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Red John Pumped Storage Hydro Scheme

Volume 2, Chapter 8: Ornithology

ILI (Highlands PSH) Ltd.

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Quality Information

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Revision History

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8 Ornithology

8.1 Introduction

8.1.1 This chapter assesses the ornithological impacts and effects of the Development. Where appropriate, it provides details of proportionate mitigation and / or enhancement measures. This chapter is related to ornithological features only. Chapter 6: Terrestrial Ecology describes the assessment of impacts and effects on terrestrial ecological features, while Chapter 7: Aquatic Ecology considers freshwater ecology, including aquatic invasive non-native species (INNS).

8.1.2 This chapter is supported by Figures 8.1 – 8.9 (Volume 3), and Appendix 8.1: Breeding Bird Survey Report (Volume 5). Note that certain raptor species are regarded by Scottish Natural Heritage (SNH) as sensitive species which are vulnerable to persecution, for which reason the precise locations of raptor breeding sites are contained in Confidential Appendix 8.1: Locations of Breeding Raptors (Volume 6).

8.1.3 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.

8.2 Legislation, Policy and Guidance

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

- Directive 2009/147/EC on the conservation of wild birds (the 'Birds 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 Alien 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);
- 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, Coastal and Marine (Ref 6).

8.2.2 Further details on how the legislation and biodiversity policy listed above relates to the species considered in this assessment can be found in Appendix 8.1. Further information on relevant planning policy can be found in the Planning Statement submitted as part of the Section 36 application for the Development.

8.3 Methods

Assessment Scope

8.3.1 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. AECOM's PEA Report can be found as an appendix to the Scoping Report for the Development which itself is provided in Appendix 4.2: Scoping Report (Volume 5). SNH was the only consultee to provide comments in relation to ornithological features at the Development Site, as described in Table 8.1.

Table 8.1 Consultee Responses to Scoping Report

Consultee	Recommendation	Response
SNH	Loch Ashie Special Protection Area (SPA) and Loch Ruthven SPA, which are both designated for Slavonian grebe *Podiceps auritus*, are located in close proximity to the Development and consideration should be given to potential impacts on this species.	Targeted survey for Slavonian grebe was conducted to inform the EIA. A Habitats Regulations Appraisal (HRA) Screening exercise was also carried out to identify any Likely Significant Effects (LSE) on designated sites from the Development. As it could not be concluded at the Screening stage that there would be no adverse effects on the Loch Ashie SPA and / or Loch Ruthven SPA, a detailed Appropriate Assessment was conducted. The Statement to Inform Appropriate Assessment document has been submitted as part of the Section 36 application for the Development.
	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 (with the exception of post-breeding Slavonian grebe.

8.3.2 In addition to the above, SNH was also consulted on the precise reason for the designation of Loch Ashie SPA. Although designated under Article 4.1 of the Birds Directive, the citation for the site does not reference breeding Slavonian grebe. It was confirmed by SNH via email on 08 October 2018 that the SPA designation does not include breeding Slavonian grebe and post-breeding, moulting birds are the sole qualifying feature of the site.

8.3.3 Wintering birds were excluded from the scope of assessment given that the Development Site is not known or expected to support other important non-breeding populations.

8.3.4 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 Annex I of the Birds Directive;
- All species listed on Schedule 1 of the WCA;
- Species listed on the Scottish Biodiversity List (SBL);
- All species on the Inverness and Nairn LBAP;

- All species on the Red and Amber lists of Birds of Conservation Concern (BoCC) (Ref 10); and
- Invasive non-native bird species listed on Schedule 9 of the WCA (although this no longer legally applies in Scotland) and those considered to be of European Union (EU) concern under the Invasive Alien Species Regulation.

Ornithological Impact Assessment

8.3.5 The assessment of ornithological impacts described in this chapter was conducted in accordance with the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref 6). The principal steps involved in the CIEEM approach can be summarised as:

- Ornithological 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 ornithological features is evaluated to place their relative biodiversity and nature conservation value into geographic context, and this is used to define the relevant 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 ornithological 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 ornithological 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.

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

8.3.7 CIEEM impacts 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), impact magnitude has been translated as ‘High’, ‘Medium’, ‘Low’ and ‘Negligible’, while significance of effect has been defined as ‘Major’, ‘Moderate’, ‘Minor’ or ‘Negligible’. Significance of effect can either be adverse or beneficial. Full descriptions of the definitions of impact magnitude and significance of effect can be found in Tables 4.6 and 4.7, respectively, in Chapter 4: Approach to EIA.

Desk Study

8.3.8 A desk study was carried out to identify nature conservation designations, and protected and notable 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 ornithological features 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 and notable species within 2 km of the Development Site boundary.

8.3.9 The desk study was carried out using the data sources detailed in Table 8.2.

Table 8.2 Desk Study Data Sources

Data Source	Date Accessed	Data Obtained
Highland Biological Recording Group (HBRG)	04 August 2017	• Records of protected and / or notable species within 2 km. • Non-statutory designated sites within 2 km.
Highland Raptor Study Group (HRSG)	08 August 2017 and 06 July 2018	• Records of breeding or roosting raptors 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.
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

8.3.10 The study area used for the field surveys varied according to survey type, as shown in Table 8.3. All buffer distances quoted in Table 8.3 are based around the footprint of the Development with the exclusion of the stretch of public road between the junction with the C1064 and the point where it will be diverted through Dirr Wood as works on this stretch will be limited to resurfacing only and are not expected to result in any impacts to ornithological features. The survey areas are shown on Figure 8.1.

Table 8.3 Field Survey Areas

Survey Type	Survey Area
Common Bird Census (CBC)	All areas of grassland and woodland habitat within a 100 m buffer around Development infrastructure.
Moorland breeding bird survey	All areas of blanket bog and heath habitat within a 100 m buffer around Development infrastructure.
Breeding diver and grebe survey	1 km buffer around Development infrastructure.
Black grouse lek survey	1.5 km buffer around Development infrastructure.
Breeding raptor survey area	2 km buffer around Development infrastructure.

8.3.11 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 Appendix 8.1.

8.3.12 All field survey was carried out by experienced ornithologists. All field surveyors held valid Schedule 1 survey licences issued by SNH.

Common Bird Census

8.3.13 A modified version of the Common Bird Census technique was adopted to survey all common breeding birds within the grassland and woodland habitats on-site (Ref 12). Five CBC survey visits were made between May and July 2018, inclusive. Five visits was considered an adequate survey effort, rather than the ten visits prescribed by CBC methodology, to provide a reasonable indication of the numbers of breeding birds for the purposes of determining the bird assemblage and individual species which may potentially be affected by the Development. All surveys were carried out under favourable weather conditions of light winds (below Beaufort force 5), no continuous or heavy precipitation and good visibility. Surveys were carried out as far as possible in the morning, avoiding the period of one hour after sunrise.

8.3.14 Pre-determined transect routes were walked by experienced ornithologists which allowed all parts of the survey area to be approached to within 50 – 100 m, depending upon the level of visibility afforded by the different habitat types (e.g. in the areas of semi-natural broadleaved woodland it was necessary to increase coverage when compared with open areas of grassland). Binoculars were used to scan all parts of the survey area and surveyors included regular stops to listen for singing or calling birds.

8.3.15 All of the birds observed, either by sight or sound, their locations and activity / behaviour were recorded on 1:10,000 scale Ordnance Survey (OS) field maps using standard British Trust for Ornithology (BTO) species codes and behaviour notation (Ref 12).

Moorland Breeding Bird Survey

8.3.16 Survey for breeding birds in the areas of heath and bog habitat within 100 m of infrastructure followed an adapted version the methodology for surveying upland waders (Ref 3). In line with recommendations, four survey visits were made between May and July 2018, inclusive (Ref 4).

8.3.17 Pre-determined survey routes were devised which allowed surveyors to approach all parts of the survey area to within at least 100 m. Surveyors maintained a constant speed, covering 500 m^2 quadrats in 20 – 25 minutes. The route taken to walk the moorland breeding bird survey transects was varied between survey visits. Stops were made at regular intervals to scan for birds and to listen for song and calls. Surveys were carried out between 08:00 and 18:00 (and on one occasion until 21:00 to record evening activity, in particular by waders such as curlew *Numenius arquata*). Surveys were conducted in favourable weather conditions and were not carried out during persistent rainfall or in winds exceeding approximately Beaufort force 4.

8.3.18 All bird species encountered were recorded and mapped on to a 1:10,000 scale OS field map using standard BTO notation, including a description of activity / behaviour. Where necessary, additional field notes were taken.

Breeding Diver and Slavonian Grebe Survey

8.3.19 Targeted searches were conducted for breeding red-throated diver *Gavia stellata*, black-throated diver *Gavia arctica* and Slavonian grebe. The surveys were designed following the

species-specific guidelines (Ref 12). Two survey visits were made, one in late-May / early-June and one in July 2018.

8.3.20 All waterbodies within 1 km of the proposed above-ground infrastructure were searched for the presence of divers and Slavonian grebe. Viewing was initially done from a distance using telescope and binoculars to scan the surface of the water and the shoreline. In instances where no birds were observed on a waterbody, surveyors slowly approached and once satisfied that divers and / or grebes were absent, walked the entire perimeter to look for empty nest scrapes or signs that birds may have attempted to breed but had failed (e.g. broken eggshells or dead chicks). Any other notes of relevance, including the presence of disturbance sources and / or evidence of predators such as otter *Lutra lutra* and grey heron *Ardea cinerea* were also recorded.

8.3.21 If any divers or grebes were detected on a waterbody, their behaviour was observed, taking particular note of evidence that breeding may take place such as birds displaying, copulating or going ashore.

8.3.22 As no breeding was suspected on any waterbody within the search area, no further survey was conducted to monitor breeding success.

8.3.23 No field survey was conducted for post-breeding Slavonian grebe on Loch Ashie as sufficient information on the numbers of birds which use the loch is available from the SPA citation for this designated site. Furthermore, with the aim of applying the precautionary principle to the assessment of effects, a worst case scenario will be assumed, this being that the maximum number of birds stated as being present during the autumn moult period (60 according to the SPA citation, although a peak count of 42 birds in 1992)) all occur near the southern shore of Loch Ashie (Ref 11).

Black Grouse Lek Survey

8.3.24 Survey for lekking (displaying) black grouse *Tetrao tetrix* followed the methods described for this species (Ref 12).

8.3.25 A preliminary survey visit was made to search for areas of habitat which could be used by lekking black grouse, including areas of woodland / moorland edge and openings within woodland. This survey was carried out on 11 April 2018 and all areas of suitable (and unsuitable) black grouse lek habitat were noted.

8.3.26 Three subsequent surveys were made on 18 April, 04 May and 10 May 2018 to search for lekking individuals in the areas of suitable habitat identified by the preliminary assessment. Surveys were conducted in dry and calm weather and commenced one hour before dawn and continued until at least one hour after sunrise. Surveyors walked slowly, listening for lekking black grouse and scanning from suitable vantage point locations with binoculars. Where a lek was found, the number of males present was recorded, in addition to any females observed.

