat activity levels for all developments considered within **Table 8.9**, 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.

308. In review of the information available for each development and detailed further in **Technical Appendix 8.3**, and on the basis of the overall low levels of bat activity reported across all the sites, significant cumulative effects are considered '**Unlikely'**.

8.6.4.5 Mitigation, Compensation and Enhancement

309. 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.

310. 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. The restoration of 168 ha of forestry to blanket bog represents a considerable net gain over the predicted loss of 10.05 ha of this habitat for the proposed Development. There will also be indirect beneficial effects for the Phillips Mains Mire SSSI, as removal of tree cover

surrounding the site and rewetting of the underlying peatlands will reduce any drying effects associated with the forestry, thereby protecting the hydrological unit and the Favourable condition status of the site. As such, the HMP is expected to provide '**Significant'** beneficial effects associated with the proposed Development in the long-term, particularly when contrasted with a future baseline of continuing commercial forestry operations.

8.6.4.6 Residual Effects

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

8.6.5 Further Survey Requirements and Monitoring

8.6.5.1 Habitat Monitoring

312. Vegetation monitoring would be undertaken as part of the HMP, as detailed within **Technical Appendix 8.6**, in order to assess the efficacy of the implemented measures.

8.7 Statement of Significance

313. The evolution of sensitive 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.

314. The proposed Development also provides opportunity to compensate for unavoidable sensitive habitat losses and deliver notable habitat improvements to enhance the ecological value of the Site, through the restoration of coniferous woodland plantation to blanket bog, delivered by an HMP.

315. Given the demonstrable confidence of success of measures detailed within the draft HMP (see **Technical Appendix 8.6**), habitat and species protection measures to be delivered as part of a CEMP (see **Technical Appendix 3.1**), the proposed Development will lead to a net positive impact upon ecological features in the long term.

316. **Table 8.13** 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 8.13: 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 proposed Development 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 and vegetation	Direct effects via loss to proposed Development 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.	Removal of forestry and restoration of 168 ha of blanket bog under a HMP.	Not Significant.
Otter	Mortality	Implementation of good practice and species protection measures via delivery of a CEMP	No effects	None in addition to embedded mitigation	Not Significant
	Loss of habitat	Reduction via design (minimisation of watercourse crossings). Delivery of a CEMP detailing construction phase good practice measures including pollution control measures.	Negligible, Minor Adverse, Not Significant	Removal of forestry and restoration of 168 ha of blanket bog under a HMP	Beneficial, Not Significant
	Disturbance	Reduction via design, delivery of a CEMP detailing construction phase good practice measures including species protection measures. Employment of an ECoW and pre-construction surveys	Low, Minor Adverse, Not Significant	None in addition to embedded mitigation	Not Significant
Water vole	Mortality	Good practice via a CEMP. Construction works at watercourse crossings restricted to defined working areas, subject to pre-construction surveys and overseen by the ECoW	Negligible, Minor Adverse, Not Significant	None in addition to embedded mitigation.	Not Significant
	Loss of habitat	Reduction via design (minimisation and design of watercourse crossings). Delivery of a CEMP detailing construction phase good practice measures including pollution control measures.	Low, Minor Adverse, Not Significant	Removal of forestry and restoration of 168 ha of blanket bog under a HMP.	Beneficial, Not Significant

Feature	Predicted Effects	Good Practice Measures	Magnitude and Significance	Additional Mitigation / Compensation	Residual Significance
	Disturbance	Measures outlined in the CEMP, including a Species Protection Plan to ensure legislative compliance with regards to water vole during the construction phase	No effects	None in addition to embedded mitigation.	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
	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.	Environmental Management Plan	No effects	None in addition to embedded mitigation.	Not Significant
Habitats	Indirect effects via pollution	Environmental Management Plan	Negligible, Negligible Adverse, Not Significant	None in addition to embedded mitigation.	Not Significant
Otter	Direct and indirect effects	Environmental Management Plan	Negligible, Negligible Adverse, Not Significant	None in addition to embedded mitigation.	Not Significant
Water vole	Direct and indirect effects	Environmental Management Plan	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

8.8 Information to inform a Habitats Regulations Appraisal

8.8.1 Screening for Likely Significant Effects

322. Under the Conservation (Natural Habitats, &c.) Regulations 1994, as amended (the Habitats Regulations) any development that may have a 'Likely Significant Effect' (LSE) on a SAC, either alone or in combination with other plans or projects, requires an Appropriate Assessment (AA) to be carried out by the relevant competent authority, to determine whether the proposal will have an adverse effect on the integrity of the SAC.

323. Before an AA is initiated a screening process has been undertaken to determine whether any of the predicted impacts of the Proposed Development will result in a LSE. This screening assessment is presented here to provide information to the competent authority to allow them to reach a decision on whether or not the proposed Development will have a LSE on the Caithness and Sutherlands Peatlands SAC and therefore whether an AA is required. The potential for 'Likely Significant Effects' upon Loch of Wester SAC (as presented in **Table 8.5**) is screened out on the basis of spatial separation of the Site.

324. The Caithness and Sutherlands Peatlands SAC is located 0.8 km south of the Site at its closest point, and is designated by virtue of its importance for:

- Acid peat-stained lakes and ponds;
- blanket bog;
- clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels;
- depressions on peat substrates;
- very wet mires often identified by unstable quaking surface;
- wet heathland and cross-leaved heath;
- marsh saxifrage *Saxifraga hirculus*; and
- otter.

325. This SAC has the following overarching conservation objectives:

- to ensure that the qualifying features of Caithness and Sutherland Peatlands SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status; and
- to ensure that the integrity of Caithness and Sutherland Peatlands SAC is restored by meeting objectives 2a, 2b and 2c for all qualifying features.

