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Red John Pumped Storage Hydro Scheme

Volume 2, Chapter 6: Terrestrial Ecology

ILI (Highlands PSH) Ltd.

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Quality Information

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6 Terrestrial Ecology

6.1 Introduction

6.1.1 This chapter assesses the terrestrial ecological impacts and effects of the Development. Where appropriate it provides details of proportionate mitigation and/or enhancement measures. This chapter is related to terrestrial ecology only. Chapter 7: Aquatic Ecology describes the assessment of impacts and effects on aquatic ecology, including aquatic invasive non-native species (INNS). The assessment of impacts and effects on bird species is dealt with in Chapter 8: Ornithology.

6.1.2 This chapter is supported by Figures 6.1 – 6.11 (Volume 3), and Appendices 6.1 – 6.7 (Volume 5). Note that badgers are regarded by Scottish Natural Heritage (SNH) as a species which is vulnerable to persecution, for which reason the report and figures which describe precise locations of badger setts are confined to Confidential Appendix 6.1: Badger Sett Locations (Volume 6).

6.1.3 Throughout this chapter, species are given their scientific names when first referred to and their common names only thereafter. All distances are cited as the shortest boundary to boundary distance 'as the crow flies' unless otherwise specified.

6.2 Legislation, Policy and Guidance

6.2.1 This assessment been undertaken within the context of the following relevant legislative instruments, planning policies and guidance documents:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive');
- Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy (the 'Water Framework Directive');
- Regulation 1143/2014 on invasive alien species ('Invasive Species Regulation');
- 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);
- Protection of Badgers Act 1992;
- Scottish Planning Policy (SPP) 2014;
- The Highland Wide Local Development Plan (HwLDP);
- Inverness and Nairn Local Biodiversity Action Plan (LBAP); and
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition (Ref 7).

6.2.2 Further details on how the legislation and biodiversity policy listed above relates to the species considered in this assessment can be found in the relevant appendices to this

chapter (Appendix 6.1 – 6.6, Volume 5). Further information on relevant planning policy can be found in the Planning Statement.

6.3 Methods

Assessment Scope

6.3.1 The scope of the assessment described in this chapter was defined by AECOM following the completion of a Preliminary Ecological Appraisal (PEA) and based on the comments provided by consultees in response to the Scoping Report for the Development (the PEA Report can be found as an appendix to the Scoping Report for the Development which itself is provided in Appendix 4.1: Scoping Report, Volume 5). A summary of the key comments provided by those organisations is provided in Table 6.1.

Table 6.1 Consultee Responses to Scoping Report

Consultee	Recommendation	Response
The Highland Council (THC)	It will be essential to demonstrate how ancient woodland is being safeguarded and, where it is being removed, what provisions will be made for compensatory planting. Any proposed works should also have regard to Scottish Government's Control of Woodland Removal Policy.	The design of the Development has sought to minimise the amount of woodland being lost, particularly that which is classed as ancient. Areas for felling will be re-planted where possible. Where this cannot be achieved, compensatory planting will be provided on the Landscape Embankment and in other suitable locations.
SNH	A National Vegetation Classification (NVC) survey should be undertaken of the whole Development area, not just including priority habitats, and the extent of habitat loss by type should be presented in the EIA Report.	NVC survey of the entire Development plus a 250 m buffer was carried out and is reported upon in this chapter and Appendix 6.1: National Vegetation Classification Survey Report (Volume 5).
	One year of bird survey work is sufficient to assess the impacts of the Development.	One year of bird survey work was carried out, this being limited to the breeding season given the low importance of the Development area to birds in winter.
Scottish Environment Protection Agency (SEPA)	Groundwater Dependent Terrestrial Ecosystems (GWDTE) are protected under the Water Framework Directive and therefore the layout and design of the Development must avoid impact on such areas. The following information must be included in the submission: • A map demonstrating that all GWDTE are outside a 100 m radius of all excavations shallower than 1 m and outwith 250 m of all excavations deeper than 1 m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey needs to extend beyond the Development boundary where the distances require it.	NVC survey of the entire Development plus a 250 m buffer was carried out and is reported upon in this chapter and Appendix 6.1: National Vegetation Classification Survey (Volume 5). The survey area used provides sufficient flexibility to allow for micro-siting.

Consultee	Recommendation	Response
SEPA cont.	• If the minimum buffers above cannot be achieved, a detailed site-specific qualitative and/or quantitative risk assessment will be required.	

6.3.2 Based on the results of the PEA and the feedback provided on the Scoping Report, the scope of the ecology assessment for the Development included the following ecological features:

- Statutory and non-statutory designated nature conservation sites;
- Habitats;
- Protected species, including bats, badger *Meles meles*, otter *Lutra lutra*, pine marten *Martes martes*, red squirrel *Sciurus vulgaris*, wildcat *Felix sylvestris* and water vole *Arvicola amphibius*;
- Great crested newts *Triturus cristatus*;
- Reptiles;
- Butterflies, dragonflies and damselflies; and
- Invasive non-native species.

6.3.3 For the purposes of desk study, field survey and impact assessment, protected and notable habitats and species were as follows:

- Qualifying features of European designated sites within 10 km (or further where connectivity exists) of the Development;
- All species listed on Schedules 2 and 4 of the Habitats Regulations;
- All species listed on Schedules 1, 5 and 8 of the WCA;
- Species and habitats listed on the Scottish Biodiversity List (SBL);
- All species and habitats on the Inverness and Nairn LBAP;
- Species that are Nationally Rare, Nationally Scarce or listed in Red Data Lists; and
- Invasive non-native species of plants and animals listed on Schedule 9 of the WCA (although this no longer legally applies in Scotland) and those considered to be species of EU concern under the EU Invasive Alien Species Regulation.

Ecological Impact Assessment

6.3.4 The assessment of ecological impacts described in this chapter was conducted in accordance with the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref 7). The principal steps involved in the CIEEM approach can be summarised as:

- Ecological features that are both present and might be affected by the Development are identified (both those likely to be present at the time works begin, and for the sake of comparison, those predicted to be present at a set time in the future) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions;
- The importance of the identified ecological features is evaluated to place their relative biodiversity and nature conservation value into geographic context and this is used to define the relevant ecological features that need to be considered further within the impact assessment process;

- The changes or perturbations predicted to result as a consequence of the Development (i.e. the potential impacts) that have the potential to affect relevant ecological features are identified and their nature described. Established best practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account;
- The likely effects (beneficial or adverse) on relevant ecological features are then assessed, and where possible quantified;
- Measures to avoid or reduce any predicted significant effects, if possible, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines). If necessary, measures to compensate for effects on features of nature conservation importance are also included;
- Any residual effects of the Development are reported; and
- Scope for ecological enhancement is considered.

6.3.5 A detailed description of the CIEEM method for impact assessment is provided in Appendix 6.7: Method for Assessment of Ecological Impacts (Volume 5).

6.3.6 CIEEM effects have been translated in this assessment into more widely-used terms, following the approach and definitions set out in Chapter 4: Approach to EIA. Taking account of professional judgement and the full range of impact assessment parameters (as described in Appendix 6.7, Volume 5), impact magnitude has been translated as 'very high', 'high', 'medium' and 'low', while effect has been defined as 'major', 'moderate', 'minor' or 'negligible'. Effects can either be adverse or beneficial. Full descriptions of the definitions of impact magnitude and effect can be found in Tables 4.6 and 4.7, respectively, in Chapter 4: Approach to EIA.

Desk Study

6.3.7 A desk study was carried out to identify nature conservation designations, and protected and notable habitats and species potentially relevant to the Development. A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the Development on different ecological receptors and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any international nature conservation designations within 10 km of the Development Site boundary and other national statutory and local non-statutory nature conservations designations within 2 km. A search for records of protected and/or notable species within 2 km of the Development was also carried out.

6.3.8 The desk study was carried out using the data sources detailed in Table 6.2.

Table 6.2 Desk Study Data Sources

Data Source	Date Accessed	Data Obtained
Highland Biological Recording Group (HBRG)	04 August 2017	• Records of species of conservation concern within 2 km. • Non-statutory designated sites within 2 km.
Ness and Beauly Fisheries Trust (NBFT)	08 August 2017	• NBFT hold no records of invasive non-native species within 2 km of the Development Site.
SNH SiteLink webpage	31 July 2017	• International statutory designations within 10 km. • Other statutory designations within 2 km.

Data Source	Date Accessed	Data Obtained
Ordnance Survey (OS) 1:25,000 maps and aerial photography	31 July 2017	• Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints.
Highland-wide Local Development Plan	31 July 2017	• Details of local planning policy relevant to nature conservation.

Field Survey

6.3.9 The study area used for field survey varied according to survey type, as shown in Table 6.3. All buffer distances quoted in Table 6.3 are based around the footprint of the Development with the exclusion of the stretch of public road between the junction of the B862 and the C1064 and the point where the C1064 will be diverted through Dirr Wood. Works on this stretch of public road will be limited to resurfacing only and are not expected to result in any effects on ecological features. The survey areas are shown on Figures 6.1 – 6.6 (Volume 3).

Table 6.3 Ecology Field Survey Areas

Survey Type	Survey Area	Figure Reference (in Volume 3)
Phase 1 habitat survey	Entire red line boundary	Figure 6.1
NVC survey	250 m buffer around proposed above-ground infrastructure	Figure 6.1
Bat survey	Minimum 50 m buffer	Figure 6.1 and Figure 6.2
Badger and red squirrel survey	100 m buffer	Figure 6.1
Otter, pine marten, wildcat and water vole survey	200 m buffer	Figure 6.1 and 6.3
Great crested newt survey	250 m buffer	Figure 6.4
Reptile survey	Multiple survey areas within footprint of Development and immediate surrounds	Figure 6.5
Butterfly, dragonfly and damselfly survey	Walked transects through footprint of Development and immediate surrounds	Figure 6.6

6.3.10 The following is a summary of the methods used for the field surveys completed to establish the baseline conditions at the Development Site. For full details of the survey methods, refer to the relevant Appendices to this chapter (Appendix 6.1 – 6.6, Volume 5).

Phase 1 Habitat Survey

6.3.11 A Phase 1 habitat survey was initially carried out on 27 and 28 July 2017 in accordance with the standard survey method published by the Joint Nature Conservation Committee (Ref 16), by which areas of land are assigned standard habitat types and ecological notes are recorded. The weather on both days of the survey was optimal, being dry and mild with light winds and good visibility.

6.3.12 Further Phase 1 information was gathered during the NVC survey (see below) which provides refined habitat information for areas within 250 m of above-ground infrastructure.

6.3.13 All habitat types present within the survey area were recorded and mapped, along with any relevant associated ecological receptors. Where relevant ecological features were present,

target notes were recorded and the position of these mapped. Typical and notable plant species were recorded for different habitat types. Nomenclature for plant species followed that of *Field Flora of the British Isles* (3rd Edition) (Ref 35).

NVC Survey

6.3.14 The National Vegetation Classification survey was carried out in accordance with the methods described in NVC: User's Handbook (Ref 30) in which stands of vegetation are assigned NVC types recorded in polygons either as single types or mosaics as necessary. In addition to the published NVC volumes (Ref 25, Ref 26, Ref 28, Ref 28 and Ref 29), reference was also made to the NVC review (Ref 31) and other guidance (Ref 1) describing other vegetation types. Further details of the NVC methodology and the results are provided in Appendix 6.1 (Volume 5).

6.3.15 The NVC survey was carried out between 19 and 21 July and between 4 and 7 September 2018. The survey was completed by suitably experienced botanical and habitat specialists.

Bat Roost Survey

6.3.16 The bat roost suitability of all trees within the footprint of infrastructure plus a 50 m buffer was assessed following guidance published by the Bat Conservation Trust (BCT) (Ref 8). Potential Roost Features (PRF) were identified from the ground and trees were classified as having negligible, low, moderate or high bat roost suitability, according to the definitions in the BCT Guidance (Ref 8). The assessment was conducted on 20 and 21 March 2018, prior to trees being in full leaf as this can restrict views and limit the efficacy of ground-based search for PRF. However, due to the design evolution of the Development, it was necessary to expand the survey area and additional ground-based roost assessment was conducted on 13 June 2018.

6.3.17 All trees identified during the ground-based assessment as having either moderate or high suitability to support roosting bats were subsequently climbed using ladder, rope and harness to enable a detailed inspection of PRFs. Torch and endoscope were used to investigate features suitable for bat roosting including cracks, crevices and areas of dead wood where boughs have split off, to search for the presence of bats or signs of use by bats. Following closer inspection of PRFs by tree climbing, the bat roost suitability of trees was re-assessed and re-classified, as appropriate.

6.3.18 In accordance with the BCT guidelines, those trees which were still classified as having moderate or high bat roost suitability were subject to two or three (respectively) dusk emergence and/or dawn re-entry surveys. These surveys were carried out between 31 May and 9 August 2018. Surveyors stood in a position which allowed them a view of the identified PRFs and watched for bats leaving or returning to a roost. Elekon Batlogger M ('Batlogger') devices were used to aid in detection and identification of bats. If any bats emerged / entered a roost, the surveyors noted the roost location, identified the species (using bat detection equipment) and counted the number of bats emerging or entering (where light conditions allowed). General bat activity was also noted during the survey to provide further information on use of the Development Site by bats.

Bat Activity Survey

6.3.19 Three transect routes covering the Development and comparable habitats in the surrounding area were devised, as shown on Figure 6.2 (Volume 3). These transect routes were walked in September 2017 and then on a monthly basis between April and August

2018, inclusive. The transects were walked both at dusk (during the period shortly after sunset) and dawn (during the period before sunrise) in suitable weather conditions.

6.3.20 The surveyors used Batloggers to detect, identify and record bats and their calls.

Static Detector Survey

6.3.21 Wildlife Acoustic SM2+ static bat detectors were placed at three locations within the Development Site to record general bat activity over an extended period of time during the bat activity season. The three static detector locations were chosen as being representative of the habitats within the Development footprint and which may be important to local bat populations. The locations at which the static detectors were placed are shown on Figure 6.2 (Volume 3). The detectors were deployed for a minimum of 14 continuous days on two separate occasions between June and August 2018.

Analysis of Sound Files

6.3.22 Analysis of all bat calls recorded during the bat roost, bat activity and static detector surveys was carried out using Kaleidoscope Pro and BatSound software. This allowed identification of calls to species level.

Badger Survey

6.3.23 Survey for badger was carried out in all areas of suitable habitat following the guidelines in the Mammal Society's guidance on surveying badgers (Ref 15). This involved searching for evidence of badger activity including setts, spoil heaps, bedding, guard hairs, latrines, footprints, trails, scratch marks and signs of foraging activity.

6.3.24 Where possible, setts were classed as main, annexe, satellite or outlier, and holes described as well-used, partially-used or disused.

Otter and Water Vole Survey

6.3.25 Combined survey for otter and water vole was carried out in all areas of suitable habitat (including lochs and other smaller waterbodies and watercourses) within 200 m of all infrastructure associated with the Development on 15 May and 11 June 2018. The survey followed guidance in published literature (Ref 6; Ref 20; Ref 36; Ref 37) where appropriate to a site survey. Evidence of otter searched for included holts, laying-up areas, spraints, footprints, trails and foraging signs. Evidence of water vole searched for included latrines, droppings, burrows, trails and foraging signs.

6.3.26 The weather on all survey dates was favourable, being dry and with low water levels.

Pine Marten and Wildcat Survey

6.3.27 Survey for pine marten and wildcat was carried on concurrently in all areas of suitable habitat for these species on 19, 20 and 24 April 2018. A walkover was conducted following the guidelines in the Mammal Society's *UK BAP: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation* (Ref 9) to search for field signs indicative of the presence of these species which include scats, footprints and trails. A search for den sites was also carried out. The survey was carried out by experienced subconsultants working on behalf of AECOM.

6.3.28 In addition to the walkover survey, motion sensitive camera traps were also used to aid in the survey for pine marten and wildcat. Cameras were placed at a total of six locations across the Development area, as shown in Figure 6.3 (Volume 3). The traps were placed in locations which were assessed as being likely to be used by pine marten and wildcat and

were left in place for a period of 57 days, between 27 April 2018 and 22 June 2018. Bait was placed in the field of view of the cameras to increase the chance of recording pine marten or wildcat, if present. Checks of the cameras were made on four occasions during this period to ensure they continued to be operational, to download collected images and to replace batteries.

6.3.29 On 22 June 2018 the six motion sensitive cameras were relocated and placed facing six features assessed as having suitability to be used by pine marten or wildcat as den sites. They were left for a period of 37 days until 27 July 2018. The cameras were not checked during this monitoring period to minimise the risk of disturbance and no bait was used. The positions of the relocated cameras are shown on Figure 6.3 (Volume 3).

Red Squirrel Survey

6.3.30 Walkover survey to search for red squirrel was carried out on 8 and 9 August 2018. The survey covered all areas of woodland habitat within 100 m of proposed infrastructure. Searches were made for squirrels, their feeding signs and dreys, in accordance with Forestry Commission guidance (Ref 13).

6.3.31 Although not the specific aim for the use of motion sensitive cameras (which was to survey for pine marten and wildcat), these devices also recorded red squirrel activity.

Great Crested Newt Survey

6.3.32 Following a review of aerial images and initial walkover surveys of habitats affected by the Development, all waterbodies within 250 m of proposed infrastructure were identified and mapped. A Habitat Suitability Index (HSI) assessment was carried out on all of these waterbodies[1], in accordance with the standard methodology described in Oldham *et al* 2000 (Ref 23) to establish their suitability for great crested newt and the likelihood that the species would be present. In addition, based on anecdotal evidence of great crested newt in woodland close to Ach-na-Sidhe B&B, Lochan an Eoin Ruadha, which is just beyond the 250 m buffer and so large as to be normally considered unsuitable for great crested newt, were also subject to HSI assessment. Park Pond (see Figure 6.4, Volume 3) was also included within the survey despite now being more than 600 m from proposed above-ground infrastructure as at the time of survey the design of the Development was such that this waterbody was within the great crested newt survey area.

6.3.33 Water samples were collected from all waterbodies subject to HSI assessment (with the exception of a waterbody referred to as Glaic na Ceardaich Pond (see Figure 6.4, Volume 3), which could not be sampled for reasons of health and safety (see section relating to limitations below for more detail) and were analysed for great crested newt environmental DNA (eDNA). eDNA is DNA that is sampled from the environment, such as loch water, rather than directly from an organism. A total of twenty sub-samples of 30 ml each were collected from around the periphery of each waterbody and mixed together before transferring the samples to six laboratory-supplied test tubes. For the larger waterbodies located only partly within or just outside the survey area (Loch na Curra and Lochan an Eoin Ruadha), samples were only collected from those parts of the loch closest to the Development and/or within the 250 m buffer.

[1] No HSI assessment was carried out on Loch Ashie to the north-east of the Scheme as owing to its extremely large size it was considered to be highly unsuitable for great crested newt regardless of any other habitat parameters.

Reptile Survey

6.3.34 A reptile survey using artificial refuges was carried out in September 2017 and in April and May 2018. The methods adopted are a modified version of those described by Froglife (Ref 12), and surveys were carried out within the optimal period for surveying reptiles.

6.3.35 A total of 130 bitumen-backed tiles and 18 corrugated metal sheets were placed across six areas of suitable habitat within the footprint of the Development and the immediate surrounds. The locations of the six survey areas are shown on Figure 6.5 (Volume 3).

6.3.36 A total of six survey visits were made during periods of suitable weather conditions to check the tiles for the presence of reptiles. All reptiles encountered on or underneath a tile were recorded. Any incidental sightings of reptiles made whilst walking between tiles were also recorded.

Butterfly, Dragonfly and Damselfly Survey

6.3.37 Following a review of aerial images and initial walkover surveys of the Development Site, three transects which covered areas of habitat suitable for supporting the various life stages of butterflies, dragonflies and damselflies were devised. The route of the three transects is shown on Figure 6.6. Each transect route was walked on a monthly basis between May and August 2018 during periods of suitable dry, calm and mild or warm weather conditions, as described by the UK Butterfly Monitoring Scheme (UKBMS) *Field Guidance Notes for Butterfly Transects* (UKBMS, undated) and the British Dragonfly Society (BDS) *Dragonfly Monitoring Scheme Manual* (Ref 4).

6.3.38 All butterflies, dragonflies and damselflies observed while walking the transects, using binoculars where necessary, were identified to species level. Where it was not possible to identify to species level (e.g. due to short observation of a fast moving individual), then identification was made to genus level.

Limitations and Assumptions

6.3.39 Desk study information is dependent upon people and organisations having submitted records for the area of interest. As such, a lack of records for particular habitats or species does not necessarily mean that they are absent from the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant to the Development.

6.3.40 Due to evolution of the design of the Development, ten trees which were identified as having moderate or high bat roost potential were not subject to tree climbing inspection or emergence / re-entry surveys. However, the results of the ground-based bat roost suitability assessment suggest that the potential roost features on these trees are not likely to host a significant bat roost (i.e. features were not suitable for significant maternity or hibernation roosts) and therefore this is not anticipated to have a significant effect on the robustness of the assessment of potential effects. Based on the current design, there is potential for three of these trees to be directly or indirectly affected by the construction of the temporary access track and permanent spillway in the woodland adjacent to Loch Ness. Mitigation will be considered, primarily micro-siting of infrastructure, to avoid disturbance. However, these trees should be subject to further pre-construction survey to confirm use by bats.

6.3.41 Due to technical failure of the static bat detectors, for two survey locations data were only collected for one period rather than two as intended. Given the species and frequency of bat activity recorded by the static detectors, it is considered that whilst recording for a shorter

period than intended, the static detector data collected are representative of the bat activity on Site.

6.3.42 Dense gorse *Ulex europaeus* at the location of Compound 3 presented a limitation to badger survey as it was not possible to access all parts of this area. However, the perimeter of this area was walked, including incursions into the footprint of the compound where possible, and no evidence of badger was found. It is therefore considered unlikely that any setts are present in this area.

6.3.43 It was not possible to collect water samples for great crested newt eDNA analysis from the waterbody referred to as Glaic na Ceardaich Pond due to Health and Safety concerns. The margins of this waterbody comprised very wet peat, which was unstable, and water depths were generally too shallow to collect water without attempting to walk out over the margins. However, where the water was deeper it was found to be flowing, and there was a substantial flow-through of water observed at the point where the pond drains into a watercourse at its south-western end. Due to the combination of shallow water depths and flowing water, the pond received a low HSI score and is considered unlikely to support great crested newt. The absence of eDNA results for this waterbody is therefore not considered to be a significant limitation to the results of the overall assessment of potential effects on this species.

6.3.44 The artificial reptile refuge tiles were left out over the 2017/18 winter period, between survey visits made in each year. A total of 21 tiles could not be relocated and are considered to have been lost. All but five of these were from survey Areas D and E (see Figure 6.5, Volume 3). There will be no above-ground infrastructure within the area encompassed by Area D, and Area E is several hundred metres from the nearest works associated with the Development. The loss of a relatively small number of tiles during the course of the reptile survey from these areas is therefore not considered to be a limitation to the baseline data collected.