Breeding Raptor Survey

8.3.27 Survey for breeding raptor species listed on Annex I of the Birds Directive and / or Schedule 1 of the WCA was carried out in all areas of suitable habitat within 2 km of infrastructure associated with the Development. A total of four survey visits were made between April and July 2018, inclusive. Surveys were carried out under favourable weather conditions, in particular avoiding persistent heavy rainfall.

8.3.28 During the preliminary visits all habitat within the survey area which could be suitable for nesting by raptor species (e.g. areas of deep heather, rocky crags or other areas of dense

vegetation) were searched for signs of occupancy. This involved a walkover of the survey area, with short vantage point watches being made from suitable locations to observe birds and any behaviour indicative of breeding (e.g. displaying, alarm calling etc.). All raptor species encountered were recorded and mapped on to 1:25,000 scale OS maps. Any suspected or confirmed nest sites were also described and accurately mapped.

8.3.29 During subsequent survey visits, the species-specific methodologies were used to target areas in which raptors had been previously encountered (including during the course of other field survey) to establish and monitor the breeding success of those birds where nesting was suspected or confirmed (Ref 13). Extended vantage point watches were made from a suitable distance so as to avoid disturbance. Observations of activity and behaviour were made and the numbers of chicks / fledged birds noted where possible.

Territory Analysis

8.3.30 Although they involve slightly different methodologies, the results of CBC and moorland breeding bird survey provide comparable information relating to the presence of birds on-site. The results of both surveys were therefore combined to determine breeding activity and to estimate territorial locations of protected and notable species. On this basis, species on the Green list of Birds of Conservation Concern were excluded from territory analysis, except in those few cases where a Green-listed passerine species is nevertheless listed on Schedule 1 of the WCA. Furthermore, although they qualify as being notable through their listing on the SBL or Amber list of BoCC, or by being Priority Species of the Inverness and Nairn LBAP, the following species were excluded from territory analysis on the basis that they are all very common and widespread and were abundant across the survey area:

- Dunnock *Prunella modularis*;
- Meadow pipit *Anthus pratensis*
- Siskin *Carduelis spinus*;
- Skylark *Alauda arvensis*; and
- Willow warbler *Phylloscopus trochilus.*

8.3.31 ArcGIS 10.5.1 software was used to digitise and collate all observations made during the CBC and moorland breeding bird survey visits. One or more records of territorial behaviour (e.g. singing, displaying or alarming, or the finding of nests or dependent young) were assumed to indicate a possible or probable occupied territory in accordance with BTO evidence codes. In line with the methodology, simultaneous registrations of waders were used to identify different territories (Ref 4). Where this was not possible, a distance of 500 m between observations of the same species made on the same survey visit was assumed to indicate birds occupying different territories. This distance was increased to 1,000 m for observations made on different visits. For passerines, obvious clusters of records were used to help identify breeding territories, taking into consideration the relevant ecologies of the species in question and using professional judgement.

Limitations and Assumptions

8.3.32 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.

8.3.33 The likelihood of deviations from the ecological baseline reported here increases with further 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 the time of construction.

8.3.34 No nocturnal surveys were carried out during the breeding season surveys and this could potentially lead to an underestimation of the activity of some species, including short-eared owls *Asio flammeus* and waders. However, short-eared owl was not recorded at any time during the breeding survey programme and this species can be active during daylight hours, particularly during the breeding season when they may be provisioning young, and this species is therefore not likely to be present.

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

8.4 Baseline Environment

Designated Sites

Statutory Designations

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

8.4.2 There are three statutory designated sites within the desk study area for which bird species are qualifying species and / or notified features. These are described in Table 8.4, listed in descending order, with those closest to the Development Site appearing first. They are also shown on Figure 2.1: The Surrounding Environment (Volume 3).

Table 8.4 Statutory Designated Sites in Proximity to the Development

Designation	Reason(s) for Designation	Relationship to the Development
Loch Ashie SPA and Site of Special Scientific Interest (SSSI)	Designated for its pre- and post-breeding population of Slavonian grebe, with the loch supporting between 30 – 60 individual birds during the autumn moult period. This makes it the most important known moult site for this species in Scotland.	Loch Ashie is situated approximately 145 m north-west of the closest point of the Headpond. There is a strip of woodland along the Development Site boundary which provides screening to the loch and which may reduce the risk of disturbance being caused to any birds present. The Headpond is located within the catchment of Loch Ashie and there is a possibility of pollutants (including silt) from construction activity reaching the waterbody. This has been subject to an Appropriate Assessment, and can be viewed in the Statement to Inform document.
Loch Ruthven SPA, Wetland of International Importance (Ramsar site) and SSSI	Loch Ruthven is designated as a SPA and Ramsar site as it supports approximately 18 % of the British population of breeding Slavonian grebe. Breeding Slavonian grebes are also a notified feature of the SSSI, in addition to the general breeding assemblage which includes fifteen species of aquatic birds.	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.

Designation	Reason(s) for Designation	Relationship to the Development
North Inverness Lochs SPA	Contains five lochans which support breeding Slavonian grebe.	The SPA is situated approximately 8.5 km west of the Development, on the opposite side of Loch Ness. Slavonian grebe do not leave the nesting loch during the breeding season and so there is no connectivity between the qualifying feature of the SPA and the Development.

Non-statutory Designations

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

General Breeding Birds

Red-listed Passerines

8.4.4 Amongst the less common and more notable of the recorded Red list bird species was spotted flycatcher Muscicapa striata, of which five assumed territories were found in the ancient broadleaved woodland above Loch Ness. An additional likely territory was also found at an opening in the conifer plantation near Ashie Moor, but otherwise this species was not found in the conifer plantation. The density of spotted flycatcher in the ancient broadleaved woodland was approximately one territory per 6 ha, and this density is likely to apply to this habitat in the wider surrounds outside of the survey area since it is similar throughout.

8.4.5 Also notable amongst the Red list species was tree pipit *Anthus trivialis*. In total 29 assumed territories were found, of which 11 were in the Headpond area in the open moorland strip along the C1064, ten in the conifer plantation along rides and other openings (including felled areas), eight in the Glaic na Ceardaich unmanaged open area (not affected by the Development), and two at the south-western edge of the survey extent (in an area also not affected by the Development).

8.4.6 One assumed territory of whinchat *Saxicola rubetra* was found in the far south of the survey extent in the wet valley near the C1064. However, this area is now unaffected by the layout of the Development.

8.4.7 Two cuckoo territories were presumed to be present within the survey area, one near to Balnafoich and one within the conifer plantation adjacent to the Headpond.

8.4.8 A total of 20 assumed territories of lesser redpoll *Acanthis cabaret* were widely dispersed across the survey extent, mainly on the higher ground and mostly in the conifer plantation or the Glaic na Ceardaich unmanaged area. Six assumed territories are in areas that are likely to be lost to the Headpond or Compounds.

8.4.9 Other recorded Red list species comprised those that, both locally and in Scotland as a whole, are widespread and not uncommon, namely: common starling *Sturnus vulgaris*, linnet *Linaria cannabina*, mistle thrush *Turdus viscivorus*, song thrush *Turdus philomelos* and yellowhammer *Emberiza citrinella*. There were 48 assumed song thrush territories recorded throughout all types of woodland, whilst seven mistle thrush territories were noted and these were all in conifer plantation. The three linnet territories were on Ashie Moor in the vicinity of gorse *Ulex europeaus*, one of their favoured nesting habitats. The two yellowhammer territories were, as would be expected, in agricultural areas in the west of the

survey area. Only one possible starling territory was noted, and this was near the horse stable by Loch Ness.

8.4.10 The locations of the assumed territories of all Red-listed passerines are shown on Figure 8.2.

Schedule 1 Passerines

8.4.11 Two Schedule 1 passerines (that are not afforded Red Amber list status) were recorded: crested tit *Parus cristatus* and crossbill *Loxia* sp.

8.4.12 Crested tit is a notable species in the UK, its breeding range being highly restricted to certain parts of the Scottish Highlands, including around Inverness. There was one record of crested tit during the bird surveys. On a precautionary basis, and since it was located in possible suitable breeding habitat in the part of the conifer plantation near Ashie Moor, this has been treated as a possible territory.

8.4.13 Crossbill was recorded on numerous occasions across the conifer plantation, both during the bird surveys and during other Site visits. Common crossbill *Loxia curvirostra* is common across Scotland, but is difficult to separate from Scottish crossbill *Loxia scotica*, which is largely confined to the Scottish Highlands, and the rarer parrot crossbill *Loxia pytyopsittacus*, confined as a breeding species also to certain parts of the Scottish Highlands including near Inverness. In total, 46 possible or probable crossbill territories were identified. Identifying crossbill territories is difficult because they nest semi-colonially, forage over significant areas, and it is often difficult to see the birds and in particular the nests. Therefore it is not known whether nests occur in the conifer plantation, but this is considered highly likely given the suitability of mature Scots pine plantation and frequency of crossbill records.

8.4.14 The location of the possible crested tit territory and all possible crossbill territories are shown on Figure 8.3 (Volume 3).

Amber List Species

8.4.15 The recorded Amber list species comprise species that, despite inclusion on the Amber list, are common and widespread in Scotland and the local area. The most notable was common redstart *Phoenicurus phoenicurus*, one territory of which was identified at the edge of the ancient broadleaved woodland above Loch Ness, and one in the conifer plantation. The other recorded Amber list species, which are all common and widespread, were: bullfinch *Pyrrhula pyrrhula*, dipper *Cinclus cinclus*, dunnock, mallard *Anas platyrhynchos*, house martin *Delichon urbicum*, red grouse *Lagopus lagopus* subsp. *scotica*, tawny owl *Strix aluco*, reed bunting *Emberiza schoeniclus* and willow warbler.

8.4.16 The territory locations of all Amber-listed species are shown on Figure 8.4 (Volume 3).

Waders

8.4.17 The highest concentration of wader territories was on Ashie Moor and adjacent agricultural fields. Two Red-listed waders were recorded here, curlew *Numenius arquata* and lapwing *Vanellus vanellus*. Excluding the distant curlew record by Loch Ashie, there were three assumed curlew territories: two on Ashie Moor and one on the agricultural fields to the west of Ashie Moor. The same agricultural fields held two assumed lapwing territories, and a third was located at the south end of Loch na Curra. The same agricultural fields also held an oystercatcher *Haematopus ostralegus* (Amber list) territory, and there were two snipe *Gallinago gallinago* (also Amber list) territories on Ashie Moor / by Loch na Curra.

8.4.18 Elsewhere, there were distant snipe territories in the Glaic na Ceardaich unmanaged area and by Loch Ashie, two oystercatcher territories beside Loch Ashie and Loch Ness, one curlew territory on moorland near Loch Ashie, and one common sandpiper *Actitis hypoleucos* territory by Loch Ness (all except the Amber-listed common sandpiper were located beyond likely disturbance).

