Balliemeanoch Pumped Storage Hydro

Environmental Impact Assessment Report

Volume 2: Main Report
Chapter 6: Terrestrial Ecology

ILI (Borders PSH) Ltd

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Quality information

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1	July 2024	Submission	DL	David Lee	Technical Director

Distribution List

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6. Terrestrial Ecology

6.1 Introduction

This chapter addresses the potential impacts and effects of the construction, operation (including maintenance) / restoration of the Development on terrestrial ecology features. Where appropriate, it provides details of committed mitigation and/or enhancement measures identified to minimise or compensate for adverse effects on these features.

This chapter concerns terrestrial ecological features, including designated nature conservation sites, habitats and species. Features that are exclusively freshwater (as opposed to amphibious features such as otter *Lutra lutra*, which are addressed in this terrestrial ecology chapter), marine features and ornithological features are separately addressed in the following respective chapters:

- *Chapter 07: Aquatic Ecology;*
- *Chapter 08: Marine Ecology; and,*
- *Chapter 09: Ornithology.*

This chapter is supported by the following Appendices within Volume 5 Appendices:

- *Appendix 6.1: Method for Ecological Impact Assessment*
- *Appendix 6.2: Statement to inform Habitats Regulations Appraisal (Confidential Version within Volume 6 Confidential Appendices)*
- *Appendix 6.3: Habitats;*
- *Appendix 6.4: Mammals;*
- *Appendix 6.5: Bats;*
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The following figures accompany this chapter:

- *Figure 6.1: European Sites;*
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Also relevant to this chapter is the Statement to Inform Habitats Regulations Appraisal submitted as part of the Section 36 application in support of the Development. This sets out the assessment to test for adverse effects from the Development on qualifying features of European sites, which comprise Special Areas of Conservation (SAC) and Special Protection Areas (SPA). SAC are relevant to this chapter, but SPA are designated for the conservation

of bird species and are therefore dealt with in Chapter 09: Ornithology. Where appropriate, reference is made in this chapter to analysis in the Statement to Inform Habitats Regulations Appraisal.

In this chapter, animal and vascular plant species are given their common and scientific names when first referred to and their common names only thereafter. Common names of bryophytes are not well-known therefore only scientific names are used. Animal scientific names follow those used by the National Biodiversity Network. Vascular plant scientific names follow Stace (2019), and Atherton *et al.* (2010) for bryophytes. All distances are cited as the shortest distance 'as the crow flies', unless otherwise specified.

6.2 Legislation and Policy

6.2.1 Legislation

The following nature conservation legislation is potentially relevant to the Development and has been considered during the preparation of this chapter:

- Convention on Wetlands of International Importance ('Ramsar Convention');
- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (the 'Habitats Regulations');
- Wildlife and Countryside Act 1981 (as amended) (the 'WCA');
- Nature Conservation (Scotland) Act 2004 (as amended);
- Wildlife and Natural Environment (Scotland) Act 2011 (as amended) (the 'WANE Act');
- Protection of Badgers Act 1992 (as amended);
- Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) ('CAR');
- Water Environment and Water Services (Scotland) Act 2003 ('WEWS Act').

6.2.2 Planning Policy

Detailed information on relevant planning policy can be found in the Planning Statement which has been submitted as part of the Section 36 application for the Development. However, a brief summary of national and local planning policy relevant to conservation is given under the following sub-headings:

6.2.2.1 National Planning Policy

National Planning Framework 4 (NPF4) was formally adopted by Scottish Ministers on 13 February 2023. NPF4 includes the following statements of policy intent: "*To protect, restore and enhance natural assets making best use of nature-based solutions*" and "*To protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks*". Wherever possible and proportionate to the scale and nature of the project, the Development has therefore sought to deliver benefits for biodiversity, in addition to protecting existing biodiversity. NPF4 also states that major development will only be supported where nature networks "*are in a demonstrably better state than without intervention*" using best practice and including future monitoring and management where appropriate.

Prior to the UK's exit from the European Union (EU), Scotland's SACs and SPAs were part of a wider European network of such sites known as the 'Natura 2000 network'. They were consequently referred to as 'European sites'. Now that the UK has left the EU, Scotland's SACs and SPAs are no longer part of the Natura 2000 network but form part of a UK-wide network of designated sites referred to as the 'UK site network'. However, it is current Scottish Government policy to retain the term 'European site' to refer collectively to SACs and SPAs (Scottish Government, 2020).

6.2.2.2 Local Planning Policy

Local Development Plan 2 (LDP2) for Argyll and Bute was adopted in February 2024. Planning policy relevant to nature conservation and the Development contained within LDP2 is summarised in Table 6.1. Further detail can be found in LDP2 at https://www.argyll-bute.gov.uk/planning-and-building/planning-policy/local-development-plan-2.

Table 6-1 Summary of Potentially Relevant Policies within the Argyll and Bute LDP2

Planning Policy	Summary of Purpose
Policy 30 – The Sustainable Growth of Renewables	The Council will support renewable energy developments where consistent with the principles of sustainable development and it can be demonstrated that there would be no unacceptable environmental effects, including on ecological features.
Policy 73 – Development Impact on Habitats, Species and Biodiversity	The Council will consider nature conservation legislation, the Argyll and Bute Biodiversity Strategy and Action Plan and the Scottish Biodiversity Strategy when assessing developments. Where a development is likely to have effects on important habitats or species, the Council will require the developer to undertake appropriate surveys and, if necessary, to prepare a mitigation plan. Development proposals likely to have an adverse effect on protected species and habitats will only be permitted where it can be justified in accordance with the relevant protected species legislation.
Policy 74 – Development Impact on Sites of International Importance	This policy sets out the strict requirements for developments potentially affecting European sites, including compliance with the Habitats Regulations.
Policy 75 – Development Impact on Sites of Special Scientific Interest and National Nature Reserves	This policy sets out requirements for developments affecting Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR). Where adverse effects on these are possible, developments must demonstrate that integrity of the sites/interests would not be compromised, or that social, economic or environmental benefits of national important clearly outweigh adverse effects on the sites/interests, and that there no suitable alternative locations.
Policy 76 – Development Impact on Local Nature Conservation Sites	Development having a significant effect on Local Nature Conservation Sites (LNCS) will not be supported unless demonstrated that clear social, economic or environmental benefits outweigh the adverse effects and sufficient mitigation is provided to conserve and enhance the site interests.
Policy 77 – Forestry, Woodland and Trees	There is a strong presumption in favour of protecting these resources, particularly ancient semi-natural woodland, native or long-established woods, hedgerows and trees with high nature conservation value. Developments affecting these must demonstrate clear public benefits and provide adequate compensation.
Policy 78 – Woodland Removal	Woodland removal and compensation will be assessed using Scottish Government's Control of Woodland Removal Policy and Argyll and Bute Woodland and Forestry Strategy. Compensatory planting is preferred on-site, secondarily off-site in Argyll and Bute and least preferably elsewhere in Scotland.

6.3 Consultation

The assessment of impacts on terrestrial ecological features has been informed and influenced by consultation held with several statutory and non-statutory stakeholders. A summary of the consultation held, the information / recommendations provided by consultees, and details of how this EIA has responded to consultee feedback is provided in *Table 6-2 Summary of Consultation*.

Table 6-2 Summary of Consultation

Consultee	Summary of Response	Action Taken
NatureScot	In summary, where relevant to terrestrial ecology, the scoping response expected: • impacts on nationally-important peatland habitat and deep peat / carbon-rich soils to be addressed; • the EIAR to set out how such impacts would be avoided, mitigated or compensated; • inclusion of a Peatland Management Plan and Habitat Management Plan; • consideration of operational hydrology impacts; • impacts on groundwater dependent terrestrial ecosystems (GWDTE) to be addressed; • habitat and National Vegetation Classification (NVC) surveys to cover sufficient area to assess impacts on hydrological bog units; • cumulative assessment to consider any upgrade of Blarghour Wind farm Access Tracks, and the Blarghour Land Management Plan (involving conversion of 95ha conifer plantation to a mosaic of native woodland and open ground suitable for notable breeding birds);	This EIA has responded to this advice provided by NatureScot as follows: • impacts on peatland habitats have been considered in detail; • impacts on deep peat have been minimised as far as possible by moving infrastructure elements; • mitigation and compensation of peatland impacts has been considered; • a Preliminary Peat Management Plan (PMP) and Outline Landscape and Ecological Management Plan (oLEMP) have been developed; • GWDTE and hydrological impacts have been considered; • with local exceptions, habitat and NVC surveys generally extended to at least 200m from infrastructure; • Blarghour Wind Farm Access Track, if constructed, will not be upgraded and therefore does not require assessment, and

Consultee	Summary of Response	Action Taken
	• impacts on wild deer to be considered, stating whether impacts are possible, and if so a deer management statement to be included; • inclusion of a Biosecurity Management Plan; • demonstration of biodiversity enhancement, considering measures by nearby developments.	the Blarghour Land Management Plan has been considered; • impacts on wild deer have been considered; • habitat enhancement has been considered, with consideration of proposals by nearby developments.
Argyll and Bute Council	No specific terrestrial ecology issues were raised in the scoping response.	N/A
Royal Society for the Protection of Birds (RSPB)	In summary, where relevant to terrestrial ecology, the scoping response recommended: • detailed peat mapping; • planting low-density native scrub and woodland to extend and link existing native woodland (constituting temperate 'rainforest'), which would also expedite carbon offsetting of peatland impacts, replace lost ancient woodland, and support raptor prey species and black grouse *Tetrao tetrix*; • inclusion of mitigation and enhancement for priority species and habitats, with appropriate timing constraints; • consideration of construction lighting impacts; • inclusion of actions to achieve positive biodiversity effects in line with NPF4; • avoidance of Class 1 and 2 peatland wherever possible; • setting out whether the Development Site interfaces with habitat management plans by nearby developments.	This EIA has responded to this advice provided by RSPB as follows: • detailed peat mapping has been carried out; • a oLEMP has been produced including extensive and sensitive native tree planting expanding existing ancient woodland; • mitigation/enhancement for priority species/habitats has been included where appropriate; • lighting impacts have been considered; • a range of measures have been included in the oLEMP to achieve positive effects; • peatland loss has been minimised as far as possible, e.g. by routing Access Tracks on shallower peat; • consideration has been given to habitat management plans of nearby developments.
Scottish Forestry	In summary, where relevant to terrestrial ecology, the scoping response recommends: • not removing large woodland areas; • minimising woodland removal and emphasising replanting efforts where felling is necessary; • addressing woodland management and tree felling within the EIA.'	This EIA has responded to this advice provided by Scottish Forestry as follows: • no large woodland areas will be removed; • infrastructure refinements have been made to minimise woodland removal; • the oLEMP includes planting and woodland management measures, including extensive native planting in appropriate places in accordance with biodiversity and landscape enhancement principles.
SEPA	In summary, where relevant to terrestrial ecology, the scoping response recommends: • peat depth surveys to inform development design; • avoidance of pristine/near-natural peatland, with compensatory restoration and enhancement where impacts on such habitat are unavoidable; • responsible handling of excavated catotelmic peat by reusing it within a functional peatland below the water table and covered with reinstated turves; • minimising Access Tracks, and designing floating tracks over areas of deep peat.	This EIA has responded to this advice provided by SEPA as follows: • peat depth surveys have been carried out and have been used to locate infrastructure to minimise impacts on deeper peat; • as far as possible higher quality peatland has been avoided, such as by avoiding deeper peat and known locations of scarce sphagnum species, however the Headpond unavoidably impacts some higher quality wetter peatland (although not with known scarce sphagnum species); • a Peatland Management Plan has been produced with catotelmic peat management; • existing forestry and other Access Tracks have been used as far as possible; • floating tracks will be used over all peat of 1m or greater depth, which has also been avoided by design as far as possible.

6.4 Study Area

The Zone of Influence (ZoI) of the Development is the area over which an ecological effect might extend as a result of construction and/or operation . This will vary for different ecological features and effects, depending on their sensitivity to environmental change. It is therefore appropriate to identify different ZoI for different features and effects. As recommended by the Chartered Institute of Ecology and Environmental Management in CIEEM (2022), professionally accredited or published studies and guidance, where available, were used to help determine the likely ZoI, as well as professional judgement. However, CIEEM also highlight that establishing the ZoI should be

an iterative process informed by both desk study and field survey. Where limited information was available, the Precautionary Principle (UNESCO, 2005) was adopted and a ZoI estimated on that basis.

The desk study and field survey areas were designed to allow sufficient data to be collected to establish the baseline condition of ecological features and determine the impacts of the Development. However, the ZoI can extend beyond a development and beyond the survey area. However, at a distance from a development its impacts might not result in *significant effects* (these being the focus of Ecological Impact Assessment (EcIA) according to CIEEM guidance), and even where a significant effect might occur over a large distance this does not necessarily require the field survey to extend to such distances (e.g., loss of individuals of a nationally rare plant could be considered to have a significant effect at a national scale). The field survey areas adopted for this assessment were sufficiently precautionary to allow assessment of potentially significant effects from the Development on ecological features, including within the wider ZoI beyond the field survey areas.

6.5 Methods

6.5.1 Guidance and Standards

The following principal guidance informed the scope and method of the assessment, including field survey:

- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2022);
- *Assessing the Cumulative Impact of Onshore Wind Energy Developments* (Scottish Natural Heritage (SNH), 2018).

Where other specific guidance for specific ecological features has been referenced, this is stated further below in this chapter and in the accompanying appendices.

6.5.2 Assessment Scope

The scope of survey and assessment described in this chapter was informed by the guidance listed in Section 6.5.1, desk study results and published guidance for specific ecological features (as referenced where appropriate below), the responses of consultees (as set out in *Table 6-2 Summary of Consultation*), and professional expertise.

EcIA guidelines (CIEEM, 2022) advise that only those features that are 'important' and that could be significantly affected by the Development require detailed assessment, stating that "*it is not necessary to carry out detailed assessment of ecological features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable*". Consequently, for the purposes of the desk study, field survey and assessment described in this chapter, important ecological features were taken to include:

- Qualifying non-avian features of SACs or other international designations within 10km (or further where connectivity exists) of the Proposed Development;
- Notified non-avian features of Sites of Special Scientific Interest (SSSIs) or other national designations within 2km (or further where connectivity exists) of the Proposed Development;
- Species listed on Schedules 2 and 4 of the Habitats Regulations;
- Species listed on Schedules 5 and 8 of the WCA;
- Badger *Meles meles*, afforded protection under the Protection of Badgers Act;
- Priority species and habitats listed on the Scottish Biodiversity List SBL;
- Species or habitats listed or indicated to be priorities in the Argyll and Bute LBAP;
- Invasive non-native species listed on Schedule 9 of the WCA (although this no longer legally applies in Scotland) and those considered to be of European Union (EU) concern under the Invasive Alien Species Regulation.

Other species or habitats, that may be rare, scarce or otherwise notable, have been included where deemed appropriate through available information and/or professional judgement.

In further regard to the scope of assessment, the following apply:

- Decommissioning was scoped out of assessment as the decommissioning of large-scale pumped storage hydro projects is extremely rare due to the long operational lifespan of such facilities. Potential decommissioning effects are therefore considered to be similar to and associated with the components described in the project construction phase, and are not separately assessed. However, a decommissioning survey and plan would be produced when required;
- The Development will not construct an Access Track from Three Bridges (such an Access Track will only be used if already consented and constructed by Blarghour Wind Farm and the necessary land rights have been secured). Therefore, the Three Bridges Access Track was excluded from assessment of construction effects.

6.5.3 Baseline Data Collection

6.5.3.1 Desk Study

A desk study was carried out to identify nature conservation designations and records of protected and notable species potentially relevant to the Development. A stratified approach was taken, based on the possible ZoI of the Development on different ecological features. Accordingly, the desk study sought to identify:

- International nature conservation designations within 10km of the Development Site (or further where there is connectivity, e.g. hydrologically);
- National nature conservation designations within 2km of the Development Site (or further if there is connectivity, e.g. hydrologically);
- Local nature conservation designations within 1km of the Development Site;
- Records of protected and notable species within 1km of the Development Site.

The desk study was carried out using the data sources detailed in *Table 6-3 Desk Study Data Sources.*

Table 6-3 Desk Study Data Sources

Data Source	Date Last Accessed	Data Obtained
Argyll and Bute Council website (https://www.argyll-bute.gov.uk/)	30 October 2023	• Local Development Plan policies relevant to nature conservation; • Argyll and Bute LBAP information; • Information on relevant planning applications for cumulative assessment.
Argyll and Bute Council Open Data website (https://data-argyll-bute.opendata.arcgis.com/datasets/d05f7337b41e48b4af933404dc0592a2/explore)	06 July 2023	• Information on local non-statutory nature conservation designations.
Highland Biological Records Group (HBRG)	11 August 2023	• Records of protected and notable species, obtained via the NBN (see below – HBRG advised that records were uploaded to NBN and should be obtained from there).
NatureScot SiteLink and Open Data Hub (https://sitelink.nature.scot/home; https://opendata.nature.scot/)	02 August 2023	• Extents of and information on international and national statutory designations; • Ancient Woodland Inventory; • Other relevant information e.g. Wildcat Priority Areas.
NBN Atlas Scotland (https://scotland.nbnatlas.org/)	11 August 2023	• Commercially-available records of protected and notable species from the last twenty years (i.e. since 2003).
Ordnance Survey (OS) 1:25,000 maps	31 October 2023	• Habitats and connectivity relevant to interpretation of planning policy and potential presence of important features that could be used by protected and notable species.
OS 1:50,000 maps and Bing aerial (https://www.bing.com/maps/)	31 October 2023	

6.5.3.2 Field Survey – Habitats and Flora

The habitat surveys were carried out in the periods 8-12 July 2019, 22-24 July 2019, 09-20 August 2021 and 29 September-01 October 2021, by an AECOM ecologist with extensive habitat survey experience, including in upland NVC.

Phase 1 habitats and National Vegetation Classification (NVC) types were recorded concurrently. For Phase 1 classification, the standard survey method published by the Joint Nature Conservation Committee (JNCC, 2010)

was employed, and ecological notes were taken, including recording of notable plant species. The NVC survey followed the classification set out in the original NVC volumes (Rodwell 1991a, 1991b, 1992, 1995, 2000), with reference also to other NVC guidance (Averis et al, 2004; Hall et al, 2004) that describe some additional vegetation types.

Further details on the habitat survey methods are given in *Appendix 6.3 Habitats (Volume 5 Appendices).*

6.5.3.3 Field Survey – Terrestrial Mammal Surveys

The mammal surveys took place between April 2019 and May 2023. They comprised:

- Otter and water vole walkover surveys;
- Badger, pine marten *Martes martes* and wildcat *Felis sylvestris* walkover surveys;
- A camera trap survey to record mammal activity in woodland by Allt a' Chrosaid near Loch Awe, at a ruined shieling in the Headpond area, on the edge of conifer plantation north of the Headpond, at a discovered otter holt beside Lochan Airigh in the Headpond area, and at a stream/forest track near Inveraray.

For details of the mammal survey methods refer to *Appendix 6.4 Mammals (Volume 5 Appendices)*.

6.5.3.4 Field survey – Bat Surveys

The bat surveys took place between May 2019 and May 2023. They comprised:

- Ground level roost assessment of trees (there were no relevant structures);
- Aerial/endoscope inspections of specific trees identified by the ground level assessment;
- Emergence/re-entry surveys of specific trees identified by the ground level assessment;
- Transect activity surveys in the Headpond and Inveraray parts of the Development;
- Static bat detector activity monitoring (by Lochan Airigh in Headpond area, by the Allt Beochlich in the Headpond area, by the existing reservoir below the Headpond area, and near the Allt a' Chrosaid beside woodland and pasture near Loch Awe).

For details of the bat survey methods refer to Appendix 8.3.

6.5.3.5 Field Survey – Terrestrial Invertebrate Survey

Walkover surveys to look for and identify butterfly and dragonfly species in and near the Headpond area were carried out monthly between April and August in 2019 in the Headpond vicinity, and in 2021 in the Inveraray area. The surveys took place as far as possible in favourable weather conditions, although as a result of the exposed upland nature of the site in a western Scotland location it was not possible to carry out the surveys in continuously sunny weather, and wind speed was not always very low. However, strong wind and rain were avoided, and the surveys are considered sufficient to judge the nature and value of the apparently limited butterfly and dragonfly populations in and near the Headpond area. Incidental records of such species were also recorded during other surveys. Full Details of the terrestrial invertebrate surveys are provided in *Appendix 6.6 Butterflies and Dragonflies (Volume 5 Appendices*).

6.5.3.6 Exclusions From Survey Scope

Red squirrel *Sciurus vulgaris* is the only squirrel species in the Development vicinity and can be assumed to use all established woodland. However, the Development would have limited impact on woodland. Where Access Tracks pass through woodland for the northern (Upper Sonachan) route and at Inveraray, they largely use existing forestry tracks. Although there will be localised woodland loss at the Tailpond, this will be small in comparison to the woodland resource along and inland of this part of Loch Awe. Impacts on red squirrel will therefore be limited, with no effect on local conservation status, and possible impacts on individual dreys can be addressed by standard temporal avoidance and pre-construction checks. Therefore no survey was carried out for red squirrel.

The Development Site is not located in a region where great crested newt *Triturus cristatus* is present, and waterbodies are in unfavourable habitat such as extensive upland blanket bog and wet heath, and for this reason are themselves liable to be unfavourably acidic. Therefore great crested newt has been assumed absent. Other amphibians present in this part of Scotland receive no protection relevant to Development activities and are widespread. Therefore no surveys were carried out for great crested newt or other amphibians.

Only common reptile species (excepting non-native introductions) occur in Scotland and none are specially-protected. The upland habitats dominating the Development Site can reliably be assumed to support such reptiles

and standard mitigation can be implemented to reduce impacts on them. Therefore no reptile surveys were carried out.

6.5.4 Assessment Methodology

The assessment of impacts and effects on ecological features followed CIEEM EcIA guidelines (CIEEM, 2022). The principal steps involved in the CIEEM approach can be summarised as:

- Determine baseline conditions through targeted desk study and field survey, to identify important ecological features that might be affected;
- Evaluate the importance of identified ecological features on a geographic scale, determining those that need to be considered further;
- Describe potential impacts on relevant ecological features, considering best practice, legislation and embedded design measures;
- Assess and quantify (as far as possible) likely effects (adverse or beneficial) on relevant ecological features;
- Develop measures to avoid, reduce or if necessary compensate for predicted significant effects, in conjunction with other elements of the design (including mitigation for other environmental disciplines);
- Report residual effects taking into account developed mitigation or compensation;
- Identify opportunities for biodiversity enhancement.