6.3.45 Froglife (Ref 12) recommends that seven survey visits should be carried out to establish the presence of reptiles at a site. Only six survey visits were made for the Development because only a small number (19) of common lizards *Zootoca vivipara* were encountered during those checks. It is therefore considered that sufficient information was obtained from the six survey visits to evaluate the importance of the habitats present to reptiles.

6.3.46 The likelihood of deviations from the ecological baseline reported here increases with elapsed time since survey. Whilst the baseline is not expected to change sufficiently to alter the impact assessment at the time of construction, the precise situation regarding protected species may nevertheless differ at this time. For example, protected species refuges may become disused or be created, or invasive non-native species may be introduced. Note that SNH typically regard protected species data as out-of-date after 18 months. Pre-construction surveys will therefore be conducted as necessary.

6.3.47 Other minor limitations to field survey which are not considered to significantly affect the reliability of the assessment of baseline conditions at the Development are reported upon in the relevant appendices to this chapter (Volume 5).

6.4 Baseline Environment

Designated Sites

Statutory Designations

6.4.1 The Development does not lie within any statutory site designated for nature conservation.

6.4.2 There are several statutory designated sites in proximity to the Development. Table 6.4 describes the international nature conservation designations within 10 km of the Development and other nature conservation designations within 2 km, in order of increasing distance from the Development (they are also shown on Figure 2.1, Volume 3).

Table 6.4 Statutory Designated Sites in Proximity to the Development

Designated Site	Reason(s) for Designation	Relationship to the Development
Creag nan Clag Site of Special Scientific Interest (SSSI)	The cliffs at Creag nan Clag are covered in lichens, with over 80 different species recorded. These include two Nationally Rare species and fifteen Nationally Scarce species. In addition to the lichen assemblage, the SSSI is also notified for its geological interests.	The SSSI is situated approximately 3.2 km to the south of the public road which will be diverted to accommodate the Headpond. However, it is approximately 510 m from the primary access route for construction traffic to the Development. Lichens are vulnerable to changes in air quality and to airborne pollution and, given the proximity to the Development Site, it is possible that they could be affected by works (e.g. by increased road traffic volumes).
Loch Ruthven Special Area of Conservation (SAC) and SSSI	Loch Ruthven SAC is designated as a clear-water lake with aquatic vegetation and poor to moderate nutrient levels, and for supporting a population of otters. The mesotrophic loch habitat is largely unaffected by modification within the catchment area or by water level fluctuations. There are pockets of bottle sedge *Carex rostrata* swamp along much of the edge of the loch, and there is a transition through swamp and fen vegetation to sedge-rich wet acidic grassland at its western end.	Loch Ruthven is situated approximately 4.5 km south-east of the Development. There is no direct surface water connectivity between the Development Site and Loch Ruthven.
Urquhart Bay Wood SAC and SSSI	Designated as alder *Alnus glutinosa* woodland on the floodplains of the River Enrick and River Coiltie.	Urquhart Bay Wood is situated approximately 7.1 km south-west of the Development, on the opposite side of Loch Ness. There is no connectivity between the Development Site and Urquhart Bay Wood SAC and SSSI.
Ness Woods SAC	Designated for its woodland habitats which comprise the 'western acid oak' and 'mixed woodland on base-rich soils associated with rocky slopes' categories. It also supports a population of otter.	Situated approximately 10 km south-west of the Development Site, there is no direct connectivity between the qualifying features of the SAC and the Development.

6.4.3 In addition, as part of the consultation process for the Development, the NBFT advised that potential effects on the River Moriston SAC should be considered. At its closest point, where it flows into Loch Ness, the River Moriston SAC is approximately 22 km from the Development. The site is designated for Atlantic salmon *Salmo salar* and freshwater pearl mussel *Margaritifera margaritifera*. This designation and its aquatic ecology features are not considered further in this chapter but are assessed in Chapter 7: Aquatic Ecology.

Non-statutory Designations

6.4.4 There are no non-statutory designations for nature conservation within 2 km of the Development.

Ancient Woodland

6.4.5 Almost all of the semi-natural broadleaved woodland on the shore of Loch Ness and on the hill slopes to the immediate south-east is classified as ancient on the SNH Ancient Woodland Inventory (AWI). In addition, the majority of the coniferous woodland within the footprint of the Headpond, in Dirr Wood and around Balnafoich is also classified as ancient, though in these areas being of long-establish plantation origin (LEPO). The extent of ancient woodland is shown on Figure 6.7 (Volume 3).

Habitats

Phase 1 Habitats

6.4.6 The habitats recorded, their extent and distribution are shown in Table 6.5 and on Figure 6.8 (Volume 3). The areas quoted are approximate only and the percentages fall short of 100 %, with the missing amount corresponding to built-up areas, roads and tracks. The areas of Phase 1 habitats in Table 6.5 refer only to habitats within 250 m of above-ground infrastructure (excepting the C1064 public road extending south-west of the Headpond, where only superficial works are expected). This is because a more detailed and refined Phase 1 survey was carried out for this critical area concurrently with the NVC survey. Note, however, that the PEA Report (see Appendix 4.1, Volume 5) covered the whole red line boundary, providing useful contextual habitat data for the wider landscape, and this wider area is also referred to in the Phase 1 habitat descriptions below.

Table 6.5 Phase 1 Habitats Present, in Descending Order of Area Covered

Habitat	Area Covered (ha)	% of Survey Area
A1.1.1 Semi-natural broadleaf woodland	55.52	11.1
A1.1.2 Broadleaf plantation	0.37	0.07
A1.2.1 Semi-natural conifer woodland	2.46	0.49
A1.2.2 Conifer plantation	210.67	42.1
A1.3.1 Semi-natural mixed woodland	9.28	1.86
A1.3.2 Mixed plantation	0.05	0.01
A2.1 Dense scrub	2.99	0.6
A4.2 Felled conifer plantation	34.05	6.8
B1.1 Unimproved acid grassland	2.32	0.46
B1.2 Semi-improved acid grassland	0.08	0.02
B2.1 Unimproved neutral grassland	0.89	0.18
B2.2 Semi-improved neutral grassland	2.28	0.45
B4 Improved grassland	25.87	5.17
B5 Marshy grassland	3.58	0.71
C1.1 Dense bracken	29.01	5.8
C3.1 Tall ruderal	0.10	0.02

Habitat	Area Covered (ha)	% of Survey Area
D1.1 Dry acid heath	17.78	3.55
D2 Wet heath	24.66	4.93
D5 Dry heath / acid grassland mosaic	1.30	0.26
E1.6.1 Blanket bog	12.88	2.57
E1.7 Wet modified bog	1.30	0.26
E1.8 Dry modified bog	0.95	0.19
E2.1 Acid / neutral flush	3.83	0.76
E2.2 Basic flush	1.06	0.21
E3.2 Basin mire	1.18	0.24
F1 Swamp	0.68	0.14
G1 Standing water	38.85	7.76
I2.1 Quarry	0.22	0.04
J1.2 Amenity grassland	2.82	0.56
Pebbles (shore of Loch Ness)	0.55	0.11

6.4.7 The habitats recorded are described in greater detail below.

Woodland and Scrub

6.4.8 Much of the northern and western parts of the Development Site are covered by woodland. This includes large extents of both semi-natural woodland, which is mainly broadleaved but occasionally mixed, and plantation of native and non-native conifers.

6.4.9 Most of the semi-natural woodland is broadleaved, and is particularly extensive in the following places:

- On the slopes between Loch Ness and the B862;
- On undulating unmanaged terrain amongst conifer plantation in the north of the 250 m buffer; and
- South of the 250 m buffer on mainly steeply sloping ground near Achnabat.

6.4.10 The slopes above Loch Ness are predominantly composed of downy birch *Betula pubescens* and hazel *Corylus avellana*. In places there is occasional mature ash *Fraxinus excelsior* and less often mature oak *Quercus* sp and Scots pine *Pinus sylvatica*. The understorey sometimes contains extensive regenerating holly *Ilex aquifolium*, typically grazed by deer down to short sprigs, and occasionally mature specimens. The higher slopes tend to be more dominated by acid grasses (such as creeping soft-grass *Holcus mollis,* common bent *Agrostis capillaris* and wavy hair-grass *Deschampsia flexuosa*) and bracken, with a smaller number of frequent herbs including common dog-violet *Viola riviniana* and wood-sorrel *Oxalis acetosella*. Lower down the slopes, there is less bracken and floristic diversity is higher, including wood false-brome *Brachypodium sylvaticum*, yellow pimpernel *Lysimachia nemorum*, sanicle *Sanicula europaea,* honeysuckle *Lonicera periclymenum*, bluebell *Hyacinthoides non-scripta*, wood-sorrel and hard fern *Blechnum spicant.* Near Loch Ness there is often also bramble *Rubus fruticosus* agg. and sometimes sycamore *Acer pseudoplatanus*. Occasional flushes within the woodland also support alder and willow *Salix* spp., and here the variable ground flora includes *Sphagnum palustre*, devil's-bit scabious

Succisa pratensis, marsh violet *Viola palustre*, remote sedge *Carex remota* and occasionally smooth-stalked sedge *Carex laevigata*. Widely and sparsely scattered through this woodland there is the scarce bird's-nest orchid *Neottia nidus-avis*.

6.4.11 Extensive semi-natural and mainly broadleaved woodland towards the north edge of the 250 m buffer comprises downy birch with occasional self-sown Scots pine. Although bracken is common here, the ground flora mostly contains ericoids, particularly heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus*, but also to a lesser extent cowberry *Vaccinium vitis-idaea*. It also contains scattered juniper *Juniperus communis*. This woodland exists in a large undulating unmanaged area which also contains patches of wet heath, dry heath and flush, which become dominant outside the survey area further north.

6.4.12 The woodland near Achnabat is overwhelmingly dominated by dense mature downy birch *Betula pubescens*. The ground flora appears to comprise acid grasses and bracken *Pteridium aquilinum*, however the upper slopes were not closely inspected and some areas may contain ericoids (heathers and related species) especially where grading into open heath.

6.4.13 There are small patches of semi-natural woodland elsewhere, including in the proposed Headpond area, largely of downy birch with a wet or heathy ground flora. In this area there are also small areas of apparently self-sown Scots pine with a similarly heathy ground flora.

6.4.14 The majority of the woodland in the northern half of the survey area is coniferous plantation. Much of this is mature Scots pine, although there are also large stands of mature Sitka spruce *Picea sitchensis* and occasionally mature larch *Larix* spp. All areas of observed mature spruce have suppressed ground floras as a result of the heavy shade and acid leaf litter, as is normally the case. Whilst some areas of larch and pine are poorer floristically (with, for example, acid grasses, bracken or occasionally tufted hair-grass), there are extensive areas of Scots pine with ericaceous ground flora including heather, bilberry and cowberry. Chickweed-wintergreen *Trientalis europaea* occurs occasionally in this more natural plantation.

6.4.15 Some parts of the conifer plantation have been felled, some recently and others not, and have not yet been replanted.

6.4.16 Small patches of conifer and (rarely) mixed plantation elsewhere include non-native species such as beech *Fagus sylvatica* which are of low ecological value.

6.4.17 There are some large areas of dense gorse scattered through the centre of the Development Site and also in the northern parts, and this species is also frequent as scattered bushes on some of the heaths. Of much greater note is the substantial amount of juniper on Ashie Moor amongst the gorse. Juniper also occurs scattered across the unmanaged area north of Park farm, across the unmanaged area (in the vicinity of Glaic na Ceardaich) in the north of the survey area and occasionally in clearings in the woodland above Loch Ness. Juniper is rare within the proposed Headpond area, and mainly located at the south end.

Grassland

6.4.18 The majority of the grassland comprises pasture above the woodland flanking Loch Ness. Most of this is species-poor agriculturally-improved grassland, of low ecological value. A rectangular area of improved grassland also occurs on raised dry ground amongst bog and wet heath close to Loch Duntelchaig. A small area categorised as species-poor semi-

improved grassland is dominated by common bent and Yorkshire-fog *Holcus lanatus* and is also of negligible ecological value.

6.4.19 The narrow fields beside Loch Ness include unimproved neutral grassland constituting lowland haymeadow, which is scarce throughout the UK. It is moderately diverse and does not support the high species diversity that this habitat can attain. Neutral herbs include common knapweed *Centaurea nigra*, ribwort plantain *Plantago lanceolata*, red clover *Trifolium pratense* and meadow buttercup *Ranunculus acris*.

6.4.20 Acid grassland occurs in relatively small extent on rough ground east of Kindrummond. This is unimproved but of lower diversity, with, for example, common bent, tormentil *Potentilla erecta* and, in places, mat grass *Nardus stricta*. Some of the acid grassland also contains abundant dead burnt gorse. Similar acid grassland occurs north of Park farm, and locally in the Achnabat area in mosaic amongst wet heath. Locally between the B862 and Loch Duntelchaig there is further degraded and over-grazed acid grassland, often containing some mesotrophic species such as white clover and Yorkshire-fog.

6.4.21 Marshy grassland with purple moor-grass *Molinia caerulea* occurs in woodland rides and adjacent to the small pond at Drummond there is marshy grassland with species such as soft rush *Juncus effusus*, tufted hair-grass and marsh thistle *Cirsium palustre*.

Bog and Heath

6.4.22 Blanket bog and heath habitats are common in the unmanaged area in the north of the Development Site, in the proposed Headpond area, north of Park farm (in these three locations the majority is heath rather than bog), on Ashie Moor, around and beyond Loch na Curra and Lochan an Eoin Ruadha, and near Achnabat.

6.4.23 It is common for wet heath and blanket bog to intergrade depending on topography, as occurs at the Development Site, with the bog tending to occupy flatter areas.

6.4.24 Bog in the proposed Headpond area is rather dry with both heather and hare's-tail cottongrass but often more of the former, and limited bog-moss *Sphagnum* spp. The heath in this area is typical and also (even where 'wet' heath) fairly dry; heather is the dominant species.

6.4.25 The bog in the vicinity of Ashie Moor has been burnt in places, leading to its degradation and often to reduced heather cover and increased occurrence of hare's-tail cottongrass *Eriophorum vaginatum*. In these burnt areas the sphagnum is often white and presumed to be dead at the surface. The burnt areas have been mapped as wet modified bog (wet because sphagnum is still present). The unburnt bog areas vary in the amount and type of sphagnum present. Small areas contain more limited sphagnum coverage with thicker heather and/or hare's-tail cottongrass. More commonly, there is abundant sphagnum including *Sphagnum papillosum, Sphagnum capillifolium* and (in wetter patches) *Sphagnum fallax / cuspidatum*, and often there is deergrass *Trichophorum cespitosum* and sometimes bog asphodel *Narthecium ossifragum.* The wetter bog often also contains round-leaved sundew *Drosera rotundifolia.* Some of this bog has been historically cut-over but such areas are not now obviously degraded except where they have been recently burnt.

6.4.26 Just south-west of Loch na Curra and in the valley to the north-west, the bog is often richer with frequent *Sphagnum magellanicum*, a less common species which tends to indicate high quality bog. The bog to the north-west of Loch na Curra is also of note for the unusual occurrence of basic (as well as acid and rarely neutral) flushes within it, which contain, for

example, dioecious sedge *Carex dioica* and the 'brown' mosses *Campylium stellatum* and *Scorpidium* spp. This bog also grades to the west into a larger basic flush.

6.4.27 The bog south-west of Loch na Curra grades toward the loch itself through a transition zone dominated by hare's-tail cottongrass and *Sphagnum fallax* with scattered stunted downy birch, and then through a thinner zone of swamp with bottle sedge and *Sphagnum fallax*, before passing to patches of sediment and soft rush and finally open water with white water lily *Nymphaea alba*. This apparently natural and extensive gradual transition from blanket bog to swamp and open water is not commonly observed.

6.4.28 Smaller areas of blanket bog occur near Loch Duntelchaig, in the unmanaged area in the north of the Development Site, and in mosaic with wet heath near Achnabat. The bog in these areas is similar to the unmodified bog described above, except for a small patch mapped as modified bog by Loch Duntelchaig which is adversely affected by heavy overgrazing.

6.4.29 Wet heath is abundant on Ashie Moor and nearby. On the Development Site it tends to be dominated by mixes of heather and deergrass with variable amounts of cross-leaved heath, and a range of other species including purple moor-grass *Molinia caerulea*, *Sphagnum capillifolium* (more locally), tormentil, green-ribbed sedge *Carex binervis* and bog asphodel.

6.4.30 The area north of Park farm includes substantial areas of wet heath with both heather and cross-leaved heath *Erica tetralix,* and notably in places grass-of-parnassus *Parnassia palustris*.

6.4.31 Dry acid heath occurs primarily in the unmanaged area in the north of the Development Site adjacent to Compound 1 and on the steep high ground adjacent to Achnabat. There are also small patches elsewhere on Ashie Moor. The dry heath is mainly dominated by heather, often with bilberry and acidic pleurocarpous mosses, such as *Hylocomium splendens* and *Pleurozium schreberi*, and sometimes with frequent green-ribbed sedge. This type of heath is very common in Scotland. In the unmanaged area amongst the forestry in the north of the Development Site, chickweed-wintergreen was noted in one location within the heath, though it is possible that it may be more frequent and suggests that the heath is long-undisturbed. Occasionally, and most extensively on the high slopes adjacent to Achnabat, there is a high proportion of bell heather *Erica cinerea* amongst the ling heather.

Flush, Fen and Swamp

6.4.32 Flushes are scattered amongst the mapped areas of bog and heath, and occasionally elsewhere such as in the woodland rides above Loch Ness. The most common type of flush in the Development Site is more acidic. Common to all are star sedge *Carex echinata* and/or common sedge *Carex nigra*, and there is often *Sphagnum fallax, Sphagnum palustre* and/or *Polytrichum commune* particularly where wetter. Grassier forms are drier and in addition to the aforementioned also contain species such as purple moor-grass, sweet vernal-grass *Anthoxanthum odoratum,* mat grass, tormentil and marsh thistle. Some forms on Site are rushy with compact rush *Juncus conglomeratus*. Other species found in variable amounts in these acid flushes include cross-leaved heath, bog asphodel, marsh pennywort *Hydrocotyle vulgaris*, marsh violet, marsh horsetail *Equisetum palustre* and water horsetail *Equisetum fluviatile.* Occasionally there is a small amount of flea sedge *Carex pulicaris* suggesting transition to basic flush (see next paragraph).

6.4.33 Basic flushes are more notable because they tend to support a larger range of plant species, some of which are often scarce. Basic flushes are less frequent than other flushes

within the Development Site. The largest examples were observed Loch na Curra and Lochan an Eoin Ruadha, and on Ashie Moor. Basic flush was also noted in smaller quantity in the unmanaged area in the north of Site, north of Park farm, in woodland rides above Loch Ness, and locally within the proposed Headpond area. Common to all these basic flushes are the following species: dioecious sedge, tawny sedge *Carex hostiana*, flea sedge, 'brown' mosses including *Scorpidium revolvens*, *Campylium stellatum* and (less often) *Scorpidium scorpioides*, lousewort *Pedicularis* sp., butterwort *Pinguicula vulgaris* and devil's-bit scabious. The vegetation is variable and can also contain few-flowered spike-rush *Eleocharis quinqueflora,* jointed rush *Juncus articulates*, bog pondweed *Potamogeton polygonifoliu*s and (rarely) black bog-rush *Schoenus nigricans*. Notable in basic flush on Ashie Moor is the rare occurrence of grass-of-parnassus. Also notable at several of the basic flushes is the occurrence of broad-leaved cottongrass *Eriophorum latifolium*, a localised species in the UK. An unusual occurrence in the valley north-west of Loch na Curra is the occurrence of basic flushes within acidic blanket bog.

6.4.34 Neutral flush dominated by soft rush or sharp-flowered rush *Juncus acutiflorus* is uncommon within the survey area, but was noted in small quantity on Ashie Moor north-west of Loch na Curra and rarely elsewhere.

6.4.35 The Phase 1 habitat category of fen was employed in locations where the habitat was considered to be best described as basin mire. These occur as roughly parallel elongated basins within the south-west part of the conifer plantation, north of Ashie Moor, and also as transitional vegetation between blanket bog and open water at Loch na Curra. The basin mires in the plantation support variable bog and flush vegetation with both acidic and basic elements. Species present in the more acid areas include ericoids, hare's-tail cottongrass, *Sphagnum fallax / palustre* and star sedge. More basic flushed vegetation in these areas include mud sedge and 'brown' mosses. Also present are bogbean *Menyanthes trifoliata,* bottle sedge, bog pondweed and pale sedge *Carex pallescens*.

6.4.36 Swamp at Loch na Curra comprises bottle sedge with *Sphagnum fallax*, with patches of soft rush, at the south end of the waterbody. At Lochan an Eoin Ruadha, there are very sparse monospecific stands of common reed *Phragmites australis* in several patches at the south end. Swamp also occurs at the pond at Glaic na Ceardaich, where it includes bottle sedge and bog pondweed, and grades into flushed vegetation including basic flush.

Waterbodies and Watercourses

6.4.37 Loch Ashie and Lochan an Eoin Ruadha have extensive shallow water in which shoreweed *Littorella uniflora* is abundant, and there is often (at the latter) also water lobelia *Lobelia dortmanna*. Alternate-leaved water-milfoil *Myriophyllum alterniflorum* is also frequent. Lochan an Eoin Ruadha also has localised floating stands of broad-leaved pondweed *Potamogeton natans*. This combination of species, combined with stony substrate, indicates that the water is oligotrophic, but not very acidic. The water quality appears to be very good.

6.4.38 At the south end of the Loch na Curra there are large floating stands of white water-lily, suggesting mesotrophic conditions, and the water quality appears very good.

6.4.39 The small elongated pond in the south-west part of the conifer plantation is very shallow and apparently seasonally dry. It contains much bulbous rush *Juncus bulbosus*, as well as shoreweed and common spike-rush *Eleocharis palustris*. This combination suggests that the water is mesotrophic, and the water quality appears to be good.

6.4.40 All observed watercourses were small. Those in the woodland flanking Loch Ness were mostly very small, steep and more or less dry at the time of survey. Small watercourses elsewhere were generally well-vegetated with flush vegetation and/or rill vegetation with bog pondweed.

Notable Habitats

6.4.41 According to the definition adopted in this chapter, the following habitats within the red line boundary are considered to be notable:

- Semi-natural broadleaved woodland – all such woodland observed on Site is mature and composed of native species, primarily birch and hazel. The majority is also designated as Ancient Woodland. Semi-natural ancient woodland is a Priority Habitat under the Scottish Biodiversity List and there is also a presumption against adverse effects on it in Scottish Planning Policy. Some of the woodland also contains juniper which itself is a Priority Species on the Scottish Biodiversity List and is highly localised in a Scottish and UK context;
- Long-established woodlands of plantation origin – the majority of coniferous plantation woodland within the red line boundary is classified in the Ancient Woodland Inventory as being long-established;
- Blanket bog – all blanket bog constitutes a Priority Habitat under the Scottish Biodiversity List. It is also a priority Annex I habitat of the Habitats Directive;
- Heaths with juniper – these are most extensive on Ashie Moor between Kindrummond and Loch na Curra. This is a habitat listed on Annex I of the Habitats Directive and, as highlighted above, juniper is itself a species of conservation concern.
- Wet and dry heaths – though common in northern Scotland, both are listed on Annex I of the Habitats Directive, and of particular note is flushed wet heath with grass-of-parnassus north of Park farm;
- Flushes and fen – in particular the basic flushes and fen which are species-rich and are localised both in the regional context of the Highlands and within the Development Site. They also constitute Annex I habitats of the Habitats Directive and are priorities for conservation under the Scottish Biodiversity List;
- Swamp – this is a Priority Habitat of the Scottish Biodiversity List. The best examples on Site are the natural transition from bog to open water at the southern end of Loch na Curra (this hydroseral succession is not commonly observed in such a large extent) and the swampy pond on the Glaic na Ceardaich; and
- Waterbodies and watercourses – Oligotrophic and mesotrophic lakes and rivers are all Priority Habitats under the Scottish Biodiversity List. Clear-water lochs with poor nutrient levels are also listed on Annex I of the Habitats Directive.