8.4.19 The estimated territory locations for all waders are shown on Figure 8.5 (Volume 3).

Divers and Slavonian Grebe

8.4.20 A total of ten waterbodies were identified within the breeding diver and Slavonian grebe survey area, as shown on Figure 8.6 (Volume 3). The following were discounted from further survey on the basis of being unsuitable for these species:

- Ashie Lochan – this waterbody is very small and closely surrounded by dense conifer plantation. It also completely dried out during the field survey period;
- Glaic na Ceardaich Pond – this very small waterbody is situated in dense forestry and is situated close to a forestry track. It was assessed as being more like a swamp than a waterbody and there was no open water during the breeding season;
- Dirr Wood Pond – this waterbody is situated in dense plantation woodland and completely dried out during the 2018 breeding season; and
- Lochview Lochan – there was no trace of any water at this location and it is possible the waterbody may have been drained in recent years. It is very close to houses and a public road and is trampled by livestock.

8.4.21 The remaining waterbodies presented some suitability for divers and grebes, for nesting, foraging and / or displaying. A brief description of each is provided in Table 8.5.

Table 8.5 Waterbody Descriptions

Waterbody	Relationship to Development	Description of Suitability for Divers and Slavonian Grebe
Loch Ashie	Approximately 145 m north-west of the closest point of the Headpond.	The majority of the shoreline of Loch Ashie is unsuitable for divers and Slavonian grebe, being rocky and having very limited emergent vegetation. A small natural island is particularly suitable for black-throated diver nesting.
Loch na Curra	Approximately 230 m from the location where the realignment of the C1064 will commence.	This waterbody has peaty banks dominated by heather *Calluna vulgaris* but these are regularly too steep to support diver or Slavonian grebe nests. The southern end of the lochan is dominated by bottle sedge *Carex rostrata* and is suitable for nesting by divers and Slavonian grebes. A pair of red-throated divers is known to have nested in this area and successfully fledged one chick in 2017.
Lochan an Eoin Ruadha	Approximately 310 m from the closest point of the Headpond, with intervening woodland habitats.	Lochan an Eoin Ruadha is a large waterbody, with a surface area of approximately 186,000 m^2 (0.186 km^2). It likely contains a significant fish resource and divers have been recorded on this waterbody foraging on several occasions. It is generally unsuitable for nesting divers and Slavonian grebes as is it has a very rocky shoreline and is bounded extensively by dense woodland. It is also likely to be regularly used by potential predators and an otter was flushed from the bank of the loch during the diver and grebe survey on 30 May 2018.

Waterbody	Relationship to Development	Description of Suitability for Divers and Slavonian Grebe
Loch Ness	An Inlet / Outlet Structure will be constructed on the bank of Loch Ness, with associated infrastructure immediately adjacent.	An extremely large waterbody which may be used by red-throated diver, black-throated diver and Slavonian grebe (prior to or following nesting) for foraging and displaying. The shoreline within 1 km of the Development is pebbly and in places subject to high levels of human disturbance (e.g. from the nearby fish farm). It is therefore of very low suitability for nesting by divers and Slavonian grebe.
Loch Duntelchaig	Approximately 1 km south-east of the Headpond.	Loch Duntelchaig is a very large waterbody which is likely to be used by red-throated divers and black-throated divers for foraging and displaying. It is also known to be used by Slavonian grebes during the pre-breeding and post-breeding periods. The habitat within the survey area, however, is unsuitable for nesting by any of these species.
Park Pond	The nearest above-ground infrastructure associated with the Development will be the diverted public road, approximately 600 m east.	Small to medium-sized waterbody of artificial origin, having obvious linear earthworks at the south end to retain water. Much of the bank is unsuitable for nesting by divers due to the presence of dense gorse scrub, though there are small areas with banks suitable for nesting. Line of sight is constrained by topography which further reduces suitability of waterbody for nesting divers. There is very little emergent vegetation and it is therefore considered unsuitable for nesting by Slavonian grebe.

Divers

8.4.22 Red-throated divers were recorded on six occasions during the course of the bird survey programme. Observations were made of birds on Loch Duntelchaig, Lochan an Eoin Ruadha and Loch na Curra. Further details are provided in Appendix 8.1 (Volume 5).

8.4.23 A single red-throated diver nest was confirmed in 2018 on the west side of Loch na Curra. An adult bird was flushed from the nest during the diver survey on 30 May 2018 and two eggs were found to be present. The nest was surveyed again on 08 June 2018 (during a breeding raptor survey) and was found to still be occupied. However, subsequent surveys of this waterbody (including a check made during a breeding raptor survey on 05 July 2018) confirmed that the nest had failed and no second clutch was laid. The location of the red-throated diver nest is shown on Figure 8.7 (Volume 3).

8.4.24 Black-throated divers were recorded on six occasions during the course of the breeding bird survey programme. Observations were made of birds on Loch a' Chlachain (which is outside of the breeding diver survey area), Loch Ashie, Lochan an Eoin Ruadha and Loch Ness. Further details are provided in Appendix 8.1 (Volume 5).

8.4.25 Despite walking the shorelines of all waterbodies within the survey area, no evidence of black-throated diver breeding was noted and, despite suitable nesting habitat being present, it is concluded that this species did not nest within 1 km of the Development.

Slavonian Grebe

8.4.26 Slavonian grebes were observed on three occasions during the early part of the 2018 breeding season. On 9 April four individuals were recorded on Loch Duntelchaig, including two birds displaying together. A single bird was also observed during breeding raptor survey on Loch a' Chlachain on 13 April 2018 (this being beyond the 1 km search area for this species). The final observation was made during CBC survey on 03 May 2018 when a pair was recorded on Loch na Curra.

8.4.27 No further observations of Slavonian grebe were made after this date and it is concluded that no breeding occurred within the survey area.

Black Grouse

8.4.28 Black grouse were incidentally recorded on two occasions during the 2018 breeding bird survey programme. A single bird was flushed from the edge of Dirr Wood, within the footprint of the Headpond, during the preliminary black grouse habitat assessment on 11 April. A male was flushed from Drumashie Moor, near to a lek site at this location, on 08 June. In addition, although outside of the 2018 breeding season, two male black grouse were also flushed from a tree in the Headpond area on 26 September 2017.

8.4.29 Displaying black grouse were recorded on four occasions, at a minimum of three lek sites. A description of the leks is provided in Table 8.6 and their locations are shown on Figure 8.8 (Volume 3).

Table 8.6 Black Grouse Leks

Date	Location	Description
18 April 2018	Drumashie Moor	The location of this lek is approximate only. One male and two females were present. One female left heading north-east at 07:37. The second female departed flying south for 300 m at 07:41, followed by the male bird. Both were out of sight but display calls could be heard.
04 May 2018	Drumashie Moor	A single male was first seen lekking at 05:20 and was last observed at 05:45. Other black grouse droppings found nearby once the male bird had departed may have been from unseen females.
10 May 2018	South of Loch Duntelchaig	A single male was heard lekking but not seen at 06:22.
10 May 2018	Drumashie Moor	A single male was heard lekking but not seen at 07:31.

8.4.30 The lekking birds identified on Drumashie Moor on 4 May 2018 and 10 May 2018 were present in the same vicinity and, because the bird detected on 10 May 2018 was heard only and not seen, it is possible that these records relate to a single lek site.

Raptors

8.4.31 The following target raptor species (i.e. those listed on Annex I of the Birds Directive and / or Schedule 1 of the WCA) were recorded at the Development Site:

- Barn owl *Tyto alba*;
- Hen harrier *Circus cyaneus*;
- Red kite *Milvus milvus*;
- Peregrine *Falco peregrinus*; and
- Osprey *Pandion haliaetus*.

8.4.32 In addition, kestrel *Falco tinnunculus*, sparrowhawk *Accipiter nisus*, buzzard *Buteo buteo* and tawny owl *Strix aluco*, which do not receive special protection beyond that afforded to all breeding birds, were also all recorded during the breeding bird survey programme.

8.4.33 A description of the occurrence of each species listed above is provided in the following sections.

Barn Owl

8.4.34 A barn owl roost was found in a mature oak *Quercus* sp. near Ach-na-Sidhe B&B when a single bird was flushed from the tree during moorland breeding bird survey in this area on 30 May. There was no evidence that this location was used for breeding in 2018 and no barn owls were recorded during the remainder of the survey programme.

8.4.35 The location of the barn owl roost is shown on Figure 8.9 (Volume 3).

Hen Harrier

8.4.36 Hen harriers were observed on three dates during the breeding bird survey programme. The first record was an incidental sighting on 09 May 2018 of a male hunting over open moorland near Drumashie, more than 5 km north-east of the Development. A female was observed on 06 July 2018 flying high above the moorland south of Easter Erchite, approximately 2.5 km from the nearest proposed infrastructure. Finally, a male was recorded hunting over the blanket bog to the south of Loch na Curra on 18 July 2018. A 'ringtail' (a bird with the plumage of an adult female or a juvenile (although not of a recently fledged bird)) was observed displaying over forestry to the east of Ach-na-Sidhe B&B on the same date.

8.4.37 There was no other evidence to suggest that hen harrier bred within 2 km of the Development in 2018.

Red Kite

8.4.38 Red kite was first observed on 9 April 2018 when a single individual was recorded flying in a southerly direction over Ashie Moor, past Loch na Curra. A pair of red kites was also observed above suitable breeding woodland just north of Loch Ashie on 10 April 2018 and a nest which could be used by this species was identified at this location. This nest was checked on subsequent survey visits and was unoccupied during the breeding season. A single bird was observed in flight at Loch na Curra on 23 April 2018 whilst undertaking great crested newt *Triturus cristatus* survey. This bird flew in the direction of Lochan an Eoin Ruadha.

8.4.39 There was no evidence of breeding by red kite within the raptor survey area and it is concluded that this species did not nest within 2 km of the Development in 2018.

Peregrine

8.4.40 A female peregrine was recorded alarm calling from the top of a larch tree *Larix* sp. at Tor Point, west of Dores, on 9 April 2018. No further records of peregrine were made in this area during the course of the breeding raptor surveys. The only other record of peregrine within 2 km of the Development was of a single bird in flight over Loch na Curra on 5 July 2018.

8.4.41 A peregrine nest site was identified approximately 4 km from the Development and outside of the raptor survey area. The precise location of the nest is provided in Confidential Appendix 8.1 (Volume 6). Three chicks were seen to be present in the nest on 8 June 2018, and a food delivery was noted. By the time of the next survey on 5 July, fledging had occurred and two juveniles were observed in the area around the nest site. It is believed that the third chick, which was small relative to the others, did not survive to fledging.

Osprey

8.4.42 Ospreys were recorded on numerous occasions during the breeding season, flying over the Development Site and fishing on waterbodies including Loch na Curra, Lochan an Eoin Ruadha and Loch Ness.