When baseline conditions have been determined, it can become apparent that there is no possibility of effect on certain ecological features, and in this case such features are scoped out of further assessment.

In line with CIEEM EcIA guidelines (CIEEM, 2022), this chapter draws a distinction between ‘impact’ and ‘effect’:

- Impact – action resulting in change to an ecological feature (e.g. loss of a bat roost);
- Effect – the outcome of an impact on the conservation status or structure and/or function of an ecological feature (e.g. loss of a bat roost may have an adverse effect on conservation status at a particular scale).

Impacts are assessed in view of the conservation status of the ecological feature under consideration. Conservation status is defined as follows:

- Habitats – the sum of influences acting on it that may affect its extent, structure/functions, distribution and typical species within a given geographical area (CIEEM, 2022);
- Species – the sum of influences acting on it that may affect its long-term distribution and abundance within a given geographical area (CIEEM, 2022). Similarly, conservation objectives for European sites indicate that to contribute to favourable conservation status the following must be maintained: the population as a viable component of its habitats, distribution, and sufficiency of supporting habitats, processes and prey.

NatureScot recommends that the concept of the favourable conservation status for species should be applied at a national (Scottish) level to determine the level of significance of an effect (SNH, 2018). However, consideration of effects at all scales is important (CIEEM, 2022), and where an impact may not affect conservation status at the national level, the potential for effects on conservation status at regional and local scales has been considered.

For the purposes of this EIA and, residual effects predicted to be significant at the Regional or higher geographic scale are considered ‘Significant’ in broader EIA terms, whereas those predicted to be significant at Local or Negligible scales are considered ‘Not Significant’. The latter does not, however, necessarily imply that mitigation is not required.

A detailed description of the CIEEM method for impact assessment is provided in *Appendix 6.1: Method for Ecological Impact Assessment (Volume 5 Appendices).*

6.5.5 Limitations And Assumptions

Information obtained during the desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for particular species does not necessarily mean they do not occur in the study area. Likewise, the presence of records for a particular species does not automatically mean that these still occur within the area of interest or are relevant to the Development.

The design of the Development changed several times during the period that the habitat surveys were carried out, and also after they were completed. Therefore the following points should be noted:

- The main habitat survey visits took place before it was confirmed that the Development would not construct or upgrade an Access Track from Three Bridges to the Headpond (an Access Track here would only be used if already constructed for Blarghour Wind Farm and the necessary land rights have been secured). As a result, the habitat survey extended to Three Bridges in the vicinity of this possible third-party Access Track. Although this area will now not be impacted by the Development, this habitat information has been retained because it provides useful contextual information;
- Although in most places the habitat survey area extends to at least 200m from proposed infrastructure, including the entirety of the Headpond, small sections of infrastructure (such as small compounds and associated Access Track) locally extend beyond the habitat survey area as a result of late alterations to the design.

The likelihood of deviations from baseline conditions increases with elapsed time since survey. While the baseline is not expected to change sufficiently to alter the impact assessment by the time of construction, the precise situation regarding protected/notable species may nevertheless differ (for example, new otter holts may become established). It is not likely that baseline habitats would significantly change for several years at least, acknowledging however that the proposed Blarghour Wind Farm proposes a small area of blanket bog restoration within the survey area (and beyond Development infrastructure).

Further limitations regarding the habitat, mammal, bat and butterfly/dragonfly surveys are stated in *Appendix 6.3 Habitats, Appendix 6.4 Mammals, Appendix 6.5 Bats* and *Appendix 6.6 Butterflies and Dragonflies (Volume 5 Appendices)* respectively.

There were no other significant limitations to the desk study, field survey or subsequent analysis which could affect the reliability of this impact assessment.

6.6 Baseline Environment

6.6.1 Designated Nature Conservation Sites

6.6.1.1 Statutory Designated Sites

There are two international statutory designations with terrestrial ecology interests within 10km of the Development Site, summarised in *Table 6.4 Statutory Designated Sites* and shown on *Figure 6.1 European Sites* (*Volume 3 Figures*) (for designations with ornithological interests, see *Chapter 09 Ornithology*, and for designations with aquatic or marine interests see *Chapter 07 Aquatic Ecology* and *Chapter 08 Marine Ecology*). There are no national or local statutory designations within 2 km of the Development Site.

Table 6.4 Statutory Designated Sites

Designation	Reason(s) for Designation	Relationship to the Development
Loch Etive Woods SAC	Supports the following qualifying features: • Tilio-Acerion forests of slopes, screes and ravines; • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) • Otter	A multi-part site of which two parts are within 10km of the Development Site. These are approximately 6.3 km north-west and 6.8 km north-east of the Development Site at closest, on the opposite bank of Loch Awe. There is intervening mountainous terrain of moorland and forestry, and separation by Loch Awe. The SAC is also supplied by a different water catchment.
Glen Shira SAC	The sole qualifying feature is: • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.	A two-part site on opposite sides of a watercourse in Glen Shira. The closest point is approximately 5.5 km from the Development Site. There is intervening highly mountainous terrain of moorland and forestry, and the SAC is in a different water catchment.

There is distant connectivity between the Development and Loch Etive Woods SAC for otter via Loch Awe, but no other hydrological or other connectivity from the Development to the above two SACs, nor to SACs, SSSIs or other statutory designations further afield.

6.6.1.2 Non-statutory Designated Sites

There are no non-statutory designated sites within 1km of the Development Site. The nearest are Local Nature Conservation Sites (LNCS) comprising small islands in the northern end of Loch Awe, and an oak *Quercus* sp. wood beside Loch Fyne opposite Cairndow. There is no connectivity to these or other LNCS.

6.6.2 Habitats

Further details of terrestrial habitats and flora are given in *Appendix 6.3 Habitats (Volume 5 Appendices*). The below information is a summary.

6.6.2.1 Ancient Woodland

Within 1km of the Development footprint, there are strips and patches of ancient semi-natural woodland (ASNW) in the AWI along Loch Awe and extending in places inland. In the vicinity of Inveraray, the AWI shows further localised extents of ASNW, and also more extensive long-established plantation.

Loch Awe

Within 1km of the Development footprint at Loch Awe there are ten ASNW polygons and one long-established plantation. The total extents of these particular AWI polygons amount to approximately 18.8ha of ASNW and 1.86ha of long-established plantation. In order of most relevance, these woods (grouped where appropriate) are as follows:

- Wood_ID 14169 – ASNW determined from 1860 mapping. The northern tip is within the Tailpond works area. It extends southwards from the Tailpond works area for 570m between Loch Awe and the B840, and inland along the Allt a' Chrosaid for approximately 1km; south of this watercourse it also extends substantially east of the B840. Part of this wood within and south of the Tailpond area is actually not woodland but caravans, gardens or hard-standing, and the width along the Allt a' Chrosaid is narrower than the AWI shows (compare the AWI data on *Figure 6.2 Ancient Woodland (Volume 3 Figures*) with the habitat map on *Figure 6.3 Phase 1 Habitats (Volume 3 Figures)).* The Native Woodland Survey of Scotland (NWSS) classifies most of this wood beside Loch Awe as Wet Woodland – however, whilst field survey for this EIA did find NVC type W7 here, drier Upland Oakwood (including NVC types W11 and W10) and occasionally Upland Mixed Ashwood (NVC type W9) also occur (see further details in *Appendix 6.3 Habitats (Volume 5 Appendices));*
- Wood_ID 14170 and 14172 – contiguous ASNW determined from 1750 and 1860 mapping respectively, along the Allt Beochlich. It is somewhat narrower in places than the AWI indicates. At closest approximately 60m from the nearest infrastructure (an upgrade of the existing Access Track from Balliemeanoch farm) but mostly much further. The NWSS classifies it as Upland Oakwood or unidentifiable – the latter however is known from field survey to include related upland woodland types such as NVC types W17, W11 and (in limited extent) W9 (see further details in *Appendix 6.3 Habitats (Volume 5 Appendices*));
- Wood_ID 14173, 14174 and 13451: together forming a continuous block of ASNW determined from 1750 mapping, mostly above the B840 and at closest approximately 400m south of the Development footprint beyond the Allt Beochlich. The NWSS classifies it mainly as Upland Mixed Ashwood, with some Upland Oakwood;
- Wood_ID 14164, 14165, 14166, 14167 and 14168: mostly ASNW (one long-established plantation at 14166) north of the Development footprint, beside Loch Awe, on the adjacent hillside and along the Allt Mor. ASNW at 14168 is determined from 1750 mapping, but the others are from 1860 mapping. 14168 is closest, at 500m from the nearest part of the Development (temporary compound TC01), but uphill. The NWSS classifies 14168 and connected woodland as Upland Oakwood, and along the Allt Mor there is further Upland Oakwood followed (uphill) by Upland Birchwood.

Inveraray

There is extensive woodland listed in the AWI around Inveraray. The below concentrates on relevant woodland within the two red line boundaries at Inveraray (that encompass proposed Access Tracks, temporary compounds and jetty):

- Northern section: there is extensive long-established plantation in this area. Two of the relevant polygons (Wood_ID 14071 and 14783) are determined from 1750 mapping, and the others (Wood_ID 14069, 14070 and 14774) are from 1860 mapping. In places these are shown as continuous across the red line boundary area, but in reality there is an existing substantial forestry/estate track that the Development would use. The NWSS identifies a thin wedge near the northern tip as native – this however is clearly a plantation of two very uniform parallel rows of yew *Taxus baccata* (for which reason it is not considered to constitute the

Annex I habitat H91J0 *Taxus baccata* woods of the British Isles, which are known in the UK only in England and Wales – see Yew-dominated woodland (Taxus baccata woods of the British Isles) - Special Areas of Conservation (jncc.gov.uk[1])). However this small yew plantation does support a rather sparse native flora including ramsons *Allium ursinum*, and thus still corresponds reasonably well to NVC type W13b. Other long-established plantation in this area is often classed by NWSS as native or nearly-native, although field survey found it to be mostly plantation with limited semi-natural areas;

- Southern section: according to the AWI, a substantial amount of the woodland through this area is ASNW determined from 1750 mapping, with smaller amounts of long-established plantation determined from 1860 mapping. Again, the AWI polygons are continuous but in reality there is an existing substantial forestry track that the Development would largely use, and also an existing quarry in which a temporary compound is proposed. However, the NWSS indicates that most of this ASNW is actually Plantation on Ancient Woodland (PAWS). This was largely confirmed during field survey, which found areas of young, mature and felled conifer plantation with poor floras. There is also a more restricted extent of mature broadleaved plantation (often of beech *Fagus sylvatica* but including scattered mature oaks) in which there are patches of native woodland flora including patchy carpets of bluebell *Hyacinthoides non-scripta*, sparse enchanter's nightshade *Circaea* sp., primrose *Primula vulgaris*, remote sedge *Carex remota*, wood sedge *Carex sylvatica*, and rarely (close to the southern edge of the broadleaved plantation) dog's mercury *Mercurialis perennis* and yellow pimpernel *Lysimachia nemorum*. There is also some apparently semi-natural birch *Betula* sp. (wet and dry) with native flora towards the western end of this red line boundary (see *Figure 6.3 Phase 1 Habitats (Volume 3 Figures)*). A limited amount of long-established plantation would be crossed by the proposed Access Track to reach the proposed jetty, which is ecologically poor (dense Sitka spruce *Picea sitchensis*, and, locally, dense mature beech).

6.6.2.2 Other Woodland

Other woodland not encompassed by ASNW or long-established plantation includes small areas of broadleaved woodland near Loch Fyne and plantation of Sitka spruce (the dominant habitat at Upper Sonachan, and frequent near Inveraray). The former is generally neutral in character, occasionally acidic, mature with a variety of canopy species, and is most natural within the surveyed area along part of the shore of Loch Fyne. However, this same shore also includes a substantial amount of broadleaved woodland dominated beneath by Japanese knotweed *Reynoutria japonica*.

There are various acid, neutral and wet woodlands in the vicinity of Three Bridge, which are now less relevant since the Development will not construct an Access Track here.

6.6.2.3 Blanket Bog and Associated Habitats

Blanket bog dominates the Headpond area and is also extensive beyond it. It is often degraded to variable degrees by overgrazing and in places burning, and it is likely that burning has taken place in various places historically beyond those locations where obvious evidence (remains of burnt vegetation) was evident at the time of survey. The most clearly degraded bog has been classed as modified bog and symbolised as such on *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*. There are localised areas of peat hagging with some bare peat. However, there are also extensive areas of intact wet blanket bog.

The drier bog is commonly NVC type M19, with hare's-tail cottongrass *Eriophorum vaginatum*, heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* and reduced sphagnum cover and abundance (as is typical of M19). It is often M19c with cowberry *Vaccinium vitis-idaea*, in places M19b (with no particular distinguishing features) or M19a (slightly wetter and transitional towards wetter oceanic M17 bog). It is the drier bog that most often exhibits degradation, with reduced or sub-optimal ericoid cover, occasionally going so far as to form M20 vegetation. The overgrazing/burning is most evident in the south/west part of the Headpond and beyond it. This bog very rarely contains cloudberry *Rubus chamaemorus* and bog bilberry *Vaccinium uliginosum*, which can be frequent in such bog, and the abundant availability of suitable habitat for these species is also suggestive of adverse management (overgrazing and/or burning).

The wetter bog is mainly NVC type M17a. In places it supports *Sphagnum medium* as well as *Sphagnum papillosum* (although on overall floristic grounds most *S. medium* occurrences were considered M17 rather than M18), and more rarely other notable bog species such as few-flowered sedge *Carex pauciflora*, white beak-sedge *Rhynchospora alba* and (in small quantity at one location only, near Lochan Airigh, cranberry *Vaccinium* sp.). *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*. indicates the extents of wetter bog, dominated by M17a.

[1] https://sac.jncc.gov.uk/habitat/H91J0/

Within the blanket bog complex in the southern part of the Headpond area, there is a very wet area classed as basin mire. This may have included a lochan in the past, and there is some open water in addition to treacherous extents of acid-flush related vegetation with rushes and common sphagna. Some of this vegetation equates to Annex I transition mire. Similar vegetation also occurs locally outside the Development footprint at Blarghour (at the limits of the surveyed area for the Development but included in surveys for Blarghour Wind Farm (Ramboll/ESB/Coriolis Energy, 2018)). Another wetter patch, also classed partly as basin mire, in the north of the Headpond area, includes some vegetation that is transitional between bog and flush.

Acid flush vegetation corresponding to NVC type M6, mainly M6d with sharp-flowered rush *Juncus acutiflorus*, is scattered through the blanket bog and along watercourses, and sometimes also in other upland habitat such as wet heath. It is typical, not species-rich and not notable.

6.6.2.4 Heath and Grassland

Both dry heath and wet heath occur in the Headpond area and beyond it. Dry heath is much more localised, on steeper drier slopes. Typical forms with heather/bilberry and heather/bell heather *Erica cinerea* occur. Locally on the mountain slopes at the north-west side of the Headpond H10d occurs, in which bell heather is accompanied by thyme *Thymus drucei* and other species. Wet heath is more common, all corresponding to NVC type M15 with typical but variable mixes of purple moor-grass *Molinia purpurea*, deer-grass *Trichophorum germanicum*, cross-leaved heath *Erica tetralix*, acid grasses and in places the moss *Racomitrium lanuginosum*. More locally there is flushed wet heath (M15a), which is mostly not of particular note (sometimes only carnation sedge *Carex panicea* providing a distinction) but very locally it is species-rich (at Target Note 19; see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*). On the lower moorland towards Loch Awe, the wet heath tends to be degraded by overgrazing and has in places been converted to species-poor purple moor-grass with negligible ericoid cover.

Grassland in the Headpond area and beyond it is localised and typically comprises forms of the acid grasslands U5 and U6 with abundant mat-grass *Nardus stricta* and heath rush *Juncus squarrosus* respectively. The latter sometimes contains sphagnum and is almost certainly in those cases derived from blanket bog by overgrazing and/or burning. Locally, U5c occurs, often not notable and distinguished mainly by abundant carnation sedge, but very locally more species-rich (e.g. rarely containing northern bedstraw *Galium boreale*).

Very locally there are small extents of basic grassland (CG10), with thyme. Occasionally this is damp with sedges (CG10b), and these examples (some within and some beyond the Headpond) often contain a wide range of species – see further information below under other notable habitats.

On the lower ground in the vicinity of Loch Awe and at Inveraray, there are typical improved pastures, patches of grazed rushy neutral grassland, and areas of amenity grassland. There are also marshy grasslands, quite extensive west of Inveraray and scattered near Loch Awe, generally dominated by sharp-flowered rush with typical neutral wetland herbs. Rarely, this such marsh is accompanied by small amounts of iris *Iris pseudacorus*-dominated vegetation, a common vegetation type in western Scotland. Some marshy grassland above Loch Awe is purple moor-grass grassland likely derived from wet heath by overgrazing, but very locally this is more species-rich.

6.6.2.5 Species-rich Ledge/Ravine Vegetation

A few rocky ledge and ravine locations were noted with notably species-rich vegetation. Two significant examples occur outside of the Development footprint west of the southern Headpond Embankment (Embankment 1), at Target Notes 2 and 3 (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*), on a tributary of the Allt Beochlich at Target Note 2, and on a tributary of it at Target Note 3. A wide variety of species are present in vegetation that includes U17 species-rich ledge, a very small amount of W9 basic woodland, CG10b flushed basic grassland and H10d basic heath.

Two other species-rich ledge locations were found. One is in the Headpond area at Target Note 37, a small amount of U17 along the upper Allt Beochlich (Buinne Dubh). The other is near the Three Bridges Access Track at Target Note 54, a very species-rich small, narrow ravine including U17, CG10 and H10d, with a wide range of species.

6.6.2.6 Other Notable Habitats

A number of species-rich habitats that are localised in the survey area (and elsewhere in highland Scotland outside of particularly obviously base-rich regions) were recorded, as follows:

- Basic flushes – several of these were recorded at 18 locations (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*), of which eight are within the Development footprint. There are likely to be others sparsely scattered through the surrounding landscape especially north-west of the Headpond. Frequently encountered species include alpine meadow-rue *Thalictrum*

alpinum, dioecious sedge *Carex dioica*, few-flowered spikerush *Eleocharis quinqueflora* and base-indicative mosses. A few flushes (Target Notes 6, 9 and 32) also contain frequent yellow saxifrage *Saxifraga aizoides*;

- Flushed wet heath – very localised; discussed above in Section 6.6.2.4;
- Basic grassland and basic heath – NVC type CG10 occurs in small quantity on the mountain slopes at and beyond the west side of the Headpond, however it is not generally of special note. Similarly, U5c also occurs in this area but is mostly not particularly diverse, often being separated from more typical acid U5 primarily by an abundance of carnation sedge. Five locations were recorded with more notable diverse flora:
  - CG10b and U5c with alpine meadow-rue, thyme, lesser clubmoss *Selaginella selaginoides* and northern bedstraw *Galium boreale*, at Target Notes 8 and 11 (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*). The latter is within the Development footprint;
  - CG10b and U5c with northern bedstraw, thyme, bird's-foot trefoil *Lotus corniculatus*, eyebright *Euphrasis* sp. and common dog-violet *Viola riviniana*, at Target Note 14 (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*). This is within the Headpond area;
  - U5c with lesser clubmoss, carnation sedge, tawny sedge *Carex hostiana*, flea sedge *Carex pulicaris*, eyebright and a little thyme, at Target Note 29 (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*). This is just beyond the Headpond freeboard; and,
  - H10d with northern bedstraw, thyme and the lady's-mantle *Alchemilla filicaulis*. This is within the Headpond area at Target Note 13.

6.6.2.7 Other Habitats

At the edge of Loch Fyne in the proposed jetty vicinity, there is a very thin strip of poor quality discontinuous saltmarsh, of the typical sort found widely in such situations around Scottish sea lochs (NVC type SM16), and of no note. There is also a very thin strip of coastal grassland, also of poor quality being ruderal in nature and including scattered Japanese knotweed.

Japanese knotweed also occurs by Loch Fyne as a large dense stand, east of the proposed jetty.

Built-up areas, roads, tracks and other artificial land uses are localised in the Loch Awe and Inveraray vicinities.

6.6.3 Notable Flora

More detailed information on notable flora is given in *Appendix 6.3 Habitats (Volume 5 Appendices*). The below information is a summary.

6.6.3.1 Desk Study Information

The desk study found records of 22 priority SBL lichen species. The nearest is *Lobaria pulmonaria* shortly north of Inveraray. The species concerned mainly occur in high quality well-established semi-natural woodland. Suitable habitat for such species appears largely limited to ancient semi-natural woodland along Loch Awe.

There were also records of two priority SBL moss species, beyond the Development footprint. The species concerned could occur in the Development Site but are also widespread in Scotland and not under threat.

The Environmental Statement for Blarghour Wind Farm (Ramboll/ESB/Coriolis Energy, 2018) noted that a sedge that may have been tall bog-sedge *Carex magellanica* was found in the wetter blanket bog approximately 200m south-west of permanent compound PC09. This was not seen during field survey for the Development but could easily have been missed if very localised (as is the case) and especially if grazed (as is quite possible). Tall bog-sedge is not rare or scarce, but is sparsely distributed.

6.6.3.2 Notable Recorded Sphagna

Two notable sphagnum species were found during the field surveys, both at single locations:

- *Sphagnum austinii* – three hummocks in wet M17a blanket bog at Target Notes 30/31 (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*), a watershed area approximately 85m from the limit of the eastern Headpond freeboard (located downslope), and 100m from the nearest Access Track (located upslope); and,
- *Sphagnum fuscum* – two small hummocks between the southern edge of the Headpond and nearest Access Track, at the junction of drier M19c blanket bog and damp M17b blanket bog (Target Note 49 on

Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)); this location is approximately 60m from the Headpond (located very slightly downslope) and 80m from the nearest Access Track (located upslope).

These two sphagnum species are rare in the Argyll West and Islands Natural Heritage Zone (NHZ 14) and were not found anywhere else in the surveyed area, nor were they reported in surveys for Blarghour Wind Farm. They are very likely equally rare in the wider area.