NVC

6.4.42 A detailed description of the vegetation within 250 m of above-ground infrastructure is set out in the NVC report in Appendix 6.1 (Volume 5). A map of NVC survey results is provided in Figure 6.9 (Volume 3). A brief summary is given here.

6.4.43 Conifer plantation within the NVC survey area is in large part Scots pine, as described in the Phase 1 section above. Much of the Scots pine plantation is heathy beneath and clearly corresponds to NVC type W18b. Other parts (as mapped) are not dominated by heather or related species, and together with plantation of Sitka spruce and larch do not correspond to

an NVC type. There is also a very small amount of apparently natural (self-sown) immature Scots pine woodland in the proposed Headpond area, also corresponding to W18b. Occasional chickweed-wintergreen occurs in the ground flora of the plantation W18b, a species which sets seed and colonises poorly and is therefore suggestive of long-established and potentially ancient woodland.

6.4.44 The bulk of the broadleaved woodland within the NVC survey area is on the slopes above Loch Ness, and comprises predominantly W9a and W11b, both dominated by birch but with hazel abundant on the lower slopes especially. W9a is a more neutral woodland type with a fairly diverse range of species, here including diagnostic species such as wood false-brome, enchanter's-nightshade *Circaea* sp., sanicle, primrose *Primula vulgaris*, bluebell and the moss *Rhytidiadelphus triquestrus*. Of particular note in the W9b is bird's-nest orchid. Other species occurring in this woodland are given in the Appendix 6.1 (Volume 5). The W9a is most abundant on the lower slopes, with W11b becoming dominant on the higher slopes. The W11 is less diverse with more acid grasses and often bracken. Within the woodland above Loch Ness, more so on the lower slopes, there are patches of damp flushed woodland corresponding to W7, with species such as remote sedge, yellow pimpernel, smooth-stalked sedge and occasionally golden-saxifrage *Chrysosplenium oppositifolium*. All this woodland is identified as ancient woodland according to the Ancient Woodland Inventory, and some of the plants (such as sanicle and bird's-nest orchid) are consistent with this.

6.4.45 In the Headpond area, and rarely elsewhere, there are very small amounts of more acid wet woodland corresponding to W4, which is not particularly diverse. In the unmanaged area in the vicinity of Glaic na Ceardaich there is a great deal of W17b woodland, again mainly birch, with a heathy ground flora and occasional juniper. Very small amounts of this woodland type also occur as tiny patches in the Headpond area.

6.4.46 Scrub within the NVC survey area includes frequent juniper in places. However, it was only found to be reasonably dense (as opposed to widely scattered bushes), corresponding to W19, in one patch in a woodland ride above Loch Ness, as shown in Figure 6.9 (Volume 3). This vegetation type is scarce in the UK. Other scrub types are dominated by gorse or (rarely) blackthorn *Prunus spinosa*, and are of limited ecological value.

6.4.47 The majority of blanket bog vegetation within the NVC survey area is M19, largely confined to patches within the Headpond footprint, near Lochan na Curra, and in small quantity in basin mires within the conifer plantation. This is the drier blanket bog form, with low *Sphagnum* diversity, and whilst mostly intact it is locally modified by drainage / disturbance / burning, where it is given the Phase 1 code of modified bog. Some of the M19 is damper with cross-leaved heath, corresponding to M19a, whilst the rest is typical M19b. On Ashie Moor the blanket bog is wetter with much *Sphagnum,* including *Sphagnum papillosum*, corresponding to M17a. In the latter, and less so in the M19 (as is normally the case), bog pool and runnel vegetation occurs including M1 and M2, grading to M6 acid flush in places.

6.4.48 Most of the recorded flush vegetation corresponds to acid M6, mainly M6a with abundant small sedges, but also occasionally M6c which is less diverse with soft rush dominant. A variety of species occur in the M6 (see Appendix 6.1), but it is far less diverse than the occasional basic flushes which all correspond to M10a. The M10a has a wide range of species including base-indicators such as brown mosses (e.g. *Scorpidium revolvens*), few-flowered spikerush *Eleocharis quiqueflora*, dioecious sedge and, often, broadleaved cottongrass.

6.4.49 Dry heaths in the NVC survey area largely comprise H12a dry acid heath, which is very common in Scotland. It is dominated by heather with variable amounts (sometimes sparse) of bilberry, and large amounts of acid pleurocarpous mosses. Extremely small and localised patches of H10a were also recorded in which bell heather is prominent. Occasionally patches of degraded heath with reduced heather and/or moss correspond to H9 (e.g. some burnt heath near Lochan na Curra). Wet heath is invariably M15, one of the commonest vegetation types in northern Scotland. Mostly it is fairly dry M15b, distinguished by presence of purple moor-grass and/or deergrass (sometimes sparse), but more notable areas (north of Park and in woodland rides above Loch Ness) are much more diverse flushed M15b, which includes grass-of-parnassus north of Park farm.

6.4.50 The most abundant grassland is agriculturally-improved pasture corresponding to species-poor MG6a. Very locally, and in most quantity beside Loch Ness, there is lowland meadow (see Appendix 6.1, Volume 5 for more detail) corresponding to MG5a, a scarce vegetation type which is however only moderately diverse at the Development Site and well below SSSI-standard. There are also small patches of purple moor-grass-dominated grassland (often flushed with species such as black bog-rush, corresponding to the richer M25c), small amounts of species-poor damp MG9 and MG10, and small amounts of acid grassland with and without mat grass (U4 and U5 respectively). Bracken with an underlying flora resembling acid grassland (U20a) is abundant in some parts of the survey area, especially north of Park. Locally, bracken has a heathy understorey (U20b).

6.4.51 Swamp vegetation is uncommon. It is most extensive at Glaic na Ceardaich Pond where the bottle sedge swamp with sparse other species corresponds to S9b. The bur-reed swamp here is S14. Species-poor bottle sedge swamp by Loch Ashie is S9a. Vegetation intermediate between swamp proper and M23 neutral rush-pasture occurs very locally near Glaic na Ceardaich, in the conifer plantation and on Ashie Moor, and corresponds to wetter and drier forms of S27, a more locally-occurring NVC type in Scotland.

6.4.52 The vegetation of the small, narrow and seasonally-desiccated waterbody in the south-west part of the conifer plantation corresponds to A24 and S19 (bulbous rush-dominated vegetation and vegetation with common spikerush and shoreweed). The shallow waters of Loch Ashie support A22 shoreweed-dominated vegetation.

Groundwater Dependent Terrestrial Ecosystems

6.4.53 NVC types indicate likely groundwater dependency. Groundwater Dependent Terrestrial Ecosystems are shown in Figure 6.10 (Volume 3) and described in Appendix 6.1 (Volume 5). They include all wet woodland, all flushes, wet heath, purple moor-grass vegetation, S27 fen and damp grassland corresponding to MG9 and MG10 (although the latter are rare in the survey area and of low ecological value).

Juniper and Veteran Scots Pines

6.4.54 Figure 6.11 (Volume 3) shows the distribution of most of the juniper within and beyond the 250 m buffer on above-ground infrastructure. As can be seen, juniper is most abundant by far on Ashie Moor.

6.4.55 Figure 6.11 (Volume 3) also shows the locations of a small number of veteran Scots pine trees within the conifer plantation. These veteran Scots pines exhibit multiple irregular branching and are substantial in size, in comparison to the straight-stemmed and younger plantation trees.

Protected and Notable Species

6.4.56 The results of the ecological field survey for protected and notable species are presented in the following sections. Figures 6.12 – 6.15 (Volume 3) show the locations of protected and notable species records and/or evidence and Appendices 6.2 – 6.6 (Volume 5) provide further information.

Bats

6.4.57 One record of a minor pipistrelle *Pipistrellus* sp. roost was returned from 2009, however this is not within disturbance distance of the Development.

6.4.58 A total of 68 trees with bat roost suitability were recorded during field survey. A description of each tree is provided in Table 6.6. One tree (Tree 19) was identified as a bat roost during ground-based suitability assessment, with a single pipistrelle bat observed in a low wound feature. However, this tree is beyond the distance at which disturbance to roosting bats is considered likely.

Table 6.6 Assessment of Bat Roost Suitability

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
1	NH 58732 32837	Birch *Betula* sp.	M	Birch with extensive epicormic growth. Significant rot hole on north-east side of main trunk.	Not possible to climb due to health and safety issues.	M	No	No
2	NH 58749 32888	Birch	M	Birch with rot in 'elbow' of branch extending approximately 10 cm.	Cavity narrows quickly.	L	No	No
3	NH 58749 32888	Birch	L	Birch with rot hole in south facing branch approximately 2 m up.	Low bat roost suitability – not climbed.	L	No	No
4	NH 58765 32997	Ash *Fraxinus excelsior*	M	Rot in branch collar on south aspect at approximately 7 m height.	Not possible to climb due to health and safety issues.	M	No	No
5	NH 58765 32997	Holly *Ilex aquifolium*	M	One dead stump approximately 10 m north-east of Tree 4 with multiple rot features, a few of which extend to enough depth for crevice-dwelling bats.	Not possible to climb due to health and safety issues.	M	No	No
6	NH 58767 33243	Alder *Alnus glutinosa*	M	Tree on loch shore with rot in branch collar on south aspect approximately 2.5 m high. Cannot confirm extent of void from ground.	2.5 m void 10 cm deep, wet with woodlice.	N	Yes	No
7	NH 58778 33260	Ash	L	Ash with hole in trunk approximately 2 m up, facing north.	Low bat roost suitability – not climbed.	L	Yes	No

[2] N – negligible, L – low, M – moderate, H – high and C – confirmed roost

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
8	NH 58785 33271	Ash	L	Hole in trunk facing west.	Low bat roost suitability – not climbed.	L	Yes	No
9	NH 58799 33304	Ash	M	Ash with hole approximately 3 m high facing north.	3 m hole closed.	N	Yes	No
10	NH 58810 33181	Ash	L/M	Larger mature tree with rot holes in branch collars – very small (2-3 cm diameter) but unclear depth. Also larger hole (5 cm diameter) on east of trunk.	2 large rot holes at 7 m both with a large cavity which extends up for 30 cm and is dry.	M	Yes	Yes, done.
11	NH 58825 33167	Ash	L	Rot / damage particularly on south-east facing bough. May be exposed/damp (appears open at top) but some small suitable cracks.	Low bat roost suitability – not climbed.	L	Yes	No
12	NH 58825 33361	Ash	L	Crack in east facing branch.	Low bat roost suitability – not climbed.	L	Yes	No
13	NH 58831 33004	Holly	M	Hole in off-shooting elbow of branch.	Endoscoped. Good cavity, no bats.	M	No – but was at time of roost surveys	No, but done.
14	NH 58845 33051	Birch	H	Main trunk sloping to west - large damage / void, unclear how far this extends back.	No large void, possibly big enough for few bats.	M	No – but was at time of roost surveys	No, but done.
15	NH 58848 33112	Holly	M	Many rot features/dead wood, some rot holes in branch collar.	Not possible to climb due to health and safety issues.	M	Yes	Yes, done.
16	NH 58866 33316	Ash	L	Void very low in trunk.	Low bat roost suitability – not climbed.	L	No	No

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
17	NH 58887 32681	Birch	M	Rot in low bough facing south-west and in higher bough facing east.	Not possible to climb due to health and safety issues.	M	No	No
18	NH 58896 33279	Ash	M	Damage / rot at base. Extends up into cavity.	Features open at top so rain can enter, provides limited shelter.	L	Yes	No
19	**NH 58904 32661**	**Birch**	**Confirmed**	**One bat (probably a pipistrelle) roosting in recently lopped branch collar. Feature on south / south-east aspect facing south. Surrounding habitat is open improved / wet woodland with clearing to south and improved grass to north.**	**Bat roost confirmed – no climbing required.**	**C**	**No**	**No**
20	NH 58910 33271	Ash	L	Almost dead, very large (15 cm x 20 cm) rot hole which extends to whole trunk but open at the top to the elements.	Low bat roost suitability – not climbed.	L	Yes	No
21	NH 58945 33306	Ash	M	Large rot feature 10 m high on south aspect of trunk.	Not possible to climb due to health and safety issues.	M	Yes - but was not at time of roost surveys	Yes, not done.
22	NH 58966 33250	Willow *Salix* sp.	L	Beside burn with rot hole low in trunk facing north.	Low bat roost suitability – not climbed.	L	Yes	No
23	NH 58966 33250	Ash	L	Damage and crack / rot hole 7 m high facing north.	Low bat roost suitability – not climbed.	L	Yes	No
24	NH 58974 33300	Ash	M/H	Large (15 x 20 cm) void / rot hole in east side of trunk	Not possible to climb due to health and safety issues.	M/H	Yes – but was not at time of	Yes, not done.

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
				approximately 10 m high.			roost surveys	
25	NH 58983 33276	Birch	L	Crack in bark, east facing, approximately 3 m high.	Low bat roost suitability – not climbed.	L	Yes	No
26	NH 58990 33306	Ash	M	Large ash with damaged north facing bough. Rot / boring in exposed wood. Appears to be open and extends downwards but cannot confirm from ground.	Not possible to climb due to health and safety issues.	M	Yes – but was not at time of roost surveys	Yes, not done.
27	NH 59025 32877	Alder	M	Extensive rot features (last tree in south-east corner of wood).	Endoscoped, no good spaces.	L	No	No
28	NH 59025 32877	Alder	M	Immature, adjacent to above with similar features.	Not possible to climb due to health and safety issues.	M	No	No
29	NH 59025 32877	Alder	M	Immature, adjacent to above with similar features.	Not possible to climb due to health and safety issues.	M	No	No
30	NH 59042 33175	Unknown	L	Tree beside burn with crack on east side and multiple small collar holes.	Low bat roost suitability – not climbed.	L	Yes	No
31	NH 59051 33007	Birch	L	Dead, approximately 5 m tall with damage on south aspect.	Low bat roost suitability – not climbed.	L	No	No
32	NH 59060 33234	Ash	M	Almost dead with cavity where branches have joined.	Not possible to climb due to health and safety issues.	M	Yes – but was not at time of roost surveys	Yes, not done.
33	NH 59112 33182	Ash	H	Ash with cavity approximately 2 m high in base and damage higher up. Holly growing on felled branch.	Not possible to climb due to health and safety issues.	H	Yes – but was not at time of roost surveys	Yes, not done.

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
34	NH 59119 33042	Birch	M	Hollow trunk with hole is 1.2 m high up trunk.	Rotten stem open to rain at top.	L	Yes	No
35	NH 59122 33222	Birch	M	Birch with damage / rot approximately 2 m up south sloping stem on south aspect of tree.	Not possible to climb due to health and safety issues.	M	Yes – but was not at time of roost surveys	Yes, not done.
36	NH 59145 33029	Birch	L	Birch	Low bat roost suitability – not climbed.	L	Yes	No
37	NH 59145 33029	Ash	L	Ash	Low bat roost suitability – not climbed.	L	Yes	No
38	NH 59145 33029	Ash	L	Ash	Low bat roost suitability – not climbed.	L	Yes	No
39	NH 59145 33029	Unknown	L	Dead stump with damage and rot features.	Low bat roost suitability – not climbed.	L	Yes	No
40	NH 59156 33167	Unknown	M	Large rot hole in fallen branch.	Not possible to climb due to health and safety issues.	M	Yes – but was not at time of roost surveys	Yes, not done.
41	NH 59160 33161	Unknown	L	Cavity on cracked branch.	Low bat roost suitability – not climbed.	L	Yes – but was not at time of roost surveys	Yes, not done.
42	NH 59168 33059	Alder	L/M	Large alder with rot in several branch collars on south aspect and damaged bough.	After climb several knotholes noted as closed, one unsuitable tear out, a branch with wound not suitable. Reassessed as low	L	Yes	No

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
43	NH 59174 33152	Ash	M	Old ash with damage / rot feature approximately 2 m high on south aspect	Rot 2 m high. Not very suitable.	L	Yes	No
44	NH 59190 33157	Ash	H	Ash with large hole on east / north-east aspect of trunk. Small entrance but considered likely to extend up / back / down.	Good features.	H	Yes – but was not at time of roost surveys	Yes, not done.
45	NH 59233 39233	Ash	Done with climbing survey.	-	Knot hole 5 m in height on west aspect.	L	Yes	No
46	NH 59228 33005	Unknown	Done with climbing survey.	-	Dead. Multiple cavities in trunks. Not possible to climb due to health and safety issues.	M	Yes	Yes, done.
47	NH 59225 33014	Ash	Done with climbing survey.	-	Several small knotholes and broken branch features which don't appear very suitable due to size.	L	Yes	No
48	NH 59216 33026	Ash	Done with climbing survey.	-	Fold / crack 6 m in height on west, good potential feature.	M	Yes	Yes, done.
49	NH 59203 33044	Ash	Done with climbing survey.	-	Dead. Lifted bark, large open tear out and tiny knothole. Suitable for small numbers (one or two) of bats.	L	Yes	No

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
50	NH 59203 33041	Alder	Done with climbing survey.	-	Tear out. Dry but space for only one bat potentially.	L	Yes	No
51	NH 59201 33049	Alder	Done with climbing survey.	-	Tear out on elbow 6 m. When climbed found to be limited to only 5 cm deep.	L	Yes	No
52	NH 59193 33061	Alder	Done with climbing survey.	-	Hollow trunk open in middle, when endoscoped found to be very open and too exposed for bats.	L	Yes	No
53	NH 59179 33078	Alder	Done with climbing survey.	-	Small knothole 2 m high with deep cavity facing north.	M	Yes	Yes, done.
54	NH 59185 33072	Alder	Done with climbing survey.	-	Large hollow cavity at base extends 1 m up on north-east side. Endoscoped, no bats found.	M	Yes	Yes, done.
55	NH 59210 33059	Ash	Done with climbing survey.	-	Unhealthy tree with several knot holes into potentially hollow branches plus large broken leader stem.	M	Yes	Yes, done.
56	NH 59222 33055	Alder	Done with climbing survey.	-	Dead. Lots of shallow cavities which when endoscoped were found to be unsuitable.	L	Yes	No

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
57	NH 59220 33042	Alder	Done with climbing survey.	-	Cracked branch 3 m high in west aspect of trunk. Other small features which were endoscoped and found to be very shallow.	L	Yes	No
58	NH 59221 33050	Alder	Done with climbing survey.	-	Cracked branch 5 m high in east leaning trunk. Not possible to climb due to health and safety issues.	M	Yes	Yes, done.
59	NH 59163 33132	Ash	Done with climbing survey.	-	Tearout / knothole 5-6 m high which extends to 20 cm, front half open but narrows to very small cavity.	L	Yes	No
60	NH 59226 33006	Ash	Done with climbing survey.	-	Cankers all over trunk which is hollow from the bottom for a significant way up trunk, endoscoped and found to be too open and exposed for bats.	L	Yes	No
61	NH 59189 33078	Unknown	Done with climbing survey.	-	Dead tree, only pole-like trunk remaining with various north facing rot holes.	M	Yes	Yes, done.
101	NH 60037 33330	Birch	M	Woodpecker hole on trunk, south-west facing.	Not climbed.	M	Yes	Yes, done.

Tree Ref.	Grid Reference	Species	Initial Bat Roost Suitability[2]	Ground-based Bat Roost Suitability Assessment Description	Description Following Tree Climbing Inspection of PRFs	Final Bat Roost Suitability Assessment	Within 50 m of Development Footprint?	Emergence / Re-entry survey Required?
102	NH 60005 33371	Birch	L	Cracked bough with small cavity which could house small number of bats.	Not climbed.	L	Yes	No
103	NH 60646 33520	Pine *Pinus* sp.	M	Dead tree with multiple woodpecker holes. In middle of dense pine plantation so habitat sub-optimal. Lower two holes currently occupied by birds (droppings / feathers noted).	Not climbed.	M	Yes	Yes, done.
104	NH 59159 33264	Ash	H	Hole from loss of bough 2 m high, east facing.	Not climbed.	H	Yes	Yes, not done.
105	NH 60829 33095	Pine	L	Dead tree with old woodpecker holes.	Not climbed.	L	Yes	No
106	NH 59345 32954	Unknown	M	Completely dead tree with holes, some containing bird droppings.	Not climbed.	M	Yes	Yes, done.
107	NH 60645 33535	Pine	M	Dead tree with multiple woodpecker holes. In middle of dense pine plantation so habitat sub-optimal.	Not climbed.	M	Yes	Yes, done.

6.4.59 Following the suite of bat roost suitability surveys described above (including tree climbing inspections and further work required due to the evolution in the Development design), 15 trees were identified which had moderate or high bat roost potential (i.e. not low or confirmed), and were located within 50 m of the most up-to-date Development footprint (at the time of survey). These trees were subject to bat emergence and re-entry surveys. Due to regular changes to the Development footprint, ten trees which were identified as having moderate and high bat roost potential during the initial bat roost suitability assessment were not subject to further surveys, although the proposed layout of the Development indicates that these trees may now be affected (see section regarding survey limitations). Similarly, two trees which were subject to full or partial roost surveys are now not relevant to the current design of the Development (i.e. they will not be affected).

6.4.60 A total of three trees were identified by the emergence / re-entry surveys as supporting roosting bats. One tree (Tree 45) was assessed as having low bat roost potential during the suitability surveys (and therefore was not included in the roost surveys schedule), however was immediately adjacent to a tree which was subject to survey (Tree 46). During the initial dawn re-entry survey on 1 June 2018, one soprano pipistrelle *Pipistrellus pygmaeus* bat was recorded entering a very small, shallow rot feature on the east aspect of Tree 45 at around 3 m in height. As this observation was made incidentally and because the surveyor was not concentrating on this particular tree, further targeted emergence / re-entry survey was carried out at this location.

6.4.61 During the 26 July dusk emergence survey of Trees 55 and 58, a single soprano pipistrelle was observed entering Tree 56 under a small piece of lifted bark at around 4 m in height, and exiting four minutes later. Again this observation was incidental as Tree 56 had previously been identified as having low potential for supporting roosting bats, and so was not subject to dedicated emergence / re-entry survey. Given the very short period of time during which the bat resided in the tree and the use of a very minor feature (a bit of lifted bark) it is possible that this feature is not a roost but was utilised for other purpose, such as a singing post which is not a refuge and instead has a social function. However, with cognisance to the precautionary principal, for the purposes of this Report, and for the associated impact assessment, this tree is recorded as a roost.