8.4.43 Several observations were made of ospreys displaying breeding behaviour within the survey area, including individuals carrying nesting material and fish. In addition, birds were observed during the early part of the breeding season sitting in suitable nest structures in trees on Drumashie Moor, on the shore of Loch Ness north of Dores and just north of Park. However, subsequent monitoring of these locations confirmed that they were not used by osprey for breeding and no other nest sites were identified within survey area. It is therefore concluded that osprey did not nest within 2 km of the Development in 2018 but that this species regularly used the waterbodies within the survey area for foraging.

8.4.44 A single active osprey nest was identified outside of the breeding raptor survey area, approximately 4.5 km north-east of the Headpond location. Monitoring of this nest confirmed that three chicks successfully fledged. The location of the nest site is provided in Confidential Appendix 8.1 (Volume 6).

Non-target Raptor Species

8.4.45 Kestrels were recorded frequently during the 2018 breeding season and a single nest site was identified in a nest box fixed to a tree approximately 2.2 km from the Headpond. On checking this feature on 08 June, five kestrel chicks were found to be present. On 5 July this box was empty and it is assumed that at least some of the young successfully fledged. Although not considered to be a species which is particularly susceptible to persecution given that the nest box used by kestrels in 2018 could also be used by barn owl *Tyto alba*, its location is given in Confidential Appendix 8.1 (Volume 6).

8.4.46 Sparrowhawks were observed on several occasions during the 2018 breeding season and plucked kills were located across the Development Site. Breeding was not confirmed but may have taken place within the survey area. A cluster of three nests believed to belong to sparrowhawk were found in woodland just south of Park, in addition to a plucking post. Two of the nests were assessed as being old but one was more recent. There was, however, no evidence such as splashing to suggest that the more recently used nest had been occupied in 2018.

8.4.47 Buzzards were regularly encountered and observations of display behaviour were indicative of potential breeding in a number of woodland areas. However, only a single nest was confirmed at Creag nan Clag, outside of the raptor survey area. An incubating bird was observed on 08 May 2018 and observations made during the diver survey of 18 July 2018 confirmed that two young had successfully fledged.

8.4.48 Two possible tawny owl territories were found during CBC survey. Two birds were recorded, both on 31 May 2018. In one location, a bird repeatedly alarmed and in the other location, to the south, a bird was heard calling. Both encounters were made in coniferous plantation to the east of the Headpond area and are outside of the Development boundary.

8.5 Assessment of Effects

8.5.1 Relevant ornithological features are those that are considered to be ‘important’ and have the potential to be affected by the Development (Ref 6). 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, or they are species that are common and widespread and not of significant importance:

- Loch Ruthven SPA, Ramsar site and SSSI – this designated site is located 4.5 km from the Development and there is no potential for disturbance to breeding birds, including Slavonian grebe which remain on the breeding loch when nesting. In addition, there is

no hydrological connectivity between the site and the Development so there is no potential for pollution or other water-related effects;

- North Inverness Lochs SPA – Slavonian grebes remain on the breeding lochan when nesting. At 8 km from the Development, there is therefore no potential for any effects on the qualifying feature of the designation whilst breeding;
- Sites with non-statutory designation for nature conservation – there are no such sites within 2 km of the Development;
- Species on the Green list of BoCC (with the exception of red kite and the two Green-listed passerines that are listed on Schedule 1 of the Wildlife and Countryside Act) – these species are common and widespread and are therefore of low nature conservation significance. They are thus not considered to be important in the context of this impact assessment, in accordance with CIEEM guidelines;
- Those species on the BoCC Red and Amber lists that are common and widespread in Scotland and are therefore not considered important in the context of this assessment, in accordance with CIEEM guidelines; and
- Kestrel, sparrowhawk, buzzard and tawny owl – these are common and widespread species which have relatively flexible habitat requirements for nesting and foraging. No breeding by any of these species was confirmed within 2 km of the Development in 2018 (with the exception of tawny owl which is still assumed to have held territory outside of the red line boundary of the Development Site).

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

- The disturbance of protected and / or notable breeding birds while at the nest, displaying and / or foraging;
- The permanent and / or temporary loss of habitat used by protected and / or notable bird species; and
- The destruction of active bird nests.

8.5.3 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 ornithological 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 ornithological features is expected to be negligible. Decommissioning of the Development, if undertaken, may 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 ornithological 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 and Site Description.

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

Importance of Ornithological Features

8.5.5 The assessed importance of those ornithological features identified in the baseline conditions, and which have not been screened out above, is set out in Table 8.7 together with rationale. Ornithological importance has been assessed considering geographic scale (as per CIEEM guidelines) and is used in this chapter as a surrogate for 'sensitivity' as defined in Chapter 4: Approach to EIA. The approach to valuing ornithological features is described in detail in Appendix 6.7 (Volume 5).

8.5.6 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 8.7 Importance of Ornithological Features

Ornithological Feature	Importance	Rationale
Loch Ashie SPA and SSSI	Very High (International)	International nature conservation designation.
Crested tit	Medium (Regional)	Only one possible territory was identified but this is a Schedule 1 species that is highly localised both in Scotland and within the Inverness and Nairn region.
Crossbill	Low (Local)	Although listed on Schedule 1, and those crossbills present may include less common species such as Scottish crossbill as well as common crossbill, the affected conifer plantation is a very small proportion of the total amount of viable habitat across Inverness and Nairn, such that any impact on crossbills would not be significant at a Regional scale.
Notable Red-listed passerines	Medium (Regional)	There are good numbers in particular of spotted flycatcher in the ancient woodland above Loch Ness and of tree pipits on the higher ground and in the conifer plantation.
Waders	Medium (Regional)	The breeding population of curlew in the Moray Firth Natural Heritage Zone (NHZ) is estimated at 385 pairs (Ref 25). It can be assumed therefore that the Inverness and Nairn region would be similar to this number or slightly lower. The four curlew territories believed to be on-site in 2018 would therefore represent approximately 1 % of the Regional total. The presence of breeding oystercatcher, lapwing, snipe and common sandpiper means that the Development Site supports a relatively diverse assemblage of breeding waders. However, no specially-notable rarer species (such as greenshank *Tringa nebularia*) were found.
Red-throated diver	Medium (Regional)	The total breeding population estimations of red-throated diver on the Scottish mainland to be 194 pairs (Ref 9). While no estimate of numbers is available for the Highlands, the breeding population in Argyll alone has been estimated at 80 pairs (Ref 11). With the remainder of the Scottish population spread across the country, but with a particular concentration in the far north and west, it is therefore likely that the single breeding pair on Loch na Curra in 2018 represents more than 1 % of the regional population.
Black-throated diver	Low (Local)	The Scottish breeding population of black-throated diver is estimated at 200 pairs, with three quarters of these nesting in the far north and west, including the Outer Hebrides (Ref 11). However, no breeding by this species was recorded within 1 km of the Development in 2018. In addition, observations of black-throated diver were limited to six records, four of which were made on the large waterbodies of Loch Duntelchaig, Loch Ashie and Loch Ness.
Slavonian grebe	Very High (International)	Although no evidence of breeding was found within the field survey area, post-breeding Slavonian grebe is a qualifying species of Loch Ashie SPA.

Ornithological Feature	Importance	Rationale
Black grouse	Medium (Regional)	Black grouse is a species of conservation concern listed on the SBL and identified as a Priority Species of the Inverness and Nairn LBAP. It is also on the Red list of Birds of Conservation Concern having undergone significant population declines. A maximum of three birds were recorded on a single occasion at one lek site on Drumashie Moor. In addition, birds were also encountered at various locations in proximity to proposed infrastructure throughout the survey programme for the Development.
Barn owl	Low (Local)	Barn owl is a Schedule 1 species that is vulnerable to loss of nest sites. However, the occurrence of a single bird (potentially one of pair) within the survey area is not of Regional significance.
Hen harrier	Low (Local)	Hen harrier is of high conservation concern and is protected by Schedule 1 of the WCA. It is present on the Red list of BoCC and the Scottish Biodiversity List and is a Priority Species of the Inverness and Nairn LBAP. However, no breeding by this species was identified on-site or in the surrounding area in 2018. Hen harriers were only recorded within 2 km of the Development on a single date, with two birds observed separately near to Loch na Curra and Ach-na-Sidhe B&B. The Development Site therefore does not support a regularly-occurring population and is of low importance to hen harriers.
Red kite	Low (Local)	Although protected by Schedule 1 of the WCA, and present on the SBL, red kite is of relatively low conservation concern in the context of the UK. This is reflected in its occurrence on the Green list of BoCC. Furthermore, red kite did not breed within 2 km of the Development in 2018. Observations of red kite were made on only three occasions during the breeding bird survey programme and the Development Site is of low importance to this species.
Peregrine	Medium (Regional)	A single peregrine nest was found though this was situated approximately 4 km from the nearest point of the Development. Peregrine is, however, a species of conservation concern and is protected under Schedule 1 of the WCA. In 2002 there were 165 known inland (i.e. not coastal) peregrine territories across the Highlands (Ref 2). The single pair therefore represents a significant proportion of the Inverness and Nairn regional population.
Osprey	Medium (Regional)	Osprey is a species of conservation concern, listed on Schedule 1 of the WCA and the SBL. It is a Priority Species of the Inverness and Nairn LBAP and is on the Amber list of BoCC. Within the Inverness and Nairn LBAP area, there may be around 80 pairs of osprey and the regular occurrence of several birds over the Development Site during the breeding season represents a significant proportion of the regional population of this species (Ref 11).

Impacts on Loch Ashie SPA and SSSI

8.5.7 According to the SPA and SSSI citations, Loch Ashie is a large (approximately 162 ha), mesotrophic loch, with a shoreline which is predominantly stony and exposed and has only small areas of emergent vegetation. However, where the shore is more sheltered, some small beds of bottle sedge have developed.

8.5.8 Loch Ashie SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting a population of Slavonian grebe which is of European importance, with up to 60 individuals, representing 15 % of the British population, gathering to moult in the autumn. In addition to the autumn moult period, the SSSI designation covers pre-breeding season when Slavonian grebe are also present on the loch.

8.5.9 The SPA and SSSI designations therefore protect pre- and post-breeding birds. The habitat within Loch Ashie is generally sub-optimal for breeding by the species (although it should be noted that breeding by this species has been recorded here in the past) and, as noted previously in this chapter, breeding Slavonian grebe are not a qualifying / notified feature of the designations afforded to Loch Ashie.

8.5.10 Slavonian grebe return to breeding sites in April but there is a considerable delay prior to egg laying (Ref 11). Post-breeding, peak numbers of moulting birds gather on Loch Ashie in early-September. There is then a decline in numbers during late-September and October as birds disperse to coastal wintering areas.

8.5.11 The potential effects of the Development during each of the three stages of the Development are considered below. However, further detail is also provided in the Statement to Inform Appropriate Assessment document, which has been submitted as part of the Section 36 application for the Development.