Sphagnum medium was also recorded at fourteen locations (see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*). This species is not rare or scarce but does tend to be local and is associated with wetter and usually higher quality bog habitat. In all but one case (where a small amount of cranberry was recorded – see above) the vegetation is more akin to M17a than M18. Of these fourteen locations, eight are within the Development footprint (mainly the Headpond). The Environmental Statement for Blarghour Wind Farm (Ramboll/ESB/Coriolis Energy, 2018) indicates that *S. medium* also occurs occasionally in bog elsewhere in the local area.

6.6.3.3 Notable Recorded Vascular Plants

A number of notable vascular plants were recorded during the field survey. None of these are rare or scarce nationally, but are either noticeably and probably unnaturally scarce locally, or indicate higher quality habitat. Distribution and habitat information in this section is taken from the Botanical Society of the British Isles (BSBI) Plant Atlas 2020 (https://plantatlas2020.org/).

Cloudberry and bilberry, and possibly cranberry, are probably very scarce at the Development Site owing to degradation of the blanket bog, mainly by grazing but in places by burning (which almost certainly occurred more widely historically but would leave no obvious sign other than likely contributing to species-poverty). The locations of these species are shown on *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*.

Several other species, also not rare or scarce nationally but localised in the Development vicinity, were also recorded:

- Bog orchid *Hammarbya paludosa* – an inconspicuous under-recorded species found in several hectads in NHZ 14, which was found in an M10 basic flush approximately 18m north of the northern Headpond Embankment (Embankment 2) and 35m from the nearest Access Track (Target Note 34; see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*);
- Fragrant orchid *Gymnadenia conopsea* – a widespread but localised species, found once only in U4 acid grassland with thin bracken, beyond the Development footprint (Target Note 1; see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*);
- Lesser twayblade *Neottia cordata* – widespread including in NHZ 14, also inconspicuous and under-recorded. It was found beyond the Development footprint under Sitka spruce at the edge of Upper Sonachan plantation (Target Note 18; see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*
- Few-flowered sedge – widespread in wetter blanket bog in highland Scotland. It was only found twice in the survey area, at the northern end of the Headpond area (Target Note 15; see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*), and also rarely in the wet M17 bog north-east of Lochan Airigh;
- Stone bramble *Rubus saxatilis* – widespread in highland Scotland, including NHZ 14, but localised, found once in small quantity on a rock ledge in the Headpond area (Target Note 38; see *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*).

A number of other species were recorded that are not rare or scarce but occur in species-rich habitats that are localised in the survey area (and elsewhere in highland Scotland outside of particularly obviously base-rich regions). These are discussed under species-rich ledge/ravine vegetation and other notable habitats above.

6.6.4 Otter

Detailed results of the otter desk study and surveys are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- There were nine desk study records of otter, all near Inveraray;

- Moorland zone (which includes the Headpond) – seven holts and fourteen lay-ups were found in this area. Spraints and rarely other evidence were found along the majority of watercourses, including far up minor tributaries, with larger concentrations at or near refuges. Most of the holts are along the Allt Beochlich (Buinne Dubh). Five holts, four on the Allt Beochlich and one at Lochan Airigh, are within the Headpond or associated compound footprints. The other two holts are beyond the Development footprint and not likely to be disturbed either. The holt at Lochan Airigh was considered potentially viable as a natal holt, and this holt was used frequently by otter during camera monitoring, and bedding was seen to be carried inside. However, no evidence of use for breeding was recorded or observed, and the holt entrance(s) physically changed during the monitoring period, at times rendering the holt less suitable for natal purposes. Other holts were considered unsuitable in various ways to be of likely value as natal holts.
- Loch Awe – one holt and five lay-ups were found near Loch Awe, and several spraints sites. The holt is along the Allt a' Chrosaid, is not considered viable for natal purposes and would be liable to disturbance from temporary compound TC02. However, neither the holt nor any of the lay-ups would be directly impacted.
- Inveraray – five holts and six lay-ups were found, mainly along the River Aray but occasionally on smaller watercourses. The locations of all the holts and lay-ups, and given that none of the holts were considered viable as natal holts, are such that neither destruction or disturbance of these otter refuges is likely.
- Upper Sonachan – a single spraint was found on a small watercourse, but no refuges or other evidence.

Additionally, six holts and six lay-ups were found in the Three Bridges area, and three lay-ups in the Blarghour area. However, since the Development will not construct the Three Bridges Access Track, there will be no direct impact on these refuges by the Development.

The Development vicinity is highly suitable for use by otter, with suitable watercourses and standing water that contain fish prey resources (including brown trout and including Lochan Airigh and adjacent watercourses).

6.6.5 Bats

Detailed results of the bat desk study and surveys are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- There were no desk study records within 2 km;
- Bat roosts – the key results of the Bat Roost Suitability (BRS) assessment and follow-on surveys are set out below:
  - Allt a' Chrosaid – one High BRS and six Low BRS trees within 30 m of the Development. Two roosts were confirmed (a Daubenton's bat *Myotis 15aubentoniid* maternity roost that subsequently moved, as can often occur with *Myotis* species, in the High suitability tree, and a single bat in a Low suitability tree). None are within the Development footprint, the closest is 7 m from an Access Track, and the confirmed roosts are 30m or more from the Development footprint. Several other trees with BRS were also recorded that (following Development redesign) are now more than 30 m from the Development footprint;
  - Loch Awe – six High BRS, six Moderate BRS and eight Low BRS trees within 30 m of the Development. Of these, three High BRS, three Moderate BRS and four Low BRS trees are within the Tailpond works area;
  - Inveraray – six High BRS, fourteen Moderate BRS and eleven Low BRS trees within 30m of the Development. However, three (large mature oaks) are immediately adjacent to the proposed Access Track along the forestry track west of Inveraray, and two others (sycamore *Acer pseudoplatanus* and beech) are immediately adjacent to the proposed Access Track along the forestry track north-east of Inveraray. Several other trees with BRS were also recorded that (following Development redesign) are now more than 30m from the Development footprint.
- The moorland and Loch Awe parts of the Development were considered together as having Moderate suitability for bats in general. The transect found very low bat activity in the vicinity of the Headpond. This was consistent with the findings of the static bat detector monitoring. Static detector monitoring at Allt a' Chrosaid (near Loch Awe) recorded the highest activity, consistent with the lowland setting, mature broad-leaved woodland and riparian habitat and known roosts nearby. Transects along the B840 and lower part of the western (Balliemeanoch) Access Track expectedly found the most bat activity, mainly moderate levels of common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, rarely *Myotis* sp. (potential Natterer's bat *Myostis nattereri* as well as Daubenton's bat).

- The Inveraray parts of the Development were assigned High suitability for bats in general. The transect recorded soprano pipistrelle, common pipistrelle and a small minority of *Myotis* sp., most likely Daubenton's bat and Natterer's bat, with passes recorded frequently throughout the length of the route, and particularly concentrated along the northern section of the forestry track west of Inveraray (the majority of the few *Myotis* sp. calls were from this location, and from the bridge crossing the River Aray or nearby).

6.6.6 Water Vole

Detailed results of the water vole desk study and surveys are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- There were no desk study records of water vole within 2 km;
- The most optimal water vole habitat and most consistently-recorded evidence of water vole between years was found at Lochan Romach, at closest 150m from the nearest infrastructure (permanent compound PC19 and associated Access Track). Several burrows (approximately ten, counting potential burrows as well as those with confirmatory latrine/dropping evidence) and multiple latrines were found here, in particular along the outflowing stream which is highly suitable for water vole with deep, slow-flowing water, deep diggable banks and plentiful rushy vegetation for foraging;
- Seven water vole locations were found in the Headpond area, sparsely spread across it, in which approximately 24 burrows (including those in all survey years and those without confirmatory evidence (latrines or droppings)) and one possible nest were found. However, the evidence at each location was not found in every survey year, and in some years was absent or comprised very little evidence, and the number of water voles in the Headpond area appears unlikely to much exceed 10-20 individuals;
- A very few additional water vole burrows were found outside the Headpond area;
- No evidence of water vole was found by or near Loch Awe or at Inveraray, where habitat is at best sub-optimal.

6.6.7 Pine Marten

Detailed results of the pine marten desk study and surveys are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- There was one desk study record of pine marten;
- The moorland part of the Development, especially the Headpond area, is not particularly favourable for pine marten, being mostly distant from woodland and with no dens having been found here and potential features for dens sparse. However, one scat was found in the Headpond area, indicating at least occasional presence, and two were found at Lochan Romach which could indicate use of the known water voles here as a prey resource;
- Scats were most frequent beside Loch Awe and along tracks at Inveraray;
- There is anecdotal evidence of pine marten regularly occurring beside Loch Awe including in the Tailpond vicinity, and pine marten was seen at Three Bridges and two other places outside the wider Development Site but within the local region;
- Two potential pine marten dens were found. One is in a mature oak near Loch Awe and the Allt a' Chrosaid, very close to pine marten sightings reported by a local resident, and 24m from temporary compound TC02 on the opposite side of the B840. The other is amongst tree roots beside a small watercourse, 21 m from the Access Track north-east of Inveraray (and only slightly further from the A819) – this contained a very old scat.

6.6.8 Wildcat

Detailed results of the wildcat desk study and surveys are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- The desk study found recent reporting referring to one publicly-submitted but unverified record of wildcat north of Loch Fyne, but the nearest verified record was 40 km away and there was stated to be 'scant evidence' of wildcat in the entirety of Argyll and the Trossachs. There is no Wildcat Priority Area covering or near the Development. Commercially-available NBN records of wildcat include two from 1985 and 1994 from the hectad containing the Development, but none more recent;

- No evidence of wildcat was found during the surveys, including a lack of potential den sites. Surveys for Blarghour Wind Farm reported no evidence either;
- The extensive open upland moorland habitat in the Headpond area constitutes unfavourable habitat, particularly given an apparent absence of rabbit *Oryctolagus cunniculus* and hares *Lepus* spp. as prey resources, and lack of denning potential.

6.6.9 Red Squirrel

Detailed results of the red squirrel desk study and field records are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- There are numerous desk study records of red squirrel, including by Loch Awe at Portsonachan and near Inveraray. Grey squirrel *Sciurus caroliensis* is absent from the study area. Red squirrels can be assumed to be present in all established woodland in and near the Development;
- Sitka spruce plantation, as occurs in places within and near the Development, is the least favourable woodland type for red squirrel with published studies indicating low densities in Sitka-dominated plantations. Semi-natural woodland along Loch Awe is likely to support higher red squirrel densities.
- No specific squirrel drey or other squirrel survey was carried out, since presence can be reliably assumed and impacts on woodland will be slight. However, no dreys were found during surveys of trees for bat roost suitability, and no red squirrels were recorded on trail cameras located in woodland, although several incidental observations of red squirrel were made near Inveraray and along public roads beyond but approaching the Development Site.

6.6.10 Badger

Detailed results of the desk study and survey are given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- There were no desk study records of badger in the study area;
- A small number of latrines and snuffle holes demonstrated presence of badger in the Inveraray area, but no badger setts were found. No badger evidence at all was found anywhere else, and badger is assumed likely absent from the Development vicinity except at Inveraray.

6.6.11 Other Notable Mammals

Detailed information for other notable mammals is given in *Appendix 6.4 Mammals (Volume 5 Appendices*). A brief summary is given below:

- The initial desk study did not find any records of other notable mammals within the study area apart from hedgehog *Erinaceus europaeus* near Inveraray and Portsonachan;
- Further desk study found that mountain hare *Lepus timidus* was historically present in the Development vicinity, but there are no records more recent than 1960 from this area, and the nearest post-2000 record is in the hectad north of that containing the Development and hence likely from north of Loch Awe.
- No notable mammals, including mountain hare, were seen during any of the extensive field surveys. Surveys for Blarghour Wind Farm (Ramboll/ESB/Coriolis Energy, 2018) similarly did not find any mountain hares or other notable mammals.

6.6.12 Wild Deer

Deer are not an important ecological feature in the sense of CIEEM (2022) and do not warrant detailed impact assessment from a conservation perspective. However, they can impact habitat through grazing pressure, and the following points are noted:

- Trail cameras recorded red deer *Cervus elaphus*, roe deer *Capreolus capreolus* and possibly sika deer *Cervus nippon*. A camera nearest Balliemeanoch farm recorded roe deer only. A camera at Upper Sonachan recorded roe deer, red deer and possibly sika deer (image quality insufficient to be certain). A camera at Inveraray recorded frequent red deer;

- Deer were also the most common mammals recorded on trail cameras deployed for the nearby Blarghour Wind Farm, where 24% of recording days/nights captured red deer, and red deer accounted for 66% of all recordings (Ramboll/ESB/Coriolis Energy, 2018);
- Red deer were occasionally noted during field surveys, sometimes in large numbers, however details were not recorded given that they are not protected or notable species;
- As noted elsewhere, overgrazing is evident is several parts of the Headpond area, and deer (primarily red deer in that location) would be a significant contributing factor.

6.6.13 Amphibians and reptiles

There were no great crested newt records within the initial desk study search area. Looking further afield, the nearest were very distant, in the Glasgow area. Great crested newt is therefore taken as absent from the Development Site and surrounding area.

The desk study found four records of common toad *Bufo bufo* and three of common lizard *Zootoca vivipara* within 2 km of the Development. There are hectad records for slow-worm *Anguilis fragilis*.

No amphibians or reptiles were incidentally recorded during field surveys. However, given the desk study records at least common lizard and slow-worm are likely to occur in the Development vicinity. Despite lack of records, there is also some potential for adder *Viperus berus*, particularly on the lower moorland area towards Loch Awe where there are small areas of bracken, rushes and rougher grassland (often on steeper or damper ground) amongst more heavily-grazed habitats; however, habitat in the Headpond area is often less favourable for adder owing to grazing levels having often reduced ericoid cover.

6.6.14 Terrestrial invertebrates

Details of the findings of the butterfly and dragonfly transects, and incidental records, are given in *Appendix 6.6: Butterflies and Dragonflies (Volume 5 Appendices*), along with desk study information.

The desk study highlighted the possibility of several priority SBL species occurring at the Development Site, potentially including marsh fritillary *Euphydryas aurinia*, a protected species under Schedule 5 of the WCA whose limited distribution includes Argyll and Bute, and certain other species of limited distribution such as large heath *Coenonympha tullia*, mountain ringlet *Erebia epiphron*, pearl-bordered fritillary *Boloria euphrosyne* and the brilliant emerald dragonfly *Somatochlora metallica*, most of which are also priority LBAP species.

However, the field survey did not find any of the above-named species, and the only priority SBL species found was small heath *Coenonympha pamphilus*. However, this species remains widespread across Scotland including NHZ 14, was found somewhat more frequently outside rather than within the Headpond area, and is likely to occur similarly frequently throughout the similar moorland habitats beyond the immediate Development footprint. The other recorded species are common and widespread in highland Scotland, including within NHZ 14. Butterflies were recorded considerably more frequently along and near the western (Balliemeanoch) Access Track than within the more upland and exposed Headpond area. Recorded dragonflies and damselflies, which were expectedly most often recorded at or near watercourses or standing waters, comprised species that are common in highland Scotland, the most frequent being common blue damselfly *Enallagma cyathigera*, and the recorded species being generally found as frequently outside the Headpond area as within it, and likely to be similarly distributed across the similar moorland habitat in the local area.

6.6.15 Invasive Non-Native Species

The desk study did not find any invasive non-native species (INNS) within the study area.

The field surveys recorded botanical INNS in both sections of the Development near Inveraray. These are shown on *Figure 6.6 Invasive Non-Native Species (Volume 3 Figures*). They comprise:

- Japanese knotweed – recorded at Loch Fyne, very densely (both in broadleaved woodland and in the open around it) to the east of the proposed jetty, and also scattered through the narrow and ruderal coastal grassland strip at and either side of the proposed jetty;
- Rhododendron *Rhododendron ponticum* – scattered at occasional to abundant levels (and locally dense) throughout much of the plantation along both sections of the Development near Inveraray;

- Salmonberry *Rubus spectabilis* – scattered through several sections of plantation in the Development section north-east of Inveraray.

6.6.16 Future Baseline

6.6.16.1 Baseline at Time of Construction

Construction of the Development is expected to start in 2027 and last up to 7 years including the pre-construction works.

At the time construction would start, it is anticipated that the consented Blarghour Wind Farm may have been constructed or be under construction. The majority of Blarghour Wind Farm is outside the Development Site, however the Access Track from Three Bridges is within it, although as mentioned elsewhere it would not be constructed by the Development and would only be used by it if already constructed by Blarghour Wind Farm and necessary land rights secured. It is possible that the Access Track from Three Bridges may have been constructed when construction of the Development commences (in which case it would be used). Offshoot Access Tracks and turbine pads may also have been constructed within the Blarghour Wind Farm development boundary, part of which overlaps the part of the Development Site covering the Three Bridges Access Track. Therefore there may, at the time of construction of the Development, be very slightly reduced extents of blanket bog, and to a lesser extent other associated habitats, within the habitat survey area (which included a wide strip along Three Bridges Access Track).

No other major land use changes are expected within the Development Site prior to commencement of construction.

Minor changes in the distribution of some species, or their places of shelter, may occur due to small-scale changes in habitat structure as a result of ecological succession or other natural processes. Given the relatively short period of time before construction would be expected to start, and that significant changes in land management practices (such as grazing regimes) are unlikely in the intervening period, any such changes are likely to be within the range of normal short-term variation in the distribution and abundance of species and species activity.

It is therefore expected that, with the exception of possible construction of Blarghour Wind Farm (the majority of which is outside the Development Site), the current baseline conditions will remain largely unchanged at the time of construction of the Development.

6.6.16.2 Baseline in the Absence of the Development

In the absence of the Development, and for this purpose taking a point 30 years in the future, there are unlikely to be significant changes from the current baseline. This is because current land management practices would be likely to continue as at present, and significant changes of land use are unlikely, especially in the more upland Headpond part of the Development Site. Small changes might occur in the more lowland parts of the Development Site, such as possible implementation of biodiversity measures (e.g., planting of new woodland), but would likely be of small impact in view of the size of the Development Site. Some impact from climate change could occur, however it would probably be minor and it is difficult to predict the direction of change on habitats, since the effects of possible drier and hotter periods but also increased rainfall (e.g., on blanket bog) could counteract. In summary, the future baseline in the absence of the Development is likely to be similar to current baseline.

6.7 Assessment of Effects

6.7.1 Embedded Mitigation

Embedded mitigation measures are incorporated into the design of a development and aim to avoid or reduce adverse effects, including those on ecological features. Embedded mitigation can be considered at the impact assessment stage, whereas specific mitigation measures which are not part of the design, or which are otherwise needed to meet legislative requirements, and are developed after the initial impact assessment, are assessed at a later stage when considering the residual effects.

6.7.1.1 Infrastructure Design

The Development has sought to reduce impacts on ecological features as far as possible by a number of infrastructure refinements embedded into the design, as set out below:

- Access tracks have been minimised as far as possible, and as far as possible travel over shallower peat to avoid deeper peat (which typically supports better quality bog habitat);

- Access tracks across peat of 1m depth or more will be designed as floating tracks;
- The northern Access Track from the A819 has been located largely along existing forestry tracks, minimising the requirement for construction of new track infrastructure and avoiding impacts on non-forestry habitats;
- The Access Track from Balliemeanoch has been adjusted to avoid impacting ancient semi-natural woodland along the Allt a' Chrosaid, and to largely follow the existing Access Track with minimal other habitat impacts;
- Access tracks in the Inveraray area have been repositioned almost entirely along existing forestry tracks, avoiding or very much minimising felling requirements in long-established plantation and PAWS, and also largely avoiding impacts on wetland habitat that was crossed in previous design iterations;
- No Access Track will be constructed as part of the Development from Three Bridges – access will only be taken from Three Bridges if an Access Track has already been constructed by Blarghour Wind Farm and necessary land rights secured, otherwise access will be taken only from the north and Balliemeanoch;
- New Access Tracks throughout have been adjusted as far as possible to run though the shallowest peat, thereby also avoiding deeper, wetter and more intact blanket bog habitat;
- The temporary Access Track just north of the northern Headpond Embankment 2 has been adjusted to avoid a base-rich flush containing bog orchid;
- The Tailpond works extent has been adjusted to reduce the extent of woodland loss beside Loch Awe to a minimum;
- The permanent track/bridge near permanent compound PC09 has been moved to avoid possible impact on a rocky species-rich riparian strip;
- Permanent compounds PC13 and PC14 have been moved to avoid shallower gradients further north with deep peat;
- Permanent compound PC20 and Access Track have been moved to avoid deep peat;
- Temporary Construction Compound TC02 has been reduced in size to be confined only to agricultural improved pasture, with no impact on woodland and other habitats west of the B840 beside Loch Awe;
- Temporary Construction Compound TC04 has been relocated to avoid impact on a substantial rushy wetland that constitutes a potential GWDTE with greater floristic diversity than the heavily-grazed species-poor grassland that TC04 now occupies;
- Temporary Construction Compound TC07 has been re-shaped so that it no longer impinges on an existing grazing exclusion area by Lochan Romach with ungrazed blanket bog and native tree patches, and is now confined to habitats degraded by over-grazing, mainly wet heath and acid grassland;
- Temporary compound TC11 and associated Access Track was moved to avoid significant deep peat that also supports the only known location in the area with the notable sphagnum species *Sphagnum austinii*; subsequently, these elements have been further adjusted to avoid an additional bog area with substantial bog pools and a steep slope with local species-rich vegetation;
- Temporary Construction Compound TC21 has been adjusted to impact only an existing quarry, rather than adjacent long-established plantation.