6.4.62 The third roost was identified in a dead pine tree (Reference 107) where prior to both emergence surveys being conducted, one bat was observed roosting within a long, narrow woodpecker hole feature. During both emergence surveys the bat exited the roost feature (it was subsequently not observed within the feature when checked with a torch post survey), however the precise moment of exit was not recorded by the surveyor on either occasion. As a consequence, the species of bat was not ascertained at the time of survey. However, given the calls recorded on the Batlogger it is very likely to have been a soprano pipistrelle as only this species was recorded at the time of likely emergences.

6.4.63 The locations of all confirmed bat roosts (Trees 45, 56 and 107, described above, and Tree 19 recorded during the bat roost suitability assessment) are illustrated on Figure 6.12 (Volume 3).

6.4.64 In general bat activity was low during the emergence / re-entry surveys, with a maximum of three bats seen at any one time. The majority of bats present were soprano pipistrelle with common pipistrelle *Pipistrellus pipistrellus* recorded occasionally. These species were recorded during surveys of all trees (although only on four occasions did they emerge / re-enter a tree – see above).

6.4.65 Brown long-eared bat Plecotus auritus were recorded in several locations, as follows:

- On four surveys within the area of trees adjacent to Balnafoich;
- On two surveys at Tree 101 within broadleaved woodland near Park; and
- Once at Tree 103, within Dirr Wood plantation.

6.4.66 Daubenton's bat *Myotis daubentonii* was recorded in similar locations to brown long-eared bats:

- On three surveys within the area of trees adjacent to Balnafoich;
- On one survey at Tree 101 within broadleaved woodland near Park; and
- Once at Tree 103, within Dirr Wood plantation.

6.4.67 At no time were brown long-eared or Daubenton's bats recorded emerging or re-entering tree roosts.

6.4.68 Bat behaviour recorded including foraging (with 'feeding buzzes' recorded) in clearings within woodland, along woodland edges, above tree canopies and over open habitat (such as improved fields). Bats were regularly observed commuting at height along woodland edge habitats. On one occasion in late-July 2018, two bats were regularly seen displaying 'chasing behaviour' over an open, improved field.

6.4.69 Transect surveys recorded low levels of bat activity in general, particularly on Transects A and B which were located predominantly in open habitat at relatively high altitude. Soprano pipistrelles were the most commonly encountered species with common pipistrelle recorded occasionally throughout the transects (mirroring the results of the other bat surveys). Brown long-eared bats were recorded once in May on Transect C on the track east of Balnafoich. Daubenton's bat was recorded on five separate transect visits in three distinct locations:

- Within the broadleaved woodland adjacent to Loch Ness in June (Transect C);
- Also in June near the small waterbody Loch nan Geadas (which is forms a small extension of Loch Duntelchaig) (Transect A); and
- In August recordings of this species were captured on the west bank of Lochan an Eoin Ruadha (Transect A).

6.4.70 A summary of the number of recordings of each species at each static detector location is provided in Table 6.7. A value has been given which represents the number of instances of recordings of each species as a fraction of the total days the static detectors were deployed at each location. This provides a comparable value indicating the average activity of each species of bat at each recording location over the entire recording period. As per other bat surveys completed for the Development, soprano pipistrelle was the most commonly recorded species. This is followed by much lower numbers of common pipistrelle, and only occasional recordings of brown long-eared bat and Daubenton's bat.

6.4.71 On two occasions (at Loch side (Location 1) on 22 June and Headpond 2 (Location 3) on 6 August) bat calls were recorded which have been identified by the auto-analysis software Kaleidoscope as whiskered bat *Myotis mystacinus*. The known range of this species does not extend further north than central Scotland, and therefore both recordings were subject to further analysis by a highly experienced ecologist. Given the degree in overlap in the range and shape of whiskered bat calls the calls of Daubenton's bat (which are close relatives), a definitive identification is not considered possible. However, on the basis of the known ranges of whiskered bat and Daubenton's bat in Scotland, these calls are considered more likely to be Daubenton's bat. As such, based on the data currently available, whiskered bat is considered likely to be absent from the Development Site for the purposes of this

assessment and auto-identified whiskered bat recordings are included as Daubenton's bat in table 6.7.

6.4.72 A summary of the number of recordings of each species at each static detector location are shown in Table 6.7. A value has been given which represents the instances of recordings of each species as a fraction of the total days static detectors were deployed at each location. This provides a comparable value indicating the average activity of each species of bat at each recording location over the entire recording period. As per other bat surveys, soprano pipistrelle was the most common bat recorded. This is followed by much lower numbers of common pipistrelle, and only occasional recordings of brown long-eared bat and Daubenton's bat.

6.4.73 Note that the numbers shown in Table 6.7 are not of individual bats but of distinct recordings, which can include several calls made by the same bat repeatedly passing the detector. It is therefore the case that the total number of individuals actually present will be lower than the numbers presented in Table 6.7.

Table 6.7 Summary of Recordings Made by Static Bat Detectors

Detector Reference	Location	Survey Period 1			Survey Period 2			Total days deployed	Recordings of Each Species per Day[3]
		Number of Detections	Species	Days Deployed	Number of Detections	Species	Days Deployed		
1	Loch side	15	Common pipistrelle	12	Failed			12	**1.25**
		3	Daubenton's bat	12				12	**0.25**
		291	Soprano pipistrelle	12				12	**24.25**
2	Headpond 1	133	Common pipistrelle	16	52	Common pipistrelle	12	28	**6.61**
		1	Daubenton's bat	16	2	Daubenton's bat	12	28	**0.11**
		279	Soprano pipistrelle	16	345	Soprano pipistrelle	12	28	**22.29**
					12	Brown long-eared bat	12	12	**1.00**
3	Headpond 2	Failed			7	Brown long-eared bat	15	15	**0.47**
					129	Common pipistrelle	15	15	**8.60**
					5	Daubenton's bat	15	15	**0.33**
					449	Soprano pipistrelle	15	15	**29.93**

[3] In other words, instances of recordings of each species as a fraction of the total number of days the static detectors were deployed.

Badger

6.4.74 The desk study returned three records of dead badger on public roads within 2 km of the Development.

6.4.75 Extensive badger activity was recorded within the survey area. Multiple active setts were identified including one main sett and one subsidiary sett and 17 outlier setts. As a species which is vulnerable to persecution, precise details of the locations of badger setts are not provided in this chapter but can be found in Confidential Appendix 6.1 (Volume 6). However, of the 19 setts identified, three outlier setts were located within 50 m of proposed infrastructure. The single main sett was located approximately 255 m from the footprint of the Development.

6.4.76 In addition to evidence identified through targeted field survey, images of badger were captured by the motion sensitive trail cameras at Camera Trap References 2, 4, 5, 6 and D (see Figure 6.3, Volume 3). Camera Trap References 5 and 6 were both located within plantation woodland at the proposed Headpond location and no evidence of badger was found in this area, which during field survey was found to represent relatively low quality habitat for this species. However, the frequency with which badger was recorded by the motion sensitive cameras was low, with the highest level of activity at Camera Trap Reference 4, where badger images were collected on 11 out of the 57 days of monitoring.

Otter

6.4.77 Two records of otter spraints were returned by the desk study, with no records of sightings of live or dead animals.

6.4.78 No otter holts or lie-ups were found during the field survey and no otter activity was recorded during the motion sensitive camera trapping survey. However, otters were confirmed to be present in the survey area with spraints recorded on the south-west bank of Loch Ashie and on the Allt a' Mhinisteir burn within Dirr Wood plantation (as shown on Figure 6.13, Volume 3).

6.4.79 An otter was also flushed from beside Lochan an Eoin Ruadha during a breeding diver survey on 30 May 2018.

Pine Marten

6.4.80 A single record of a dead pine marten on the public road south of Dores was identified by the desk study.

6.4.81 The field survey for pine marten identified evidence of this species across the Development Site. Scats likely belonging to pine marten were present within broadleaved and coniferous woodland and features with suitability to be used as dens / shelters were also identified in these areas, though particularly within the semi-natural woodland near to Loch Ness (see Figure 6.14, Volume 3).

6.4.82 An incidental observation of a pine marten was also recorded by AECOM ecologists on 20 June 2018 within felled conifer plantation near Dores, more than 3 km north of the Development.

6.4.83 Pine marten activity was recorded during the preliminary period of survey using motion sensitive cameras at Camera Trap References 2, 3, and 5 (see Figure 6.3, Volume 3). However, there were only four occasions over the initial 57 day monitoring period on which pine marten images were collected by these cameras, indicating relatively low levels of activity.

6.4.84 Motion sensitive camera monitoring of six of the features which were assessed as having potential suitability to be used by pine marten for shelter recorded activity in three locations at Camera Trap References B, C and E. A pine marten was recorded by Camera Trap Reference C ascending a tree with prey on 19 July 2018. This was the only confirmed instance of a pine marten entering or using any of the features and is confirmed as a shelter.

6.4.85 The confirmed pine marten shelter was inspected and found to be situated within a cavity which descends approximately 1 m in to the main trunk of the tree. There were no signs of pine marten use (e.g. scats) and was relatively exposed. Pine marten was only recorded entering the den on one occasion during the 37 days of motion sensitive camera survey of this feature, indicating infrequent use. It is therefore concluded that this shelter is an occasionally-used, non-breeding shelter.

Red Squirrel

6.4.86 A total of 13 records of both live and dead red squirrels within 2 km of the Development were identified by the desk study.

6.4.87 Two observations of live red squirrel were made in conifer plantation within the survey area. One of these was in the proposed Headpond area near to Merchant's Stone, while the other was made on the south-west bank of Loch Ashie.

6.4.88 Nine potential dreys were identified within the survey area, as shown on Figure 6.15 (Volume 3). Seven of these are located in areas of woodland which will be felled as part of the Development.

6.4.89 In addition, three dead red squirrels were found on the B852 road near to Compound 2 on Loch Ness during the course of ecological field survey in 2017 and 2018.

6.4.90 The motion sensitive cameras recorded red squirrel at five of the six original deployment locations – only Camera Trap Reference 6 at the southern end of the Headpond did not record any red squirrel activity. However, activity levels were low, with the maximum number of visits to a camera trap location being the four made to Camera Trap Reference 5, on the western side of the Headpond.

6.4.91 Red squirrels are therefore present throughout the woodland habitats on Site, including semi-natural broadleaved woodland and coniferous plantation. No dreys were found within the semi-natural broadleaved woodland but, in the absence of grey squirrels *Sciurus carolinensis*, this represents optimal habitat and is likely to contain such features outside of the survey area.

Water Vole

6.4.92 No records of water vole were identified by the desk study.

6.4.93 No evidence of water vole was found during field survey for this species. The habitat within the survey area is considered to be sub-optimal for water vole as the majority of watercourses are located within dense woodland. Some sections are within open bog / heath habitat but these areas are fragmented by woodland blocks and the watercourse banks do not support the dense, lush vegetation preferred by water vole. Similarly the waterbodies present are sub-optimal due to their large size, unsuitable marginal vegetation and limited connectivity.

6.4.94 Water vole is therefore considered likely absent from the area of the Development.

Wildcat

6.4.95 No records of wildcat were identified by the desk study. The Development is located in proximity to an area investigated by SNH as a potential priority area for wildcat conservation, referred to as Stratherrick. A study commissioned by SNH into the presence of wildcat in this area resulted in a recording of a single hybrid cat but no other evidence of wildcat, either through genetic analysis of scats or by live capture (Ref 21). It was concluded by the study that there is little evidence of a sizeable population of wildcat in this area and it was recommended that Stratherrick should not be taken forward as a priority area for the conservation of this species.

6.4.96 No evidence of wildcat was found during field survey. Although suitable habitat does exist within the Development Site, the presence of human habitation has been shown to reduce wildcat activity, with a 2008 paper in Biological Conservation (Ref 17) demonstrating displacement of 200 m around single houses and 900 m around settlements. The presence of the village of Dores and other frequent farms and dwellings therefore reduces the likelihood of wildcat presence.

6.4.97 It is therefore concluded that wildcat is likely absent from the Development Site.

Great Crested Newt

6.4.98 No records of great crested newt were returned from HBRG during the desk study. However, a record of palmate newt *Lissotriton helveticus* was provided, dated 2007, from the edge of Glaic na Ceardaich Pond. There were also reports of great crested newt in the woodland close to Ach-na-Sidhe B&B (Owner, *pers. comm*.).

6.4.99 All waterbodies within the survey area, with the exception of Dirr Wood Pond, were assessed as having 'poor' suitability for great crested newt based on the results of the HSI assessment. Dirr Wood Pond was assessed as having 'below average' suitability for the species. The results of the HSI assessment are presented in Table 6.8, below.

Table 6.8 Habitat Suitability Index Scores

Waterbody Name	Approximate Distance from Nearest Development Infrastructure	HSI Score	Great Crested Newt Suitability
Loch na Curra	175 m from diversion of public road.	0.21	Poor
Lochan an Eoin Ruadha	290 m from Headpond.	0.21	Poor
Ach-na-Sidhe B&B Pond	70 m from Compound 4.	0.45	Poor
Dirr Wood Pond	30 m from existing track / 230 m to Headpond.	0.57	Below average
Park Pond	650 m from new temporary access track.	0.49	Poor
Glaic na Ceardaich Pond	25 m from Compound 1.	0.42	Poor

6.4.100 Of the five waterbodies from which samples were collected, only one was returned with a positive result for the presence of great crested newt eDNA – Lochan an Eoin Ruadha.

Reptiles

6.4.101 Two records of common lizard were returned by HBRG. One, dated 2007, was of a single female near to Glaic na Ceardaich, which is within survey Area A of the reptile field survey. The second record was dated 2014 and is from Drumashie Moor, to the north of the Development. There were no records of slow worm *Anguis fragilis* or adder *Vipera berus* returned by HBRG.

6.4.102 The only species encountered during the reptile survey was common lizard. No slow worms or adders were observed. Furthermore, there were no incidental sightings of slow worm or adder at any time during the other ecology field work carried out from the Development. It is therefore concluded that these species are likely absent.

6.4.103 A total of 19 common lizards were recorded using the tiles during the reptile survey. Of these, only three were adults and the rest were all juveniles. In addition to those reptiles found using the tiles, a further four were observed while walking between tiles during the survey. Two juveniles were seen basking on a gravel forestry track near to Ach-na-Sidhe B&B on 26 September 2017. A single adult common lizard was seen on 14 May on the roadside verge north-east of Loch na Curra. One further adult was observed on 29 May in survey amongst heather within the footprint of the Headpond.

6.4.104 The distribution of common lizard records is shown on Figure 6.16 (Volume 3). It can be seen that this species was present in the area of the proposed Headpond. In addition, common lizard were present in the blanket bog around Loch na Curra / Lochan an Eoin Ruadha, and the heath and semi-natural woodland at Glaic na Ceardaich, though neither of these areas will be directly affected by the Development.

6.4.105 Whilst it is not possible to estimate the relative common lizard population size class based on the survey effort employed – Froglife (Ref 12) recommend a total of twenty survey visits is necessary to do this – it is considered that Headpond area supports a moderate population of common lizards, with breeding confirmed by the presence of nine juveniles.

Butterflies, Dragonflies and Damselflies

6.4.106 Three records of butterflies were returned during the desk study. These were all of small heath butterflies *Coenonympha pamphilus* and dated from 1989 and 1996. No records of any dragonfly or damselfly species were returned.

6.4.107 In total 11 species of butterfly (plus four records of white *Pieris* sp. butterflies which could not be identified to species level), four species of dragonfly and four species of damselfly were recorded during the survey programme.

6.4.108 The total number of each species recorded in each month of survey across all three transect routes is shown in Table 6.9. The locations of all butterflies, dragonflies and damselflies recorded during the survey programme are shown on Figures 6.17 - 6.19 (Volume 3).

Table 6.9 Numbers of Butterflies, Dragonflies and Damselflies Recorded per Month

Species	Month (2018)				Total
	May	June	July	August	
Butterflies					
Green-veined white *Pieries napi*	52	8	5	10	**75**
Meadow brown *Maniola jurtina*	-	-	2	-	**2**
Orange-tip *Anthocharis cardamines*	2	-	-	-	**2**

Species	Month (2018)				Total
	May	June	July	August	
Peacock *Aglais io*	-	-	-	2	**2**
Ringlet *Aphantopus hyperantus*	-	-	25	-	**25**
Scotch argus *Erebia aethiops*	-	-	10	105	**115**
Small heath	-	1	1	-	**2**
Small pearl-bordered fritillary *Boloria selene*	2	23	3	-	**28**
Small tortoiseshell *Aglais urticae*	-	-	5	2	**7**
Small white *Pieris rapae*	-	-	2	-	**2**
Speckled wood *Pararge aegeria*	-	2	32	16	**50**
White species	-	4	-	-	**4**
Dragonflies					
Black darter *Sympetrum danae*	-	-	5	12	**17**
Common hawker *Aeshna juncea*	-	-	2	3	**5**
Four-spotted chaser *Libellulua quadrimaculata*	44	13	2	-	**59**
Golden-ringed dragonfly *Cordulegaster boltonii*	-	-	2	-	**2**
Damselflies					
Blue-tailed damselfly *Ischnura elegans*	-	1	-	-	**1**
Common blue damselfly *Enallagma cyathigerum*	-	25	4	4	**33**
Emerald damselfly *Lestes sponsa*	-	-	2	-	**2**
Large red damselfly *Pyrrhosoma nymphula*	74	4	4	-	**82**

6.4.109 The most commonly encountered species was Scotch argus, with 115 individuals recorded during the course of the survey programme, followed by the large red damselfly, with 82 recorded individuals. Speckled wood and small pearl-bordered fritillary were reasonably common, with 50 and 28 records, respectively. Small heath was only recorded on two occasions, once in June from Transect C and once in July from Transect B (see Figure 6.17, Volume 3).

6.4.110 In addition to the species recorded during the targeted survey work, two small copper butterflies *Lycaena phlaeas* and one common blue *Poloymmatus icarus* were incidentally recorded in the field at the inlet / outfall to Loch Ness on 14 August 2018.

Invasive Non-native Species

6.4.111 *Rhododendron ponticum* (hereafter referred to simply as 'rhododendron') was present in a restricted area within the semi-natural broadleaved woodland on the slopes above Loch Ness. Single bushes were recorded near to the edge of the woodland at its boundary with the agricultural fields at Balnafoich. In addition, three larger stands of rhododendron in this

area were found to have been recently cleared in an apparent attempt at removal of this invasive non-native species. Rhododendron is classified as a 'high impact' species and is listed on Schedule 9 of the WCA (although this no longer legally applies in Scotland).

6.4.112 Sika deer *Cervus nippon*, which is listed on Schedule 9 of the WCA, was also recorded across the Development Site during the course of field survey, including within the semi-natural broadleaved and plantation woodlands, and in the area of heath with Scots pine and juniper at Glaic na Ceardaich.

6.4.113 A small patch of variegated yellow archangel *Lamiastrum galeobdolon* subsp. *Argentatum* covering an area approximately 2 x 6 m was found beside a watercourse near to the village of Dores, with associated fly tipping noted. This species is also listed on Schedule 9 of the WCA. However, it was not recorded anywhere in proximity to the Development and is therefore not considered further in this assessment.

6.5 Assessment of Effects

6.5.1 Relevant ecological features are those that are considered to be 'important' and have the potential to be affected by the Development (Ref 7). In view of the baseline data obtained through desk study and field survey, the following features have been excluded from further assessment because they have been found to be likely absent from the Development Site or it is clear that no effect from the Development is possible:

- Loch Ruthven SAC and SSSI – is designated for its habitats and for otter. Loch Ruthven is situated more than 4 km from the Development and there is no connectivity between the two locations. There is therefore no potential for effects;
- Urquhart Bay Wood SAC and SSSI and Ness Woods SAC – both sites are designated for the conservation of terrestrial habitats. Urquhart Bay SAC and SSSI are situated more than 7 km from the Development and are on the opposite side of Loch Ness. Ness Woods SAC is situated 10 km from the Development, with no connectivity between the two locations. At these distances and given the nature of the qualifying / notified features of the designations, there is no possibility of effect on these sites from the Development;
- Sites with non-statutory designation for nature conservation – there are no such sites within 2 km of the Development and as such there is no potential for effects;
- Habitats which are not notable according to the criteria adopted by this assessment – these habitats are limited to common species-poor habitats including agricultural grassland, acid grassland, coarse neutral / damp grassland, gorse and blackthorn scrub, dense bracken and weed communities, which at their most biodiverse contain a relatively limited assemblage of species. They are not considered to be important for this assessment and therefore excluded;
- Wildcat – no evidence of this species was identified during field survey and no records were identified through desk study. Although suitable habitat for this species exists, a study by SNH into the Stratherrick potential priority area for the conservation of this species (just south of the Development) found no evidence of wildcat in this region (Ref 21). For the purposes of this EIA it is therefore concluded that the species is likely absent from the Development area and there is no potential for effects; and
- Water vole – this species is considered to be likely absent from the Development Site and immediately surrounding area and there is no potential for effects.

6.5.2 Considering the above, the potential effects of the Development on ecological features that require impact assessment are considered to comprise the following:

- Changes to air quality which could lead to loss of lichens which are notified features of the Creag nan Clag SSSI;
- The permanent and/or temporary loss of areas of notable habitats within the footprint of the Development;
- The permanent and/or temporary loss of habitat used by protected and/or notable species;
- The destruction of protected species resting sites;
- The disturbance of protected species resting sites (with the exception of wildcat and water vole, see above) and/or the disturbance of protected and/or notable species whilst foraging or commuting;
- The direct mortality of protected and/or notable species; and
- The potential spread of invasive non-native species.

6.5.3 The majority of potential effects are related to the construction phase of the Development. During the operational phase there is very limited potential for effects on ecological features as the Development will essentially comprise a body of water, the level of which will rise and fall as power is generated. The number of vehicles and personnel required for operation will be very low, with between five and ten on-site jobs; therefore disturbance to ecological features is expected to be negligible. Decommissioning of the Development, if undertaken, could involve the draining of the Headpond and the removal of above-ground buildings. Tunnels and the underground power cavern would be blocked off following the removal of all mechanical and electrical equipment. No tree felling will be required as part of decommissioning. Effects on ecological features are therefore expected to be of a lower magnitude when compared to the construction phase. A full description of the works associated with all phases of the Development is provided in Chapter 2: Project & Site Description.

6.5.4 Given the low potential for effects during operation and decommissioning, all three phases of the Development are considered together for each ecological feature in turn in the following sections.

Importance of Ecological Features

6.5.5 The assessed importance of those ecological features identified in the baseline conditions, and which have not been screened out above, is set out in Table 6.10 together with rationale. Ecological importance has been assessed considering geographic scale (as per CIEEM (2018) guidelines) and is used in this chapter as a surrogate for 'sensitivity' as defined in Chapter 4: Approach to EIA. The approach to valuing ecological features is described in detail in Appendix 6.7 (Volume 5).

6.5.6 When considering geographic scale, for the purposes of this assessment 'Regional' is defined as the area encompassed by the Inverness and Nairn Local Biodiversity Action Plan and 'Local' is the area within 5 km of the Development. The Inverness and Nairn LBAP area has been used to define 'Regional' importance rather than the entire Highland district as the large size of this area may have resulted in under-valuing of ecological features.