Construction

8.5.12 Whilst baseline noise levels at Loch Ashie were not measured, representative locations were selected and are described in Chapter 16: Noise and Vibration. Measurement Location S2 is considered to be the most representative due to its close proximity to Loch Ashie and, at this location, the background noise level is 53 dB(A). Noise modelling subsequently carried out for the Development estimates that average noise levels at Loch Ashie generated by typical construction activities within the Headpond area will range from, on average, approximately 64 dB(A) at the southern shore to approximately 57 dB(A) at the far, northern shore. A typical conversation is held at around 60 dB(A). Furthermore, research by indicated that at noise levels above 84 dB(A) there is a flight response in waterfowl, while at levels below 55 dB(A) there is no effect (Ref 7). Further research by the same authors recommends that ambient construction noise levels should be restricted to be below 70 dB(A) as birds will habituate to regular noise below this level (Ref 8). It is therefore concluded that the sound levels generated by construction works at the Headpond will not be elevated significantly above the baseline and are unlikely to have any effect on Slavonian grebe on Loch Ashie. Furthermore, approximately 100 m of mature conifer woodland will be retained between the Headpond and Loch Ashie and there will be complete visual screening from on-going activities as a result. Typical construction works associated with the Development are therefore likely to have Negligible magnitude effect on the Loch Ashie SPA and SSSI.

8.5.13 Noise modelling has not been conducted for blasting operations within the Headpond, as this is not normally done in the UK. However, during the peak period of excavation within the Headpond, blasting may be done on an almost daily basis. As no Slavonian grebe are

believed to have bred on Loch Ashie in 2018, and because breeding Slavonian grebe are not a qualifying feature of the designation, blasting during the breeding season and winter period will have no effect on the designated site. However, during the spring pre-breeding period and in the autumn when birds gather to moult, blasting could lead to significant disturbance of Slavonian grebe. This would represent a High magnitude effect on the Loch Ashie SPA designation.

8.5.14 Although unlikely, there is the potential for run-off containing sediment or other pollutants to escape from the Headpond construction footprint and in to Loch Ashie. This could affect food supplies for Slavonian grebe using the waterbody, which includes small fish and invertebrates. However, it is considered that the risk of this occurring is low and that a major pollution event which would have a significant effect on the entire waterbody, which is very large, is extremely unlikely. Pollution of Loch Ashie is therefore considered to be a Negligible magnitude effect.

8.5.15 Tree felling within the Loch Ashie catchment has the potential to increase run-off to the waterbody. Forestry can have a buffering effect on flood flows within a catchment, reducing direct run-off through interception, transpiration and increased infiltration to soil, and removal of forestry can result in the opposite effects. However, as concluded by Chapter 10: Water Environment, the Loch Ashie catchment within the Development Site boundary is already dominated by commercial plantation forestry, with cyclical felling operations undertaken. Therefore, in the context of these operations, any felling undertaken during the construction phase of the Development is likely to have Negligible magnitude effect.

8.5.16 With the potential for disturbance of pre-breeding and / or moulting Slavonian grebe as a result of blasting operations, the construction of the Development could result in a **temporary Major Adverse effect** on the Loch Ashie SPA designation.

Operation

8.5.17 As the Headpond lies within the catchment of Loch Ashie, it will intercept a portion of the rainfall and associated surface water flows which under baseline conditions run into the waterbody. However, Scottish Water currently has capital funding in place to implement resilience measures in relation to Loch Ashie, which provides part of the public water supply to Inverness. The proposed resilience measures being implemented by Scottish Water will allow raw water to be pumped from Loch Ness to Drumashie Water Treatment Works (WTW) (located just to the north of Loch Ashie) thereby addressing any shortfall from the Loch Ashie (and Loch Duntelchaig) water supply sources. The pumping arrangement has the capacity to supply the full demand requirement for Inverness and the water availability of Loch Ashie will no longer be critical during drought conditions. As a consequence of the lower abstraction rates from Loch Ashie, the loss of water as a result of the minor reduction in catchment area will be offset and the operation of the Headpond will have a Negligible magnitude effect on the Loch Ashie SPA and SSSI designations.

8.5.18 The potential for aquatic invasive non-native species to be spread between the Headpond and Loch Ashie is considered in more detail in Chapter 7 and the Statement to Inform Appropriate Assessment document which accompanies the Section 36 application for the Development. However, the primary species of concern are considered to be the flatworm *Phagocata woodworthi*, the crustacean *Crangonyx pseudogracilis* and the macrophyte *Elodea Nuttallii*. It is highly unlikely that these INNS would affect the population of moulting Slavonian grebe, their supporting habitats or prey items, and as such there will be a Negligible magnitude effect on Loch Ashie designated site.

8.5.19 In conclusion, therefore, the operation of the Development will have a **Negligible effect** on the Loch Ashie SPA and SSSI.

Decommissioning

8.5.20 Decommissioning of the Development, if undertaken, will involve relatively low intensity works to drain the Headpond and other activities undertaken distant to Loch Ashie. Water would be drained from the Headpond to Loch Ness in a controlled manner, and will therefore have no effect on Loch Ashie. It is therefore concluded that the decommissioning phase of the Development will have a **Negligible effect** on Loch Ashie SPA and SSSI.

Impacts on General Breeding Birds

All Species

8.5.21 For all general breeding bird species, there is a risk of accidental destruction of nests during the construction phase as a result of tree felling, vegetation stripping or other activities which directly impact upon suitable breeding habitat. It is an offence under the Wildlife and Countryside Act 1981 (as amended) to intentionally or recklessly destroy the active nest of any wild bird. However, the majority of passerine species will lay multiple clutches of eggs each year, and the loss of one brood would likely be of relatively limited conservation significance. In addition, the majority of wader territories were distant from the footprint of construction or felling activities and the risk of destroying any nests of these species is considered to be low. Therefore, in the absence of mitigation, the loss of the nests of general breeding birds would be a Medium magnitude effect. Using the highest level of importance applied to general breeding birds (which is Medium) the destruction of nests would be a **temporary Moderate Adverse effect**.

Crested Tit

Construction

8.5.22 The one possible territory of crested tit is located on the edge of the conifer plantation near Ashie Moor. The immediate area around the single crested tit record is not in the path of tree felling and, although part of the south-eastern extent of the possible territory might be lost to tree clearance for the re-routing of the C1064, there is extensive similar plantation to the north and west. Surveys did not locate any suitable trees for crested tits to nest in within the felling area for the re-routed C1064. The most likely location for suitable nesting trees to be present is the modified bog area within the nearby plantation, in which there are scattered self-sown trees and potentially dead trees. It is therefore considered unlikely that the possible territory, if indeed present, would be lost, nor that suitable nesting trees would be lost, but the territory may be forced to alter its boundaries. This is considered a Low magnitude effect on a feature of Medium importance, resulting in an overall **temporary Minor Adverse effect**.

Operation

8.5.23 There will be no impacts to crested tit during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.24 There will be no impacts to crested tit during the decommissioning of the Development and this phase will therefore have a **Negligible effect** on this species.

Crossbill

Construction

8.5.25 Crossbills are widely distributed over the conifer plantation and can reliably be expected to occur in similar numbers over both adjacent and more distant un-surveyed plantation. A reduction in breeding numbers on a very local basis can be expected from the Headpond and Compound construction. However, the majority of the plantation both locally and in the surrounding area will be unaffected. There is therefore expected to be no more than a Low magnitude effect on crossbill, resulting in a **Negligible effect** overall on this species during the construction phase of the Development.

Operation

8.5.26 There will be no impacts to crossbill during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.27 There will be no impacts to crossbill during the decommissioning of the Development and this phase will therefore have a **Negligible effect** on this species.

Notable Red-listed Passerines

Construction

8.5.28 Loss of a small part of the ancient semi-natural woodland for the proposed Access Track / Spillway construction would be within areas utilised by spotted flycatchers. However, given that this species has a preference for woodland with openings, which facilitates their favoured mode of foraging, it is not likely that the relatively small amount of woodland loss would reduce the number of breeding territories and the created woodland ride may even result in an increase. Consequently, there is considered to be a Low magnitude effect on spotted flycatcher.

8.5.29 Tree pipits also favour open woodland, woodland openings, or scattered trees. Ostensibly, there will be a direct loss of approximately one third of recorded territories owing to construction of the Headpond. Tree pipits in the Glaic na Ceardaich area and the few recorded nearer Loch Ness are in areas that will not be affected. Some tree pipit territories in the conifer plantation may be lost, but tree pipits in the plantation will take advantage of openings caused by normal forestry operations and can be expected to change location within the plantation accordingly. Consequently, there is expected to be a Low magnitude effect on tree pipit.

8.5.30 The one recorded whinchat territory will be unaffected by the Development because it is in the far south-west part of Ashie Moor.

8.5.31 Lesser redpoll may suffer a loss of around one quarter of territories owing to Headpond and Compound construction. However, as for tree pipit, there is abundant suitable habitat for breeding by this species in the wider area. Construction is therefore likely to result in a Low magnitude effect on this species.

8.5.32 With at worst a Low magnitude effect predicted for tree pipit and lesser redpoll, there will be an overall **temporary Minor Adverse effect** on notable Red-listed passerine species during the construction phase of the Development.

Operation

8.5.33 There will be no impacts to notable Red-listed passerines during the operation of the Development and this phase will therefore have a **Negligible effect** on these species.

Decommissioning

8.5.34 There will be no impacts to Red-listed passerines during the decommissioning of the Development and this phase will therefore have a **Negligible effect** on these species.

Waders

Construction

8.5.35 The vast majority of estimated wader territories are in areas that will not be directly affected by the Development (on Ashie Moor and adjacent agricultural fields, distant areas around Loch Ashie and in one case at Glaic na Ceardaich) which are all at least 400 m from above-ground infrastructure and are unlikely to suffer disturbance significant enough to result in displacement (the single exception to this in the area of Ashie Moor is a single curlew territory which was situated close to the point at which the C1064 public road will be diverted). However, a common sandpiper territory on the shore of Loch Ness near to the Tailpond Inlet / Outlet location was located sufficiently close to the construction footprint that disturbance may lead to displacement. However, abundant suitable habitat for this species exists in the wider area and it is not expected that short-distance displacement would result in the complete loss of this species from the area. In addition, an oystercatcher territory was also found in 2018 in proximity to the Tailpond Inlet / Outlet on Loch Ness. This species can be highly tolerant of human activity and has nested successfully on busy construction sites elsewhere. Construction-related disturbance is therefore predicted to be a Low magnitude effect on waders.