6.7.1.2 Environmental Protection During Construction

A range of measures that are standard good practice for development of this type, and which are required to comply with environmental protection legislation, will also be implemented. These are well-developed and have been successfully implemented on infrastructure projects across the country, and there is a high degree of confidence in their success. They can therefore be treated as embedded mitigation. These will include:

- All personnel involved in the construction, operation of the Development will be made aware of relevant ecological features and the mitigation measures and working procedures that must be adopted. This will be achieved as part of the induction process and/or through Toolbox Talks;
- An Ecological / Environmental Clerk of Works (EcoW / ECoW) will be employed for the duration of construction. The EcoW / ECoW will advise on and monitor implementation of mitigation measures and compliance with legislation concerning ecological features;
- The EcoW / ECoW or other suitably qualified and experienced ecologist will carry out pre-construction surveys for relevant protected species in suitable habitat, including otter and water vole, and search for red squirrel dreys in any suitable trees requiring felling. In line with NatureScot guidance, the pre-construction

surveys will take place no more than three months before commencing works (including facilitating works such as vegetation clearance);

- A Construction Environmental Management Plan (CEMP) will be prepared and submitted for approval by Argyll and Bute Council, in consultation with SEPA and NatureScot where necessary, prior to commencement of construction. The CEMP will set out all environmental management measures and the roles and responsibilities of construction personnel. An Outline CEMP can be found within *Appendix 3.1 Outline CEMP (Volume 5 Appendices*);
- During all phases of the Development, pollution prevention measures will be adopted, following SEPA Guidance on Pollution Prevention (GPP) or Pollution Prevention Guidelines (PPG), including the following:
  - Controls and contingency measures to manage run-off from construction areas and sediment;
  - All oils, lubricants and other chemicals will be stored in appropriate secure containers in suitable storage areas, with spill kits at the storage location and at places across the Development Site;
  - all refuelling and servicing of vehicles and plant will be carried out in a designated bunded area with an impermeable base, located at least 50m from any watercourse;
- Works near or at any retained native trees or semi-natural woodland will follow tree protection guidance set out in British Standard 5837:2012 (British Standards Institution, 2012);
- Any artificial lighting required for construction works will be directional to avoid or minimise light spill beyond immediate works areas and will be turned off when not needed.

6.7.2 Features Scoped Out of Further Assessment

Relevant ecological features are those that are 'important' and have the potential to be significantly affected by the Development (CIEEM, 2022). In view of the baseline data obtained through desk study and field survey, and consideration of the Development, the features in *Table 6.5 Ecological Features Scoped Out of Further Assessment* have been excluded from further assessment because: a) available data indicates that they are likely absent from the ZoI of the Development; b) it is clear that no impact from the Development is possible; and/or c) they are features that, although 'important' by the criteria given in this chapter, are sufficiently common and widespread that their conservation status even locally is clearly not threatened by the Development.

Table 6.5 Ecological Features Scoped Out of Further Assessment

Ecological Feature	Rationale for Exclusion from Further Assessment
European sites more than 10 km from the Development	There is very limited to zero connectivity for the two European sites within 10 km, which is discussed in the impact assessment below. Moreover, the Statement to Inform Habitats Regulations Appraisal concluded no adverse effects on site integrity for any European sites.
National statutory designated sites	There are no national statutory designated sites for nature conservation (including SSSIs) within 2 km of the Development. Further afield, there is no connectivity to any stage of the Development and thus no possibility of impacts on the notified features of any such site.
Local designated sites	There are no local designated sites (statutory or otherwise) for nature conservation within 1km of the Development. Further afield, there is no connectivity to any stage of the Development and thus no possibility of impacts on the notified features of any such site.
Woodland that is neither semi-natural nor long-established plantation	All such woodland comprises non-native commercial conifer plantation, mainly of Sitka spruce. This is ubiquitous, floristically very poor and of very low value as a terrestrial habitat.
Common habitats that are neither SBL priorities nor Annex I habitats	This includes agriculturally-improved grassland (present by Loch Awe and Inveraray); typical more species-poor acid grassland; plantation woodland (including felled plantation) that is neither long-established plantation nor Plantation on Ancient Woodland Sites (PAWS); dense bracken; and very limited extents of ruderal ('weed') vegetation, amenity grassland and poor quality coastal grassland of ruderal nature infested with Japanese knotweed.
Wildcat	There is no recent reliable evidence of wildcat in the Development vicinity or NHZ 14, and reportedly 'scant evidence' in the entirety of Argyll and the Trossachs (see *Appendix 6.4 Mammals (Volume 5 Appendices)*). No evidence was found during the field surveys (including on camera traps), as was also reported by surveys for Blarghour Wind Farm (Ramboll/ESB/Coriolis Energy, 2018). The larger part of the Development (the Headpond) contains exposed upland moorland habitat that is unfavourable for wildcat. Therefore wildcat is assumed to be absent.
Badger	No badger setts were found during any field surveys. Evidence found (two latrines and two snuffle pits – see *Appendix 6.4 Mammals (Volume 5 Appendices)*) was only found north of Inveraray, was not very close to the proposed access route, and the proposed access route here follows an existing substantial forestry/estate track. Therefore there would be negligible to zero impact on

Ecological Feature	Rationale for Exclusion from Further Assessment
	badgers. Embedded mitigation including standard animal protection measures, ECoW appointment and pre-construction survey will be sufficient to address legal obligations.
Mountain hare and hedgehog	There is no evidence of mountain hare in or near the Development Site except historically, from desk studies and field surveys for both the Development and the nearby Blarghour wind farm (see *Appendix 6.4 Mammals (Volume 5 Appendices)*). The bulk of the Development Site is upland and unsuitable for hedgehog, which although an SBL priority species also remains widespread in Scotland, therefore there is likely to be negligible impact on its conservation status (including locally), and standard animal protection measures embedded in the CEMP (such as provision of means of escape from excavations) will be sufficient to minimise risk of harm at the limited lowland works.
Wild deer	Wild deer are not under any threat from the Development. They are briefly mentioned in the baseline only to inform consideration of possible wild deer impacts on retained habitats, following loss of deer habitat to the Development (primarily the Headpond).
Great crested newt and common amphibians / reptiles	There is no evidence of great crested newt near the Development, the closest records being near Glasgow. Other amphibians in this part of Scotland receive no protection relevant to Development and are widespread. Only common reptile species with no special protection are present in Scotland, and can be assumed to be present (potentially including adder on the lower moorland parts of the Development Site). Standard mitigation can be implemented to reduce impacts on common amphibians and reptiles.
Terrestrial invertebrates	The baseline results for butterflies and dragonflies found only one priority SBL species, which remains widespread in Scotland and NHZ 14, and other found species are common and widespread in Scotland. Butterflies and dragonflies were recorded more often outside the Headpond area than within it, impacts on relevant habitats outside the Headpond area will be minimal, and the recorded species can expected to be similarly distributed throughout nearby similar habitat beyond the Development. The dominant terrestrial habitats in the main upland part of the Development Site are generally species-poor acidic bog and heath, often in sub-optimal condition, and thus not likely to support notable assemblages of other terrestrial invertebrates. Therefore impacts on terrestrial invertebrates are taken as not significant.

6.7.3 Importance of Ecological Features

The assessed importance of baseline ecological features that have not been screened out above is set out in *Table 6.6 Importance of Ecological Features,* together with rationale. Importance has been assessed considering geographic scale, in accordance with CIEEM (2022) guidelines.

With regard to geographic scale, NatureScot has devised 21 'Natural Heritage Zones' (NHZ) covering the whole of Scotland, which reflect biogeographical differences across the country and are therefore often well-suited to ecological assessment. Regional importance (both initially and during impact assessment) is defined in this assessment as referring to the extent of the Argyll West and Islands Natural Heritage Zone 14 (NHZ 14). Local importance is defined as referring to the area within 10 km of the Development.

Table 6.6 Importance of Ecological Features

Ecological Feature	Importance	Rationale
Loch Etive Woods SAC and Glen Shira SAC	International	These are European sites, which were selected and remain legally protected for the international importance of their qualifying features.
Ancient semi-natural woodland	National	Ancient woodland is considered irreplaceable in national policy, and ancient semi-natural woodland holds the most value of any woodland.
Long-established plantation	Regional	Although listed in the AWI, long-established plantation within the Development Site and nearby is widespread in the area and frequently exhibits a full or partial non-native canopy with a poor flora, therefore Regional importance is considered most appropriate. This category includes Plantation on Ancient Woodland (PAWS) where there is localised evidence of remnant ancient woodland (in plantation west of Inveraray, beside the forestry track) comprising mature oaks and patches of (native) bluebell.
Other semi-natural woodland	Local	Other semi-natural woodland is uncommon in the surveyed area, mainly comprising small amounts near Inveraray in sub-optimal condition (this excludes an extremely narrow and small amount of W9 amongst species-rich ledge vegetation, which is covered by the latter below).
Blanket bog	Regional	Blanket bog is SBL priority habitat and Annex I habitat, with significant carbon as well as habitat value. Intact (not significantly degraded) peat-forming bog is priority Annex I habitat (i.e. a priority on a European scale). For these purposes, the two local areas classed as basin mires are considered part of the wider bog. There are 48ha of wetter NVC bog types with abundant 'good' bog sphagna within the Headpond area – for comparison, peat-forming bog exceeding 25ha is amongst the SSSI criteria for bog

Ecological Feature	Importance	Rationale
		(JNCC, 1994), as is presence of particular sphagna known to occur very rarely in the surveyed area. However, substantial parts of the bog are degraded or in suboptimal condition through overgrazing and burning, and blanket bog is widespread locally and regionally. There are also estimated to be 1.8 million hectares of blanket bog in Scotland (https://www.nature.scot/landscapes-and-habitats/habitat-types/mountains-heaths-and-bogs/blanket-bog). On balance, therefore, Regional importance is considered most appropriate.
Species-rich ledge / ravine vegetation	Regional	This habitat, which includes NVC type U17, is extremely rare and very limited in extent within the surveyed area (including the wide surveyed strip along the Three Bridges Access Track), requiring appropriate steep rocky slopes with very low or absent grazing pressure (whereas grazing pressure is often high across the surveyed area). They are likely to be similarly scarce across the wider NHZ 14 and support significant plant diversity.
Other SBL priority and Annex I habitats, and potential GWDTE	Local	This includes all wet and dry heath – although these are SBL and Annex I habitats, it must be taken into account that typical forms are ubiquitous throughout upland Scotland including NHZ 14, and more local flushed forms are also widespread in the uplands. Other habitats in this group include acid species-poor flushes (frequent in this area and the uplands in general), and a variety of more localised habitats of small to very limited extent comprising basic / species-rich flushes, basic (calcareous) grassland, and rush-pasture (with wetland species). These habitats, although of some note, are sufficiently widespread in the surveyed area and upland Scotland generally that Regional importance would be disproportionate. Regional importance is also disproportionate for the very small amount of discontinuous low quality saltmarsh within the surveyed area at Loch Fyne – such unremarkable vegetation is scattered around the loch, and the only substantial notable extent is 11 km away at its head (see saltmarsh data at https://map.environment.gov.scot/sewebmap/).
Notable flora – *Sphagnum austinii* and *Sphagnum fuscum*	Regional	These two sphagnum species, which are good indicators of higher quality bog, are extremely rare in the surveyed area (probably as a result of the poorer condition of much of the blanket bog), and given the similar appearance of habitat further afield are likely to be rare throughout the local area. However, they are also scarce throughout NHZ 14 (as demonstrated by the distribution maps given for each species at https://www.britishbryologicalsociety.org.uk/learning/species-finder/), and the records in the surveyed area appear to be new hectad records.
Other notable flora	Local	The other notable (mainly vascular) plants recorded during field survey are sufficiently widespread that Regional importance would be disproportionate. They do however appreciably contribute to local biodiversity, especially given the generally species-poor nature of the dominant moorland habitats in and around the Development Site.
Otter	Local	Otter is a European Protected Species and remains strictly protected under the Habitats Regulations. Otter evidence is common in the Development Site, including a number of holts, and rivers, streams and standing waters (including the Headpond area) contain suitable fish prey resources. However, otters are widespread, including in NHZ 14, with around 8,000 individuals in Scotland (https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter). Otter home ranges are also very large, extending to around 15km or more of typical freshwater watercourse for females and much more for males (Harris and Yalden, 2008).
Bats	Local	The bat surveys very largely recorded soprano, common pipistrelle and (locally) Daubenton's bat, all of which are common. Activity was low to very low in the Headpond area, and not especially high elsewhere. Possible but uncertain Natterer's bat, a scarcer species which is nevertheless widespread, is represented here by a very few bat call passes. Two roosts including a Daubenton's maternity roost were confirmed and there are 60 trees within 30 m of the Development with some level of roost suitability, however there will be a great many more in the extensive woodland near Loch Awe and Inveraray. Habitat-wise, the Site is typical of NHZ 14, and recorded bat activity also appears typical. Regional importance would therefore be disproportionate.
Water vole	Regional	Water vole evidence was recorded locally in and near the Headpond. Abundance within the Headpond area appears low, and the only other known water vole area at Lochan Romach is also small. However, there are only seven post-1990 commercially-available hectad records of water vole in NHZ 14, and the records are localised within each hectad. Therefore despite low numbers, the local population is considered of Regional importance.
Pine marten	Local	Pine marten is widespread and frequent across much of Scotland, in particular highland Scotland and including NHZ 14. Therefore Regional importance would be disproportionate.
Red squirrel	Local	Red squirrel is widespread and frequent across most of Scotland, in particular highland Scotland and including NHZ 14. Therefore Regional importance would be disproportionate.

Invasive non-native plant species are not included in the above table because they do not have positive biodiversity importance, but can adversely affect habitats or sites that are themselves of variable geographic importance. Standard mitigation can be implemented to avoid spreading invasive plants (of which for this Development the most critical is the Japanese knotweed at the edge of Loch Fyne).

6.7.4 The Potential Impacts of the Development

The following broad categories of impact could arise during construction and operation of the Development and are considered, where potentially relevant, for each ecological feature not excluded from the scope of further assessment for the reasons given in *Table 6.5 Ecological Features Scoped Out of Further Assessment*:

- Indirect impacts on the qualifying features of Loch Etive Woods SAC or Glen Shira SAC;
- Limited direct loss of ancient semi-natural woodland and long-established plantation;
- Direct loss of blanket bog, and of smaller extents of potential GWDTE and other priority or Annex I habitats;
- Indirect hydrological impact on blanket bog and potential GWDTE (including wet woodland);
- Loss of notable flora directly or via adverse effect on supporting habitat;
- Direct harm to protected species;
- Direct damage or loss of refuges of protected species;
- Disturbance or displacement of protected species;
- Loss or fragmentation of supporting habitat of protected species;
- Spread of invasive non-native species;
- Cumulative impacts arising in combination with multiple Development aspects or other developments.

There are no likely pathways for pollution of surface water, groundwater, soils or vegetation given that industry-standard good practice pollution control measures incorporated into a CEMP will be implemented at all stages of the Development to meet legal and regulatory requirements, as described in *Section 6.7.1.2 Environmental Protection During Construction.* Therefore, waterborne pollution effects are not considered further.

Whilst plant and vehicle emissions would occur during construction, significant adverse effects on habitats arise through long-term exposure. Moreover, impacts from gaseous vehicular emissions of vehicles are not considered significant beyond 200 m, nor where traffic flow is less than 1000 vehicles or 200 heavy vehicles per day (Highways England, 2019), whereas there are estimated to be average movements during construction of 154 cars/light vehicles and 152 heavy vehicles per day. The CEMP will also include dust suppression measures to be implemented when required in dry weather conditions. For these reasons, airborne pollution effects as a result of construction are likely to be negligible. The functioning of the Development during operation, and infrequent small-scale maintenance attendance, will not incur any other appreciable airborne pollution emissions. Therefore airborne pollution effects are not considered further.

6.7.5 Impacts on Loch Etive Woods SAC

6.7.5.1 Construction Phase

A detailed assessment of the potential impacts and effects of the Development on Loch Etive Woods SAC is provided in the Statement to Inform Habitats Regulations Appraisal (*Appendix 6.2: Statement to inform Habitats Regulations Appraisal (Volume 5 Appendices) (Confidential version within Volume 6 Confidential Appendices*)). This found (given substantial separation, and the nature of the Development) that there were no likely significant effects on qualifying habitats from construction. It also found that although there could be very minor construction impacts on qualifying otter associated with the SAC (given the very large home range of otters), if these occurred they would be so minimal that the SAC conservation objectives would in no way be compromised and there would again be no likely significant effects. It therefore concluded no adverse effect on the integrity of Loch Etive Woods SAC from construction of the Development.

An EIA could theoretically arrive at a conclusion of significant effect on a European site even where an HRA concludes no adverse effect on site integrity, for example if a there is a beneficial effect. However, there is no beneficial effect from the Development in this case, and no other reason to conclude any significant negative impact. Consequently, there will be **Negligible effect** on Loch Etive Woods SAC during construction, which is **Not Significant**.

6.7.5.2 Operational Phase

A detailed assessment of the potential impacts and effects of the Development on Loch Etive Woods SAC is provided in the Statement to Inform Habitats Regulations Appraisal (*Appendix 6.2: Statement to inform Habitats Regulations Appraisal (Volume 5 Appendices) (Confidential version within Volume 6 Confidential Appendices*)). This found (given substantial separation, and the nature of the Development) that there were no likely significant effects on qualifying habitats from operation of the Development, including from changes in water level in Loch Awe (given that the qualifying habitats do not approach the shore of Loch Awe closer than 50 m). It also found that operational impacts on qualifying otter associated with the SAC are highly improbable, and if these occurred they would be so minimal that the SAC conservation objectives would in no way be compromised and there would again be no likely significant effects. It therefore concluded no adverse effect on the integrity of Loch Etive Woods SAC from operation of the Development.

An EIA could theoretically arrive at a conclusion of significant effect on a European site even where an HRA concludes no adverse effect on site integrity, for example if there is a beneficial effect. However, there is no beneficial effect from the Development in this case, and no other reason to conclude any significant negative impact. Consequently, there will be **Negligible effect** on Loch Etive Woods SAC during operation, which is **Not Significant**.

6.7.6 Impacts on Glen Shira SAC

6.7.6.1 Construction Phase

A detailed assessment of the potential impacts and effects of the Development on Glen Shira SAC is provided in the Statement to Inform Habitats Regulations Appraisal. This found (given substantial separation, complete lack of connectivity, and the nature of the Development) that there was no possibility of likely significant effects during construction of the Development on the sole qualifying feature (woodland habitat beside a stream in a different water catchment at closest 5.5 km from the Development with intervening mountainous terrain). It therefore concluded no adverse effect on the integrity of Glen Shira SAC from construction of the Development.

An EIA could theoretically arrive at a conclusion of significant effect on a European site even where an HRA concludes no adverse effect on site integrity, for example if a there is a beneficial effect. However, there is no beneficial effect from the Development in this case, and no other reason to conclude any significant negative impact. Consequently, there will be **No effect** on Glen Shira SAC during construction.

6.7.6.2 Operational Phase

A detailed assessment of the potential impacts and effects of the Development on Glen Shira SAC is provided in the Statement to Inform Habitats Regulations Appraisal. This found (given substantial separation, complete lack of connectivity, and the nature of the Development) that there was no possibility of likely significant effects during operation of the Development on the sole qualifying feature (woodland habitat beside a stream in a different water catchment at closest 5.5km from the Development with intervening mountainous terrain). It therefore concluded no adverse effect on the integrity of Glen Shira SAC from operation of the Development.

An EIA could theoretically arrive at a conclusion of significant effect on a European site even where an HRA concludes no adverse effect on site integrity, for example if a there is a beneficial effect. However, there is no beneficial effect from the Development in this case, and no other reason to conclude any significant negative impact. Consequently, there will be **No effect** on Glen Shira SAC during operation.

6.7.7 Impacts on Ancient Semi-Natural Woodland and Long-established Plantation

6.7.7.1 Construction Phase

Whilst some works would take place near retained ASNW or long-established plantation, tree protection measures are embedded within the CEMP, therefore this is not further discussed.

Direct Loss of Ancient Semi-Natural Woodland

No existing ASNW would be impacted at Inveraray – all ASNW along the proposed Access Tracks is PAWS with extensive non-native canopy species including conifers and beech. The broadleaved plantation section around temporary compound TC21 (in an existing quarry; see *Figure 6.3 Phase 1 Habitats (Volume 3 Figures*)) is mostly beech-dominated with consequent impoverished flora, although there are scattered mature oaks and sparse good quality woodland indicators (such as enchanter's nightshade, primrose, native bluebell, wood sedge and remote sedge). Dog's-mercury and yellow pimpernel were also locally recorded near the southern edge of the plantation.

However, the proposed Access Track will largely follow the existing forestry / estate Access Track. Limited felling may be required along the existing off-shoot track to temporary compound TC21, which is estimated to require felling of at most 0.30 ha of PAWS. The total broadleaved PAWS in the survey area in this vicinity is 3.8 ha, thus 92% of current broadleaved PAWS would be retained, including the best parts south of the main existing forestry track with the scattered mature oaks and the best patches of woodland flora.

There would however be loss of ASNW beside Loch Awe. By reference to the AWI, but excluding land that is in reality not woodland but rather caravans, gardens or hard-standing, there is 0.20 ha of ASNW within the Tailpond area. Given the frequent small-scale inaccuracy of the AWI, and on a precautionary basis, continued similar semi-natural woodland around the edge of and slightly north of the relevant AWI polygon (Wood_ID 14169) is also treated here as ASNW. This gives 0.42 ha of ASNW within the Tailpond works area. Although in reality it is possible that construction processes may allow a small amount of this to remain, it is assumed in a worst-case scenario that all of this 0.42 ha would be lost.

To place this in context, an estimation was made of ASNW up to approximately 1 km inland around Loch Awe (similarly to the ASNW in the Development vicinity). Areas of ASNW in the AWI that the NWSS identifies as PAWS were excluded (PAWS are former ASNW that was felled and replanted with non-native trees, often Sitka spruce, typically in the 1950s to 1980s – limited remnant ancient woodland flora may persist in PAWS but its survival, including seedbank, appears unlikely after 25 years of canopy closure (Ferris and Simmons, 2000) and least likely in acidic and wetter conditions (Brown *et al.*, 2015) as is the case with typical Sitka plantation). This indicates that there is approximately 660ha of ASNW around Loch Awe. This comprises, according to the NWSS, a mix of woodland types including those identified in the Development vicinity (Upland Oakwood, Upland Birchwood, Upland Mixed Ashwood and Wet Woodland). It is thus estimated that ASNW lost to the Development at the Tailpond would in the worst case equate to 0.06% of the ASNW resource around Loch Awe, and that 99.14% would be retained. There is far more ASNW in NHZ 14 as a whole. However, lost ASNW is not fully replaceable, owing to its antiquity (noting that this refers to temporal continuity of native woodland cover, not the age of trees, which have usually been felled and regrown historically in ASNW across the UK and Scotland), and associated ancient woodland ground flora, soil ecosystem, etc.

Consequently, loss of ASNW (including the minor PAWS impact) is considered a **Permanent Adverse effect of Regional Significance**, which is **Significant**. This can however be partially mitigated by proposed oLEMP measures (see *Section 6.9 Mitigation and Monitoring*).