Table 6.10 Importance of Ecological Features

Ecological Feature	Importance	Rationale
Creag nan Clag SSSI	High (National)	National nature conservation designation.
Ancient semi-natural broadleaved woodland	High (National)	Ancient semi-natural woodland is a priority for conservation under the Scottish Biodiversity List. There is also a presumption against effects on all ancient woodland in Scottish Planning Policy.
Long-established woodland of plantation origin with Scots pine	Medium (Regional)	Long-established woodland of plantation origin includes areas of both Scots pine and Sitka spruce which have been continuously wooded for a considerable period, although also regularly disturbed by commercial plantation activities. The spruce plantation is not of significant value because of the severely impoverished ground flora. However, much of the Scots pine plantation has a reasonably natural heathy ground flora identifiable as NVC type W18, and it is this that is considered to be of Regional importance.
Other semi-natural broadleaved and semi-natural conifer woodland	Low (Local)	The largest extent of other semi-natural broadleaved, and occasionally coniferous, woodland is naturally regenerated birch and Scots pine at Glaic na Ceardaich, adjacent to Compound 1. The trees in this area are for the most part less than 30 years old. Other semi-natural woodland occurs as small isolated patches and also comprises relatively young trees.
Vegetation containing frequent juniper	Medium (Regional)	Juniper scrub is a localised Scottish habitat, and is notable even if widely scattered through moorland as is normally the case at this Site. Juniper is also a priority Scottish Biodiversity List species.
Blanket bog, basic flush and flushed wet heath	Medium (Regional)	Active blanket bog, is a priority Annex I habitat. Whilst common in northern Scotland, blanket bog is a conservation priority and in places on Site appears to be actively peat-forming. However, blanket bog within the footprint of proposed infrastructure is of the drier type. Basic flush is also an Annex I habitat, is localised in the generally acidic environments of upland Scotland and supports a relatively high diversity of species including hose which are uncommon. Substantial areas of flushed wet heath (M15a, not M15b) on Site have some floristic similarity to basic flush, notably including grass-of-parnassus, and are likely to be highly localised in the wider area.
Dry heath, typical wet heath and oligotrophic waterbodies	Low (Local)	Although all three are Annex I habitats, they are ubiquitous in northern Scotland and are not of exceptional ecological value in terms of the habitats themselves (use of waterbodies by specially protected bird species is separately assessed – see Chapter 8: Ornithology).
Acid / neutral flush, swamp, watercourses and flushed purple moor-grass	Low (Local)	The first three of these habitats are priorities for conservation as identified by their presence on the Scottish Biodiversity List. The flushed purple moor-grass is not a priority, but is considerably more diverse than typical purple moor-grass mire. However, such habitats are widespread across northern Scotland and do not occur over large areas at the site of the Development.

Ecological Feature	Importance	Rationale
Unimproved neutral grassland (MG5 lowland meadow)	Low (Local)	Although MG5 meadow is highly localised in Scotland, the particular MG5 found by Loch Ness is only moderately diverse and would not pass SSSI monitoring thresholds nor reduced thresholds for non-SSSI grassland employed in a recent SNH commissioned survey and report (Ref 10). Consequently, this meadow is considered to be important only at a Local scale.
Groundwater Dependent Terrestrial Ecosystems	Medium (Regional)	The majority of potentially affected GWDTEs involve small areas of flush and wet woodland patches in the Headpond area, together with larger patches of wet heath also in the Headpond area. Small partial loss of GWDTEs elsewhere will occur as a result of access track construction.
Bats	Low (Local)	All species of bat receive legal protection under the Habitats Regulations and those recorded during field survey are of principal importance for conservation under the SBL. However, bat activity on Site was found to be low and identified roost sites contained only single bats.
Badger	Low (Local)	A common but legally protected species which has a widespread distribution in Scotland, though this is patchy in the Highland region.
Otter	Negligible (Site)	A European Protected Species (EPS) under the Habitats Regulations. However, evidence of otter activity was very low and no resting sites were identified. The watercourses in proximity to the Development do not support a significant fish population and will be of low value to otter. The waterbodies which do contain a substantial prey resource will be unaffected by the Development.
Pine marten	Medium (Regional)	Pine marten is fully protected under Schedule 5 of the WCA. In Scotland the population of pine marten is increasing and its distribution is expanding. It is now found throughout the Highland region and is likely to be widespread in the area around the Development (Ref 14). Approximately 161.7 ha of forestry which is suitable for foraging and commuting will be clear felled during the construction phase, with a further 25.7 ha subject to thinning.
Red squirrel	Medium (Regional)	Receives full legal protection under Schedule 5 of the WCA. This species is common in suitable habitat throughout northern Scotland. Red squirrel was recorded across the Development Site, including in semi-natural broadleaved and plantation woodland. A number of potential dreys will be lost due to tree felling.
Great crested newt	Medium (Regional)	Great crested newt is an EPS under the Habitats Regulations. The distribution of this species in Scotland is primarily restricted to the central belt and the south of the country. A small, isolated population is known in the Inverness region. Great crested newt eDNA was found in Lochan an Eoin Ruadha. This waterbody will not be directly affected by the Development.
Reptiles	Low (Local)	Common lizards are protected from intentional and /or reckless killing under the WCA. They are also species of principal importance for conservation under the Scottish Biodiversity List. The Headpond area supports a breeding population of this species. Common lizards are, however, widespread across Scotland.

Ecological Feature	Importance	Rationale
Butterflies, dragonflies and damselflies (excluding small pearl-bordered fritillary)	Low (Local)	Small heath is a species of principal importance for conservation under the Scottish Biodiversity List. Small heath and speckled wood are also Priority Species of the Inverness and Nairn LBAP. These species are, however, fairly abundant and widespread in Scotland. Habitat loss will primarily be restricted to the Headpond and wider felling within Dirr Wood.
Small pearl-bordered fritillary	Medium (Regional)	Small pearl-bordered fritillary is widely distributed and locally abundant. It is a species of principal importance for biodiversity conservation under the Scottish Biodiversity List. A small population of this butterfly was found at the southern end of the proposed Headpond location, and another at Glaic na Ceardaich.
Rhododendron	Low (Local)	It is an offence under the WANE Act to cause the spread of plant species outside of their native range. Rhododendron occurred sporadically as small bushes across the site of the Development and the implementation of simple management measures during construction will help to prevent any offence being caused.
Sika deer	Low (Local)	Sika deer were recorded across the Development Site. It is possible that felling will lead to the displacement of animals into remaining woodland within the Development Site, with increased browsing pressure as a result. This may have local consequences to the understorey of the semi-natural broadleaved woodland and retained ancient plantation.

Impacts on Designated Sites

Crag nan Clag SSSI

6.5.7 The Creag nan Clag SSSI contains more than 80 species of lichen, including two which are Nationally Rare – *Lepraria cacuminum* and *Gyalecta ulmi* – and 15 which are Nationally Scarce. The un-named road which passes Loch Ruthven from the B851 in the east to the B862 in the west forms a part of the boundary of the designated site. Construction traffic associated with the Development will be required to access Site from the A9 via the B851 and B862 (see Chapter 15: Traffic and Transport for more information). At the closest point, therefore, construction traffic will pass the SSSI on the B862 road, approximately 510 m from the boundary of the designation.

Construction

6.5.8 Assessment of traffic and transport impacts from the Development has predicted that, in the absence of the Development, there would be 451 vehicles per day on the B862 to the south-west of the SSSI in 2020 (when construction is currently expected to commence). At the peak of construction, which is expected to be during month 37, there would be a worst case scenario increase to on average 820 vehicles per day at this point on the road. This represents a 182% increase in vehicular traffic on the B862. However, this increase is in the absence of mitigation and assumes that each construction worker will access the Development in a single car, which will not be the realistic case. Taken over the construction period as a whole, there is predicted to be on average 482 vehicles per day on the road, equating to an approximate 107% increase on baseline levels.

6.5.9 An updated review of the ecological effects of diffuse air pollution arising from road traffic on semi-natural habitats commissioned by Natural England evidence that lichen diversity declined with increasing concentrations of Nitrogen Oxides (NOx) and Nitrogen Dioxide (NO_2), both of which are key components of pollution emitted from vehicle exhausts (Ref 33). Recent studies quoted in the review suggest that the impacts from NOx and NO_2 on vegetation communities are greatest within the first 50 – 100 m from roads. However, the effects on bog plants were shown in a 2010 paper in *Environment Pollution* (Ref 19) to extend up to 300 m from a road. A Natural England review (Ref 33) also describes several studies which have shown that shelterbelts prevent the spread of gaseous pollutants by acting as a physical barrier to NO_2 transport. In addition, a study carried out in rural Italy is quoted in which the diversity of lichens was not found to be influenced by proximity to a public road, and concludes that this is explained by the low numbers of vehicles and consequently low concentrations of NO_2 and ammonia (NH_3).

6.5.10 Based on the above traffic assessment and the results of the literature review described, during the construction phase of the Development (at which time traffic will be at its highest level), it is considered that the magnitude of effect on the lichen species which are the notified features of the Creag nan Clach SSSI will be Low for the following reasons:

- The increase in the number of journeys on the B862 road although proportionally large will still be small in terms of actual vehicles. It is therefore expected that effects on air quality will be small and that air quality will remain (qualitatively expressed) good;
- The distance between the SSSI and the B862 road at the closest point is beyond the maximum distance at which effects upon vegetation were identified by the literature review of scientific studies; and

- The topography between the SSSI and the B862 is such that there is a rise of almost 200 m between the B62 and the boundary of the designated site, with scattered trees also present, and this will present a natural barrier to the dispersal of pollutants.

6.5.11 Creag nan Clag SSSI is situated 3.2 km from the nearest construction area and, at this distance, there is no potential for any dust generated to have an effect on the designation.

6.5.12 According to Table 4.7 in Chapter 4: Approach to EIA, an ecological feature of High importance for which a Low magnitude effect is predicted should be assessed as resulting in a Minor effect overall. However, on the basis of the reasoning above and the degree of confidence that there will be no effects during construction, it is concluded that this phase of Development will have **Negligible effect** on Creag nan Clag SSSI.

Operation

6.5.13 During the operational phase, traffic associated with the Development will be limited to that associated with between five and ten Site workers. Access to the Development is also likely to primarily be from the direction of Inverness and will therefore not pass the Creag nan Clag SSSI.

6.5.14 The operation of the Development will therefore have **Negligible effect** on Creag nan Clag SSSI.

Decommissioning

6.5.15 It is expected that during decommissioning, the requirement for traffic to access the Development Site via the B862 will be repeated and therefore the potential effects are as described for the construction phase.

6.5.16 Decommissioning of the Development will therefore have **Negligible effect** on Creag nan Clag SSSI.

Impacts on Notable Habitats

Woodland and Scrub

6.5.17 An assessment of the potential effects on woodland and scrub habitats is provided below. This section should be read in conjunction with Chapter 10: Forestry, which provides further details on the proposals for clear felling and thinning and for subsequent restocking and forest management.

Construction

6.5.18 It is estimated that construction (including access tracks of 30 m width and temporary / permanent compounds) will result in the loss of approximately 8.7 ha of semi-natural ancient woodland on the slopes beside and above Loch Ness (see Table 10.4 of Chapter 12: Forestry). The total area of semi-natural ancient woodland within the Development Site boundary of the Development Site is approximately 120 ha. This represents a loss of approximately 7.25%. Given that loss of semi-natural ancient woodland is effectively permanent (it is well-known that planted compensatory woodland requires hundreds of years to acquire diversity approaching that inherent to semi-natural ancient woodland), and that it contains at least one species known to be highly localised on a Scotland-wide basis (bird's-nest orchid), the loss of 7.25% of this semi-natural ancient woodland is considered to be a Medium magnitude effect on a feature of High importance, resulting in an overall **permanent Moderate Adverse effect**.

6.5.19 The primary other woodland loss will be of long-established conifer plantation, part of which is Scots pine with a native heathy ground flora (W18). Approximately 110.2 ha of the long-

established plantation will be clear felled during construction, with thinning in a further 25.7 ha. However, considering the abundance of such plantation in the wider area, the net effect on conifer plantation, including W18, is therefore expected to be of Low magnitude, resulting in an overall **permanent Minor Adverse effect**.

6.5.20 Effects on other semi-natural and broadleaved woodland will be slight because there will be no effects on the large woodland extent in the Glaic na Ceardaich area, and extents of such woodland elsewhere are very small and of immature age. There is therefore expected to be a **Negligible effect**.

6.5.21 There will be very little adverse effect on juniper scrub. This is because the amount of juniper in the Headpond area is thought to be no more than 20 bushes, compared to an estimated 1,000 bushes in the wider area including Ashie Moor, the area north of Park farm and the Glaic na Ceardaich area. The loss of a very small number of juniper bushes, representing a small proportion of the wider resource, is considered to be a Low magnitude effect, resulting in an overall **permanent Minor Adverse effect** on this species.

Operation

6.5.22 The operation of the Development (e.g. infrequent maintenance traffic and operations along retained access tracks / roads, at the permanent compounds and at the Headpond) is not expected to have any noticeable effect on woodland and scrub habitats. Therefore there would be **Negligible effect** on woodland and scrub during operation.

Decommissioning

6.5.23 No tree felling or disturbance to habitats is expected as part of decommissioning as retained, permanent compounds will be utilised. Following decommissioning, compound areas and other infrastructure would be reinstated, likely by replanting with trees, and this would lead to an increase in woodland / juniper habitat. Decommissioning may therefore have a **permanent Minor Beneficial effect**.

Blanket Bog

Construction

6.5.24 Construction of the Headpond area (and to a much lesser degree, construction of Compound 1, which will eliminate a very small amount of isolated bog vegetation) will result in the permanent loss of approximately 8 ha of blanket bog. The blanket bog affected is of the drier type (M19) and not of the very wet type (M17) which has higher species diversity and Sphagnum moss abundance and which exists on Ashie Moor and elsewhere in the wider area. This compares to approximately 15 ha within the NVC survey area, but an estimated 85 ha in the wider area including all of Ashie Moor and the blanket around and extending south of Loch na Curra and Lochan an Eoin Ruadha. Bog in the wider area is not expected to be affected because no part of the Development cuts into these areas, and the small areas within the Headpond area are isolated by the conifer plantation and other non-bog habitats. Consequently, this is deemed a Low magnitude effect on a feature of Medium importance, resulting in an overall **permanent Minor Adverse effect**.

Operation

6.5.25 Operation of the Development will have **Negligible effect** on blanket bog.

Decommissioning

6.5.26 Decommissioning will not impact upon blanket bog since retained permanent compounds will be utilised. There will therefore be **Negligible effect** on blanket bog habitat at this stage of the Development.

Basic Flush and Flushed Wet Heath

Construction

6.5.27 These habitats are both notable for the variety of associated species and their localised occurrence in the wider landscape. The Headpond will eliminate two small flushes that include basic flush communities, and no flushed wet heath. A small amount of flushed wet heath will be lost to the access track north of Park farm. In contrast, there are substantial unaffected basic flushes in the Glaic na Ceardaich area, on Ashie Moor (beyond the NVC survey area) and on the west side of Lochan an Eoin Ruadha, as well as unaffected basic flush in the area north of Park farm. Flushed wet heath is extensive in part of the area north of Park farm (see Appendix 6.1). In view of the extent of such habitats in the wider area, the minor loss of basic flush within the Headpond area is deemed a Low magnitude effect on a feature of Medium importance, resulting in an overall **permanent Minor Adverse effect**.

Operation

6.5.28 Operation is expected to have **Negligible effect** on these habitats.

Decommissioning

6.5.29 Decommissioning is likely to have **Negligible effect** since retained permanent compounds will be utilised.

Dry Heath and Typical Wet Heath

Construction

6.5.30 Dry heath in the Headpond area is species-poor and of a very common type in Scotland. The typical wet heath is also extremely common in Scotland and also species-poor, with some parts approach dry heath. These habitats occur widely in the surrounding area, and across the Highlands. Consequently, loss of these habitats to the Headpond is a Low magnitude effect on features of Low importance. Construction of the Development will therefore result in **Negligible effect** on dry and typical wet heath habitats.

Operation

6.5.31 Operation is expected to have **Negligible effect** on these habitats.

Decommissioning

6.5.32 Decommissioning is likely to have **Negligible effect** since retained permanent compounds will be utilised.

Acid Flushes, Swamp, Watercourses and Oligotrophic Waterbodies

Construction

6.5.33 Again, the recorded examples of these habitats are common across Scotland and not of special note. No swamp, waterbodies or watercourses will be lost to construction. A small number of acid flushes (M6) will be lost to the Headpond, however, this type of vegetation is very common in the surrounding area and indeed across the Highlands. Consequently, for these habitats there will be a Low magnitude effect on features of Low importance, resulting in an overall **Negligible effect**.

Operation

6.5.34 Operation is expected to have **Negligible effect** on these habitats.

Decommissioning

6.5.35 Decommissioning is also expected to have **Negligible effect** on these habitats.

Unimproved Neutral Grassland

Construction

6.5.36 Construction is likely to result in the total loss of the narrow MG5 lowland meadow recorded beside Loch Ness at the proposed location of Compound 2. This constitutes a High magnitude effect on a feature of Low importance, producing a **permanent Moderate Adverse effect**.

Operation

6.5.37 There will be **no effect** on this habitat during operation because it will not be present following construction.

Decommissioning

6.5.38 There will be **no effect** on this habitat during operation because it will not be present following construction.

Groundwater Dependent Terrestrial Ecosystems

Construction

6.5.39 Construction of the Headpond and adjacent compound will unavoidably result in the loss of nine patches of vegetation which are either entirely or partly composed of flush vegetation. For the most part this is M6 acid flush, but there are also two small areas of M10 basic flush. There are much more significant areas of flush, including basic flush in the wider area including on Ashie Moor, at Glaic na Ceardaich and by Lochan an Eoin Rudha, as well as smaller patches in the open parts of the ancient woodland above Loch Ness and in the unmanaged area north of Park Farm. There are also very small patches of wet woodland (W4) in the Headpond area but again these are relatively insignificant compared with the extent and greater inherent floristic diversity of wet woodland in the ancient woodland above Loch Ness (W7). The other GWDTEs in the Headpond area largely comprise wet heath (M15), which exists in several large patches but is here represented by fairly dry forms and which are again insignificant in the wider landscape context in which such wet heath is very common. There are also very small extents of species-poor purple moor-grass, tufted hair-grass and soft rush rush-pasture in the Headpond area, of no special ecological significance.

6.5.40 GWDTEs that could be affected elsewhere comprise wet woodland components of the ancient woodland above Loch Ness and flushed wet heath in the unmanaged area north of Park Farm. These habitats are of greater ecological importance. Effects on these would potentially be caused by construction of access roads and burying of spillway pipes. Physical loss would be minor owing to the relatively narrow width of this infrastructure. Indirect effects on drainage are also possible. However, the depth of the buried spillway pipes will be such that soil can be replaced over the buried structure, and it is expected that percolation of water downslope through the soil will continue. Additionally, access road design will permit percolation of water under the road to maintain hydrological connectivity between both sides, and access roads will be removed (where not existing forestry tracks)

and vegetation reinstated on completion of construction. Thus effects on GWDTEs outside the Headpond area are expected to be slight.

6.5.41 Consequently, and largely as a result of losses in the Headpond area, there is expected to be a Low magnitude effect on GWDTEs, which are of Medium importance, resulting in an overall **Permanent** M**inor Adverse effect**.

Operation

6.5.42 Operational activities will be minor (e.g. infrequent maintenance traffic and operations along retained tracks / roads, at the permanent compounds and at the Headpond) and can be expected to implement standard pollution controls. Therefore operation is expected to have **Negligible effect** on GWDTEs.

Decommissioning

6.5.43 It is likely that the same access tracks and compounds would be used during decommissioning. Standard pollution controls can be expected to be implemented to avoid deterioration of GWDTEs. Therefore decommissioning is expected to have **Negligible effect** on GWDTEs.

Impacts on Protected and Notable Species

Bats

6.5.44 Four bat species were recorded on Site, these being soprano pipistrelle, common pipistrelle, Daubenton's bat and brown long-eared bat. All bat species receive legal protection under the Habitats Regulations and are considered to be of conservation concern. However, those which were found to be present are common and widespread in Scotland and the wider UK. The latest *State of the UK's Bats Report* (Ref 3) indicates the following population trends for the species recorded to be present on Site:

- Both common and soprano pipistrelle are common and widespread, and both species have shown statistically significant population increases since 1999, likely indicating partial recovery from historic population declines;
- Daubenton's bat populations in Scotland have shown an increase between 1999 and 2006 and the population is now considered stable; and
- Populations of brown-long eared bat are also considered to be stable (provisional data shows a decline in use of hibernation sites however this is provisional and not statistically significant).

6.5.45 No significant roosts were identified, with only single soprano pipistrelle bats recorded roosting in four trees scattered across the Development area. The roost trees were present in areas of semi-natural broadleaved woodland, conifer plantation and scattered broadleaved trees. The roosts are all considered to be transient summer day roosts with no potential for use as hibernacula given their limited size and unsuitable environmental conditions (i.e. they are features which will maintain only low humidity and will not provide stable temperatures).

Construction

6.5.46 None of the confirmed small roosts are anticipated to be directly affected during initial clear felling or construction works. Three roost sites – Trees 45, 56 and 107 – are situated within 50 m of works areas and are therefore considered to be at risk of disturbance. Trees 45 and 56 are 50 m and 6.3 m, respectively, distant from a proposed low pressure tunnel which will be underground (at a depth of approximately 115 m in the vicinity of these trees) and

installed using a Tunnel Boring Machine (TBM). Vibration modelling carried out for these features predicts that at these trees, peak particle velocity (PPV, which is a measure of vibration) would be below 0.45 mm/s. At this level, vibration is considered, in residential environments, that vibration may be just perceptible. It is therefore unlikely that this will result in significant disturbance of roosting bats using the trees. Tree 107 is positioned approximately 20 m from the location of the temporary access road and permanent underground spillway pipeline. A buffer of mature coniferous woodland will be retained between the access track and Tree 107. However, given the relatively short distance between the access track / spillway and Tree 107, and the extended period of potential construction activities in this area, it is considered likely that this minor bat roost will be subject to varying levels of disturbance for the entire construction period. The potential for the disturbance of two minor bat roosts is considered to represent a Medium magnitude effect on a very small number of roosting bats. Note that this assessment does not negate the requirement to comply with relevant legislation and disturbance of any bat roost can only be permitted under licence issued by SNH.

6.5.47 In addition, there is the potential for further felling requirements in the later stages of the construction program, although this is not confirmed. This further felling may require the complete removal of Trees 45 and 56, resulting in the destruction of two minor transient soprano pipistrelle bat roosts. Furthermore, to mitigate for the landscape effects of the Development, thinning / small-scale clear felling in advance of new planting is proposed in the immediate area of Tree 107. Given the flexibility in this 'landscape felling', however, it is considered highly unlikely that it would be necessary to remove Tree 107. In the event that Trees 45 and 56 were felled, this would represent a High magnitude effect on a very small number of roosting bats.