Operation

8.5.36 As discussed in detail in the section relating to mitigation, below, planting of native tree species, in particular juniper *Juniperus communis* is proposed on suitable areas of Ashie Moor. These will include areas of dry and sloping ground, with no planting on low-lying wetter areas. The nearest assumed territory of a wader species to the proposed planting area will be of a snipe, at approximately 90 m. The nearest curlew territory will be approximately 200 m from the planting area. Several studies have shown that waders are negatively affected by the presence of forestry and woodland edges (Ref 24). However, these generally relate to dense woodland and it is not anticipated that the expansion of juniper will have a significant effect on waders as it will form scrub habitat, rather than a forest block. In addition, the curlew currently breeding on Loch Ashie already do so within approximately 200 m of existing gorse and juniper scrub. It is therefore considered unlikely that expansion of juniper scrub will result in the loss of curlew or snipe as a breeding species from this area of Ashie Moor. The establishment / expansion of tree cover on Ashie Moor will therefore be a Low magnitude effect resulting in an overall **permanent Minor Adverse effect** on waders during the operational phase of the Development.

Decommissioning

8.5.37 There are no possible impacts to waders during the decommissioning of the Development and this phase will therefore have a **Negligible effect** on these species.

Impacts on Divers and Slavonian Grebe

Red-throated Diver

8.5.38 Red-throated divers nest in vegetation close to the edge of small pools and lochans (Ref 12). Adult birds very rarely catch fish on the waterbody used for nesting and will travel to the sea or to nearby larger lochs in order to forage (Ref 11). The foraging range of red-throated

diver during the breeding season is generally less than 8 km, though birds have been recorded travelling up to 13.5 km on the Western Isles (Ref 21). Therefore, given both the distance between the Development and the Moray Firth (approximately 11.5 km to the north) and the presence of numerous large waterbodies nearby, it is likely that birds nesting at the Development Site would preferentially use these lochs for foraging during the breeding season, rather than travel to the sea.

8.5.39 Red-throated divers were recorded on Loch Duntelchaig, Lochan an Eoin Ruadha and Loch na Curra. Loch Duntelchaig and Lochan an Eoin Ruadha were used for foraging and displaying, while Loch na Curra was confirmed as a breeding lochan, with a nest site established on its western side in 2018.

8.5.40 Loch na Curra is the only waterbody within the survey area which provides suitable nesting habitat for red-throated diver, with all others having unsuitable shorelines (too rocky or steep) or being too large in size. The reason for the failure of the nest at Loch na Curra in 2018 is unclear. However, this waterbody is regularly used for recreational activities, particularly fishing, and children on a dinghy were seen to cause a pair of red-throated divers to fly from the lochan on 18 July (though this was after the breeding attempt is already believed to have failed). Despite this, although not part of targeted ornithological survey, monitoring carried out at Loch na Curra in 2017 in advance of preliminary investigations to inform the design of the Development confirmed the presence of an active red-throated diver nest at the southern end of the waterbody. Despite the regular presence of anglers, the breeding attempt in 2017 was successful and two chicks were seen to have hatched (no further monitoring of fledging success of the chicks was undertaken). It is therefore considered that the most likely reason for the nest failure in 2018 was the occurrence of drought conditions at the time of nesting, with an extended period of hot and dry conditions leading to a significant drop in water levels, estimated to be between 0.5 – 0.75 m. This may have left the incubating bird ‘stranded’, as red-throated divers have difficulty moving on land and are conspicuous when they do so. They thus require immediate access between a nest and the associated waterbody (Ref 14) and this may not have been available due to the reduction in water level.

Construction

8.5.41 The location of the 2018 red-throated diver nest is approximately 80 from the C1064 public road to the north-west. The 2017 red-throated diver nest at the southern end of this lochan is approximately 170 m from the C1064. Baseline traffic flows were counted on this road over a ten day period in June and July 2018 and it was found that the Average Daily Flow (ADF) at this time was 240 vehicles per day (Table 15.6 of Chapter 15: Traffic and Transport). Therefore, in addition to the regular presence of anglers fishing on Loch na Curra, the divers breeding on this waterbody must also be habituated to a degree of traffic movement. During the construction period, and in the absence of mitigation (thus these figures represent a worst case scenario), the ADF on the C1064 is predicted to be 482 vehicles per day, of which 64 would be heavy goods vehicles (HGVs). However, during the peak period of works, which is currently expected to be month 37 of the construction programme, the ADF in the absence of mitigation would be 820 vehicle movements per day, of which 186 would be HGVs (Table 15.10 and Table 15.11 of Chapter 15: Traffic and Transport).

8.5.42 At the time of submitting this EIA it is not possible to know in which month of the year the peak period of construction will occur, and therefore it is not possible to say whether or not this will take place during the red-throated diver breeding season. However, adopting a

precautionary approach, for the purposes of this assessment it has been assumed that this is the case. Red-throated divers have nested close to roads without breeding failure in Iceland and Scotland (Ref 17). This has been observed at the Development Site, with successful breeding within 200 m of the C1064 road in 2017. However, evidence provided showed that red-throated divers do not show signs of disturbance in response to the presence of humans at distances of more than 500 m and therefore suggest that this is a potentially suitable buffer distance to implement around active breeding sites, taking a precautionary approach (Ref 17). The increase to an average of 482 vehicles per day over the course of the construction period represents an approximate 100 % increase on current levels. Given the high level of tolerance shown by the nesting divers to anthropogenic disturbance sources, it is considered unlikely that this would be sufficient to either prevent the establishment of a nest on Loch na Curra or to disturb nesting birds to such an extent as to result in the failure of a breeding attempt. Therefore, if the peak period of construction were to fall outside of the red-throated diver breeding season, the increase in traffic is expected to result in a Medium magnitude effect on birds nesting on Loch na Curra. However, assuming that the peak period of construction were to fall during the red-throated diver breeding season, the increase to up to 820 vehicles per day is considered much more likely to lead to levels of disturbance which would prevent this species from breeding successfully on Loch na Curra. In this case, the presence of construction-related traffic on the C1064 would lead to a High magnitude effect to red-throated divers nesting at this location.

8.5.43 The closest construction works to Loch na Curra associated with the Development will be the diversion of the C1064 public road, which will commence just prior to Ach-na-Sidhe B&B, approximately 220 m north of Loch na Curra (see Chapter 2: Project and Site Description for more information). As highlighted above, At distances of more than 500 m, breeding red-throated divers are unlikely to be disturbed by humans on foot (Ref 17). However, the divers which nested on Loch na Curra in 2017 and 2018 exhibited a high degree of tolerance to human activity, including the presence of people on boats. The realignment of a section of the C1064, which will be approximately 2.5 km long, is expected to take around eight months to complete. It can therefore be assumed that construction of the approximately 300 m stretch which lies within 500 m of Loch na Curra would last for approximately one month. Therefore, given the relatively short period of time in which construction will take place at this location, and the high degree of habituation to human activity shown by the birds nesting on Loch na Curra, it is concluded that the diversion of the C1064 will have a Negligible magnitude effect on breeding red-throated divers.

8.5.44 All other above-ground infrastructure associated with the Development is more than 500 m from Loch na Curra. The Headpond location, at its nearest point, is approximately 540 m north-east of the waterbody and is screened by mature woodland. Noise modelling carried out for the Development has estimated that, on average during the construction phase, activities within the Headpond will result in noise levels of approximately 61 dB(A) at the location of the 2017 and 2018 red-throated diver nest sites. To provide context to this value, a normal conversation is held at around 60 dB(A). Note that this value does not include the noise created by blasting, as the more important impact arising from this activity is air overpressure, and this is not typically modelled in the UK. However, based on evidence from other projects of a similar scale, blasting at a distance of approximately 1.8 km elicited no response in incubating red-throated diver (Carraig Gheal Wind Farm, Argyll). Therefore, based on the low levels of noise which will be detected at Loch na Curra during the bulk of

the construction period, there is predicted to be a Negligible magnitude effect arising from construction of the Headpond.

8.5.45 Red-throated divers were observed foraging on Lochan an Eoin Ruadha and Loch Duntelchaig. It is also very likely that Loch Ness is used for fishing by this species during the breeding season. Both Lochan an Eoin Ruadha and Loch Duntelchaig are screened from works areas by dense woodland and construction activities will not be visible to any birds present on them. In addition, noise generated by the works will be buffered by the woodland. Although Loch Ness is not screened from construction works, with the Tailpond Inlet / Outlet structure being built on the waterbody itself, it is extremely large and there is opportunity for birds to forage beyond any distance at which they may be disturbed by on-going works. Construction of the Development is therefore expected to have a Negligible magnitude effect on foraging red-throated divers.

8.5.46 With an assessed nature conservation importance (sensitivity) of Medium and with, at worst, a High magnitude effect predicted in relation to disturbance caused by increased traffic on the C1064 public road, the construction phase of the Development will have a **temporary Moderate Adverse effect** on breeding red-throated diver.

Operation

8.5.47 The Headpond will not contain or be suitable for fish because of the regular variation in water level which will be experienced. As a result, the new waterbody will not be suitable for red-throated diver as a foraging resource. In addition, as this species requires waterbodies with stable water levels on which to nest, the Headpond will similarly be completely unsuitable for breeding by this species. The operation of the Headpond will therefore have a Negligible magnitude effect on red-throated diver.

8.5.48 The velocity at which water will be taken into and released from the Tailpond 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 red-throated diver would be readily able to swim against a water velocity of 0.15 m/s and that there is consequently no risk to red-throated diver foraging in the vicinity of the structure. A Screen which prevents fish from being drawn into the system will also be fitted to the Tailpond Inlet / Outlet so there is no possibility of red-throated diver entering the structure. The presence and operation of the Tailpond Inlet / Outlet will therefore have a Negligible magnitude effect on red-throated diver.

8.5.49 The operation of the Development will therefore have an overall **Negligible effect** on red-throated diver.

Decommissioning

8.5.50 The number of vehicles likely to be associated with the decommissioning phase of the Development has not been estimated as part of the assessment of traffic and transport effects (see Chapter 15: Traffic and Transport). However, as decommissioning will be limited to the potential draining of the Headpond, removal of mechanical and electrical equipment and the blocking of tunnel entrances, it is anticipated that the numbers of personnel and machinery required will be relatively low. It is therefore assumed that the increase in traffic movements will not reach the ADF of the entire construction phase of 311 vehicles per day on the B862 or 263 vehicles per day on the C1064 (Table 15.11 of Chapter 15: Traffic and Transport) and would not be significantly elevated above baseline levels. The

relatively limited increase in traffic during the decommissioning phase is therefore likely to result in a Negligible magnitude effect on nesting red-throated divers.

8.5.51 This phase of the Development would therefore result in a **Negligible effect** on red-throated divers.

Black-throated Diver

8.5.52 Black-throated divers typically nest on larger waterbodies than red-throated divers, ranging in size from 0.05 – 1 km^2, though frequently larger than this (Ref 11). Lochan an Eoin Ruadha and Loch Ashie are the only waterbodies within 1 km of the Development which fall within this size range. However, Lochan an Eoin Ruadha is generally unsuitable for nesting by black-throated divers as the banks are predominantly rocky and the waterbody is largely surrounded by dense woodland. Loch Ashie is also predominantly unsuitable, though a small island, situated near to the eastern bank of the waterbody and approximately 1.3 km from the Headpond, provides optimal nesting habitat for this species. Unlike red-throated diver, black-throated divers fish in the waterbody used for nesting.