Direct Loss of Long-established Plantation

The only loss of long-established plantation would be a limited amount near the western end of the Inveraray section, for the Access Track to reach the proposed jetty at Loch Fyne. The loss would amount to approximately 0.2ha of mature non-native Sitka spruce and (locally) beech with negligible flora and of ecologically very low value. There is extensive long-established plantation around Inveraray – the total area of long-established plantation polygons that cross the Development Site at Inveraray is approximately 335 ha, and in places this is of appreciably higher quality (i.e. with at least some native canopy species and elements of native woodland flora). No native woodland specialists were recorded amongst the negligible flora of the affected long-established plantation, and if there is any remaining seedbank of such species in this section of plantation it will likely be poor, and potentially absent, given that such seedbanks are known to be unreliable after 25 years of canopy closure (Ferris and Simmons, 2000) and least likely to persist in acidic and wetter conditions (Brown *et al.*, 2015) as is applicable to dense Sitka spruce plantation in western Scotland.

As such, the very minimal loss of ecologically-poor long-established plantation is considered a **Negligible effect**, which is **Not Significant**.

6.7.7.2 Operation Phase

Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development,* in part owing to embedded mitigation within the CEMP.

Hydrological Impact on Retained ASNW and Long-established Plantation

Hydrological impact could occur through changes to water levels or flows in retained water features with immediately adjacent ASNW or long-established plantation that is wet in character. However, in this regard it is important that the embedded design of the Development includes a continuous supply of sufficient water to maintain normal flow along the retained part of the Allt Beochlich (Buinne Dubh) downstream of the Headpond (however, natural flow ceases approximately 1km downstream of permanent compound PC09, which will house the water supply mechanism, owing to a small existing hydroelectric dam). As such, there would be no effect on downstream wet ancient woodland corresponding to NVC type W7. Although Loch Awe will be subject to water level fluctuation,

this would have negligible hydrological impact on the known wet ASNW beside it and along the B814, which is primarily made wet from contributing terrestrial slopes (rather than through inundation by Loch Awe itself).

With regard to wet woodland further afield by Loch Awe, it has already been noted that ASNW within Loch Etive Woods SAC (which includes some wet woodland – see *Section 6.7.5 Impacts on Loch Etive Woods SAC*) is not immediately adjacent to Loch Awe but 50 m or more inland and upslope, and would therefore not be liable to effects from fluctuation in Loch Awe water level. Out of 179 NWSS polygons that for some part of their edges meet the shore of Loch Awe, 64 are identified as native wet woodland, of which 32 contain a proportion of ASNW. These include the woodlands within the surveyed area for the Development, which as stated are actually only partly wet and where wet comprise NVC type W7 which is not heavily waterlogged and made wet by contributing terrestrial slopes rather than by Loch Awe. Current contour data and historic bathymetry data (https://maps.nls.uk/bathymetric/loch_order.html) indicate that in most places the shores of Loch Awe are often similarly sloping, suggesting that most other NWSS-identified wet woodland around Loch Awe is also likely to be made wet by contributing slopes rather than loch inundation. The north end of Loch Awe includes areas of shallowly-sloping depths, within which lie several small wooded islands, however the NWSS identifies these islands as mainly upland birchwood (occasionally upland oakwood and native pinewood) and not wet woodland. For these reasons, ASNW wet woodland (and other non-ASNW wet woodland) that is significantly waterlogged and made so by inundation from Loch Awe appears likely to be rare.

The properties of some woodland can depend on humidity, which might also be affected by fluctuations in Loch Awe. This would potentially be particularly the case for 'temperate rainforest', typically comprising NVC type W17 with rocks and abundant and diverse bryophytes. Such woodland would be expected to generally be classed as upland oakwood in the NWSS dataset. Out of 179 NWSS polygons that for some part of their edges meet the shore of Loch Awe, there are 28 upland oakwoods, of which 19 contain a proportion of ASNW. Almost all of these (whether containing ASNW or not) are substantial polygons that extend significantly inland from Loch Awe. Therefore the interior humidity of these woods appears to be largely not dependent on Loch Awe, but rather the effects of the canopy, the local wet climate and water from contributing slopes (including watercourses).

Consequently, there is likely to be **Negligible effect** on retained ASNW or long-established plantation through hydrological effect, which is **Not Significant**.

Impact of Loss of Wild Deer Habitat on Retained ASNW and Long-established Plantation

A possible operational impact would be increased deer pressure on retained ASNW and long-established plantation. This could arise owing to loss of open grazing habitat used by deer (primarily to the Headpond, and primarily concerning red deer given the open upland habitat), and further loss from the peatland / upland rehabilitation zone around the Headpond (from which deer would be excluded) as proposed in the oLEMP. The loss of such open deer habitat to infrastructure amounts to 2.3 km^2 (including habitats lost to all parts of the Development other than improved/poor semi-improved grassland, woodland, coastal habitats, artificial habitats and open water / rivers), and the rehabilitation zone would extend to approximately 3km^2 around the Headpond. Passage for wild deer would be maintained to the north and south of the rehabilitation zone, so that red deer could still freely move through the region. However, during operation the combined loss of open deer habitat will be approximately 5.9km^2. For some form of comparison, there is an estimated 75 km^2 of open upland habitat between Portsonachan in the north, Inveraray / Eredine Forest in the south, the B840 in the east and the A819 in the west. There might therefore be a minor degree of increased grazing pressure locally beyond the Development, potentially including on retained ASNW and long-established plantation. However, most of this woodland is on lower ground close to Loch Awe rather than on the higher upland ground that red deer predominantly use, and at least in some cases it is deer-fenced (including a large part of the surveyed woodland beside the B814). Therefore impacts by this means on retained ASNW and long-established plantation are considered likely to be very slight (there may also be some balancing if deer numbers in the area decrease as a result of the reduction in their habitat).

Consequently, there is considered likely to be a **Negligible effect** on retained ASNW or long-established plantation through increased grazing pressure, which is **Not Significant**.

6.7.8 Impacts on Other Semi-natural Woodland

6.7.8.1 Construction Phase

Direct Loss of Other Semi-natural Woodland

There will be no loss of other semi-natural woodland, and therefore **No effect**.

6.7.8.2 Operation Phase

Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP.

Hydrological Impacts on Retained Other Semi-natural Woodland

Hydrological impact on other semi-natural woodland along Loch Awe could arise through fluctuations in water level induced by operation of the Development. However, such effects are discussed in *Section 6.7.7.2 Operational Phase* which covers other semi-natural woodland as well as ASNW. The conclusion is the same, i.e. that there is likely to be **Negligible effect** on retained other semi-natural woodland, which is **Not Significant**.

Impact of Loss of Wild Deer Habitat on Retained Other Semi-natural Woodland

For the same reasons given for ASNW and long-established plantation in *Section 6.7.7.2 Operational Phase* there is considered likely to be **Negligible effect** on retained ASNW or long-established plantation through increased grazing pressure, which is **Not Significant**.

6.7.9 Impacts on Blanket Bog

6.7.9.1 Construction Phase

Direct Loss of Blanket Bog

By reference to the NVC survey, and accounting for NVC bog communities in mosaic with other vegetation types (such as wet heath and acid grassland) the Development will incur loss of 165 ha of blanket bog, the great majority in the Headpond area. This is just under one third of the extent within the surveyed area (599 ha, although following Blarghour Wind Farm construction this would be slightly reduced). For comparison, Scotland is estimated to hold 1.8 million hectares of blanket bog (https://www.nature.scot/landscapes-and-habitats/habitat-types/mountains-heaths-and-bogs/blanket-bog), and it is widespread in NHZ 14 (SNH, 2002; and also suggested by the frequency of Class 1 and 2 peat (https://map.environment.gov.scot/sewebmap/) which commonly comprises blanket bog).

Of the blanket bog that would be lost, 37 ha is significantly degraded, by overgrazing and/or recent burning and probably past burning, with significantly reduced ericoid growth. 82 ha is of drier bog forms, mainly forms of M19 (particularly M19c, that are often quite dry with naturally limited sphagnum cover and little sphagna other than *Sphagnum capillifolium*, which is not confined to bog and not a key peat-forming species) and M17b (which here is drier than the M17a and not as sphagnum-rich). This 82 ha of drier bog forms, although not classed as degraded bog, are quite often still in less than optimal condition with less ericoid growth than would be expected under more favourable conditions. Species that can be at least frequent in M19c (especially cloudberry, also bog bilberry in this area, as discussed in *Section 6.7.14 Impacts on Other Notable Flora*) are present but extremely rare, to a degree that appears difficult to explain except by the effects of unfavourable management including overgrazing and burning. Such issues were also noted in the Blarghour Wind Farm and Balliemeanoch Wind Farm surveys (carried out by Alba Ecology and Highland Ecology respectively, in Ramboll/ESB/Coriolis Energy (2018)).

However, 50 ha of the blanket bog that would be lost is intact wetter blanket bog (nearly all M17a) with extensive cover of sphagnum including *Sphagnum papillosum* and locally *Sphagnum medium. Figure 6.3 Phase 1 Habitats (Volume 3 Figures*) indicates the wetter blanket bog, and Figure 6.4 includes known locations of *Sphagnum medium*. SSSI selection criteria for bogs (JNCC, 1994 – revised version not yet available) states that *Sphagnum medium* (better known under its former name *Sphagnum magellanicum*) is a key peat-forming species, and stipulates a minimum area of peat-forming bog of 25 ha. Owing to overall floristics, most occurrences of *S. medium* were considered part of the surrounding M17a rather than M18, except very locally where cranberry was also found near Lochan Airigh. For comparison, within the surveyed area there is 107ha of such wetter blanket bog, that is intact and not degraded (which may be slightly reduced by construction of Blarghour Wind Farm). Surveys for Blarghour Wind Farm and Balliemeanoch Wind Farm (Ramboll/ESB/Coriolis, 2018) confirm that areas of wetter blanket bog also occur outside the surveyed area, in places also with *S. medium*, although no *S. fuscum* or *S. austinii* were reported (however, as discussed in *Section 6.7.13 Impacts on Sphagnum austinii and Sphagnum fuscum*), the two known locations of *S. fuscum* and *S. austinii* are outside the Development footprint and are not considered to be at risk). The blanket bog that will be lost also includes an area of very wet and largely inaccessible vegetation, with some open water and abundant sphagnum and rushes, some of which equates to Annex I transition mire.

On balance, considering the above points, loss of blanket bog to construction of the Development is considered to remain significant at the level of importance assigned to it prior to further mitigation, i.e. a **Permanent Adverse effect of Regional Significance**, which is **Significant**.

Hydrological Impact on Retained Blanket Bog

It is embedded into the design that where new Access Tracks will pass over peat of 1 m depth or more, they will be designed as floating tracks, which will minimise hydrological effects on adjacent blanket bog and associated habitat by maintaining substrate and hydrological connectivity under the track. Moreover, the Access Tracks and compounds (both temporary and permanent) have been routed and sited to largely avoid deeper peat, which often corresponds to wetter blanket bog vegetation. In the majority of cases, blanket bog affected by Access Tracks and compounds comprises drier forms, such as M19c, that are less prone to hydrological effects than obviously wet blanket bog (the primary extents of which are shown on *Figure 6.3 Phase 1 Habitats (Volume 3 Figures*)).

For these reasons, hydrological impact on blanket bog is likely to be slight and of far less consequence than direct loss (set out above). Therefore hydrological construction impacts are considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**.

6.7.9.2 Operation Phase

Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 The Potential Impacts of the Development*, in part owing to embedded measures within the CEMP. Possible hydrological impact arises initially during construction and is discussed in the preceding section.

Impact of Loss of Wild Deer Habitat on Retained Blanket Bog

A possible operational impact would be increased deer pressure on retained blanket bog. This could arise owing to loss of open grazing habitat used by deer (primarily to the Headpond, and primarily concerning red deer given the open upland habitat), and further loss from the peatland / upland rehabilitation zone around the Headpond (from which deer would be excluded) as proposed in the oLEMP. As explained in *Section 6.7.7.2 Operation Phase*, the loss of open deer habitat would amount to approximately 5.9 km^2. For some form of comparison, there is an estimated 75 km^2 of open upland habitat between Portsonachan in the north, Inveraray/Eredine Forest in the south, the B840 in the east and the A819 in the west. There might therefore be a minor degree of increased grazing pressure on the dominating blanket bog beyond the Development, which could cause slight further deterioration, such as further slight reduction in ericoid cover (there may however be some balancing if deer numbers in the area decrease as a result of the reduction in their habitat).

Consequently, there is considered to be, at worst, a **Permanent Adverse effect of Local Significance** on retained blanket bog beyond the Development, as a result of a possible but uncertain minor increase in wild deer pressure, which is **Not Significant** for the purposes of EIA.

6.7.10 Impacts on Species-rich Ledge/Ravine Habitat

6.7.10.1 Construction Phase

Direct Loss of Species-rich Ledge/Ravine Habitat

Of the four species-rich ledge/ravine locations known within the survey area, only the smallest and least diverse (at Target Note 37; see *Appendix 6.3 Habitats (Volume 5 Appendices)* and *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures*)) would be directly lost to the Development (to the Headpond). The other three would be retained.

The effect of this loss will be consequential locally rather than at the Regional level of importance assigned to species-rich ledge/ravine habitats as a whole, because the majority would remain and the retained examples are larger and overall more diverse than the single lost example. Consequently, there will be a **Permanent Adverse effect of Local significance**, which is **Not Significant**.

Hydrological Impact on Retained Species-rich Ledge/Ravine Habitat

The small ravine near the Three Bridges Access Track would not be subject to hydrological construction impacts by the Development because the Development will not construct this Access Track.

Of the two locations along watercourses west of the southern Headpond Embankment 1, the best example is on the small tributary of the Allt Beochlich at Target Note 2 (See *Appendix 6.3 Habitats (Volume 5 Appendices)* and *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures*)). The physical characteristics chiefly maintaining the shelter and humidity that support the floristic diversity (steep-sided to vertical tall rocky slopes in a narrow ravine) will be unchanged at this location, and there is separation of at minimum 50 m from the nearest infrastructure (temporary compound TC08). The majority of the water-contributing area supplying

the small watercourse in the ravine will be maintained, thus flows and humidity would be similar to baseline. Any hydrological construction effects would therefore be negligible.

The remaining example, on the Allt Beochlich, would also retain the key steep rocky slopes unchanged. Although the Allt Beochlich is blocked upstream by the southern Headpond Embankment 1, the watercourse below the Headpond would be continually supplied with sufficient water to maintain flows similarly to typical baseline flow, using water control equipment installed at permanent compound PC09 (see *Chapter 2: Project and Site Description).* Therefore any hydrological construction effects would be negligible.

Consequently, there will be **Negligible effect** on species-rich ledge/ravine habitats through hydrological construction impacts, which is **Not Significant**.

6.7.10.2 Operation Phase

There are not considered to be any operational effects on species-rich ledge / ravine habitats. Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP. Possible hydrological impact arises initially during construction and is discussed in section *6.7.10.1 Construction Phase*. There is no possibility of impact from a minor increase in wild deer grazing pressure caused by a reduction in their open upland habitat, because these features exist in the first place by virtue of their inaccessibility to deer within an otherwise often overgrazed environment.

6.7.11 Impacts on GWDTE

6.7.11.1 Construction Phase

Direct Loss of GWDTE

The underlying geology of the Development Site is non-sedimentary and therefore not permeable to water except potentially locally and to a small extent through fractures, forming a 'low productivity aquifer' (see *Chapter 11 Water Environment).* This much reduces the likelihood of *potential* GWDTE (as defined using NVC communities in SEPA (2017)) being groundwater dependent. This is especially so for potential GWDTE located amongst blanket bog, since the blanket bog is itself primarily ombrogenous (rain-fed), the bog vegetation by definition is on significant peat, and associated potential GWDTE (mostly acid rushy flushes generally corresponding to M6) are either also on this peat or in close proximity to and fed by it. Potential GWDTE located on steep non-peaty slopes, which include small and local base-rich flushes (M10, rarely M11) as well as more widespread wet heath, are probably also primarily kept wet by rain, either directly (given the regional climate) or indirectly via the blanket bog typically found above those slopes. Where (as is often the case) acid or occasionally neutral rushy vegetation (M6 and M23) is closely associated with small streams, it is likely to be primarily fed by the watercourse. For these reasons, *potential* GWDTE indicated on *Figure 6.5 Potential Groundwater Dependent Terrestrial Ecosystems (GWDTE) (Volume 3 Figures*) are considered likely in most cases to *not* be groundwater-dependent.

Risk to GWDTE from the Development is therefore low, but sensitivity would be highest for those NVC types considered in SEPA (2017) to be potentially of High groundwater-dependency *and* not associated with blanket bog or otherwise unlikely to be groundwater-dependent for the reasons given in the previous paragraph. This leaves several localised wetland types in the vicinity of Loch Awe and beside the lower part of the western (Balliemeanoch) Access Track. These comprise M6 and M23 flush/rush pasture (often in mosaic with other vegetation types), a single occurrence of flushed U6, and W7 wet neutral woodland. By Development design, compounds (permanent and temporary) largely avoid these vegetation types. Unavoidable loss will however occur to M6 and M23 at permanent compound PC06 (containing a tunnel portal), and to M23 and W7 at the Tailpond. The loss of W7 to the Tailpond would be approximately 0.27 ha (compared to 7.58ha of W7 in the surveyed area, with other wet woodland scattered around Loch Awe in the NWSS data, that is also likely to be W7). The loss of mosaic M6/M23 to PC06, and M23 to the Tailpond, would total approximately 0.33 ha, these habitats being widespread locally, regionally and throughout highland Scotland. Other direct losses to these habitats, and potentially to flushed U6, may occur during improvements to the lower western (Balliemeanoch) Access Track, but would be minor.

Consequently, construction losses to potentially sensitive GWDTE are considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**.

Hydrological Impact on Retained GWDTE

For the reasons set out in the previous section, most recorded *potential* GWDTE is not likely to be groundwater dependent, and the potentially most sensitive GWDTE are the above-described M6, M23, flushed U6 and W7 beside or near Loch Awe and the lower part of the western (Balliemeanoch) Access Track. The relevant habitats

are often upslope (north) of this Access Track and PC06, and in these cases hydrological impact is unlikely. Since the Access Track already exists, the habitats downslope of it are already subject to hydrological impact, which may be significant. Improvements to the Access Track are therefore not likely to have a significant effect on potentially sensitive GWDTE beyond that which already occurs. Retained W7 woodland beside Loch Awe and outside the Tailpond works is separated from the works southwards by approximately 30 m of non-woodland habitat (bracken and neutral grassland), whilst northwards the Tailpond works do not extend beyond an existing non-woodland area (of amenity grassland, garden and semi-permanent caravans). Therefore hydrological impact on retained W7 is likely to be very slight, if any.

Consequently, hydrological construction impacts on retained potentially sensitive GWDTE are considered a **Negligible effect**, which is **Not Significant**.

6.7.11.2 Operation Phase

Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP. Possible hydrological impact arises initially during construction and is discussed in *Section 6.7.11.1 Construction Phase*.

Impact of Loss of Wild Deer Habitat on Retained GWDTE

As explained in *Section 6.7.7.2 Operational Phase*, there may be a minor increase in deer grazing pressure beyond the Development as a result of loss of open deer habitat. As with other open habitats accessible to deer, which would include the rushy flushes that dominate the potential GWDTE, there might therefore be a minor degree of increased grazing pressure on the potential GWDTE beyond the Development, which could cause slight further deterioration such as a slight reduction in flowering vascular plants (there may however be some balancing if deer numbers in the area decrease as a result of the reduction in their habitat).

Consequently, there is considered to be, at worst, a **Permanent Adverse effect of Local significance** on retained potential GWDTE beyond the Development, as a result of a possible but uncertain minor increase in wild deer pressure, which is **Not Significant**.

6.7.12 Impacts on Other Notable Habitat

6.7.12.1 Construction Phase

Direct Loss of Other Notable Habitats

Wet and dry heath are both priority SBL habitats and Annex I habitats. Losses to wet and dry heath will be approximately 20 ha and 6 ha respectively (with 76 ha and 13 ha each in the whole surveyed area). These comprise forms that are common and/or widespread in highland Scotland. Of most note are M15a (flushed wet heath) and H10d (more diverse basic heath with thyme, etc.), of which 5.7 ha and 0.9 ha would be lost respectively, with 12.7 ha and 0.9 ha in the surveyed area. Although these two forms can be floristically more diverse than the other heaths, they are still widespread in the uplands, and the examples in the surveyed area are mostly not specially-notable. In particular, the M15a was often only separated from other M15 by abundant carnation sedge, although one small more diverse example (at Target Note 19) would be lost. One more diverse localised example of H10d with northern bedstraw (at Target Note 13) would also be lost.

Eighteen locations with small basic flushes (constituting priority SBL and Annex I habitat) were identified of which eight would be lost. The lost basic flushes are not otherwise notably different from the ten retained basic flushes, and there are almost certainly more such basic flushes in the irregular and locally rocky upland ground north-west of the Headpond. Most of these flushes are M10, with a few at higher altitude corresponding to M11. Both these forms of flush are widespread across highland Scotland.

There are localised occurrences of grassland with basic influence, mostly at or near the steep slopes west of the Headpond. These partly correspond to basic grassland, a priority SBL habitat, and both constitute Annex I habitat. They include CG10 and U5c of relatively low diversity and no special note, and a few occurrences of more notably diverse CG10b and U5c. Of the four more diverse examples, two would be lost. The losses to CG10 and U5c would amount to 40% of the total in the surveyed area. U5c was reported by the Blarghour Wind Farm surveys (Ramboll/ESB/Coriolis Energy, 2018), and CG10 as well as other U5c is highly likely to occur locally in the irregular and locally rocky upland ground north-west of the Headpond. These types of vegetation are not normally extensive (with exceptions, such as the Breadalbanes) but are widespread.

A minority of recorded low-quality lowland meadow near the proposed jetty at Loch Fyne would be lost. Nearly all of this is in fairly homogenous agricultural pasture fields which have probably been sown and are subject to grazing. Although lowland meadow is a priority SBL habitat, and is quite localised, the low quality and probable artificial

sown origin of the majority within these fields make them poor examples of negligible note. The amount lost would be 11% of the total in the surveyed area, and a very small amount of more natural MG5 lowland meadow would be unaffected.

Poor quality discontinuous and very thin saltmarsh, an SBL priority habitat and Annex I habitat, occurs along the edge of Loch Fyne in the jetty vicinity. Approximately 10% of the mapped area would be lost. However, this type of fragmentary very thin patchy saltmarsh is not uncommon around Scottish sea lochs including Loch Fyne, with the only substantial notable example in Loch Fyne at its head.