6.5.48 Clear felling of a total of approximately 172.4 ha of woodland and thinning in a further 25.7 ha is proposed as part of the Development (see Table 12.3 in Chapter 12: Forestry for more details). Field survey for roosting bats was limited to a 50 buffer area around the Development and parts of the wider woodland which will be subject to tree clearance were not included. However, habitat and vegetation surveys (reported elsewhere in this chapter) showed that the woodland outside of the bat survey area is similar in age and composition to that within 50 m of the Development and it is therefore assumed that the results of bat roost surveys are applicable over the wider felling area. Furthermore, of the total area to be felled, approximately 8.7 ha constitutes ancient semi-natural broadleaved woodland, with the remainder in plantation coniferous / coniferous and mixed semi-natural woodland. The results of the bat roost surveys indicate that potential roost features were limited primarily to mature trees within the semi-natural broadleaved woodland, with very limited opportunity for roosting available within the coniferous plantation. Therefore, based on the results of field survey and an understanding of the suitability of the habitat in the wider area, it is not expected that tree clearance will result in the loss of a significant number of bat roosts. Additionally, any roosts which may be lost are unlikely to be of high conservation importance (i.e. they are unlikely to support maternity roosts or other large numbers of bats). Tree felling is therefore considered to result in a Low magnitude effect on bat roosts.

6.5.49 Transect surveys highlighted the use of certain features by bats for commuting and foraging, including waterbodies (i.e. the banks of Loch Ness, Loch na Curra, Lochan an Eoin Ruadha, Loch nan Geadas and Loch Duntelchaig) and broadleaved and conifer woodland. The results indicate that there are very low numbers of bats in the area of the Development, with activity largely limited to habitat edges, for example along loch sides and plantation

woodland rides / edges. Only very small numbers of bats were recorded in open heath / bog habitat. No loch habitat, including loch edges, will be lost to construction of the Development. Furthermore, although just over 161 ha of woodland will be felled, this represents a small proportion of the available bat commuting / foraging habitat in the wider area. In addition, the removal of uniform and generally straight edged forest blocks may result in the creation of new commuting and foraging opportunities by increasing the availability of edge habitats. Construction will result in the loss of approximately 8 ha of blanket bog habitat (largely associated with construction of the Headpond), however data collected here indicate that such habitat is of limited use to bats. Furthermore, although the Headpond will be highly managed, creation of this large waterbody is likely to result in an increase in potential foraging habitat, particularly for species associated with still water bodies such as Daubenton's bat. Therefore, given the low levels of bat activity recorded, minor effect of loss of edge habitat when compared with that which will be gained, and the limited value to bats of the heath / bog habitat which will be lost, a Low magnitude effect on bat foraging / commuting is expected.

6.5.50 With the exception of tunnelling, construction works associated with the Development will be limited to between the working hours outlined in CEMP. There is therefore very limited potential for direct disturbance to bats actively foraging or commuting as the majority of works will be limited to the time of day during which these species are resting. The restricted working hours means that there will be limited requirement for artificial lighting at the times of year when bats are active. Where this is needed (e.g. for security) it will be kept to a minimum and light spill to surrounding habitat will be minimised through the use of beam deflectors. Lighting and construction works are therefore expected to have a Low magnitude effect on actively foraging / commuting bats.

6.5.51 With an assessed nature conservation importance of Low and with the most serious magnitude effect expected to be High, the construction phase of the Development will have a **permanent Moderate Adverse effect** on bats. However, this is qualified by the fact that the largest predicted effects, which relate to the potential loss of two roosts, would impact upon at most two bats.

Operation

6.5.52 Security lighting at the Inlet / Outlet on Loch Ness will be required but this will be low level and will be directed away from the Loch and surrounding riparian habitat so as to avoid illuminating the shoreline and water's edge. This will therefore result in a Low magnitude effect on foraging and commuting bats.

6.5.53 It is not considered that there will be any effects on bat roosts or on general bat activity from the operation of the Development. It will therefore result in **Negligible effect** on this species.

Decommissioning

6.5.54 Decommissioning of the Development will not require tree felling. The precise location of bat roosts at the time of decommissioning cannot be predicted but assuming that baseline conditions at that time are similar to those now, it is expected that decommissioning would, at worst and assuming limited disturbance of a small number of roosting bats, have a **temporary Minor Adverse effect** on bats.

Badger

6.5.55 Badger require dry, well-draining soil, ideally on sloping ground with a south or south-east facing aspect in which to construct setts (Ref 5). The Scottish Badger Distribution Survey

(Ref 24) estimated that main badger setts occurred at highest densities in areas dominated by broadleaved woodland, arable farmland and intensive grassland, with much lower densities in areas dominated by coniferous woodland, acid grassland and bog. This is in part because of the soil conditions in each of these environments. In particular, agricultural land provides a rich foraging resource for badger, with a high number of earthworms which can be easily accessed. Coniferous woodland, especially across much of the Highlands, has been planted on areas of peat. This waterlogged substrate is generally unsuitable for the construction of setts and does not support a rich foraging resource for badger.

Construction

6.5.56 The closest setts to the construction footprint of the Development are three outliers, situated between 38 - 55 m of the temporary access track between Compounds 1 and 2. Outlier setts are of relatively low importance to badger and are unlikely to be used for breeding purposes. The only main sett identified during field survey is approximately 270 m away from the Development and will not be directly impacted upon by construction activities. The typical distance at which SNH consider that construction works may lead to disturbance of badger in a sett is 30 m. As such, it can be concluded that no setts will be directly damaged or destroyed and none are within the distance at which disturbance is considered likely to occur. Construction of the Development will consequently result in a Low magnitude effect on badger setts.

6.5.57 Badger latrines, and signs of foraging and commuting activity were found across the semi-improved and agricultural grassland adjacent to the semi-natural broadleaved woodland and around Kindrummond. As highlighted above, this represents optimal foraging habitat for badger and is likely to be of significant importance to the population inhabiting the identified setts. The construction of Compounds 2 and 3 will result in the loss of two areas of semi-improved / agricultural grassland, covering an area of approximately 11.4 ha. All other infrastructure in this area will be underground. The agricultural fields around Kindrummond and Drummond, in which substantial badger evidence was found, will be retained during construction and cover approximately 50 ha. In addition, the broadleaved woodland habitat will be retained with the exception of a 70 m strip through which the temporary access track will be constructed. There will therefore be abundant alternative foraging habitat for badger despite the construction of the two compound locations. The overall effect of the loss of these fields during the construction phase is therefore considered to result in a High magnitude effect on badger.

6.5.58 Although badger were recorded within the coniferous woodland habitat around the Headpond location, the frequency at which images were captured by the trail cameras and the lack of other field evidence suggests that this area is of relatively low importance to the species. The substrate in the majority of the coniferous woodland is peaty and provides a low quality foraging resource and is generally unsuitable for the creation of setts. In areas of good quality habitat, badger territory size in Scotland is typically around 70 – 120 ha. However, in more marginal areas, this can be much larger (Ref 34). With no other setts identified, and no habitat which would be considered likely to support a sett in the vicinity of the Headpond, it is possible that badger recorded in this area belong to the same clan inhabiting the semi-natural broadleaved woodland near Loch Ness, approximately 2 km away. With an abundance of higher quality habitat in the area within which badger activity was frequently recorded, it is expected that the loss of the sub-optimal coniferous woodland will result in, at worst, a Medium magnitude effect on foraging badger.

6.5.59 The construction of the temporary access track between Compounds 2 and 3 will require the felling of a 70 m strip through the semi-natural broadleaved woodland near to Loch Ness. All but two disused / inactive outlier setts will be situated to the south of the temporary access track and as such the potential effects associated with bisecting badger territory are considered to be minimal. Use of the access track by construction traffic will be predominantly during daylight hours and will be restricted to 15 mph. The potential for the temporary access track to prevent the continued movement of badger throughout their territory is therefore low and is assessed as representing a Low magnitude effect.

6.5.60 Desk study records show that badgers are killed by collision with traffic on the public roads around Dores. At the peak of construction of the Development, there will be an average daily increase to 820 vehicles per day on these roads in a worst case unmitigated scenario. Taken over the duration of the construction phase as a whole, the average daily vehicular journeys in an unmitigated scenario is predicted to be 482. There is the therefore increased potential for direct mortality of badger on public roads. All construction traffic on Site will be limited to 15 mph and at this speed the risk of mortality is considered to be low. The overall effect on badgers is therefore assessed as being of Medium magnitude effect.

6.5.61 With an assessed nature conservation importance (sensitivity) of Low and with at worst a Medium magnitude effect predicted, the construction phase of the Development will have **temporary Minor Adverse effect** on badger.

Operation

6.5.62 It is not considered that there will be any effects on badger from the operation of the Development. It will therefore result in **Negligible effect** on this species.

Decommissioning

6.5.63 Decommissioning of the Development will not directly affect any habitats used by badger. An increase in traffic may result in increased mortality on public roads and, in line with the construction phase, this could lead to a Medium magnitude effect.

6.5.64 The decommissioning of the Development would therefore have a **Negligible effect** on badger.

Otter

6.5.65 Otter receive legal protection under the Habitats Regulations and are therefore considered to be of conservation concern. However, the Scottish otter population is estimated at approximately 8,000 individuals and it is believed that the species may now be nearing carrying capacity (Ref 14). Fish represent between 50 – 95 % of the diet of otter (Ref 6) but other prey sources can be seasonally important, including spawning amphibians and young waterbirds.

6.5.66 Otter activity on Site was found to be very low, with occurrence only identified by the presence single spraints on the bank of Loch Ashie and along the Allt a' Mhinisteir within Dirr Wood. In addition, an otter was also flushed from the bank of Lochan an Eoin Ruadha. No otter resting sites were found within the survey area.

6.5.67 Based on the limited evidence of otter identified, it is likely that the watercourses within the otter survey area are infrequently used. Furthermore, none of these contain a significant fish resource (see Chapter 7: Aquatic Ecology for further details) and are unlikely to be suitable for foraging. Otter use of these features may therefore be restricted to commuting. This may involve individuals travelling to and between waterbodies, including Lochan an Eoin Ruadha

and Loch Ashie, as these are known to contain fish and may be important foraging locations.

Construction

6.5.68 The temporary access track which will be constructed between Compound 1 and Compound 2 will cross two minor watercourses on which no evidence of otter activity was identified. Both flow into Loch Ness but neither leads to a waterbody which could be used for otter foraging. They are also steep sided and shallow and have features which would prevent fish movements and do not present a significant foraging resource. It is therefore unlikely that these watercourses are of importance to otter. The construction of the temporary access track will therefore have a low magnitude effect on otter which may very rarely travel along these watercourses.

6.5.69 The only access track which will be permanently retained following the completion of construction will cross the Allt a' Mhinisteir between the entrance to the access tunnels and the Headpond. However, a track and crossing point already exists at this location and the Development will only require it to be upgraded. There will therefore be no new structures directly affecting watercourses on Site. The Permanent Access Track will therefore result in a low magnitude effect on otter.

6.5.70 The realignment of the C1064, to accommodate the Headpond, will not require any watercourse crossings and, as a public road already exists in the same general area, is considered to represent a low magnitude effect to otter.

6.5.71 Although no evidence was found along the shore of Loch Ness within the survey area, it is likely that otter are occasionally present in the vicinity of the Inlet / Outlet structure both for foraging and commuting. The construction of the Inlet / Outlet structure will require the installation of a cofferdam and this will result in the loss of an area approximately 100 m x 280 m within which otter could potentially forage and/or commute. In addition, construction activities at this location could lead to the disturbance or displacement of foraging and/or commuting otters. However, as the area enclosed by the Cofferdam forms a very small proportion of the overall habitat available in Loch Ness (which at this location is more than 2 km wide), there is significant alternative opportunity for foraging and the possibility for commuting otter to divert away from the Inlet / Outlet at a distance at which they are not disturbed by works. It is therefore concluded that construction of the Inlet / Outlet in Loch Ness will have a low magnitude effect on otter.

6.5.72 No other waterbodies will be directly impacted upon by the Development. Loch Ashie is approximately 145 m from the Headpond Embankment location at its closest point but is screened by mature trees. As this is outside of the typical distance at which disturbance to otter is considered likely, and with the likelihood of this occurring being further reduced by the natural woodland barrier, there will be a low magnitude effect on otter using this and any other waterbody.

6.5.73 Given the very low levels of otter activity within the Development Site, it is considered that the risk of direct mortality during the construction phase as a result of collision with moving vehicles or plant is very low. This therefore represents a Low magnitude effect.

6.5.74 With an assessed nature conservation importance of Negligible at the Development Site and with at worst a Low magnitude effect predicted, the construction phase of the Development will have **Negligible effect** on otter.

Operation

6.5.75 The velocity at which water will be taken into and released from the inlet / outlet on Loch Ness will be approximately 0.15 m/s or below. It is an important safety design feature of the Development that the drawing in or releasing of water does not endanger users of Loch Ness. It is therefore possible to state that an otter would be readily able to swim against a water velocity of 0.15 m/s and that there is consequently no risk to otter foraging or commuting in the vicinity of the structure. A screen which prevents fish from being drawn into the system will also be fitted to the inlet / outlet so there is no possibility of otter entering the structure. The presence and operation of the inlet / outlet will therefore have a Low magnitude effect on otter.

6.5.76 Security lighting at the inlet / outlet will be required but this will be low level and will be directed away from Loch Ness so as to avoid illuminating the shoreline and water's edge. This will therefore result in a Low magnitude effect on otter.

6.5.77 The Headpond will not contain or be suitable for fish because of the variation in water level which will be experienced. The new waterbody will therefore not be attractive as a foraging resource for otter. In addition, the entire Headpond will be fenced to prevent access and this is also likely to prevent otter from entering. As such, the risk of otter entering the Headpond and accessing or being drawn in to the inlet / outlet structure is very low. The operation of the Headpond will therefore have a Low magnitude effect on otter.

6.5.78 The operation of the Development is therefore concluded to result in an overall **Negligible effect** on otter.

Decommissioning

6.5.79 There will be no additional effects to those described above during the decommissioning phase of the Development and it is concluded that there will be **Negligible effect** on otter at this stage.

Pine Marten

6.5.80 Pine marten activity was recorded across the Development Site within semi-natural broadleaved and coniferous plantation woodland habitats. Pine marten are omnivorous and feed on small rodents, birds, beetles, carrion and vegetative matter, including berries. They inhabit woodland areas but will incorporate open habitats including tussock grassland and scrub within their home range (Ref 18). The Scottish pine marten population is estimated by SNH as being 3,700 adults and is believed to be increasing. The species range has also increased from the core Highland region and pine marten are now present across much of the country.

Construction

6.5.81 The main factor which influences the territory size of breeding pine marten is the availability of woodland cover and for this reason population density can vary widely between 0.12 – 0.82 adults per km^2 (Ref 2). Tree felling for the Development will result in the total loss of approximately 172.4 ha of woodland habitat (Table 12.3 of Chapter 12: Forestry) which is currently used by pine marten for foraging and commuting (pine marten den sites are considered separately, below). Based on the upper limit of quoted population density, therefore, the worst case scenario is that between one and two individuals may be displaced by tree clearance. However, it is not considered likely that total displacement would occur given the availability of woodland habitat which will be retained within the red line boundary and because pine marten will use open habitats adjacent to woodland for foraging and

commuting. Despite this, the loss of woodland habitat for foraging and commuting pine marten is considered to represent a High magnitude effect.

6.5.82 Pine marten dens are commonly in hollow trees or amongst fallen root masses, though cairns and cliffs which are covered by scrub are also used. In addition to dens used for breeding, pine marten also occupy other temporary shelters across their territory. An absence of suitable tree cavities in which dens can be created can be a limiting factor to pine marten breeding success (Ref 32). The coniferous plantation woodland within the Development boundary, while classified as ancient, predominantly comprises single age commercial stands of Scots pine or Sitka spruce. The results of the pine marten field survey (see Figure 6.14, Volume 3) show that this habitat presents very limited opportunity for pine marten breeding or shelter, with only four features with suitability to be used as dens identified, but with no evidence of pine marten activity found at any of these. Within the semi-natural broadleaved woodland there is greater potential for pine marten dens and this is indicated on Figure 6.14 (Volume 3) by the presence of ten potentially suitable den features. However, pine marten use of these features was only confirmed at one location, this being a tree cavity into which a pine marten was recorded by motion sensitive camera taking a prey item. Closer inspection of this feature showed that it was exposed and unsuitable for use as a breeding site. The confirmed pine marten shelter is situated approximately 215 m south of the temporary access track which will be constructed between Compounds 1 and 2. SNH consider that there is the potential for disturbance to be caused to pine martens using a shelter at a distance of up to 100 m from typical construction works (i.e. those not involving particularly intensive activities such as piling or blasting). The construction of the temporary access track will not require such activities and, at more than 200 m distant, it is therefore very unlikely that there will be any disturbance to a pine marten using the confirmed shelter. Furthermore, none of the other features with suitability to support a pine marten den will be lost to the Development. On this basis it is considered that the Development will have Low magnitude effect on pine marten dens.

6.5.83 On-going construction works could lead to the disturbance of foraging / commuting pine marten in retained woodland and open habitats. However, above-ground works areas are restricted to four main locations, with access tracks between these. In addition, there is extensive habitat within the wider landscape around the Development which is suitable for pine marten foraging. Disturbance of foraging / commuting pine marten is therefore considered to be a Low magnitude effect.

6.5.84 An increase in traffic on public roads during the construction phase increases the likelihood of direct mortality of pine marten. All construction traffic on Site will be limited to 15 mph and at this speed the risk of mortality is considered to be low. The overall effect on pine marten is therefore assessed as being of Medium magnitude.

6.5.85 With a high magnitude of effect predicted in relation to loss of pine marten foraging and commuting habitat, construction of the Development will have an overall **permanent Moderate Adverse effect** on pine marten, in the absence of mitigation.

Operation

6.5.86 It is not considered that there will be any effects on pine marten from the operation of the Development. It will therefore result in **Negligible effect** on this species.

Decommissioning

6.5.87 Decommissioning of the Development will not require any tree felling and it is concluded that there will be **Negligible effect** on pine marten during this phase.

Red Squirrel

6.5.88 There are estimated to be 120,000 red squirrels in Scotland, these mostly being confined to the north of the country, including the Highland region. The primary threat faced by the species is the invasive non-native grey squirrel which out-competes red squirrel for resources and carries disease which is fatal to red squirrels. Red squirrel inhabit both coniferous and broadleaved woodland, with areas containing a mix of tree species representing optimal habitat as this provides a more reliable year-to-year seed resource than single-species forests (Ref 14). Plantation forest dominated by Sitka spruce is of low value to red squirrels as it provides very little food. The average home range of red squirrel in coniferous woodland is between 9 – 30 ha and overlap between the home ranges of different individuals can be small (Ref 14).

Construction

6.5.89 Two sightings of live red squirrel were made in the coniferous plantation within the survey area for this species. Images of red squirrel were captured by motion sensitive cameras situated across the Development Site. It is therefore evident that red squirrel is present in woodland habitat across the Development. Nine potential dreys were identified during red squirrel survey, all within the plantation woodland around the proposed Headpond. Of these, seven will be lost as a result of tree felling. In addition, the two potential dreys which will not be destroyed are situated within approximately 10 m of an area in which clear felling will occur and may therefore be subject to disturbance. Approximately 172.4 ha of woodland will be clear felled as part of the Development, with thinning in a further smaller area (Table 12.3 of Chapter 12: Forestry). Adopting a worst case scenario calculated on a home range size of 9 ha, this could lead to the loss of 19 red squirrel home ranges. However, there is extensive plantation woodland in the wider landscape around the Development. In addition, red squirrel can have more than three dreys at once and have been recorded using eight different dreys within a two week period (Ref 14). There is therefore substantial alternative foraging habitat and the possibility for dreys to be present in areas unaffected by works. The loss of up to nine potential red squirrel dreys and approximately 172.4 ha of woodland habitat is therefore considered to be a High magnitude impact.

6.5.90 In addition to the live sightings of red squirrel, three dead individuals were recorded on the B852 road near to Compound 2 and the inlet / outlet structure on Loch Ness. It is predicted in a worst case scenario that the number of vehicles using this road will increase to, on average, 820 vehicles per day during the peak period of construction (see Chapter 15). Averaged across the construction phase as a whole there would be an increase of 482 vehicles per day. There is therefore an increased chance of red squirrel mortality in this area as a result. As there are no other locations with substantial areas of woodland bordering both sides of a public road within the Development Site, it is considered that the risk of red squirrel mortality elsewhere is low. In addition, all construction traffic within works areas will be limited to 15 mph or slower and it is therefore unlikely that mortality of red squirrel will occur within the construction footprint. Potential mortality of red squirrel during the construction phase is therefore considered to be a Medium magnitude effect.

6.5.91 It is therefore concluded that, in the absence of mitigation the construction phase of the Development will have a **permanent Moderate Adverse effect** on red squirrels.

Operation

6.5.92 It is not considered that there will be any effects on red squirrel from the operation of the Development. It will therefore result in **Negligible effect** on this species.

Decommissioning

6.5.93 The decommissioning of the Development will not require any tree clearance activities, however, there may still be an increased chance of direct mortality due to increased traffic on the public road.

6.5.94 Decommissioning may therefore result in a **temporary Moderate Adverse effect** on red squirrel.

Great Crested Newt

6.5.95 Great crested newt has a sparse distribution in Scotland, with an isolated population in the Inverness and Moray region (Ref 39). A study of the Highland great crested newt population identified that the most important variables for occurrence within a waterbody were water quality, shore habitat and the surrounding terrestrial habitat (Ref 22). They found that mixed Scots pine and birch woodland was particularly important and that the presence of fish lowered the probability of great crested newt presence.

6.5.96 The largest waterbody sampled in the Highland great crested newt population had a surface area of 165,000 m^2 (Ref 22). This is slightly smaller than Lochan an Eoin Ruadha, which has a surface area of approximately 186,000 m^2. A waterbody of this size is much larger than is generally considered suitable for great crested newt according to a 2000 paper in *Herpetological Journal* suggest that the optimal size is around 200 – 800 m^2 (Ref 23). In addition, numerous other habitat attributes associated with Lochan an Eoin Ruadha including the presence of fish and numerous waterbirds, very limited aquatic vegetation (or, for example, fallen leaves) for egg-laying and its very rocky substrate would suggest that great crested newts would probably be likely absent. However, this was the only waterbody which tested positive for the presence of great crested newt eDNA. All of the other waterbodies within 250 m of the Development (except Loch Ashie which was considered unsuitable) were assessed as being of low suitability for great crested newt and all tested negative for the presence of great crested newt eDNA.

6.5.97 The majority of the woodland surrounding Lochan an Eoin Ruadha is commercial plantation, however, an area on the western side comprises mixed semi-natural broadleaved woodland with some conifers, which represents optimal terrestrial habitat for great crested newt.

Construction

6.5.98 Lochan an Eoin Ruadha will not be directly affected by the Development and none of the woodland surrounding the waterbody, including the semi-natural broadleaved habitat, will be impacted upon.

6.5.99 It is therefore concluded that there will be Low magnitude effect on great crested newt and that this will result in a **Negligible effect** overall on the species during the construction phase of the Development.

Operation

6.5.100 There will be no impacts on great crested newt during the operation of the Development, resulting in **Negligible effect** on the species.

Decommissioning

6.5.101 Decommissioning will not impact upon any great crested newt habitat and will have **Negligible effect** on the species.