Construction

8.5.53 No black-throated diver nests were established within 1 km of the Development in 2018. Therefore, given the lack of evidence of breeding by this species and the generally unsuitable habitat present in the vicinity of the Development, construction will have a Negligible magnitude effect on nesting black-throated diver.

8.5.54 In addition, although the waterbodies on which black-throated diver were infrequently recorded (these being Loch a' Chlachain (which is outside of the breeding diver survey area), Loch Ashie, Lochan an Eoin Ruadha and Loch Ness) are clearly utilised by this species during the breeding season and may be used for breeding-related activities such as displaying, all (with the exception of Loch Ness) are screened from works areas by dense woodland. Loch Ness is an extremely large loch and there is a very large alternative area on which such activities could be carried out, even if birds were displaced by construction activities at the Tailpond Inlet / Outlet location. It is therefore concluded that construction would have a Negligible magnitude effect on foraging black-throated divers.

8.5.55 It is therefore concluded that the construction phase of the Development will result in a **Negligible effect** on black-throated diver.

Operation

8.5.56 For the same reasons as described in the section relating to red-throated diver, above, the operation of the Development will have a **Negligible effect** on black-throated diver.

Decommissioning

8.5.57 For the same reasons as described in the section relating to the construction phase, above, the decommissioning of the Development will have a **Negligible effect** on black-throated diver.

Slavonian Grebe

8.5.58 Slavonian grebes usually return to their breeding sites in early-April but typically do not lay eggs until June (Ref 11) (Ref 22). Once the birds have returned to the breeding lochan, they do not leave while nesting. Slavonian grebes generally build their nests from fresh and dead water plants which they accumulate to form semi-floating mats which are held in place by surrounding emergent vegetation at the edges of waterbodies. In Scotland, by far the most commonly used species for nesting is bottle sedge (Ref 22). The SPA citation for Loch

Ashie states that much of the shore is stony and exposed and that there are only small areas of emergent vegetation and it is therefore generally considered to be unsuitable for nesting by Slavonian grebes. Furthermore, (with the exception of Loch na Curra) none of the other waterbodies within 1 km of the Development support such habitat. At the southern end of Loch na Curra, there is an area of swamp habitat dominated by bottle sedge with *Sphagnum fallax*, stunted downy willows *Salix lapponum* and white water lily *Nymphaea alba* towards the open water. This area of Loch na Curra therefore provides good nesting habitat for Slavonian grebes. However, no evidence of nesting was identified in 2018 (or in 2017 during informal ornithological monitoring, as described for red-throated divers, above).

8.5.59 Slavonian grebe were recorded on three waterbodies during the breeding bird survey programme: Loch Duntelchaig, Loch a' Chlachain and Loch na Curra.

Construction

8.5.60 The maximum distance at which disturbance is thought to occur for this species is within 150 – 300 m (Ref 17). Loch Duntelchaig and Loch a' Chlachain are both situated more than 1 km from the Development and at these distances it is therefore very unlikely that disturbance is caused to Slavonian grebe using these waterbodies for foraging, displaying or breeding. As discussed in relation to red-throated diver, above, Loch na Curra is approximately 80 m from the C1064 public road, 220 m from the point where the diversion of this road will commence and 540 m from the Headpond. Given the distance between Loch na Curra and the Headpond and the low noise levels predicted from this location (see above in relation to red-throated diver) it is very unlikely that disturbance would be caused to Slavonian grebe on this waterbody. Similarly, as construction works associated with the diversion of the C1064 are likely to be relatively minor and will occur over a short period of time, it is also unlikely that these works, at 220 m from Loch na Curra, will result in disturbance to Slavonian grebe. However, and as described in more detail in relation to red-throated diver, the significant increase in construction traffic during the peak period of construction could lead to a larger effect on Slavonian grebe, if this occurred at the time of year in which this species is present (i.e. outside of the winter when this species inhabits coastal areas). The presence of on average 820 vehicles per day during the peak construction period (Table 15.10 of Chapter 15: Traffic and Transport) would likely lead to disturbance to Slavonian grebe on Loch na Curra and would represent a High magnitude effect. However, outside of the peak period of construction, the increase in traffic on the C1064 would be more limited, with an increase to 482 vehicles per day predicted. As for red-throated divers, therefore, given the relative tolerance of Slavonian grebe to human activities, it is unlikely that this increase in traffic above baseline levels would lead to complete disturbance / displacement of birds and would represent a Medium magnitude effect.

8.5.61 Other construction-related effects to Slavonian grebe on Loch Ashie are considered as part of the assessment of effects on that designated site, above, and are not reiterated here.

8.5.62 In conclusion, should the peak period of construction occur during the time of year in which Slavonian grebe may be present on Loch na Curra, this phase of the Development could result in a **temporary Major Adverse effect** due to disturbance to birds on this waterbody. If the peak period of construction occurs during the winter and traffic levels on the C1064 are in line with the average daily flow taken over the construction phase as a whole, there would be a **temporary Moderate Adverse effect** on Slavonian grebe.

Operation

8.5.63 Water levels within the Headpond will rise and fall on a regular basis. As such, it will not contain any fish but it is possible that the waterbody may support invertebrates upon which Slavonian grebe may feed. In this case, the presence of the new waterbody during the operational phase of the Development may provide very slight enhancement to foraging Slavonian grebe but this is expected to be so minimal as to represent a Negligible magnitude effect.

8.5.64 The significant and regular changes in water level within the Headpond will prevent the establishment of emergent vegetation and the waterbody will be completely unsuitable for nesting by Slavonian grebe. Operation of the Development will therefore have Negligible effect on this species.

8.5.65 Screens which prevent fish from entering the Tailpond Inlet / Outlet structures in Loch Ness and the Headpond will prevent Slavonian grebe from accidentally entering the system during operation and this represents a Negligible magnitude effect.

8.5.66 Loch Ashie and other waterbodies near to the Development are used by Slavonian grebe outside of the breeding season for moulting and displaying. Although the water level fluctuations in the Headpond will likely render it unsuitable for moulting birds which remain on the waterbody for several weeks, it is possible that it may be used by pre-breeding birds for displaying purposes. The provision of a new waterbody for Slavonian grebe displaying would represent a beneficial effect. However, given the prevalence of other waterbodies nearby which are already used by this species, the magnitude of this effect is likely to be Negligible.

8.5.67 The operational phase of the Development will therefore have a **Negligible effect** on Slavonian grebe.

Decommissioning

8.5.68 Assuming that the Headpond does become used by Slavonian grebe (e.g. for displaying), then the draining of the waterbody during decommissioning of the Development would result in the loss of habitat used by this species. However, as outlined for the operational phase, the loss of this one waterbody would be a Negligible effect due to the abundance of other suitable lochs nearby.

8.5.69 There are no other possible impacts to Slavonian grebe during decommissioning and this phase of the Development would have a **Negligible effect** on this species.

Impacts on Black Grouse

8.5.70 Black grouse inhabit areas of open woodland and woodland edge adjacent to moorland and upland rough grassland (Ref 11). The diet of black grouse varies seasonally, with heather and bilberry *Vaccinium myrtillus* being particularly important. However, birch catkins and buds, the needles, buds and flowers of pines *Pinus* sp. and larch and various flowers, fruits of sedges and rushes and berries are all eaten. Chicks require a diet chiefly composed of invertebrates during the first two to three weeks of their life (Ref 11). Male black grouse gather at prominent locations and engage in communal displaying – lekking – to attract females. Although lekking can occur year-round, females only attend leks in the spring (late-March to mid-May) at which time lekking activity by males is at its peak (Ref 12). The location of leks is generally traditional and used year-on-year. They are usually less than 0.5 ha in size and comprise an area of relatively flat, open ground with short vegetation. This

can be on pasture, moorland edge or in open areas within woodland. In addition, vehicle tracks are also used (Ref 12).

Construction

8.5.71 A single black grouse lek was identified within the survey area for this species. The lek, which is situated on Drumashie Moor, approximately 1 km north of the Headpond location, was found to have a single male and two female birds present on 18 April 2018 (see Figure 8.8). During subsequent surveys, this lek site was not found to be occupied although birds were recorded lekking elsewhere further north on Drumashie Moor. Lekking behaviour is concentrated around the time of sunrise, with birds often arriving prior to dawn. Displaying by the male birds is generally over by one hour after sunrise. At the beginning of April, which represents the early part of the peak lekking season, the time of sunrise at the Development Site is around 06:45. By the beginning of May, the time of sunrise is approximately 05:30. With the exception of tunnelling works, construction activities will be limited to between 07:00 and 19:00. It is therefore expected that Site personnel would begin to arrive on-site from around 06:30. Consequently, during the early part of the lekking season there is the potential for increased traffic on the C1064, near to the leks on Drumashie Moor, at the time of day when black grouse may be displaying. However, by May, the time of sunrise means that lekking will be predominantly over before 06:30 and the arrival of construction workers to Site. Although there is little published information available on disturbance of black grouse leks, suggestions that disturbances would not be caused at distances between 300 – 500 m (Ref 17). However, based on evidence from other projects of a similar scale (e.g. Carraig Gheal Wind Farm, Argyll) and professional judgement, feeding black grouse have shown no response to passing vehicles at distances of less than 10 m. It is therefore considered unlikely that the passage of vehicles along the C1064 during the early part of the lekking season will lead to any significant disturbance of black grouse, even when considering the increase in traffic movements relative to baseline levels. Furthermore, as the lekking season progresses and the time of sunrise gets earlier, the risk of this occurring also reduces. Overall, therefore, the passage of construction-related traffic is likely to result in a Low magnitude effect to displaying black grouse.

8.5.72 None of the lek sites identified are located in close proximity to construction areas, with the nearest displaying area being approximately 1 km away from the Headpond. Furthermore, although Site personnel will arrive for works commencing at 07:00, major construction activities are unlikely to begin for some time after this as there will be a requirement for Site personnel to attend daily safety briefings, conduct vehicles checks, etc. Therefore, based on the distance between construction areas and the known lek sites, and the timing of construction activities in relation to the peak period of the day in which displaying occurs, construction works will have a Negligible magnitude effect on lekking black grouse.

8.5.73 Black grouse were recorded on two occasions in Dirr Wood, within the footprint of the Headpond, where a relatively open stand structure and an abundance of bilberry provide optimal habitat for this species. It is therefore likely that black grouse utilise this area for foraging and potentially nesting (though no evidence of this was found in 2018). Construction works at Compound 1 and the removal of trees in this area may therefore result in disturbance of foraging black grouse. However, there is abundant habitat in the wider area which provides a foraging resource for black grouse, notably including the semi-natural woodland at Glaic na Ceardaich, just north of Compound 1, and the wider commercial plantation forestry around the Development Site. Therefore, given that black grouse were recorded on only two occasions and the prevalence of suitable habitat nearby,

it is considered that construction of the Development, including tree felling, will have a Low magnitude effect on foraging black grouse.