Acid flush is a priority SBL habitat. Most recorded acid flush (all corresponding to forms of M6 and not species-rich, as is typical) sits within blanket bog and associated habitats. Losses to M6 amount to approximately 35% of the total in the surveyed area. M6 is ubiquitous in upland areas of Scotland, as was found (for example) in surveys for Blarghour Wind Farm (Ramboll/ESB/Coriolis Energy, 2018).

Rush-pasture is a priority SBL habitat. Losses to localised M23 rush-pasture would amount to approximately 6% of the total in the surveyed area, the retained M23 including the majority of more diverse lowland M23 near Loch Awe. M23 is common in the Scotland and regionally.

Approximately 3% of recorded swamp habitat, an SBL habitat, would be lost. The lost forms comprise very common bottle sedge *Carex rostrata* and reed canary-grass *Phalaris arundinacea* swamps.

In view of the above, losses to other notable habitats are considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**.

Hydrological Impact on Retained Other Notable Habitats

Hydrological impact via groundwater is considered under GWDTE in *Section 6.7.11 Impacts on GWDTE* above.

Hydrological impact from construction could also cause impacts on certain habitats by altering surface water movement (including watercourse flows). Other notable habitats that could be impacted in this way most obviously include basic flush, acid flush and rush-pasture, but also CG10b/U5c grasslands and possibly wet heath. However, the Headpond sits in a topographical basin, and as a result retained terrestrial habitats above it would generally not suffer from inhibited surface water flows towards them. As stated elsewhere, it is also an element of the design that normal water flow would be maintained in the retained part of the Allt Beochlich (Buinne Dubh), and other retained watercourses will still receive water from the majority or all of contributing slopes. For these reasons, impacts on other notable habitats by altered surface water movements are unlikely or will be very slight.

A possible exception is the basic flush containing bog orchid (at Target Note 16) just north of the northern Headpond Embankment 2. Although not directly impacted, it is at possible risk of harm given proximity (at closest 18 m) to the Embankment, and with a temporary Access Track passing around it upslope with potential to affect flow of water towards it. However, as noted above bog orchid is not rare in this part of Scotland and also under-recorded, and ten known examples of this type of basic flush would be retained, with others highly likely to be present west of the Headpond.

Consequently, hydrological construction impact on other notable habitats is considered a **Negligible effect**, which is **Not Significant**.

6.7.12.2 Operation Phase

Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP. Possible hydrological impact arises initially during construction and is discussed in *Section 6.7.12.1 Construction Phase*.

Impact of Loss of Wild Deer Habitat on Retained Other Notable Habitat

As explained in *Section 6.7.7.2 Operation Phase*, there may be a minor increase in deer grazing pressure beyond the Development as a result of loss of open deer habitat. As with other open habitats accessible to deer, which would include the other notable habitats mentioned above, there might therefore be a minor degree of increased grazing pressure on the such habitats beyond the Development, which could cause slight further deterioration such as a slight reduction in ericoid cover or flowering vascular plants (there may however be some balancing if deer numbers in the area decrease as a result of the reduction in their habitat). If such impacts occurred they would, of these habitats, mostly affect wet heath, since this is by far the most extensive of the other notable habitats. Further grazing pressure on wet heath might, in some cases, convert it to species-poor purple moor-grass swards, as already exist in places along the western (Balliemeanoch) Access Track owing to existing grazing pressure (which

may be primarily due to livestock at that location, but if so would be exacerbated by deer). None of the relevant habitats are, however, considered of more than Local importance.

Consequently, at worst, there would be a **Permanent Adverse effect of Local significance** on retained other notable habitat beyond the Development, as a result of a possible but uncertain minor increase in wild deer pressure, which is **Not Significant**.

6.7.13 Impacts on *Sphagnum austinii* and *Sphagnum fuscum*

6.7.13.1 Construction Phase

Direct Loss of *Sphagnum austinii* and *Sphagnum fuscum*

Sphagnum austinii and *Sphagnum fuscum* are rare in NHZ 14. However, the Development footprint does not impinge upon the locations of these species, with distances of at minimum 60 m to the nearest proposed infrastructure. There will therefore be no direct loss of these species, and therefore **No effect**.

Hydrological Impact on *Sphagnum austinii* and *Sphagnum fuscum*

S. austinii at the one known location (at Target Notes 30 and 31, which are very close together; see *Appendix 6.3 Habitats (Volume 5 Appendices*) and *Figure 6.4 National Vegetation Classification (NVC) and notable plants (Volume 3 Figures)*) is in a very wet watershed area of M17a blanket bog, which is primarily rain-fed. Water will also enter this area from surrounding slopes, however a) the nearest point of the Headpond freeboard is 85 m west and slightly downslope, b) the nearest other infrastructure is an Access Track at the top of a largely dry 20 m high steep slope 100 m to the east, and c) this Access Track soon travels on to slopes that dip away from the *S. austinii* bog. For these reasons, there is not likely to be sufficient if any hydrological impact on the habitat supporting *S. austinii*, and thus no loss or reduction in *S. austinii* by this means.

S. fuscum at the one known location (at Target Note 49; see *Appendix 6.3 Habitats (Volume 5 Appendices)* and *Figure 6.4 National Vegetation Classification (NVC) and notable habitats (Volume 3 Figures*)) is in contrast not located in very wet blanket bog but rather at the junction of drier bog types. This, in combination with 60 m separation from the slightly-downslope southern Headpond Embankment 1, and 80 m separation from the upslope nearest Access Track, also indicates that there would not be sufficient if any hydrological construction impact on the habitat supporting *S. fuscum* to adversely affect it.

It is therefore concluded there will not be adverse hydrological construction impacts on *S. austinii* or *S. fuscum*, and therefore **No effect**.

6.7.13.2 Operation Phase

There are not considered to be any operational effects on *Sphagnum austinii* or *Sphagnum fuscum*. Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP. Possible hydrological impact arises initially during construction and is discussed in *Section 6.7.13.1 Construction Phase*.

6.7.14 Impacts on Other Notable Flora

6.7.14.1 Construction Phase

Direct Loss of Other Notable Flora

There are no known other plant species within the surveyed area that are nationally rare, nationally scarce, red-listed (meaning listed on the GB red list for plants under a category of threat, rather than those included on the red list but classed as ‘Least Concern’, which are not threatened) or priority SBL species.

Other species recorded as notable by professional judgement are either notable by being locally very scarce and likely indicating habitat degradation, but not otherwise of special note in NHZ 14 (cloudberry, bog bilberry and cranberry), or indicate localised higher floristic diversity (bog orchid, fragrant orchid, lesser twayblade, few-flowered sedge, stone bramble and aggregations of locally-scarce species in localised species-rich habitats). However, none of the species concerned are rare specifically in NHZ 14, and in all cases it is very likely that they occur similarly sparsely beyond the surveyed area, given similar surrounding habitat. The known locations of fragrant orchid and lesser twayblade are well beyond the Development footprint and will not be lost. The loss of several but not all of the known locations of the other named species above within the surveyed area, with likely occurrences beyond it that would not be affected, would not be of more than local consequence. The localised species-rich habitats are

discussed in *Sections 6.7.12 Impacts on Other Notable Habitats* above, which concludes locally-significant impacts only.

Consequently, direct losses to other notable flora would constitute a **Permanent Adverse effect of Local significance**, which is **Not Significant**.

Hydrological Impact on Other Notable Flora

Known instances of the notable vascular plants listed in *Section 6.6.3 Notable Flora* that are not within the Development footprint are mostly too far from it to be impacted hydrologically. A possible exception is bog orchid – although infrastructure avoids the actual basic flush containing the bog orchids, it lies between the northern Headpond Embankment 2 and the nearby temporary Access Track to the north. It is possible, if water flow through the flush is reduced by the upslope temporary Access Track, that conditions in the flush may become unsuitable for bog orchid. However, as noted above and in *Appendix 6.3 Habitats (Volume 5 Appendices*) bog orchid is widespread in western Scotland, not rare in NHZ 14, and almost certainly under-recorded owing to its diminutive nature.

Consequently, possible loss by hydrological impact during construction would constitute a **Negligible effect**, which is **Not Significant**.

6.7.14.2 Operation Phase

There are not considered to be any operational effects on other notable flora. Waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP. Possible hydrological impact arises initially during construction and is discussed in *Section 6.7.14.1 Construction Phase*.

6.7.15 Impacts on Otter

6.7.15.1 Construction Phase

Direct Loss of Otter Habitat and Refuges

The only loss of known otter refuges will be at the Headpond, which will incur loss of five holts, as well as thirteen lay-ups. Of the five holts, four are considered unsuitable for natal purposes. One (at Lochan Airigh), initially considered to have potential for use as a natal holt, did not exhibit any evidence of such use during monitoring (however, this does not fully preclude possible future use of this holt, or future holts that might be established at Lochan Airigh, for breeding purposes). Approximately 8.6 km of watercourse would be lost to the Headpond, as well as Lochan Airigh, all known to be used by otter, along which the five holts and thirteen lay-ups were found. The home range of a female otter along freshwater watercourses is known from limited studies to be around 15km or more of watercourse, with one study finding riverine female otter using 23 holts (Harris and Yalden, 2008). For male otters, the home range in such habitat could be around 40 km or more, and the same study found male otter using 37 holts (Harris and Yalden, 2008). Given these home ranges and the numbers of known holts, it is very likely that otters occurring in the Headpond area also use Loch Awe and intervening/nearby watercourses and standing waters. The extent of lost water features, and the holts and lay-ups along them, therefore appear to potentially represent around one quarter of those in the home range of a female otter, or one eighth of those in the home range of a male otter. However, considering the small size of the watercourses apart from the Allt Beochlich (Buinne Dubh), it is likely that these water features and refuges along them represent less than these proportions of local otter home ranges.

Since otter home ranges overlap, especially those of males/females (Harris and Yalden, 2008), the home ranges of at least two and possibly more adult otters would likely be impacted, and this could include breeding female(s). Therefore there would likely be a minor reduction in carrying capacity for otter in the Development vicinity, as a result of loss of these refuges and the associated water features. However, as explained in the previous paragraph the home range of otters using the Headpond area would extend far beyond it and they would be expected to have numerous alternative refuges, and there are several other good foraging resources (particularly Loch Awe but also other unaffected nearby lochans and watercourses) within the home range of otters using the Headpond area. Any contraction in carry capacity would not be significant at the regional scale of NHZ 14, which encompasses abundant suitable otter habitat (including Loch Awe, numerous other substantial lochs, lochans and rivers, and extensive suitable maritime coastlines) and would hold a significant proportion of the estimated 8,000 otters in Scotland (https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter). Note that the continued suitability of the Headpond for fish prey resources (such as brown trout *Salmo trutta*) as it floods (and thereafter), which would otherwise provide some balancing, is not likely, owing to the great fluctuation in water level, and that fish would be liable to be drawn into the Headpond turbines.

Consequently, otter population change through direct losses to otter habitat and refuges is considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**.

Mortality of Otter

Direct harm to otters during construction is very unlikely owing to a) their high degree of mobility including in water (except when recently-born), b) low plant / vehicle speeds in the construction area, c) the embedded standard mitigation of overnight means of escape from excavations and capping of pipes that otters might enter, and d) the embedded standard mitigation of pre-construction surveys/ECoW appointment. Through the latter, otter holts or lay-ups and their status at the time of construction will be confirmed, and derogation licensing put in place with any required proportionate mitigation. Under standard licensing procedures this will include supervision by the ECoW of any necessary destruction of otter refuges, with prior monitoring.

Consequently, direct mortality of otter during construction is considered a **Negligible effect**, which is **Not Significant**.

Disturbance of Otter

Any otters using the known refuges in the Headpond area would be subject to disturbance during construction of the Headpond and associated infrastructure, and also during blasting. The blasting would take place in the south-eastern part of the Headpond to create a large quarry / borrow pit (which would later be flooded). Disturbance from blasting can occur over hundreds of metres, whereas for 'normal' construction activity (and where there is no indication that a holt is a natal holt) disturbance of otters at refuges is typically considered possible at up to 30m. This means that the majority of otter holts and lay-ups in the Headpond area are likely to be subject to construction disturbance. The exact distribution of otter holts may differ at the time of construction but, where in or near the Headpond, disturbance would occur. Disturbance would be over prolonged periods, given a construction timescale of 7 years, although it would occur at various times and locations within the construction area, depending on precise construction activity at any point. It would largely occur in daylight outside the key crepuscular activity periods of otter, however this is not relevant to those otter refuges occupied during the day. Nevertheless, given the abundance of otters in Scotland and regionally, the net effect of disturbance in the Headpond area would be similar to the eventual complete removal of the refuges and associated water features within it, as discussed in the previous section and considered an adverse effect of local significance.

Disturbance of known otter refuges near Loch Awe would not occur from construction of Development infrastructure where this involves normal construction activity, given that all such refuges are well over 30 m from permanent infrastructure. However, sheet piling is required in the Tailpond area for the coffer dam, and it is therefore likely that the otter lay-up shortly north of the Tailpond area would be subject to short-term disturbance during piling activity (assuming a disturbance distance of approximately 100 m for piling). Additionally, the refuges along the Allt a' Chrosaid, including the single holt, may be subject to on-going but low level disturbance from general activity within nearby temporary compound TC02. Since otters have many refuges within their home range (for example, one study found that males and females used 37 and 23 holts respectively (Harris and Yalden, 2008)), it is very likely that otters using this area have alternative refuges further upstream along the Allt a' Chrosaid, along other streams running into Loch Awe nearby, and along the less-disturbed parts of nearby Loch Awe itself. Disturbing activities would largely take place in daylight, outside the key crepuscular activity periods of otter, and would not therefore be likely to disturb actively foraging and commuting otters to a significant degree. Given these points, otter disturbance in the Loch Awe area is likely to be of less than local consequence.

Known otter refuges in the Inveraray area are all beyond possible construction disturbance. The most relevant works would be those for the jetty at Loch Fyne, and any improvement works to the existing forestry / estate track over the River Aray. These would predominantly, if not entirely, take place during daylight and outside the key crepuscular activity periods of otter. It is also relevant that the jetty at Loch Fyne occupies an extremely small part of the coastline of this very large sea loch.

Consequently, disturbance of otter during construction is considered a **Temporary Adverse effect of Local Significance**, which is **Not Significant**.

6.7.15.2 Operation Phase

Impact on Retained Supporting Habitats of Otter

With regard to supporting habitats, waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP.

Hydrological impact could occur through changes to water flows in retained water features used by otter. However, in this regard it is important that the embedded design of the Development includes a continuous supply of sufficient water to maintain normal flow along the retained part of the Allt Beochlich (Buinne Dubh) downstream of the Headpond (however, natural flow ceases approximately 1 km downstream of permanent compound PC09, which will house the water supply mechanism, owing to a small existing hydroelectric dam). The top end of a small tributary of the Allt Beochlich (Buinne Dubh) will be lost to the northern end of the southern Headpond Embankment 1, however this stream will continue to receive water from the majority of contributing slopes such that flow is not expected to significantly change in this stream (see *Chapter 12: Water Resources and Flood Risk*). Small tributaries of the Allt Beochlich south and south-east of the Headpond also retain all or the great majority of contributing land and will similarly be negligibly affected. Lochans beyond the Headpond will not be hydrologically-affected by the Development, and although Loch Awe will be subject to water level fluctuation this would likely have negligible hydrological impact on wetter terrestrial habitats used or potentially used by otters that are primarily made wet from contributing terrestrial slopes (rather than through inundation by Loch Awe itself, as discussed for woodland in *Section 6.7.7.2 Operation Phase*). Changes in water level within Loch Awe itself are not expected to significantly impact the fish prey resource within it (see *Chapter 07 Aquatic Ecology*).

Consequently, impacts on retained supporting habitats of otter during operation are considered to result in a **Negligible effect**, which is **Not Significant**.

Mortality of Otter

There is no possibility of otter entering the Loch Awe inlet or outlet system because a screen to prevent fish being drawn in will be fitted, which will clearly also prevent otter access. The velocity of water taken into the inlet at Loch Awe will be (at maximum) 0.3 ms^{-1}. The underwater swimming speed of otter is given as approximately 0.26 ms^{-1} in Harris and Yalden (2008), however, this is the speed of searching otter – maximum speed horizontally was measured for young (yearling) otter as 1.2 ms^{-1}, rising to 1.5 ms^{-1} for adult otter; vertical descent speed for yearling otter averaged 0.54 ms^{-1} (Nolet *et al.*, 1993). Otters would therefore generally be more than able to swim against the operating intake at Loch Awe, rather than be dragged against it. There is consequently negligible risk to foraging or commuting otters in the vicinity of the operating intake at Loch Awe.

The Headpond will not support a significant fish population owing to unsuitability caused by the very large degree of water level fluctuation in the operating Headpond, and also that fish in the Headpond would be liable to be taken into the turbine system. Therefore otters are likely to make little use of the operating Headpond. However, the approach velocity of water at the Headpond intake (at maximum) is estimated to average 1.1-1.2 ms^{-1}, which (given the above information) most otters would be able to swim against. More importantly, however, the water level in the Headpond will seldom be at or near minimum operating level (close to the turbine intake level) but mostly considerably higher (up to approximately 50 m higher than the turbine intake), which very much reduces the likelihood of otters closely approaching the Headpond intake. For these reasons, otter mortality at the Headpond by its operation its likely to occur very rarely if at all.

Consequently, mortality of otter as a result of operation is considered a **Negligible effect**, which is **Not Significant**.

Disturbance of Otter

Security lighting at the Loch Awe inlet and outlet will be required but this will be low level and will be directed away from Loch Awe to avoid illuminating the shoreline and water's edge. This will therefore have very limited impact on otter.

Maintenance attendance will be infrequent, small-scale and largely in daylight, and not liable to cause any appreciable disturbance of otter.

Consequently, disturbance of otter as a result of operation is considered a **Negligible effect**, which is **Not Significant**.

6.7.16 Impacts on Bats

6.7.16.1 Construction Phase

Direct Loss of Bat Habitat and Roosts

The principal habitat loss to the Development will be of exposed moorland habitat at the Headpond, particularly blanket bog, of negligible value to bats. The principal streams, Lochan Airigh and rushy flush habitat beside watercourses and elsewhere in the Headpond area offer some potential for foraging and commuting bats, but there was limited bat activity in this area – Lochan Airigh averaged 26.2 static detector passes per night, whilst the Allt

Beochlich (Buinne Dubh) downstream of it averaged only 9.3 passes per night, compared to 112.6 passes per night at expectedly far more favourable habitat at the Allt a' Chrosaid near Loch Awe (see *Appendix 6.5 Bats (Volume 5 Appendices)).* Moreover, the static monitoring locations in and near the Headpond were in the best habitat available, and it can be reliably expected that bat activity over the dominating blanket bog away from the water features would be extremely low, as was borne out by the transect in this area. A 1 km stretch of the Allt Beochlich (the Buinne Dubh) and the existing reservoir further downstream (which averaged 40 passes per night) would remain, as well as all the Allt Beochlich downstream of the reservoir. The loss of woodland to the Tailpond is very small compared to the extents of woodland extending beyond it along Loch Awe and in various places inland. There would be negligible impact on bat habitat elsewhere, including at Inveraray (owing to use of existing forestry / estate tracks, and negligible impact by the proposed jetty at a loch-side location without trees and very little terrestrial habitat at all). Therefore losses to good bat habitat would be extremely minor in comparison with the available local resource. For each known recorded bat species the core sustenance zone (BCT, 2020) is at least 2 km in radius and mostly more, such that the minor extents of impacted good bat habitat would constitute an insignificant part of the habitat resource used by each bat.

The only location where bat roosts might be lost is at the woodland in the Tailpond area. Subject to possible change at the time of construction (e.g. if potential roost features are lost or created by natural events such as tree windblow or bough breakage), three High BRS, three Moderate BRS and four Low BRS trees would be lost from the Tailpond area. In comparison, there are currently known to be thirteen High BRS, 26 Moderate BRS trees and 25 Low BRS trees within 30 m of the Development, another fourteen High BRS, 30 Moderate BRS and 30 Low BRS trees in surveyed areas that were within 30m of an earlier design iteration, and abundant similar woodland beyond the surveyed areas at Loch Awe and Inveraray that without doubt will hold very many further trees with roost suitability. The only two known structures with BRS (a possible old ice house in woodland and a tall stone wall near Inveraray) will not be impacted.

Although survey limitations (see *Appendix 6.5 Bats (Volume 5 Appendices*)) meant that the trees with BRS that would be lost to the Tailpond have not been subject to surveys to confirm whether roosts are present, bat calls recorded by the activity surveys are almost entirely of common species, apart from a very few potential calls of Natterer's bat, the separation of which from the common Daubenton's bat is not certain owing to bat call analysis limitations for *Myotis* species. However, Natterer's bat is still moderately widespread in Scotland and regarded as of 'least concern' under International Union for the Conservation of Nature (IUCN) criteria both nationall and globally, and more importantly most known summer and winter roosts are in old built structures or caves / mines respectively (https://www.bats.org.uk/about-bats/what-are-bats/uk-bats/natterers-bat).

For the above reasons, impacts on bat habitat and roosts are likely to be negligible, with no expected appreciable change to the local (or higher-scale) conservation status of any bat species.

Consequently, losses to bat habitats and roosts is considered a **Negligible effect**, which is **Not Significant**.

Mortality of Bats

There is no means by which the Development could reasonably be expected to cause bat mortality during construction except by roost destruction. However, as noted above there will be little direct impact on potential roost sites, and the embedded mitigation of pre-construction surveys and ECoW appointment (with licensing, if required, and associated mitigation) will ensure that bat mortality is unlikely to occur.

Consequently, bat mortality during construction is considered a **Negligible effect**, which is **Not Significant**.

Disturbance of Bats

Construction disturbance of bats is likely to be slight given that works would be mainly in daylight, when bats are not active, and that the greatest works would be in the Headpond area where bat activity was found to be very limited. For typical works at the Tailpond, there is only one known tree with BRS (and only Low BRS) within 30 m of the works. Sheet piling for the coffer dam at the Tailpond could incur disturbance at greater distance, however significant vibrations are not likely to propagate through the water / terrestrial substrate interface, terrestrial substrate itself, and thence vertically into tree trunks and branches to known or potential roost sites, and sound disturbance will be reduced for potential roost sites that face away from the piling location. Disturbance of trees with BRS beside the access routes at Inveraray is not likely to be major given that disturbance would arise only from vehicles passing by, and that these access routes almost entirely follow forestry / estate tracks that are already used by forestry and other vehicles (and, north of Inveraray, have been recently used by construction vehicles during other works). If lighting is used at the Tailpond during construction, there could be some impact on foraging / commuting bats, but this would be very limited in effect given the small extent of the Tailpond works compared to

the abundance of good bat habitat in this vicinity (including extensive semi-natural woodland along and near Loch Awe, frequent watercourses with suitable riparian habitat, and occasional marshy open habitat).