Reptiles

6.5.102 The common or viviparous lizard is widely distributed across Scotland and occupies a range of habitats including wet and dry heath, grassland, woodland and scrub. Common lizard avoid areas of uniform vegetation, whether this be rank, or short sward improved grassland, and show a strong preference for areas with variation in the height of plant cover. They can be found at highest densities in damp or wet areas where tussocky grass provides opportunities for foraging, basking and sheltering. In northern Scotland the activity period for common lizard is typically between March and October. They do not usually move far and individuals occupy an area of only a few tens of metres. Longer distance movements can be made by juveniles as they disperse and in doing so they can rapidly colonise new habitat should it become available adjacent to a currently-occupied site.

Construction

6.5.103 A total of 23 common lizards were recorded during field survey. Of these, only five were adults and the rest were all juveniles, indicating a breeding population. In total, ten of the reptiles recorded were found within an area which will be directly impacted upon by the Development, and all of these were at the proposed location of the Headpond. Construction of this element of the Development infrastructure will therefore result in the permanent loss of habitat which supports a moderate breeding population of common lizard and this is assessed as representing a High magnitude effect.

6.5.104 There is the potential for common lizard elsewhere within the footprint of construction to be killed by moving vehicles and plant. However, based on the lack of evidence of this species in all construction areas where survey was conducted (other than the Headpond), this is considered to be unlikely and is assessed as representing a Low magnitude effect.

6.5.105 Similarly, there is the potential for disturbance to common lizard during the construction phase, including as a result of vibration caused by blasting at the Headpond. However, based on the lack of evidence of this species within most works areas, and the relatively low suitability of the woodland habitat surrounding the Headpond area, this will lead to a Low magnitude effect.

6.5.106 It is therefore concluded that the loss of habitat caused by the construction of the Headpond will result in a **permanent Minor Adverse effect** on common lizard.

Operation

6.5.107 Although there will be an element of permanent habitat loss due to the construction of the Headpond where this comprises open water, the embankments will establish to become suitable for common lizard and other reptiles. The sloping embankments which will be managed to prevent encroachment by trees will likely provide optimal conditions for reptile basking and foraging. This therefore represents a low but beneficial magnitude impact.

6.5.108 There are no other impacts predicted during the operation of the Development and it is considered that this stage will have **Negligible effect** on common lizard or other reptiles.

Decommissioning

6.5.109 It is likely that the embankment of the Headpond will establish to become highly suitable habitat for common lizard and other reptiles. The decommissioning of the Development will involve the draining of the Headpond but the embankments will be retained. This is will have a Low magnitude effect on reptiles which may be subject to very minor disturbance. All other effects will be as described for the construction phase, with the exception of habitat loss. It is therefore concluded that decommissioning would result in a **Negligible effect** on reptiles.

Butterflies, Dragonflies and Damselflies

Construction

6.5.110 As set out in Table 6.10, with the exception of small pearl-bordered fritillary, all species of butterfly, dragonfly and damselfly recorded during field survey have been assigned Low (Local) nature conservation importance. This is because even those species which are considered to be of conservation concern through their presence on the SBL and/or Inverness and Nairn LBAP are common and widespread in Scotland. The majority of dragonfly and damselfly observations on Site were made in wetland areas, in particular the swamp at Glaic na Ceardaich. These will generally be unaffected by the Development. There may be some disturbance to the area referred to as Dirr Wood Pond (see Great Crested Newt Survey Figure 6.4, Volume 3, which clearly illustrated the location of this water body) as a result of tree felling around this wetland but this impact will be temporary and is considered to be of Low magnitude.

6.5.111 Scotch argus and speckled wood were both present within the proposed Headpond area and in the plantation woodland which will be felled during the construction phase of the Development. The Headpond area will be temporarily lost to these species during construction and until such time as it has been reinstated, which may be up to five years following commencement of construction. Furthermore, the open water of the Headpond will not be of use for foraging or egg laying and therefore represents a permanent loss of habitat. Both species have relatively flexible habitat requirements, as indicated by their occurrence in a variety of habitat types within the survey area, including open blanket bog / wet heath, and within woodland. Therefore the felling of woodland habitat is likely to lead only to temporary disturbance and following these works it is expected that they will still be of use to Scotch argus, speckled wood and other butterflies. The permanent loss of habitat in the area covered by the Headpond and the temporary loss of other habitat used by butterflies, dragonflies and damselflies is therefore considered to be a High magnitude effect.

6.5.112 The generation of dust or other pollution during the construction phase may lead to vegetation becoming unsuitable for butterflies, dragonflies and damselflies. In addition, pollution events could lead to contamination of the wetland areas which support the highest numbers and diversity of dragonflies and damselflies. This would represent a High magnitude effect.

6.5.113 Small pearl-bordered fritillary, which is a species of principal importance under the SBL, has been assessed as being of Medium (Regional) ecological importance. A small population of this species found near the southern end of the proposed Headpond location will be lost as a result of its construction. Small pearl-bordered fritillary records away from this location were predominantly restricted to flushes, which are optimal habitat for this species. These will not be directly affected by the Development. In addition, there are likely to be numerous examples of this habitat within the wider area around the Development but which were not included in the field survey. The loss of the population of small pearl-bordered fritillary at the Headpond location is considered to be a High magnitude impact.

6.5.114 With a high magnitude effect predicted on butterflies, dragonflies and damselflies, which are assessed as being of Low ecological importance at a Local scale, the construction phase of the Development will have result in a **Minor Adverse effect**, in the absence of mitigation. This will be predominantly temporary but will result in the permanent loss of habitat to the Headpond area. As an exception, small pearl-bordered fritillary is considered to be of

Medium ecological importance and the impacts on this species from construction will be of high magnitude. This will therefore result in a **temporary and permanent Moderate Adverse effects** on small pearl-bordered fritillary.

Operation

6.5.115 Although there will be an element of permanent habitat loss due to the construction of the Headpond where this comprises open water, it is likely that the embankment of the Headpond will establish to become suitable habitat for a range of butterfly species and, to a lesser extent, dragonflies and damselflies. This therefore represents a low but beneficial magnitude impact.

6.5.116 There are no impacts predicted during the operation of the Development and it is considered that this stage will have **Negligible effect** on butterflies, dragonflies and damselflies.

Decommissioning

6.5.117 The embankments of the Headpond are likely to be suitable for butterfly species by the time of decommissioning. The decommissioning of the Development will involve the draining of the Headpond but the embankments will be retained. This is therefore a Low magnitude effect to these species which may subject to minor disturbance. All other impacts will be as described for the construction phase, with the exception of habitat loss. It is therefore concluded that decommissioning would result in a **Negligible effect** on butterflies, dragonflies and damselflies.

Invasive Non-native Species

Construction

6.5.118 Rhododendron is present as small, scattered bushes in a small number of locations in the semi-natural broadleaved woodland near to Loch Ness. Where rhododendron is present within the footprint of tree felling and construction, it will be necessary to implement standard control measures to prevent its spread and to comply with the legislative requirements of the WANE Act. Given the small amount of rhododendron present and the simple measures necessary to manage this species, it is considered to present a Low magnitude of effect (which in the case of this invasive non-native species means that its presence in the area of the Development will result in a low level of effect on native biodiversity). The presence of rhododendron is therefore assessed as having **Negligible effect.**

6.5.119 Sika deer appear to be common within the red line boundary. The felling of woodland habitat may lead to displacement of some animals into the wider landscape. This species requires woodland for cover and is believed to be less able to adapt to treeless conditions than red deer *Cervus elaphus* (Ref 14). Any displacement is likely to lead to animals entering other areas of woodland, including potentially the areas of ancient semi-natural broadleaves. This could lead to increased grazing pressure in these areas and could lead to a High magnitude effect on the diversity of ground flora.

6.5.120 In the absence of mitigation, therefore the construction phase of the Development is predicted to result in a **permanent Minor Adverse effect** due to displacement of sika deer.

Operation

6.5.121 The operation of the Development is not expected to lead to any impacts upon or because of invasive non-native species, resulting in **Negligible** effect in relation to these ecological features.

Decommissioning

6.5.122 It is possible that invasive non-native species may have increased their distribution and those currently recorded on Site may be present in the vicinity of infrastructure. Furthermore, new species not currently identified on Site may have become established. Decommissioning of the Development could lead to negative effects in relation to these species, including causing their spread. Assuming that the invasive non-native species present at the time of decommissioning are still considered to be of Local importance and the magnitude of impacts were High, this would represent a **permanent Minor Adverse effect**. It is however possible that the species of concern may be of greater importance or lead to higher magnitude impacts and this would consequently increase the significance of effect.

6.6 Cumulative Effects

6.6.1 A total of seven developments were identified at the Scoping stage of the Development which could result in inter-relationship effects. These developments are described in Table 4.8 in Chapter 4. Of these, only three are considered to have any potential to lead to cumulative ornithological effects with the Development, as described in Table 6.11 below.

Table 6.11 Developments Which Could Result in Inter-relationship Effects

Development	Description	Distance from Site	Status	Start Date
Scottish Water Underground Water Main	New underground water main to be constructed from Dores to Loch Ashie treatment works.	1.2 km north-north-west	No application submitted	Unknown
Tulloch Homes	Construction of 446 new homes on the south side of Inverness	11.4 km north-north-east	Application permitted	Unknown
Coire Glas Pumped Storage Hydro Scheme	Revised application for 1,500 megawatt pumped storage hydro scheme	53 km south-west	Under consideration	2021

6.6.2 It is not considered that there is any possibility of cumulative effects on ecological features as a result of the Tulloch Homes or Coire Glas proposals as they are both situated more than 10 km from the Development.

6.6.3 Scottish Water proposes to install a new underground pipeline between Loch Ness, near to Dores, and a treatment works at the northern end of Loch Ashie. It is not currently known precisely when works associated with this development will take place. However it is currently understood that the programme for this development is for the pipeline to have been installed prior to the commencement of construction of this Development. Therefore, assuming there is no overlapping construction period between the two schemes, there is no potential for cumulative effects on ecological features.

6.6.4 Intra-relationship effects arising through the Development are not considered further here as the approach to this chapter has been to consider all possible effects on individual ecological features. However, and as described in more detail in the following section, a holistic approach to mitigating the potential effects of the Development has been taken. A Landscape and Ecological Management Plan (LEMP) will be produced, combining all mitigation and enhancement measures for important landscape, ecological and ornithological features. This will seek to achieve maximum benefit to ecological features by ensuring that measures implemented primarily to mitigate other effects (e.g. woodland

planted to screen elements of infrastructure) are designed in such a way as to provide mitigation and/or enhancement for protected and/or notable habitats and species.

6.7 Mitigation and Monitoring

Embedded Mitigation

6.7.1 The design of the Development has sought to minimise its effects on ecological features. Wherever possible, the design has evolved to avoid important ecological features identified during the EIA process. As a result, the major ecological effects of the Development have been removed through the application of 'avoidance' mitigation, as follows:

- An initial option for the design of the Development was to drain both Loch na Curra and Lochan an Eoin Ruadha and to construct a single Headpond across the area between and surrounding these two waterbodies. This would have resulted in the loss of several notable habitats, including blanket bog and swamp. In addition, Lochan an Eoin Ruadha was also found to contain great crested newt eDNA. Impacts on these ecological features have now been avoided by the proposed siting of the Headpond. Although part of the proposed Headpond location comprises blanket bog, this is dry and of relatively low quality when compared to that surrounding Loch na Curra and Lochan an Eoin Ruadha;
- It was initially proposed to store material generated during the excavation of the Headpond and tunnels on the semi-natural broadleaved and juniper-containing heath habitats at Glaic na Ceardaich. This may also have involved the loss of swamp habitat which supports a diversity of dragonfly and damselfly species. This has now been avoided by the proposal to use material generated during excavations to create the Landscape Embankment area upon which native broadleaved trees will be planted, immediately adjacent to the Headpond location;
- Although restricted by the steepness of the slopes down to Loch Ness and the engineering constraints this poses, the route of the temporary access track between Compound 1 and 2 has been selected to minimise the amount of ancient semi-natural broadleaved woodland which will be lost;
- The only permanent access road to be retained during the operational phase of the Development uses an existing track, thereby removing the requirement for further habitat loss and/or disturbance; and
- The proposed compound locations have been sited in areas of relatively low ecological value, including agricultural grassland (Compound 3) and on clear felled plantation forestry (Compound 1).

6.7.2 The implementation of ecological mitigation measures with regard to reinstatement and enhancement will be secured by the preparation of a Landscape and Ecological Management Plan. This document will be produced prior to construction and must be reviewed and approved by relevant statutory consultees including SNH and The Highland Council. The LEMP will describe in detail the ecological mitigation measures which are required to minimise the effects of the Development.

6.7.3 The Landscape Embankment will cover a total area of approximately 25 ha. It will be planted with a range of native broadleaved and coniferous tree species, reflecting the natural mix of species currently present on Site. It will be designed with cognisance of the ecological features for which adverse effects are predicted from the Development as follows:

- When trees are of sufficient age / size to be able to support such structures, a minimum of two pine marten den boxes will be installed;
- At least one artificial reptile hibernation refuge and one reptile basking bank will be constructed, following the design guidance provided in the *Reptile Habitat Management Handbook* (Ref 11); and
- Open areas / glades will be left to create habitat diversity which benefits reptile and butterfly species.

6.7.4 The Construction Environmental Management Plan (CEMP) outlines the standard measures which will be implemented during the construction phase across a variety of topics and also as standard good housekeeping. A range of other standard mitigation measures will be implemented to minimise the ecological effects of the Development. These are all well-developed and have been successfully adopted on infrastructure projects across the country and there is a high confidence in their success. These include:

- Construction of the Development is expected to commence in 2020 by which time the precise locations of protected species resting sites may have changed. A pre-construction survey for protected species within 100 m of the Development will therefore be carried out, including all areas of woodland which are to be felled or thinned. This will be completed not more than six months prior to commencement of construction. The results of the pre-construction survey will be reported and communicated to the appointed Construction Contractor.
- All Site personnel involved in the construction, operation and decommissioning of the Development will be made aware of the ecological features at the Development Site and the mitigation measures and working procedures which must be adopted. This will be achieved as part of the Site induction process through the delivery of a Toolbox Talk. In addition, as required, briefings will be provided to all Site personnel in advance of works which are considered to present an increased risk of impacting upon ecological features (e.g. where tree felling requires the destruction (under licence) of a red squirrel drey).
- An Ecological Clerk of Works (ECoW) will be employed on a full-time basis for the duration of the construction of the Development. The ECoW will be responsible for monitoring and ensuring the implementation of all mitigation measures and compliance with legislative requirements in relation to ecological features. The ECoW will also carry out pre-works checks for protected and/or notable species and provide other ecological advice as appropriate.

Additional Mitigation, Compensation and Enhancement

6.7.5 Specific mitigation measures will also be implemented to minimise the significant effects on the important ecological features identified by this assessment. Note that although mitigation is not required where effects are not considered to be significant (i.e. they have been assessed as being either minor or negligible), in some cases measures will be implemented where these can be readily achieved and where it may lead to ecological enhancement.

6.7.6 The implementation of mitigation does not negate the requirement to comply with relevant ecological legislation applying to protected species.

Habitats

6.7.7 There will be an overall increase of 71.8 ha of native broadleaved woodland as a result of the Development Restocking Plan (this is an increase of 7.1% on the baseline area). This

will involve the planting of new woodland and changes to existing woodland by the removal of non-native species. In addition, mixed native broadleaved / conifer woodland cover will increase by 142.6 ha, a 15% increase on the baseline area. Indicative species composition is outlined in the LEMP post-consent but will include the following species:

- Scots pine;
- Juniper;
- Downy birch;
- Rowan;
- Oak;
- Hazel; and
- Aspen *Populus tremula*.

6.7.8 The above planting scheme will seek to create expanded areas of W19 juniper woodland and W17 / W18 heathy broadleaved / Scots pine woodland. Other woodland types will be created where appropriate (e.g. wet woodland types where ground conditions dictate). Planted trees will be native and of local provenance.

6.7.9 In order to create, where necessary, the heathy ground flora typical of W17 / W18, heather will be sown in the relevant planting areas. If possible, heather seed will be gathered from adjacent or nearby heaths by mechanically harvesting it from those areas, thus ensuring the most local provenance and preservation of local genetic stock.

6.7.10 Access roads will be micro-sited as far as possible to minimise damage to flushed wet heath with grass-of-parnassus. This habitat occurs in the unmanaged area north of Park farm. Areas of more species-poor and drier bracken and acid grassland will be prioritised for access track creation in this area.

6.7.11 Access roads through the ancient woodland above Loch Ness and the unmanaged area north of Park Farm will be designed to allow water to percolate under the road to maintain hydrological connectivity between each side, and hence to ensure that downslope water percolation continues in the flushed GWDTE habitats in these areas (areas of wet woodland within the ancient woodland, and flushed wet heath north of Park Farm). Where ground conditions and topography allow, a floating track construction will be used which minimises ground disturbance and helps to maintain hydrology. Where this is not possible, small pipes will be incorporated at regular intervals, and in particular in areas of obvious water flow, to ensure hydrological connectivity above and below the track.

6.7.12 Micro-siting will also be used to avoid, as far as possible, direct effects to GWDTEs as a result of the construction of the permanent compound areas.

6.7.13 Loss of the MG5 lowland meadow beside Loch Ness will be compensated by creation of similar meadow at a suitable location nearby. The precise location will be determined and included within the finalised LEMP. An appropriate MG5 seed mix will be sourced from a Scottish supplier for this purpose.

6.7.14 As the blanket bog surrounding the Development is currently in good condition (e.g. it is not significantly affected by drainage) there is little scope for compensating for the loss of GWDTE habitat by implementing restoration measures. However, through the detailed LEMP, effort will be made to establish new wetlands within areas being replanted with native woodland.

Bats

6.7.15 A total area of 172.4 ha of woodland will be felled to accommodate the Development, with the potential requirement for the removal of a smaller number of trees in areas beyond this. Two trees which were identified as supporting single soprano pipistrelles lie within areas in which felling may be required. In addition, there is the potential for further small bat roosts in areas of woodland which are to be felled but which were not subject to detailed bat survey. A total of 25 bat boxes will therefore be installed in retained mature woodland within the Development Site boundary to compensate for the potential loss of roosting habitat. The will include 20 typical summer roost models, three which are designed to be used by maternity colonies and two which are aimed at providing a suitable hibernation sites. Given the relatively small number of features identified as having suitability to be used by roosting bats and that those identified were only suitable for use by a small number of bats, the provision of these boxes will represent an enhancement to current baseline conditions.

6.7.16 Two recordings auto-identified by computer software as belonging to whiskered bats were made in two separate locations by the static bat detectors. Given the known distribution of whiskered bat in Scotland, it is considered likely that these calls are from Daubenton's bat, which has similar call characteristics. However, because certain parameters of the call strongly match those of whiskered bat and because the habitat on Site is highly suitable for this species, further survey to establish the potential presence of this species will be conducted. This will involve a period of bat trapping to identify individuals in the hand. Should any whiskered bats be caught, they would be fitted with a radio tag and tracked to try and establish the location of a roost site.

Badger

6.7.17 Effects on badger will not be significant and therefore no specific mitigation is required.

6.7.18 However, to minimise the likelihood of badger mortality due to increased traffic on public roads during the construction phase, a 20 mph speed limit will be applied to all construction traffic using the Access Tracks within the Development Site boundary. This is expected to substantially reduce the risk of collision mortality.

6.7.19 The overall increase of approximately 214.4 ha of native broadleaved and mixed native woodland represents ecological enhancement for badger compared to the existing plantation woodland.

Pine Marten

6.7.20 The loss of approximately 172.4 ha of woodland which supports foraging and commuting pine marten will be mitigated by the net increase of 214.4 ha of native broadleaved and mixed native woodland. This will not be of significant value to pine marten in the short-term but will be sufficiently established so as to provide substantial cover for this species after 10 – 15 years. Once established this native mixed woodland will likely be of higher value to pine marten than the current plantation woodland through the incorporation of a range of species which provide foraging resource for the species (e.g. berry producing trees and shrubs such as elder).

6.7.21 In addition, as further mitigation for the loss of woodland habitat as a foraging, commuting and potential shelter resource, pine marten den boxes will be installed at suitable locations within the semi-natural broadleaved woodland near to Loch Ness and within the retained coniferous plantation woodland. Croose *et al* (2016) studied uptake of pine marten den boxes in southern Scotland and found that these were readily occupied by pine martens and were used for breeding and rearing of young, concluding that their provision was likely to

contribute to pine marten breeding success and over-winter survival. They recommend that at least one den box should be provided within a pine marten territory and that in commercial conifer forest this is likely to equate to 1 – 2 boxes per 2 km^2. A total of two boxes will therefore be installed.

6.7.22 To minimise the likelihood of pine marten mortality due to increased traffic on public roads during the construction phase, a 20 mph speed limit will be applied to all construction traffic on Access Tracks within the Development Site Boundary and a 30 mph speed limit will be applied to all construction traffic using the highway. This is expected to substantially reduce the risk of collision mortality.

Red Squirrel

6.7.23 Field survey identified a total of nine dreys which will be destroyed as a result of tree felling during the construction phase of the Development. Pre-construction checks should be carried out near to the time of felling to search for the presence of red squirrel dreys as the locations of these structures are liable to change over time. Wherever possible, tree felling within 50 m of dreys will take place outside of the red squirrel breeding season between October – January, inclusive. Prior to felling, all dreys will be monitored to confirm whether they are occupied and to establish their breeding status. If a drey is considered to be occupied but not being used for breeding, the tree would be climbed by a qualified ecologist and the drey carefully inspected for the presence of red squirrel. Any animals present will likely leave the drey on approach of the tree climber. Once the ecologist is satisfied that the drey is empty, the tree will be felled. Felling will not be permitted in any case where it is suspected that a drey is being used for breeding purposes. Such locations will be monitored until it is considered that breeding is over, at which point the tree will be climbed and the drey inspected to confirm this to be the case. All felling of trees containing red squirrel dreys will be done under licence issued by SNH. Similarly, any felling or construction works which are required within 50 m of a drey which will be retained must also be carried out under licence to permit the potential disturbance of that ecological feature.

6.7.24 As mitigation for the loss of woodland during construction, 214.4 ha of native broadleaved and mixed native woodland will be established across the Development Site. Although red squirrel occupy both conifer and broadleaved woodlands, in the absence of grey squirrel, broadleaved woodland represents optimal habitat for the species. Broadleaved species such as hazel provide an abundant food resource for red squirrel and the increase in area of this type of woodland is likely to benefit red squirrel in the medium-term.

6.7.25 Several red squirrels were recorded dead on the B852 road, presumably as a result of collision with vehicles. As mitigation for this and the increase in vehicles which will occur along this road during the construction phase, a squirrel rope bridge will be installed across this road. This will be situated to the north of Compound 2, to mitigate for traffic coming from the direction of Inverness. This will be retained as a permanent feature following the completion of construction and will serve as an enhancement measure for red squirrels.

Reptiles

6.7.26 At least one artificial reptile hibernation refuge and one reptile basking bank will be constructed within the Landscape Embankment to mitigate for the permanent loss of reptile habitat within the footprint of the Headpond.