326. For habitat features, objectives 2a, 2b and 2c are:

a. maintain extent and distribution within the site;
b. restore/restore structure, function and supporting processes; and
c. restore the distribution and viability of typical species.

327. For species features, objectives 2a, 2b and 2c are:

a. restore the population of otter as a viable component of the site;
b. maintain the distribution of otter throughout the site; and
c. maintain the habitats supporting otter within the site and availability of food.

328. There will be no direct effects on the habitats within the SAC from the development of the proposed Development. As such, the only realistic pathway for effects would be via mortality to otter arising as a result of construction or operation of the proposed Development, thereby affecting species objectives 2a and/or 2b, or via water pollution leaving the site, and entering the SAC with sufficient concentration per unit volume to affect otter and/or qualifying habitat features. The southern extent of the proposed Development (Turbine; see **Figure 10.5**), enters into the Burn of Lyth Hydrological Catchment Area, and within which the Caithness and Sutherland Peatlands SAC/Ramsar is also partially located. As such, given the proximity to the Site of <1 km at its closest point, in the absence of mitigation it is not possible to conclude no LSE on the features of the Caithness

and Sutherlands Peatlands SAC. As such, information to inform AA is provided below to allow the competent authority to determine whether the Proposed Development will lead to an 'Adverse Effect' on Site Integrity (AESI).

8.8.2 Information to inform Appropriate Assessment

329. Otter activity recorded within the Site was limited, restricted to the identification of two spraints along the Link Burn and Burn of Hollandmey. No potential holts or resting places were recorded. Although individual otters using the Site are considered likely to comprise part of the Caithness and Sutherland Peatlands SAC qualifying population, the watercourses of the Site are largely considered to be of limited value for the species; they provide suitable commuting opportunities for otter, but are considered to provide poor foraging opportunities due to their low importance for fish (see **Technical Appendix 8.4**). The Site is primarily intersected by a series of small shallow burns, with the most substantial watercourse comprising the Link Burn, whose headwaters include the Burn of Hollandmey. Functional fish habitat recorded within the Site during the baseline fish habitat survey is relatively restricted and is considered to be of low sensitivity given the short extents and low-quality habitat recorded. The majority of watercourses are choked by emergent and bankside vegetation, resulting in low flow conditions. No significant areas of high calibre salmonid spawning habitat were recorded, with habitat suitability where present, limited to juvenile fish. No significant areas of spawning or nursery habitat for lamprey species were noted and suitable habitat for eel is also limited. Though amphibians were recorded within the Site there is little evidence that the habitats within the Site are extensively used by foraging otters or that they provide an important source of food for this species.

330. In order to prevent otter mortality associated with the Proposed Development, good practice measures implemented during construction via a site-specific CEMP and operation via a site-specific EMP will include:

- pre-construction surveys;
- careful storage of potentially dangerous substances or materials within designated areas;
- speed limits on Site tracks and access roads;
- restricting working at night;
- capping of excavations at night;
- pollution prevention controls; and
- regular toolbox talks given by the site ECoW.

331. No holts or potential otter resting places were recorded within the Site, however it is possible that breeding or resting places may be established prior to the commencement of construction activities for the proposed Development. Pre-construction surveys will be undertaken to ascertain any changes in baseline otter conditions within the Site to identify the requirement for additional species-specific mitigation.

332. Full details of construction phase mitigation measures for the proposed Development will be contained within a CEMP. The CEMP will include all good practice construction measures, pollution prevention controls and monitoring to be implemented during construction of the proposed Development in line with current industry and statutory guidance. Good practice measures in relation to pollution risk, sediment management, watercourse crossings and sensitive techniques with regards construction in peatlands and near watercourses, to be adopted during the construction and operation phases and serving to protect the aquatic environment, are detailed in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**.

333. The potential for indirect effects to otter and habitat features within the Caithness and Sutherland Peatlands SAC has also been avoided and minimised through embedded mitigation measures including use of floating roads, minimisation of tree felling, adoption of watercourse buffers and minimisation of watercourse crossings. These measures reduce pathways for changes in hydrology to the aquatic and terrestrial habitat qualifying interests. With the exception of Turbine 8, which is not hydrologically connected to the Caithness and Sutherland Peatlands SAC, a minimum 50 m buffer has been included around all mapped watercourses for turbine hardstandings and associated access tracks. Turbine 8 is c.10 m from the nearest watercourse (identified as a drainage ditch), measures to prevent impacts on this watercourse associated with the construction of Turbine 8 are included in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils**, and in **Technical Appendix 3.1**.

334. It should be noted that Caithness and Sutherland Peatlands is an extensive SAC, separate areas of which cover c.1,436 km^2 of the north of Scotland over an area c.90 km east to west, and 60 km north to south. The proposed Development is adjacent to a small and spatially separated portion of the SAC at its furthest north-eastern extent (see **Figure 8.1**). As such, with the application of embedded mitigation and good practice, which have demonstrable extensive success in preventing impacts and adverse effects associated with windfarm development, it can be concluded that the Proposed Development will not result in any AESI, either alone or in combination with other developments.

8.8.3 Summary

335. To summarise, in the absence of embedded mitigation, there is the potential for LSE to otter and habitat features within the Caithness and Sutherland Peatlands SAC via direct mortality (otter) and/or indirect effects of pollution incidents, such as accidental spills or mobilisation of sediments, during the construction and operation phases of the proposed Development. With the successful implementation of the proposed embedded mitigation, it is concluded that the potential for effects on qualifying features of the Caithness and Sutherland Peatlands SAC will be negligible and there will be no AESI as a result of the proposed Development.

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