Consequently, disturbance to bats during construction is likely to constitute a **Negligible effect**, which is **Not Significant**.

6.7.16.2 Operation Phase

Impact on Retained Supporting Habitats of Bats

With regard to supporting habitats, waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP.

Hydrological impact could occur through changes to water flows in retained water features used by bats. However, in this regard it is important that the embedded design of the Development includes a continuous supply of sufficient water to maintain normal flow along the retained part of the Allt Beochlich (Buinne Dubh) downstream of the Headpond. The watercourse and riparian habitat, and associated low levels of bat activity recorded here, would therefore be maintained. Natural flow ceases approximately 1 km downstream of permanent compound PC09 (which will house the water supply mechanism), owing to a small existing hydroelectric dam. The top end of a small tributary of the Allt Beochlich (Buinne Dubh) will be lost to the northern end of the southern Headpond Embankment 1, however this stream will continue to receive water from the majority of contributing slopes such that flow is not expected to significantly change in this stream (see *Chapter 12: Water Resources and Flood Risk*), therefore similarly the watercourse and riparian habitat likely to be used by bats will be maintained. Small tributaries of the Allt Beochlich south and south-east of the Headpond also retain all or the great majority of contributing land and will similarly be negligibly affected, therefore associated low levels of bat activity would also be maintained. Lochans beyond the Headpond will not be hydrologically-affected by the Development, and although Loch Awe will be subject to water level fluctuation this would have negligible hydrological impact on wetter terrestrial habitats used or potentially used by foraging or commuting bats that are primarily made wet from contributing terrestrial slopes (rather than through inundation by Loch Awe itself, as discussed for woodland in *Section 6.7.7.2 Operation Phase*).

Consequently, impacts on retained supporting habitats of bats during operation are considered to result in a **Negligible effect**, which is **Not Significant**.

Mortality of Bats

There is no mechanism by which operation of the Development could result in bat mortality. Therefore there is **No effect**.

Disturbance of Bats

External lighting at the Loch Awe inlet and outlet will be required for access but this will only be used when needed rather than continuously from dusk to dawn. This will therefore have very limited impact on bat activity, especially in view of the great extents of good bat habitat in this vicinity (including extensive semi-natural woodland along and near Loch Awe, frequent watercourses with suitable riparian habitat, and occasional marshy open habitat). Navigational lights fitted to the Marine Facility at Loch Fyne are unlikely to have any effect on bats, given that the shoreline at this point constitutes poor habitat for bats with negligible trees/shrubs and only a very thin strip of disturbed vegetation immediately beside the A83, and that the navigational lights will be on the seaward parts of the proposed jetty.

Maintenance attendance will be infrequent, small-scale and largely in daylight, and not liable to cause any appreciable disturbance of bats.

Consequently, disturbance of bats as a result of operation is considered a **Negligible effect**, which is **Not Significant**.

6.7.17 Impacts on Water Vole

6.7.17.1 Construction Phase

Direct Loss of Water Vole Habitat and Refuges

As demonstrated in *Appendix 6.4 Mammals (Volume 5 Appendices*), water voles are localised within the Headpond area, with significant variability in occurrence of burrow and other evidence between years, and a metapopulation within the Headpond area thought unlikely to much exceed 10-20 individuals. The sparsely-spread locations within the Headpond area where water vole evidence was found (some tentatively without confirmatory latrine / dropping

evidence) will be lost. However, the most consistently-recorded evidence of water vole over different years was at and near Loch Romach, in an area that will be retained unaffected (including by disturbance, given that it is at closest 150 m from the nearest above-ground infrastructure (PC19 and associated Access Track)). The Lochan Romach water vole location was also reported in the Blarghour Wind Farm surveys (Ramboll/ESB/Coriolis Energy, 2018), demonstrating longer-term existence of water voles at this location prior to the surveys for this EIA, which no doubt reflects the better habitat quality for water voles at this location (most significantly, a long, deep and slow-flowing outflowing watercourse with deep banks suitable for burrow excavation and plentiful rushy vegetation). In comparison, habitat at the recorded water vole locations within the Headpond area is less optimal for water voles. Very minor impact could also occur to one known other burrow outside the Headpond, at the Access Track directly south of it. There are no known water voles elsewhere that could be affected by the Development.

Given the above, loss of water vole habitat and refuges to the Headpond would not result in loss of water voles from the local area and would not involve a large population, and the most consistent, longer-term and better-quality habitat for water voles would remain unaffected at Lochan Romach. The effect would therefore be of lower significance than the Regional level of importance assigned to the overall water vole population in this area.

Consequently, loss of water vole habitat and refuges during construction is considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**.

Mortality of Water Vole

Mortality of water vole during construction is inextricably associated with loss of their habitat and refuges as discussed in the previous section, and without mitigation would initially result in the same degree of ecological effect. Whilst for some causes of species mortality, a local retained population could often recruit replacement individuals through breeding in the relatively short-term, the habitat which water voles occupied in the Headpond area would be permanently lost, therefore carrying capacity of the local area would be reduced and the reduced level of the water vole population would likely be permanent, thus recruitment to replace lost individuals is not particularly relevant.

Consequently, mortality of water voles during construction is considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**.

Disturbance of Water Vole

Disturbance of water voles would only be likely to occur during loss of their habitat and burrows, and is only likely for this species over short distances of tens of metres, either during elements of construction of the Headpond (depending on the precise location of works compared to the distribution of water voles at the time), or during licensed mitigation to remove water voles by, for example, displacement. Disturbance is of much less consequence than the actual loss of water vole habitat and burrows.

Therefore disturbance of water vole during construction is considered a **Negligible effect**, which is **Not Significant**.

6.7.17.2 Operation Phase

Impact on Retained Supporting Habitats of Water Vole

With regard to supporting habitats, waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP.

Retained known water vole habitat primarily comprises the best quality water vole habitat in the surveyed area, at Lochan Romach. As mentioned, this is 150m from the nearest infrastructure (permanent compound PC19 and associated Access Track). Given this separation, and that the majority of water vole evidence at Loch Romach is downstream of it along the outflowing watercourse, there is no realistic possibility of adverse hydrological impact on this retained water vole habitat during operation. The only other known retained water vole habitat is an area at and beyond the Access Track south of the Headpond where two widely-separated possible water vole burrows were found in single years only and with no confirmatory evidence (i.e. no latrines or droppings) – one of these possible burrows is not likely to be retained since it will likely be lost during construction, and the other is in an up-slope zone approximately 180 m from the Access Track and thus will not be hydrologically affected.

Consequently, there will be **Negligible effect** during operation on retained supporting habitat of water vole, which is **Not Significant**.

Mortality of Water Vole

There is no mechanism by which operation of the Development could realistically result in water vole mortality. Therefore there is **No effect**.

Disturbance of Water Vole

There is no mechanism by which operation of the Development could result in disturbance of water vole, given that the retained water vole habitats (primarily at Lochan Romach) are at minimum 150m from the nearest infrastructure. Therefore there is **No effect**.

6.7.18 Impacts on Pine Marten

6.7.18.1 Construction Phase

Direct Loss of Pine Marten Habitat and Refuges

The only two known potential pine marten dens are close to Loch Awe and the Access Track north-east of Inveraray. These are 24m from temporary compound TC02 and 21m from the existing well-used Access Track respectively. There is therefore no possibility of these potential dens being lost. No other potential or actual pine marten dens are known in the survey area. This includes the small amount of woodland beside Loch Awe that will be lost to the Tailpond. The woodland and adjacent habitats along Loch Awe, and extending a few kilometres inland, contain excellent pine marten habitat, especially the semi-natural woodland, and the losses to the Tailpond will be insignificant in this context. There will be negligible loss of woodland at Inveraray because the Access Tracks largely follow existing well-used forestry / estate tracks. Habitat lost to the Headpond does not constitute good pine marten habitat because it is open and exposed, not near woodland and does not appear to support abundant foraging resources (owing to dominance of blanket bog). No potential or actual pine marten dens were found in this area, and the general lack of pine marten evidence at the Headpond area is probably a true reflection (despite the greater difficulty in finding pine marten scats away from tracks) of the likely infrequent presence of pine marten in this area. Pine marten scats were found by Loch Romach (where pine marten may prey on the water voles known to occur there) but this area will remain intact.

Consequently, loss of pine marten habitat (with no loss of known potential or actual dens) during construction is considered a **Negligible effect**, which is **Not Significant**.

Mortality of Pine Marten

Direct harm to pine martens during construction is unlikely owing to a) their high degree of mobility (except when recently-born), b) low plant/vehicle speeds in the construction area, c) the embedded standard mitigation of overnight means of escape from excavations and capping of pipes that pine martens might enter, and d) the embedded standard mitigation of pre-construction surveys / ECoW appointment. Through the latter, a check will be made for possible pine marten dens and their status confirmed prior to construction, and derogation licensing (in the unlikely event that this is found necessary) put in place with any required proportionate mitigation. Under standard licensing procedures this will include supervision by the ECoW of any necessary destruction of pine marten refuges, with prior monitoring.

Consequently, direct mortality of pine marten during construction is considered a **Negligible effect**, which is **Not Significant**.

Disturbance of Pine Marten

The potential den by Loch Awe is approximately 24 m from temporary compound TC02, very close to residential properties and on the other side of the B840. The potential den north of Inveraray is approximately 21 m from the nearest Access Track, which already exists and is very well-used by forestry and estate traffic, and approximately 27m from the A819, and liable to be subject to a degree of existing disturbance from both sources. There are no actual construction works within kilometres of the potential den north of Inveraray, and the potential den by Loch Awe is 190m from the Tailpond construction area. As such, there is no realistic possibility of construction causing significant disturbance of pine martens at either of these potential dens.

Although other dens might be established prior to construction, and these might be within disturbance distance of works, the embedded standard mitigation of pre-construction survey and appointment of ECoW will address this and (in the unlikely event it is found necessary) enable licensing with proportionate mitigation.

Construction activity would largely take place in daylight outside the primary nocturnal activity period of pine marten. There is abundant suitable pine marten habitat (particularly woodland) near and beyond the Development in the

Loch Awe and Inveraray vicinities, and pine marten occurrence in the Headpond area is likely to be rare for the reasons set out under loss of pine marten habitat above.

Consequently, disturbance of pine marten during construction is considered a **Negligible effect**, which is **Not Significant**.

6.7.18.2 Operation Phase

Impact on Retained Supporting Habitats of Pine Marten

With regard to supporting habitats, waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP.

Retained supporting habitats of pine marten primarily comprises the woodlands along and near Loch Awe, extending in places inland, and at Inveraray, and associated mosaic open habitats at lower altitude, and not the open moorland more distant from woodland. The habitats that pine martens tend to use are not especially wet and are not therefore vulnerable to hydrological impact. Moreover, although some of the woodland beside Loch Awe that is probably used by pine marten is wet woodland (NVC type W7), it is made wet from contributing terrestrial slopes (rather than through inundation by Loch Awe itself, as discussed for woodland in *Section 6.7.7.2 Operation Phase).*

Consequently, there is considered to be **No effect** on retained supporting habitats of pine marten.

Mortality of Pine Marten

There is no mechanism by which operation of the Development could realistically result in pine marten mortality. Therefore there is **No effect**.

Disturbance of Water Vole

There is no mechanism by which operation of the Development could result in appreciable disturbance of pine marten. Therefore there is **No effect**.

6.7.19 Impacts on Red Squirrel

6.7.19.1 Construction Phase

Direct Loss of Red Squirrel Habitat and Dreys

There will be negligible impact on red squirrel habitat. Minor loss to established semi-natural woodland will occur at the Tailpond, and also to small parts of the Sitka spruce plantations (of known lower value to red squirrels, as explained in *Appendix 6.4 Mammals (Volume 5 Appendices*)) at Upper Sonachan and Inveraray where the Access Tracks will very locally need to cut through plantation. These losses will be inconsequential given the extensive amounts of other semi-natural woodland around Loch Awe and in places extending inland, and the very large coniferous and broadleaved plantations around Inveraray and Loch Fyne more widely. Therefore there would be negligible effect on red squirrel habitat.

Given the small amount of felling required by the Development, the proportion of dreys of the local population that might be lost (if any) would be very small, thus any such loss would similarly be inconsequential to local conservation status.

Consequently, loss of red squirrel habitat and dreys during construction is considered a **Negligible effect**, which is **Not Significant**.

Mortality of Red Squirrel

Direct harm to red squirrels during construction is unlikely owing to a) their high degree of mobility, b) low plant / vehicle speeds in the construction area, and c) the embedded standard mitigation of pre-construction surveys / ECoW appointment, which will include drey checks. It is acknowledged that dreys in Sitka spruce plantation (although there would be fewer dreys in such woodland, which is the least favourable for red squirrels, as explained in *Appendix 6.4 Mammals (Volume 5 Appendices*)) are very difficult to locate, therefore there remains a possibility that a small number of impacted dreys (given the very limited amounts of Sitka spruce plantation that require felling) might go undetected. However, the impact of this on local conservation status would be slight given the very great extents of established suitable woodland at Loch Awe, Upper Sonachan and Inveraray. It is also relevant that squirrel populations will necessarily have survived periodic felling of the plantations and associated drey loss across very much larger areas than would be required for the very localised felling for the Development.

Consequently, mortality of red squirrel during construction is considered a **Negligible effect**, which is **Not Significant**.

Disturbance of Red Squirrel

Disturbance of red squirrels in dreys is only considered generally possible by NatureScot at up to 50m from the disturbance source for active breeding dreys, and 5m for non-breeding dreys or all dreys in the non-breeding season. Dreys within these distances of the limited felling areas would be few in number, and similarly to mortality of red squirrel, worst-case maximum disturbance of these dreys would not impact the local conservation status of red squirrel, given the very large extents of suitable established woodland at Loch Awe, Upper Sonachan and Inveraray.

Consequently, disturbance of red squirrel during construction is considered a **Negligible effect**, which is **Not Significant**.

6.7.19.2 Operation Phase

Impact on Retained Supporting Habitats of Red Squirrel

With regard to supporting habitats, waterborne and airborne pollution impacts have been scoped out as discussed in *Section 6.7.4 Potential Impacts of the Development*, in part owing to embedded measures within the CEMP.

Although Loch Awe will be subject to water level fluctuation, this would have negligible hydrological impact on wetter established woodland beside Loch Awe potentially used by red squirrels, because these are NVC type W7 that are not strongly waterlogged and are primarily made wet from contributing terrestrial slopes (rather than through inundation by Loch Awe itself). Therefore any such woodland used by red squirrel would be negligibly affected. No other woodland habitat used by red squirrels near the Development is particularly prone to hydrological impact.

Consequently, impacts on retained supporting habitats of red squirrel during operation are considered to result in a **Negligible effect**, which is **Not Significant**.

Mortality of Red Squirrel

There is no mechanism by which operation of the Development could result in red squirrel mortality. Therefore there is **No effect**.

Disturbance of Red Squirrel

There is no mechanism by which operation of the Development could result in appreciable disturbance of red squirrel. Therefore there is **No effect**.

6.8 Cumulative Effects

6.8.1 Inter-Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2022). For this Chapter, the inter-cumulative assessment has been considered in the context of the Argyll West and Islands NHZ (NHZ 14). It considers the schemes identified in *Chapter 4: Approach to EIA*, that are reasonably foreseeable but not yet under construction or constructed at the time of assessment, and are relevant to terrestrial ecology.

The closest such development is Blarghour Wind Farm, which will be located nearby to the south-west of the Headpond, and includes construction of Access Tracks (including an Access Track from Three Bridges), and typical wind farm infrastructure such as turbine pads, turbines and small ancillary infrastructure. Cumulative effects with Blarghour Wind Farm on terrestrial ecological features are discussed below:

- Blanket bog – a total of 9.8ha of blanket bog is stated in the Blarghour Wind Farm EIA Main Report to be permanently lost, nearly all considered unmodified (this excludes areas of flush and acid grassland within the bog areas). This is insignificant compared to the 165ha that would be lost to the Development (including all blanket bog whether or not considered sufficiently overgrazed and/or burnt to be classed as degraded bog). This small increase in overall loss of blanket bog would not increase the assessed (unmitigated) scale of effect for the Development to national level, and it remains as a **Permanent Adverse Effect of Regional Significance**, which is **Significant**. Limited hydrological impacts on retained blanket bog at Blarghour Wind

Farm would not increase the slight degree of effect from the Development, which is minor in comparison to the loss;

- Effects of Blarghour Wind Farm on other habitats are still less in magnitude than for blanket bog, and are stated to be negligible. The small degrees of loss involved would not cumulatively change the degree of significance from those of the Development alone, which are set out above and are all of **Local Significance** or **Negligible**, and remain **Not Significant**. Moreover, under the Outline Habitat Management Plan for Blarghour Wind Farm there would be increases in semi-natural woodland and restoration of areas of blanket bog, that would work to counter the losses;
- For otter, all effects of Blarghour Wind Farm were stated to be negligible with the exception of Low magnitude effect from pollution. However, standard pollution control measures (regardless that these were considered additional rather than embedded mitigation for Blarghour Wind Farm) would be implemented during construction similarly to the Development. The implementation of pollution controls in both cases would render this effect also negligible. Given also that surveys for Blarghour Wind Farm did not locate any otter holts or foraging areas that were considered important, the cumulative effect on otters would not exceed the maximum of **Local Significance** stated above for the Development alone, which remains **Not Significant**;
- For bats, the effects of Blarghour Wind Farm were stated to be negligible with the exception of Minor magnitude for habitat loss. The effects of the Development on bats are however all negligible, including for habitat loss, therefore it is Blarghour Wind Farm that would bear the main responsibility for bat habitat loss, having a non-negligible minor effect. However, the Outline Habitat Management Plan for Blarghour Wind Farm would result in increases in semi-natural woodland that would almost certainly balance the stated minor effect. Therefore the cumulative impact would likely remain **Negligible** for all bat effects, which is **Not Significant**;
- There are no stated effects for any other terrestrial species for Blarghour Wind Farm, and therefore no cumulative change to other impacts discussed above for the Development.

In summary for Blarghour Wind Farm, there are no cumulative effects that would exceed in significance that stated for the effects of the Development alone, because cumulative contributions from Blarghour Wind Farm are either considerably less than those of the Development alone, or both are sufficiently negligible to remain so cumulatively.

There are several other proposed wind farms within the cumulative impact study area. However, for similar reasons given for Blarghour Wind Farm above it is unlikely that any significant cumulative impacts would arise with the Development. In particular, any habitat impacts of other wind farms are likely to be very much less than habitat losses incurred by the Development (particularly to the Headpond). Any cumulative habitat loss effect with the smaller habitat impacts of these wind farms is not likely to exceed the Regional significance already assigned to blanket bog loss by the Development (i.e. no cumulative habitat impact is considered likely to reach National significance). Terrestrial species impacts would similarly be likely to be minor for wind farms, and are not expected to result in higher effect significances than those assigned for the Development alone.

There are proposals in the planning system for upgrading Blarghour and Beinn Ghlas Wind Farms to install slightly fewer but larger turbines. If consented, and given the prior existence of these wind farms and that impacts on terrestrial ecology will have largely already occurred, these upgrades are likely to have negligible cumulative impact with the Development.

There are a number of overhead lines (OHL) and substations proposed within the cumulative impact study area. These will have small habitat impacts and likely minor terrestrial species impacts, and are thus not likely to incur significant cumulative impacts with the Development.

Cruachan Expansion (to the hydroelectric scheme) does not involve expansion of its Headpond and thus there is unlikely to be any cumulative impact with the Development.

6.8.2 Intra-Cumulative Effects

It is possible for different aspects of a single Development to combine to produce greater effects.

With regard to habitats, given in this case a) the significant degree of habitat loss to the Headpond with minor additional losses elsewhere, and b) that construction losses are far more pronounced in effect than operational effects (where there are any, which involves only minor hydrological effects in some cases), there is not considered to be any extent of intra-cumulative effect that would change the degrees of significance stated above for these habitat effects alone.

For otter, the combination of loss of habitat and refuges to the Headpond, combined with disturbance, could theoretically result in a slightly greater cumulative effect, with the disturbance effect occurring over a prolonged period prior to eventual habitat loss. However, for the same reasons given individually for these effects on otter, the combined effects would remain only locally significant, primarily owing to the abundance of otter in the region (NHZ 14) and nationally (Scotland). This applies similarly to the other assessed species, for which no combination of effects is considered to result in a cumulative effect that exceeds the levels of significance stated for the individual effects (which are all locally significant only or negligible, or in some cases lack any effect at all).

It is concluded that there are no intra-cumulative effects that would exceed in significance that stated for the individual effects alone.

6.9 Mitigation and Monitoring

6.9.1 Embedded Mitigation

Embedded design mitigation and standard environmental measures are set out in *Section 6.7.1 Embedded Mitigation* and have been accounted for in the above impact assessments.

6.9.2 Additional Mitigation, Compensation and Enhancement

6.9.2.1 Landscape and Ecological Management Plan

An Outline Landscape and Ecological Management Plan (oLEMP) has been drafted for the Development and submitted as part of the Section 36 Application. The oLEMP sets out a range of measures that will be implemented by the Development. This is intended to a) **mitigate** landscape and ecological impacts, and b) beyond this deliver biodiversity and general environmental **enhancement**. In summary, these measures primarily comprise:

- Establishment of a substantial peatland and upland habitat rehabilitation zone around the Headpond, covering approximately 3 km^2. This would be deer-fenced to exclude wild deer grazing, and only conservation-level livestock grazing would be permitted, to improve the condition of over-grazed upland habitats. Burning of blanket bog (and other habitats) would also cease. On steeper slopes on lower ground within this area, natural tree regeneration may occur and would not be prevented as long as it comprised native species such as birch, willow *Salix* spp., rowan *Sorbus aucuparia* and hazel *Corylus avellana* (as already exist in extremely small quantity in small retained ravine-like locations south-west of the Headpond);
- Restoration of localised blanket bog exhibiting bare peat exposure, and infilling of drainage grips where locally present;
- Extensive ecologically-appropriate planting of woodland to expand native woodland beside Loch Awe and nearby, in places also providing visual screening of Tailpond infrastructure;
- Rehabilitation of the caravan zone near the Tailpond by a) removal of caravans, non-native plants, ruderal vegetation and hard-standing; b) planting of appropriate native trees (as standards rather than saplings) to suit and expand the existing thin strip of ancient woodland here; and c) translocation of turves (including deep soil) of ancient woodland ground flora from the Tailpond area to this rehabilitation zone, to replace existing soil/vegetation where currently degraded, under existing trees or planted standards;
- Sowing of the exposed faces of the two Headpond Embankments with appropriate heathland seed mixes;
- Provision of a green roof sown with lowland meadow over the Tailpond infrastructure at the edge of Loch Awe.