Butterflies, Dragonflies and Damselflies

6.7.27 As mitigation for loss of habitat, the embankment of the new Headpond will be reinstated with earth following the completion of construction and this will be seeded with a mixture of plant species. The species selected will be appropriate for the location and underlying soil conditions (which are likely to be well-drained and therefore quite dry) but will be selected, as far as possible, to benefit the butterflies present at the Development Site. Species which will make up the seed mix will include heather, red fescue *Festuca rubra* agg., devil's-bit scabious and common dog violet, all of which are important egg-laying or food plants.

6.7.28 The Landscape Embankment will be replanted with native tree species. However, planting of this area will give consideration to butterflies, dragonflies and damselflies and will include habitat features for the benefit of these species. This will include the provision open clearings and glades within the woodland and the creation of new wetland areas. These could include areas of marshy grassland, suitable for species including small pearl-bordered fritillary, in addition to small ponds which should be of sufficient depth to avoid drying out, making them suitable for dragonflies and damselflies.

Invasive Non-native Species

6.7.29 A Biosecurity Management Plan (BMP) will be prepared prior to the commencement of construction and must be reviewed and approved by SEPA and THC. The BMP will be informed by a pre-construction survey for rhododendron to accurately map all locations in which this species occurs. The BMP will set out in detail the construction methods to be adopted to ensure that this species is not spread by the Development.

6.7.30 To prevent the influx of sika deer and to provide a form of ecological enhancement, a deer fence will be installed around the ancient semi-natural woodland on Site. In addition, control of those deer within the woodland will also be undertaken to ensure that individuals are not left within the exclosure. Installation of the deer fence should take place during the early stages of construction and will be retained as a permanent feature. Much of the ground flora within the woodland has been suppressed by over-grazing and the exclusion of sika deer (and other deer species) would likely lead to increased floral diversity and would represent ecological enhancement.

6.7.31 Prior to decommissioning of the Development a full survey for the presence of invasive non-native species would be carried out. Based on the results of this survey a decommissioning, a Biosecurity Management Plan would be prepared detailing the measures for control of those species identified as presenting an ecological risk.

6.8 Residual Effects

6.8.1 The potential effects of the Development during the construction, operation and decommissioning phases are summarised in Tables 6.12 – 6.14, respectively. The specific mitigation measures proposed to minimise the identified effects are outlined in these tables and the residual, post-mitigation effect is assessed.

6.8.2 For the purposes of this assessment, only effects which are judged as Moderate or Major are considered to be significant. On this basis, the only significant effects predicted on ecological features in the absence of mitigation were:

- The loss of ancient semi-natural woodland habitat;
- The loss of a small area of unimproved neutral grassland at Compound 2;
- The potential disturbance and/or loss of two trees which support single roosting bats;
- The loss of woodland habitat used by foraging and commuting pine marten;

- The loss of nine potential red squirrel dreys;
- The loss of woodland habitat which supports red squirrels; and
- Effects on small pearl-bordered fritillary, including the permanent and temporary loss of habitat and the potential degradation of habitat.

6.8.3 However, with the implementation of mitigation, as described above and summarised in Tables 6.12 – 6.14, the single remaining adverse effect which is considered to be significant will be the loss of ancient semi-natural woodland habitat. In addition, two significant beneficial effects are expected as follows:

- The expansion of juniper in the area through the planting of 4.3 ha of juniper scrub on Ashie Moor, compared to the loss of up 20 bushes as a result of the construction of the Headpond; and
- The creation of mixed native woodland as part of the Forest Plan for the Development will significantly improve the habitats on Site for bat species.

6.8.4 In addition, although not assessed as significant, further biodiversity benefit will be achieved by:

- Providing 25 bat boxes, including types designed for breeding and hibernating purposes;
- The provision of a red squirrel rope bridge over the B852 to mitigate for the increase in traffic during construction will represent an enhancement measure during the operational phase by reducing the risk of collision mortality with regular public traffic on the road; and
- The control of herbivores, including the non-native sika deer, will reduce browsing pressure within the ancient semi-natural broadleaved woodland and help to improve plant diversity.

Table 6.12 Summary of Assessment for Construction Phase

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Creag nan Clag SSSI	No potential for effects from deterioration in air quality as a result of increased traffic during construction.	Negligible	None required.	N/A	Not Significant
	No potential for dust generated during construction to have an effect on notified lichen species.	Negligible	None required.	Negligible	Not Significant
Ancient semi-natural broadleaved woodland	Construction will involve the loss of approximately 8.7 ha of semi-natural ancient woodland. This represents approximately 7.25% of the total 120 ha within the Development Site boundary. In addition, felling and construction in this area may result in the loss of some bird's-nest-orchids, a species which is highly localised in Scotland.	Permanent Moderate Adverse	The temporary access track through the semi-natural ancient woodland will be reinstated on completion of construction works by replanting with native tree species. In addition, a mix of native broadleaves will be planted on the Landscape Embankment, covering an area of 33.6 ha. However, as it can take hundreds of years for newly planted forest to acquire the diversity of ancient semi-natural woodland, the residual effect is still considered to be permanent in this assessment.	Permanent Moderate Adverse	Significant
Long-established woodland of plantation origin with Scots pine	Approximately 110.2 ha of the long-established conifer plantation within the boundary of the Development Site will be clear felled to accommodate the Headpond and compounds. A further 24.5 ha will be thinned.	Permanent Minor Adverse	The Development Restocking Plan will result in the overall expansion of mixed native woodland, with an increase of 142.6 ha of this forest type. To recover the W18 habitat which will be lost, a range of tree species will be incorporated including rowan, birch and oak. It is anticipated that this woodland will re-establish to a condition similar to the current baseline within a reasonable timeframe.	Temporary Minor Adverse	Not Significant
Other semi-natural broadleaved and semi-natural broadleaved woodland	There will be no effects on the large woodland extent at Glaic na Ceardaich and effects on other woodland involve trees which are small and of immature age.	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Vegetation containing frequent juniper	Construction of the Headpond will result in the loss of up to 20 juniper bushes. This compares to an estimated 1,000 bushes in the wider area which will not be affected by the Development.	Permanent Minor Adverse	Approximately 4.3ha of W19 juniper woodland will be planted, primarily in suitable areas on Ashie Moor where this species is already present. Juniper will comprise 60% of the species mix, with downy birch and rowan also planted. The provision of this additional area of juniper will represent a substantial increase on the current resource, in comparison to the small number of plants which will be lost to the Development.	Permanent Moderate Beneficial	Significant
Blanket bog	Construction of the Headpond area (and to a much lesser degree, construction of Compound 1) will result in the permanent loss of approximately 8 ha of blanket bog. This compares to approximately 15 ha within the NVC survey area, but an estimated 85 ha in the wider area including all of Ashie Moor and the blanket around and extending south of Loch na Curra and Lochan an Eoin Ruadha.	Permanent Minor Adverse	None required.	Permanent Minor Adverse	Not Significant
Basic flush and flushed wet heath	The Headpond will eliminate two small flushes that include basic flush communities. A small amount of flushed wet heath will be lost to the access track north of Park farm. In contrast, there are substantial unaffected basic flushes in the Glaic na Ceardaich area, on Ashie Moor and on the west side of Lochan an Eoin Ruadha, as well as unaffected basic flush in the area north of Park farm. Flushed wet heath is extensive in part of the area north of Park farm.	Permanent Minor Adverse	None required.	Permanent Minor Adverse	Not Significant
Dry heath, typical wet heath and oligotrophic waterbodies	Dry heath and typical wet heath habitats which will be lost to the Development are species-poor and occur widely in the surrounding area and the wider Highland region.	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Acid / neutral flush, swamp, watercourses and flushed purple moor-grass	No swamp, waterbodies or watercourses will be lost to construction. A small number of flushes will be lost to the Headpond, however these habitat types are common in the surrounding area and wider Highland region.	Negligible	None required.	Negligible	Not Significant
Unimproved neutral grassland	Construction will result in the total loss of the narrow MG5 lowland meadow at the proposed location of Compound 2	Permanent Moderate Adverse	The loss of this area will be compensated by the creation of a similar meadow in a suitable nearby location. An appropriate MG5 seed mix will be sourced.	Negligible	Not Significant
Groundwater Dependent Terrestrial Ecosystems	The main effect is the loss of small patches of flush and wet birch / willow woodland, and larger patches of fairly dry wet heath in the Headpond area. Slight loss elsewhere to access track / spillway construction.	Permanent Minor Adverse	None required, however, mitigation includes track design to permit percolation of water beneath and micro-siting of infrastructure to avoid direct effects on GWDTEs. In addition, where possible, wetlands will be established within new woodland areas.	Permanent Minor Adverse	Not Significant
Bats	None of the trees which were found to support single roosting bats are situated in areas where tree felling will definitely be required to accommodate the Development. Vibration modelling for Trees 45 and 56 shows that they are unlikely to experience significant levels of disturbance from underground tunnelling works. Tree 107 is situated in close proximity to the temporary access track and may be disturbed by construction activities.	Temporary Minor Adverse	None required (although note that disturbance can only be permitted under licence issued by SNH).	Temporary Minor Adverse	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Bats Cont.	There may be a need for some limited felling beyond those areas described above in which tree clearance is currently a confirmed requirement. This could lead to the loss of two trees which support single roosting bats.	Permanent Moderate Adverse	A total of 25 bat boxes will be installed in suitable locations across the Development Site in retained semi-natural broadleaved woodland and conifer plantation. This will include three boxes designed for use by maternity colonies and two which are suited for use by hibernating bats. Given the relatively limited opportunities for bat roosting identified on Site, and that potential roost features were only suitable for a small number of bats, the provision of bat boxes likely represents an enhancement on baseline conditions.	Permanent Minor Beneficial	Not Significant
	Clear felling of 161.7 ha of woodland and thinning in a further 24.5 ha will be undertaken. Of the total area to be felled, approximately 8.7 ha constitutes semi-natural broadleaved woodland and 153 ha plantation coniferous / coniferous and mixed broadleaved woodland. The results of the bat roost surveys indicate that potential roost features were limited primarily to mature trees within the semi-natural broadleaved woodland, with very limited opportunity for roosting available within the coniferous plantation. Therefore, based on the results of field survey and an understanding of the suitability of the habitat in the wider area, it is not expected that tree clearance will result in the loss of a significant number of bat roosts. Additionally, any roosts which may be lost are unlikely to be of high conservation importance (i.e. they are unlikely to support maternity roosts or other large numbers of bats).	Negligible	None required, however 25 bat boxes will be provided, as described above.	Permanent Minor Beneficial	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Bats Cont.	Tree felling and the loss of habitat to construction of the Headpond will affect a small number of foraging / commuting bats. However, the removal of uniform and generally straight-edged forest blocks may result in the creation of new commuting and foraging opportunities by increasing the availability of edge habitat.	Negligible	None required, however the restocking of native broadleaved and mixed native woodland will increase this forest type by 214.4 ha from the baseline area. This is likely to lead to an enhancement of on-Site habitats for bats compared to existing plantation woodland.	Permanent Moderate Beneficial	Significant
	With the exception of tunnelling, construction works associated with the Development will be limited to between 07:00 and 19:00. There is therefore very limited potential for direct disturbance to bats actively foraging or commuting as the majority of works will be limited to the time of day during which these species are resting.	Negligible	None required, however the use of lighting will be kept to a minimum and, where required, light spill to surrounding habitat will be minimised through the use of beam deflectors.	Negligible	Not Significant
Badger	The nearest identified badger setts are more than 30 m from any construction area and the risk of disturbance being caused to badgers using these shelters is low.	Negligible	None required.	Negligible	Not Significant
	The temporary loss of approximately 11.4 ha of optimal foraging habitat due to the construction of Compounds 2 and 3.	Temporary Minor Adverse	None required, however, enhancement for badger will be achieved by the planting of new mixed native broadleaved / conifer woodland.	Temporary Minor Adverse	Not Significant
	The loss of coniferous plantation woodland in which badger were recorded as being active but which presents a sub-optimal foraging resource for this species.	Negligible	None required.	Negligible	Not Significant
	The construction of the temporary access track between Compounds 2 and 3 will bisect badger territory. However, all but two disused / inactive outlier setts will be to the south of the track. In addition, construction use of the track will be predominantly during daylight hours and construction traffic will be limited to 15 mph.	Negligible	None required.	Negligible	Not Significant.

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Badger cont.	An increase in vehicular traffic during construction may potentially lead to direct mortality of badger on public roads.	Negligible	None required, implemented via Construction Traffic Management Plan.	Negligible	Not Significant
Otter	Potential for temporary watercourse crossings to impact upon otter commuting.	Negligible	None required, however, all watercourse crossings will be designed so as to be passable to otter.	Negligible	Not Significant
	Disturbance to foraging and/or commuting otter in Loch Ness during construction of inlet / outlet structure.	Negligible	None required, implemented via Construction Environment Management Plan.	Negligible	Not Significant
	With the exception of Loch Ness, no other waterbodies will be affected by the Development. Loch Ashie, which is less than 150 m from the Headpond, is screened by existing mature plantation. There is therefore very low potential for disturbance to otter using this waterbody.	Negligible	None required.	Negligible	Not Significant
	Low potential for direct mortality of otter during construction, operation and decommissioning given very low levels of otter activity on Site.	Negligible	None required.	Negligible	Not Significant
Pine marten	Loss of woodland habitat for foraging and commuting pine marten, potentially resulting in the displacement of between one and two individuals.	Permanent Moderate Adverse	Native broadleaved and mixed native woodland cover will increase by 214.4 ha from the baseline area. Once established (which is considered to take between 10 – 15 years) this is likely to be of higher value to pine marten than the current plantation woodland as a greater diversity of species will be included, providing improved foraging resource.	Temporary Minor Adverse	Not Significant
	The single pine marten shelter identified within the survey area for this species will not be directly affected by the Development. No other feature which was assessed as having suitability to shelter pine marten will be lost.	Negligible	None required, however, a total of two pine marten den boxes will be installed in semi-natural broadleaved woodland retained conifer plantation within the red line boundary as an enhancement measure.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Pine marten cont.	Potential for disturbance of foraging / commuting pine marten present in retained woodland and open habitats adjacent to construction areas.	Negligible	None required.	Negligible	Not Significant
	An increase in vehicular traffic during construction may potentially lead to direct mortality of pine marten on public roads.	Temporary Minor Adverse	None required, however to minimise risk of direct mortality a speed restriction of 30 mph will be applied to all construction traffic on public roads within the red line boundary.	Negligible	Not Significant
Red squirrel	The loss of nine red squirrel dreys and the potential for disturbance of two additional dreys.	Permanent Moderate Adverse	Felling of trees containing dreys will be undertaken outside of the red squirrel breeding season, as far as possible. All dreys which are to be destroyed must be monitored to confirm whether they are occupied and to establish their breeding status. If a drey is considered to be occupied but not being used for breeding, the tree would be climbed by a qualified ecologist and the drey carefully inspected for the presence of red squirrel. Any animals present will likely leave the drey on approach of the tree climber. Once the ecologist is satisfied that the drey is empty, the tree will be felled. Felling will not be permitted in any case where it is suspected that a drey is being used for breeding purposes. Such locations will be monitored until it is considered that breeding is over, at which point the tree will be climbed and the drey inspected to confirm this to be the case.	Permanent Minor Adverse	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Red squirrel cont.	The loss of approximately 153 ha of woodland habitat which supports red squirrel.	Permanent Moderate Adverse	Native broadleaved and mixed native woodland cover will increase by 214.4 ha from the baseline area. Once established (which is considered to take between 10 – 15 years) this is likely to be of higher value to red squirrel than the current plantation woodland as a greater diversity of species will be included, providing improved foraging resource.	Temporary Minor Adverse	Not Significant
	An increase in vehicular traffic during construction may potentially lead to direct mortality of red squirrel on the B862 road near to Compound 2.	Temporary Moderate Adverse	To minimise risk of direct mortality, a speed restriction of 30 mph will be applied to all construction traffic on public roads within the red line boundary. In addition a red squirrel rope bridge will be erected over the B852 road north of Compound 2 to reduce the risk of mortality in this area where three dead individuals were recorded during field survey.	Negligible	Not Significant
Great crested newt	Lochan an Eoin Ruadha, which tested positive for great crested newt eDNA will not be directly affected by the Development. In addition, suitable terrestrial habitat surrounding the loch will also be retained and will not be directly impacted upon during construction, operation or decommissioning.	Negligible	None required.	Negligible	Not Significant
Common lizard	Construction of the Headpond will result in the permanent loss of habitat in which ten common lizards forming part of a breeding population were identified during field survey.	Permanent Minor Adverse	At least one artificial reptile hibernation refuge and one reptile basking bank will be constructed within the Landscape Embankment to mitigate for the permanent loss of reptile habitat within the footprint of the Headpond	Negligible	Not Significant
	There is low potential for direct mortality of reptiles as a result of moving vehicles and plant in areas away from the Headpond.	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Common lizard cont.	There is the potential for disturbance to common lizard during the construction phase, including as a result of vibration caused by blasting at the Headpond.	Negligible	None required.	Negligible	Not Significant
Butterflies, Dragonflies and Damselflies (excluding small pearl-bordered fritillary)	Temporary disturbance of habitats, in particular wetland areas, during construction	Negligible	None required.	Negligible	Not Significant
	The permanent loss of habitat used by butterflies, dragonflies and damselflies during the construction of the project.	Permanent Minor Adverse	The embankment of the Headpond will be reinstated with a diversity of plant species which benefit butterfly species. In addition, the Landscape Embankment will be designed to include areas of habitat which are important to butterflies, dragonflies and damselflies, including open glades.	Negligible	Not Significant
	The temporary loss of habitat used by butterflies, dragonflies and damselflies during the construction of the Development.	Temporary Minor Adverse	None required, however standard pollution prevention measures will be implemented to avoid contamination of habitat used by butterflies, dragonflies and damselflies.	Negligible	Not Significant
	Dust generated during construction may smother vegetation used by butterflies, dragonflies and damselflies and pollution incidents may affect wetland habitats used by dragonflies and damselflies.	Temporary Minor Adverse	Standard dust management measures will be implemented in accordance with the Dust Management Plan.	Negligible	Not Significant
Small pearl-bordered fritillary	The loss of a small population of small pearl-bordered fritillary at the southern end of the Headpond location.	Permanent Moderate Adverse	The embankment of the Headpond will be reinstated with a diversity of plant species which benefit small pearl-bordered fritillary. In addition, the Landscape Embankment will be designed to include areas of habitat which are important to this species.	Temporary Minor Adverse	Not Significant
	The temporary loss of other habitat used by small pearl-bordered fritillary elsewhere on Site.	Temporary Moderate Adverse	Standard pollution prevention measures will be implemented to avoid contamination of habitat used by butterflies, dragonflies and damselflies.	Negligible	Not significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Small pearl-bordered fritillary cont.	Dust generated during construction may smother vegetation used by small pearl-bordered fritillary.	Temporary Moderate Adverse	Standard dust management measures will be implemented in accordance with the Dust Management Plan.	Negligible	Not Significant
Rhododendron	Potential for spread of this invasive non-native species from the small number of locations where it was identified.	Negligible	Standard management measures required to comply with legislative requirement to ensure that this species is not caused to spread by Development activities. Control measures will be included within an Invasive Non-native Species Risk Assessment and Management Plan.	Negligible	Not Significant
Sika deer	Potential for displacement of sika deer into retained woodland, and in particular ancient semi-natural broadleaved woodland, increasing browsing pressure on ground flora.	Temporary Minor Adverse	Deer fencing will be installed around the ancient semi-natural broadleaved woodland within the red line boundary. Deer left inside the exclosure will be controlled to reduce browsing pressure on ground flora.	Permanent Minor Beneficial	Not Significant

Table 6.13 Summary of Assessment for Operational Phase

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Bats	Security lighting at the inlet / outlet on Loch Ness will be required but this will be low level and will be directed away from the waterbody and surrounding riparian habitat so as to avoid illuminating the shoreline and water's edge.	Negligible	None required.	Negligible	Not Significant
Otter	Water velocity at the inlet / outlet structure will be below 0.15 m/s, against which an otter could swim. The Headpond will be unattractive to otter and will be fenced. There is therefore very low potential for otter to be drawn into the system.	Negligible	None required.	Negligible	Not Significant
	Security lighting will be required at the inlet / outlet on Loch Ness but this will be directed away from the waterbody.	Negligible	None required.	Negligible	Not Significant
	The Headpond will be unsuitable for fish and will not provide foraging opportunities for otter. In addition, it will be fenced and this will further prevent otter access. There is therefore low risk of otter entering the Headpond and accessing or being drawn in to the inlet / outlet structure.	Negligible	None required.	Negligible	Not Significant
Great crested newt	Lochan an Eoin Ruadha, which tested positive for great crested newt eDNA will not be directly affected by the Development. In addition, suitable terrestrial habitat surrounding the loch will also be retained and will not be directly impacted upon during construction, operation or decommissioning.	Negligible	None required.	Negligible	Not Significant
Common lizard	The Headpond embankment will establish during the operational phase to provide suitable conditions for reptile basking and foraging.	Negligible	None required.	Negligible	Not Significant
Butterflies, Dragonflies and Damselflies (excluding small pearl-bordered fritillary)	The Headpond Embankment is likely to provide optimal habitat for butterflies and, to a lesser extent, dragonflies and damselflies.	Negligible	None required.	Negligible	Not Significant
Small pearl-bordered fritillary	The Headpond embankment may provide suitable habitat for small pearl-bordered fritillary during the operational phase.	Negligible	None required.	Negligible	Not Significant

Table 6.14 Summary of Assessment for Decommissioning Phase

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Red squirrel	An increase in vehicular traffic during decommissioning may potentially lead to direct mortality of red squirrel on public roads	Temporary Moderate Adverse	None required, however, to minimise risk of direct mortality a speed restriction of 30 mph would be applied to all traffic associated with decommissioning on public roads within the red line boundary.	Negligible	Not Significant
Common lizard	The Headpond embankment is likely to provide optimal reptile habitat. Decommissioning of the Development will involve the draining of the Headpond but the embankments will be retained. Effects at this stage will therefore be limited to minor disturbance of reptiles inhabiting the embankment.	Negligible	None required.	Negligible	Not Significant
Butterflies, Dragonflies and Damselflies (excluding small pearl-bordered fritillary)	Decommissioning of the Development will involve the draining of the Headpond but the embankments will be retained. Effects at this stage will therefore be limited to minor disturbance of butterflies, damselflies and dragonflies where these species inhabit or otherwise make use of the embankment.	Negligible	None required.	Negligible	Not Significant
Small pearl-bordered fritillary	The Headpond embankment is likely to be provide optimal habitat for butterflies and, to a lesser extent, dragonflies and damselflies. Decommissioning of the Development will involve the draining of the Headpond but the embankments will be retained. Effects at this stage will therefore be limited to minor disturbance of these species where they inhabit or otherwise make use of the embankment.	Negligible	None required.	Negligible	Not significant
Invasive non-native species (general)	The distribution of invasive non-native species is likely to have changed by the time of decommissioning and those currently present on Site may be present in the vicinity of infrastructure and/or new species may have become established. There is the potential for negative impacts to native biodiversity as a result and for these species to be spread by decommissioning activities.	Permanent Minor Adverse (minimum)	Pre-decommissioning survey for invasive non-native species survey would be undertaken and a decommissioning Biosecurity Management Plan produced.	Negligible	Not Significant

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