The oLEMP will be updated pre-construction, including through preparation of Method Statements where necessary, to provide the full level of detail needed to ensure successful delivery of all mitigation and enhancement measures.

6.9.2.2 Ancient Semi-Natural Woodland Mitigation

Mitigation to partially address the small loss of ASNW to the Tailpond is summarised under oLEMP above, for which a key measure is the translocation of entire turves of woodland flora and soil, and any small saping or shrubs, to the nearby degraded zone with existing caravans etc. (following removal of caravans and low quality vegetation / soil). Sympathetic adjacent planting of native trees, including standards, that match the existing narrow strip of nearby retained ASNW, will also partially mitigate the loss. The oLEMP itself includes significant detail on the methods to be used for this translocation, with cognisance of recent guidance under produced as part of the 'HS2 Learning Legacy' (https://learninglegacy.hs2.org.uk/document/ancient-woodland-soils-translocation/).

For retained ASNW close to works and at possible risk of incursion by works activity, the ECoW will supervise appropriate demarcation and signposting to exclude plant, vehicles, materials or personnel, and will monitor the exclusion zones to ensure compliance and to take action in the event of non-compliance. This will be additional to standard tree protection measures already included as embedded mitigation.

6.9.2.3 Blanket Bog Compensation and Enhancement

Measures to compensate for loss of blanket bog, and to provide enhancement retained blanket bog over a substantial area, are summarised under the oLEMP above, for which the primary measure is establishment of an upland rehabilitation zone of approximately 3 km^2 around the Headpond, accompanied by local bare peat restoration and drainage grip filling. Deer would be excluded from the rehabilitation zone and only conservation-level livestock grazing permitted, and burning will not be permitted. The total area of lost semi-natural terrestrial habitats (excluding non-native conifer plantation, improved agricultural pasture, amenity grassland, built-up areas, roads, tracks and quarries, which amount to 0.1 km^2) is 2.4 km^2. Therefore the rehabilitation zone is approximately 0.6 km^2 larger than the area of all lost semi-natural habitats.

The restoration of areas of bare peat within blanket bog proposed in the Blarghour Wind Farm Outline Habitat Management Plan will complement the proposed upland rehabilitation zone and similar bare peat restoration by the Development, together helping to improve the condition of upland habitat, especially blanket bog, in the wider local area.

6.9.2.4 Protection of Other Notable Habitats

For all potential GWDTE (including flushes) and other wetland the following measures will be implemented:

- Infrastructure such as Access Tracks and compounds will be micro-sited as far as possible, under ECoW guidance, to avoid potential GWDTE and other wetlands, aiming where possible for a buffer of 20 m;
- Where such avoidance is not possible, and under ECoW guidance, infrastructure will be located as far as possible to minimise the impact (e.g. by siting it lower down the hydraulic gradient or peripherally);
- Access tracks or compounds affecting potential GWDTE or other wetlands will be made permeable, through use of coarse aggregate bases and/or installation of culverts/cross drains at regular intervals to ensure that water flows and hydrological connectivity are maintained;
- Retained potential GWDTE or other wetland features near proposed infrastructure will be demarcated and/or signposted as appropriate under ECoW guidance, and no plant, vehicles, materials and personnel will be permitted to enter these areas; the ECoW will monitor to ensure compliance and to take action in the event of non-compliance.

This is additional to the embedded mitigation measures of use of floating tracks through deep peat areas and standard pollution controls that would protect such features and terrestrial ecology in general.

With regard to other notable habitat features, the following will be implemented:

- all retained species-rich ravines and other notable habitat features (including all retained CG10 and U5c grassland) will be demarcated and/or signposted as appropriate under ECoW guidance, and no plant, vehicles, materials and personnel will be permitted to enter these areas; the ECoW will monitor to ensure compliance and to take action in the event of non-compliance.

6.9.2.5 General Habitat Reinstatement

The following general habitat reinstatement measures will be implemented:

- Where applicable, reinstatement of habitats directly impacted by construction works will follow the Good practice during Wind Farm construction guidelines (NatureScot, 2019), which would generally be applicable to temporary Access Track etc.
- For Access Tracks that are not floating on deep peat, and where Access Tracks will be sufficiently short-term, removed vegetation and substrate holding the seedbank will be stripped (where practical as whole turves) and carefully set aside (vegetation side up) for use in reinstatement as soon as possible on removal of the temporary infrastructure. Where necessary (e.g., during hot and dry weather), stored turves will be watered.
- Where temporary infrastructure will not be sufficiently short-term, such that turves are likely to decompose or become less viable prior to reinstatement, the reinstatement areas will be covered with a layer of previously excavated soil or peat, of a depth matching the surroundings. The areas will then be landscaped to grade into the natural landscape, seeded with appropriate species as stipulated in the oLEMP or (if

needed) as directed by the ECoW, and where necessary fenced off to prevent grazing by animals until established.

6.9.2.6 Protection of *Sphagnum austinii* and *Sphagnum fuscum*

The two known locations of *S. austinii* and *S. fuscum* are outside the footprint of the Development and as stated above are not considered to be at risk of hydrological or other indirect impacts. However, to ensure that these species (which are rare in NHZ 14) and the supporting habitats around them remain intact, the following will be implemented:

- The ECoW will supervise installation of an exclusion zone covering the habitats around the *Sphagnum austinii* and *Sphagnum fuscum*, extending out to the limits of the nearest infrastructure or as otherwise appropriate;
- The exclusion zones will be appropriately marked out (e.g. with rope tied to stakes) and signposted, and no plant, vehicles, materials or personnel will be permitted to enter them;
- The ECoW will monitor the exclusion zones to ensure compliance and to take action in the event of non-compliance.

6.9.2.7 Otter

Embedded mitigation already includes pre-construction survey and ECoW appointment, through which otter holts and lay-ups would be confirmed and licensing obtained as necessary. However, given that there is some potential for otter breeding at Loch Airigh or nearby, the following will also be implemented:

- The ECoW or other suitably qualified and experienced ecologist will carry out monitoring, including use of camera traps, of the holt at Loch Airigh (if still present) and any others found within the Headpond area that offer potential for use by breeding otter, for a period of approximately one year prior to construction;
- If evidence of breeding activity is found, the ECoW will liaise with NatureScot and consideration shall be given to additional otter mitigation;
- A species protection plan will be produced by the ECoW (and will be required for licensing purposes);
- Watercourse crossings will be constructed as clear-span structures and the natural bed and channel of watercourses retained, as per SEPA Engineering in the water environment: Good practice guide for river crossings (SEPA, 2010), so as to remain passable to otter (and fish) under most conditions. Where possible, riparian habitat will be retained but where this cannot be achieved or the extent of habitat is too small and may be routinely impassable (e.g., during periods of higher water), a mammal ledge will be incorporated into the structure, or an alternative tunnel near to the bridge will be provided. The final design details of watercourse crossings will be included in the CEMP and species protection plan;
- If construction lighting is required, at the Tailpond especially, but also elsewhere, it will be directional, directed only at the works and not at Loch Awe, watercourses or riparian vegetation, and will be turned off when not required.

6.9.2.8 Bats

As noted in *Appendix 6.5 Bats (Volume 5 Appendices*), there are limitations to the bat surveys, including in regard to the small number of trees with bat roost suitability that would be lost to the Tailpond. For the reasons set out in the assessment of impacts on bats, it is not likely that loss of bat roosts in these trees (if any) at the time of construction would have a significant impact on the local conservation status of bats. However, the following will be implemented:

- In the bat activity season prior to removal of the woodland for construction of the Tailpond, the ECoW or other suitably qualified and experienced ecologist will carry out surveys of the relevant trees to a) check for any changes to potential roost features (as may be caused by e.g. tree windblow or bough breakage), and b) carry out additional survey as necessary to determine presence and character of any roosts, in line with Bat Conservation Trust guidance in use at that time;
- For trees containing roosts that will be removed (if any) at the Tailpond (or elsewhere), and also in the unlikely event that piling for the coffer dam is considered close enough to roost(s) to also require it, licensing will be obtained and any required mitigation for the licensing implemented;
- If bat roosts will be affected, a species protection plan will be produced prior to construction (and will be required for licensing purposes);

- If and where construction lighting is required at the Tailpond especially, but also elsewhere, it will be directional, directed only at the works and not at Loch Awe, watercourses or riparian vegetation, or woodland edges, and will be turned off when not required.

6.9.2.9 Water Vole

In addition to standard pre-construction surveys as already stipulated as embedded mitigation, the following will be implemented:

- Watercourse crossing design will be as stipulated for otter above, which will also normally maintain waterborne passage for water vole;
- Following the pre-construction surveys (which should take place in spring and autumn, and the timing of which will be dependent on construction timing), a species protection plan will be prepared (and will be required for licensing purposes), unless water voles are found to be absent from the Headpond area prior to construction;
- The species protection plan will set out required mitigation and the approach to any water voles present in the Headpond (or other infrastructure) area at the time of construction; it may be appropriate to displace water voles by habitat removal (as per Dean *et al.* (2016)), however the best approach will be determined following the pre-construction surveys.

6.9.2.10 Common amphibians and reptiles

Although no significant effects are predicted for common amphibians and reptiles, the following standard and best practice mitigation will be adopted:

- Any features identified by the ECoW during pre-construction checks as possible terrestrial refugia or hibernacula for amphibians/reptiles will be carefully dismantled by hand or under a watching brief by the ECoW, in the summer months (when amphibians and reptiles are active) closest to the construction period of the infrastructure in question;
- Any amphibians or reptiles found will be captured and relocated to suitable retained habitat elsewhere;
- The dismantled refugia/hibernacula will be rebuilt in similar suitable retained habitat that will not be affected by the construction works, under ECoW supervision.

6.9.2.11 Other species

No additional mitigation is proposed for other species, further to the existing embedded mitigation of pre-construction surveys (including for badger and pine marten, and for red squirrel dreys in directly affected and adjacent woodland) and appointment of an ECoW, with follow-on licensing and associated mitigation if found necessary.

6.9.2.12 Invasive Non-Native Species Management

There is risk of construction of the Development causing the spread of INNS ‘in the wild’ (which includes road verges where not in built-up areas, and almost all habitats other than private gardens and built-up areas) if appropriate best practice precautionary measures are not taken, which would constitute offence(s) under Scottish legislation. The risk of spreading INNS is highest for Japanese knotweed, since it occurs in the works area for the proposed jetty at Loch Fyne. There is less risk of spreading the recording rhododendron or salmonberry, because the Development in the relevant areas primarily uses existing forestry / estate tracks, however precautions will also be required for these species wherever infested woodland requires felling for any local widening of existing Access Tracks or short sections of new Access Track.

Best practice measures to be implemented during construction will be set out in a Biosecurity Management Plan (BMP), to be produced prior to commencement of construction and used to inform Method Statements for works in the vicinity of recorded INNS.

6.10 Residual Effects

In summary, with mitigation in place there are not considered to be any residual effects that exceed Local significance, thus all effects are **Not Significant** (however, it should be noted that the amelioration of the effect of blanket bog loss by the proposed rehabilitation of retained blanket bog, as set out in the oLEMP, is estimated to come to fruition in approximately 20 years, thus there would still be a medium-term effect of Regional Significance, which would be Significant).

The residual effects of those pre-mitigation effects whose significance is given above as Negligible or No effect remain so.

Residual effects for those pre-mitigation effects that are non-negligible are as follows:

- Direct loss of ancient semi-natural woodland – minor loss to the Tailpond will be partially mitigated by the translocation of ground flora / soil to nearby retained woodland and adjacent ground currently degraded by caravans, and associated sympathetic planting of appropriate tree species as standards. The residual effect is therefore considered a **Permanent Adverse effect of Local Significance**, which is **Not Significant**;
- Direct loss of blanket bog – the proposed mitigation, primarily the oLEMP measure of a peatland/upland habitat rehabilitation zone of 3 km^2 around the Headpond, with exclusion of deer, conservation-level livestock grazing and cessation of all burning, is considered to result in eventual amelioration of the unmitigated effect of blanket bog loss. Therefore, there would be a **medium-term Temporary Adverse effect of Regional Significance**, which would be **Significant**, but which is considered ameliorated to a **Permanent Adverse effect of Local Significance in approximately 20 years**, which is **Not Significant**;
- Hydrological impact on retained blanket bog – this effect was considered relatively slight compared to direct loss, and the above oLEMP measure of a peatland/upland habitat rehabilitation zone is considered to reduce it to a **Negligible effect**, which is **Not Significant**;
- Impact of loss of wild deer habitat on retained blanket bog – the uncertain minor increase in deer pressure on retained blanket bog beyond the Development, through loss of 5.9 km^2 of grazing habitat to the Headpond and peatland/upland rehabilitation zone, is considered to remain (at worst) a **Permanent Adverse effect of Local Significance**, which is **Not Significant**;
- Direct loss of species-rich ledge/ravine habitat – the residual effect for loss of the smallest and least diverse of the four recorded species-rich ledge/ravine habitats will remain a **Permanent Adverse effect of Local significance**, which is **Not Significant**;
- Direct loss of GWDTE – the mitigation will protect retained GWDTE as far as possible, but the losses will not be compensated, therefore the residual will remain a **Permanent Adverse effect of Local significance**, which is **Not Significant**;
- Impact of loss of wild deer habitat on retained GWDTE – the uncertain minor increase in deer pressure on retained GWDTE beyond the Development, through loss of 5.9km^2 of grazing habitat to the Headpond and peatland/upland rehabilitation zone, is considered to remain (at worst) a **Permanent Adverse effect of Local Significance**, which is **Not Significant**;
- Direct loss of other notable habitats – the residual will remain a **Permanent Adverse effect of Local significance**, which is **Not Significant**;
- Impact of loss of wild deer habitat on retained other notable habitats – the uncertain minor increase in deer pressure on retained other notable habitats beyond the Development, through loss of 5.9km^2 of grazing habitat to the Headpond and peatland/upland rehabilitation zone, is considered to remain (at worst) a **Permanent Adverse effect of Local Significance**, which is **Not Significant**;
- Direct loss of other notable flora – the residual will remain a **Permanent Adverse effect of Local significance**, which is **Not Significant**;
- Direct loss of otter habitat and refuges – the mitigation will protect otters from direct harm, protect retained refuges and minimise disturbance in retained habitat, however the loss of otter habitat and refuges to the Headpond will remain, therefore the residual will remain a **Permanent Adverse effect of Local significance**, which is **Not Significant**;
- Disturbance of otter – primarily owing to significant disturbance of otter refuges prior to their above loss at the Headpond, the residual will remain a **Temporary Adverse effect of Local significance**, which is **Not Significant**;
- Direct loss of water vole habitat and refuges – the mitigation will protect retained water vole habitat and refuges (including the best known habitat with the most consistent evidence in the surveyed area), but the losses to the Headpond will remain, therefore the residual will remain **Permanent Adverse effect of Local Significance**, which is **Not Significant**;
- Mortality of water vole during construction – the mitigation will ensure that, prior to construction, the current distribution of water vole burrows in the Headpond will have been determined, and a licensed mitigation approach (such as displacement) will have been developed to discourage water vole presence in the

Headpond area. Therefore mortality of water voles, although it may still infrequently occur, is likely as a residual effect to constitute a **Negligible effect**, which is **Not Significant**;

Table 6.7 Summary of Effects: Construction and *Table 6.8 Summary of Effects: Operation*, below summarise the impact assessment for construction and operation, showing the pre-mitigation effect, residual effect and final significance (significant or not significant). Effects for which the pre-mitigation effect is negligible are included in these tables, but those where there is predicted to be no pre-mitigation effect at all are excluded.

Table 6.7 Summary of Effects: Construction

Receptor	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
Loch Etive Woods SAC	Possible very minimal effect on qualifying otter	Negligible	None	Negligible	Not significant
Woodland listed in the AWI	Direct loss of ancient semi-natural woodland	Permanent Adverse effect of Regional Significance	Expansion of native woodland with ecologically-appropriate planting; translocation of ASNW turves from Tailpond to adjacent degraded ancient woodland with sympathetic adjacent planting of native trees as standards; protection of retained ASNW.	Permanent Adverse effect of Local Significance	Not significant
	Direct loss of long-established plantation	Negligible	None	Negligible	Not significant
Blanket bog	Direct loss	Permanent Adverse effect of Regional Significance	3km^2 peatland / upland habitat rehabilitation zone with deer exclusion, conservation-level livestock grazing and no burning; and local restoration of bare peat and drainage grip filling.	Medium-term Temporary Adverse effect of Regional Significance; ameliorating to Permanent Adverse effect of Local Significance in ~20 years.	**Initially Significant**; ameliorating to **Not significant in ~20 years**.
	Hydrological impact on retained blanket bog	Permanent Adverse effect of Local Significance		Negligible effect	Not significant
Species-rich ledge / ravine	Direct loss	Permanent Adverse effect of Local Significance	Retained areas demarcated / signposted as needed under ECoW guidance to exclude any entry / damage, and monitored.	Permanent Adverse effect of Local Significance	Not significant
	Hydrological impact on retained species-rich ledge / ravine	Negligible	None	Negligible	Not significant
GWDTE	Direct loss	Permanent Adverse effect of Local Significance	Micro-siting Access Tracks / compounds as far as possible; tracks / compounds to be permeable where GWDTE affected; retained areas demarcated / signposted as needed under ECoW guidance to exclude any entry / damage, and monitored.	Permanent Adverse effect of Local Significance	Not significant
	Hydrological impact on retained GWDTE	Negligible	None	Negligible	Not significant
Other notable habitat	Direct loss	Permanent Adverse effect of Local Significance	Retained areas demarcated / signposted as needed under ECoW guidance to exclude any entry / damage, and monitored.	Permanent Adverse effect of Local Significance	Not significant
	Hydrological impact on retained GWDTE	Negligible	None	Negligible	Not significant
Sphagnum austinii and	No effects are likely	None	Located beyond footprint and indirect harm unlikely, but to ensure no harm of these	None	Not significant

Receptor	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
Sphagnum fuscum			sphagna and surrounding habitat, exclusion zone to be installed / monitored by ECoW.		
Other notable flora	Direct loss	Permanent Adverse effect of Local Significance	None	Permanent Adverse effect of Local Significance	Not significant
	Hydrological impact on retained other notable flora	Negligible		Negligible	Not significant
Otter	Direct loss of habitat and refuges	Permanent Adverse effect of Local Significance	ECoW survey / monitoring; preparation of species protection plan; licensing; appropriate design of watercourse crossings / construction lighting (plus embedded mitigation including pre-construction survey, best-practice protection measures during construction and low construction vehicle speeds).	Permanent Adverse effect of Local Significance	Not significant
	Mortality	Negligible		Negligible	Not significant
	Disturbance	Temporary Adverse effect of Local Significance		Temporary Adverse effect of Local Significance	Not significant
Bats	Direct loss of habitat and roosts	Negligible	Further survey of Tailpond trees; if necessary, licensing and preparation of species protection plan; appropriate design of construction lighting.	Negligible	Not significant
	Mortality	Negligible		Negligible	Not significant
	Disturbance	Negligible		Negligible	Not significant
Water vole	Direct loss of habitat and refuges	Permanent Adverse effect of Local Significance	Watercourse crossing design; licensing and preparation of species protection plan to remove or displace water voles (plus embedded mitigation including pre-construction survey).	Permanent Adverse effect of Local Significance	Not significant
	Mortality	Permanent Adverse effect of Local Significance		Negligible effect	Not significant
	Disturbance	Negligible		Negligible	Not significant
Pine marten	Direct loss of habitat and refuges	Negligible	None (embedded mitigation sufficient – including pre-construction survey; best-practice protection measures during construction).	Negligible	Not significant
	Mortality	Negligible		Negligible	Not significant
	Disturbance	Negligible		Negligible	Not significant
Red squirrel	Direct loss of habitat and refuges	Negligible	None (embedded mitigation sufficient – including pre-construction drey survey; licensing if necessary).	Negligible	Not significant
	Mortality	Negligible		Negligible	Not significant
	Disturbance	Negligible		Negligible	Not significant

Table 6.8 Summary of Effects: Operation

Receptor	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Loch Etive Woods SAC	Possible very minimal effect on qualifying otter	Negligible	None	Negligible	Not significant
Woodland listed in the AWI	Hydrological impact on retained ASNW and long-established plantation	Negligible	None	Negligible	Not Significant
	Impact of loss of wild deer habitat on retained ASNW and long-established plantation	Negligible	None	Negligible	Not Significant
Other semi-natural woodland	Hydrological impact on retained other semi-natural woodland	Negligible	None	Negligible	Not Significant

Receptor	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
	Impact of loss of wild deer habitat on retained other semi-natural woodland	Negligible	None	Negligible	Not Significant
Blanket bog	Impact of loss of wild deer habitat on retained blanket bog	Permanent Adverse effect of Local Significance	None	Permanent Adverse effect of Local Significance	Not significant
GWDTE	Impact of loss of wild deer habitat on retained GWDTE	Permanent Adverse effect of Local Significance	None	Permanent Adverse effect of Local Significance	Not significant
Other notable habitat	Impact of loss of wild deer habitat on retained other notable habitat	Permanent Adverse effect of Local Significance	None.	Permanent Adverse effect of Local Significance	Not significant
Otter	Impact on retained supporting habitat	Negligible	None	Negligible	Not Significant
	Mortality	Negligible	None	Negligible	Not Significant
	Disturbance	Negligible	None	Negligible	Not Significant
Bats	Impact on retained supporting habitat	Negligible	None	Negligible	Not Significant
	Disturbance	Negligible	None	Negligible	Not Significant
Water vole	Impact on retained supporting habitat	Negligible	None	Negligible	Not Significant
Red squirrel	Impact on retained supporting habitat	Negligible	None	Negligible	Not Significant

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