8.5.74 Construction of the Development will require the felling of approximately 110 ha of long-established plantation forest which is currently suitable for black grouse. Reviews carried out showed the results of a number of studies into the area of habitat required to support black grouse and concluded that the species is largely sedentary and that an area of between 500 – 700 ha of suitable forest and moorland habitat may be sufficient to support a single black grouse lek (Ref 5). The total area of forest to be felled is therefore potentially large enough, in combination with surrounding moorland, to support one black grouse lek. However, black grouse are not restricted to forest habitats and can use open moorland and rough grassland for foraging, nesting and displaying (Ref 5). There is abundant suitable habitat in the wider area around the Development, in particular on and around Drumashie Moor where most observations of black grouse were made. In addition, black grouse were recorded on only two occasions in Dirr Wood within the footprint of the Headpond, suggesting that this area is of relatively low importance to the local population. Furthermore, although the construction of the Headpond will result in the permanent loss of some woodland cover and blanket bog, the effects of tree felling will be temporary. This is because although the movement of machinery will cause some disturbance to ground flora, this will largely be retained and available to black grouse on completion of works in a given area. It is therefore expected that the permanent loss of a small area of habitat within the Headpond area will lead to a Low magnitude effect on black grouse while the temporary disturbance and / or displacement of birds within Dirr Wood during tree felling activities will result in, at worst, a Medium magnitude effect.

8.5.75 Black grouse nest on the ground, preferring to use sites with tall and dense vegetation, often heather or rushes, which provide vertical cover and concealment (Ref 23). The ground flora within Dirr Wood contains very little heather or rush, though there are extensive areas of bilberry which may provide sufficient cover for nesting. Although no breeding by black grouse was identified in this area in 2018, it is possible that nests may be established during the construction period and / or at the time that tree felling will take place. This could result in the accidental destruction of nest sites which may contain eggs or chicks. However, for the following reasons, it is considered unlikely that breeding by black grouse will occur within the footprint of works:

- The vegetation in Dirr Wood is relatively sub-optimal for nesting when compared to the deeper areas of heather available on and around Drumashie Moor;
- All observations of displaying birds were on Drumashie Moor (with the exception of the single lek to the south of Loch Duntelchaig);
- There were only two observations of black grouse within Dirr Wood during the entire breeding bird survey programme (and during the course of other ecological fieldwork conducted for the Development); and
- No evidence of breeding was identified by targeted survey work in this area.

8.5.76 It is therefore assessed that the risk of any active black grouse nests being destroyed by construction and / or felling works is low and that this represents a Low magnitude effect on black grouse.

8.5.77 The highest magnitude effects on black grouse during the construction phase are expected to occur as a result of the permanent loss of habitat within the Headpond footprint and the temporary loss of habitat in Dirr Wood as a result of tree felling. Considering the Low

magnitude effect of the permanent loss of habitat area for the Headpond, there will be a **permanent Minor Adverse effect** on black grouse. With a Medium magnitude effect predicted as a result of the temporary loss of habitat caused by tree felling, there will be a **temporary Moderate Adverse effect** on black grouse during the construction phase of the Development.

Operation

8.5.78 There are no possible impacts to black grouse during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.79 Decommissioning of the Development will not require any tree felling or alteration of habitat used by black grouse and it is concluded that this phase will have a **Negligible effect** on this species.

Impacts on Raptors

Barn owl

Construction

8.5.80 A single barn owl roost (not a breeding site) in the edge of conifer plantation near the southern edge of the Headpond will likely be lost to associated tree felling. Since this site is used for resting only and is not a breeding location, and there are likely to be other suitable roosting features in the nearby area, this constitutes a Medium magnitude effect.

8.5.81 There is not expected to be any significant reduction in barn owl foraging habitat given that the agricultural grassland and open bog / heath habitats on-site will be almost entirely retained (with the exception of the footprint of the Headpond). In addition, tree felling will open up areas which could become used by foraging barn owl. Furthermore, as construction works will be limited to between 07:00 – 19:00 each day, there is low potential for disturbance to be caused to actively foraging barn owls which are most likely to be roosting during these hours. There will therefore be a Negligible magnitude effect on foraging barn owl during the construction phase.

8.5.82 Based on the loss of the single barn owl roost, the construction phase of the Development will therefore have a **permanent Minor Adverse effect** on this species. Not considering this loss, the other effects of the development will be temporary and **Negligible**.

Operation

8.5.83 There will be no impacts to barn owl during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.84 There will be no impacts to barn owl during the decommissioning of the Development and this phase will therefore have a **Negligible effect** on this species.

Hen Harrier

8.5.85 Hen harrier is a rare breeding bird in Scotland, with current estimates of between 405 – 536 pairs nationally (Ref 19). Of the national total, the combined Moray Firth and Central Highlands Natural Heritage Zones (which together cover an area approximately equivalent to the Inverness and Nairn LBAP) are estimated to support between 10 – 20 pairs of hen harrier. Therefore any breeding by this species in the area around the Development would

be regionally significant. However, no evidence of hen harrier nesting was found during the 2018 breeding bird survey programme.

8.5.86 Hen harriers nest predominantly in heather moorland and forestry plantations, including mature coniferous woodlands (Ref 13). Nests are typically on the ground (though some tree nesting has been recorded) amongst dense vegetation, most often heather, though soft rush *Juncus effusus* and bog myrtle *Myrica gale* are also used. Within 2 km of the Development the most suitable areas of habitat for nesting are to the north, in particular Drumashie Moor and around Glaic na Ceardaich. In closer proximity to the Development Site, the area of Ashie Moor around Loch na Curra has been extensively burnt in the recent past and is in unsuitable for nesting. Ashie Moor to the north of C1064 contains little heather and is in places very wet and is therefore also sub-optimal for hen harriers.

Construction

8.5.87 Breeding by hen harrier did not occur within 2 km of the Development in 2018. There is, however, some potential for nest sites to be established in future years, most notably to the north of the Development. Despite this, the main expanse of Drumashie Moor is more than 1 km from the Headpond location and outside of the distance at which it is considered that hen harriers are typically disturbed by human activities (Ref 17). Similarly, although there is some potential for nesting in the open areas amongst the semi-natural birch and juniper woodland at Glaic na Ceardaich close to Compound 1, a wider expanse of heather is available more than 750 m further north of this location. Should any hen harriers establish a nest within 2 km of the Development Site during the construction phase they would do so in the presence of background levels of activity. Therefore, on the basis that no hen harriers nested within 2 km in 2018 but taking a precautionary approach and considering that even if nesting were to occur the most suitable breeding habitat is beyond the typical disturbance distance for this species, the construction phase of the Development will have at worst a Low magnitude effect on nesting hen harriers.

8.5.88 The observations of hen harrier during the 2018 breeding season included a male hunting over Drumashie Moor in May, more than 5 km north of the Development and a male hunting over the moorland at Loch na Curra in July. Both of these dates are within the breeding season for hen harrier and it is possible that these birds (or potentially this individual) may have been hunting to provision chicks. A radio-tracking study of breeding hen harriers showed that males travelled up to 9 km from the nest and it is therefore possible that, if these birds were breeding, the nest site could be located a considerable distance from the Development Site (Ref 1). The habitats on-site were therefore infrequently used by hen harrier and are of apparently low value for foraging during the breeding season. Construction of the Development is therefore expected to result in a Negligible magnitude impact on foraging hen harriers.

8.5.89 Considering the potential effects on hen harrier, the construction phase of the Development is therefore predicted to result in an overall **Negligible effect** on this species.

Operation

8.5.90 There will be no impacts to hen harrier during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.91 The Embankment of the Headpond will be restored following the completion of construction and it is proposed that this will be seeded, at least in places, with heather. It is therefore

possible that should extensive areas of dense heather become established, the Embankment could become highly suitable for hen harrier nesting. The decommissioning of the Development will involve the gradual draining of the Headpond and this will not require the regular presence of people. The potential for disturbance of any hen harrier nests which may have been established on the Headpond Embankment is therefore considered to be very low. This would consequently represent a Low magnitude effect.

8.5.92 No other activities associated with decommissioning of the Development would result in effects on areas which could be used by hen harrier.

8.5.93 The decommissioning phase of the Development would therefore have a **Negligible effect** on hen harrier.

Red Kite

8.5.94 Red kite was reintroduced to the Black Isle, north of Inverness, between 1989 and 1994. The population of the North Highlands and Moray Firth NHZs is now estimated to be approximately 55 territorial pairs (Ref 19). Nests are in trees in open stands of coniferous and broadleaved woodland, with the most frequently used species in Scotland being Scots pine *Pinus sylvestris* and oak. Both moorland and agricultural habitats are used for foraging year round (Ref 11).

Construction

8.5.95 Although suitable habitat for nesting by red kite exists, no breeding by this species occurred within 2 km of the Development. A pair of red kite was observed above woodland north of Loch Ashie early in the breeding season and a nest which could be used by this species was identified at this location. Although no breeding by red kites occurred at this location in 2018, it is possible that this nest could be occupied in future years. At more than 2.5 km from the nearest proposed infrastructure, however, this is well beyond the distance at which disturbance is likely to occur. Therefore, on the basis that no breeding was recorded within 2 km of the Development, construction will have a Negligible magnitude effect on nesting red kite.

8.5.96 Red kite were observed on two occasions near to Loch na Curra during April 2018. This species is known to be relatively tolerant of human activity, and forages near busy roads and settlements (Ref 17). Given the rare occurrence in proximity to the Development Site, and the low sensitivity of the species to human activity, construction of the Development is expected to have a Negligible magnitude effect on foraging red kite.

8.5.97 It is therefore concluded that construction of the Development will result in a **Negligible effect** on red kite.

Operation

8.5.98 There will be no impacts to red kite during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.99 Decommissioning of the Development will not require any tree felling or alteration of habitat which could be used by red kite and it is concluded that this phase will have a **Negligible effect** on the species.

Peregrine

8.5.100 Peregrines generally breed on high, steep cliffs, with eggs being laid on ledges which are sufficiently large to accommodate up to four fledglings. The nest sites used as are very often

traditional and may be used for decades (Ref 18). The species hunts over a range of open habitats wherever there is a plentiful supply of avian prey (Ref 11).

Construction

8.5.101 The identified nest site is more than 4 km from the Development and is well beyond the distance at which disturbance to this species is likely to be caused by construction activities. A study found and reported that two female peregrines in southern Scotland spent more than 85 % of their time within 2 km of the nest site over the course of 20 days during the breeding season (Ref 15) (Ref 18), this only increasing once the chicks had fledged. This tendency to remain within a relatively small home range is reflected in the low occurrence of peregrine on-site, with only a single observation of a bird in flight over Loch na Curra on 05 July. Of potential relevance is the fact that this is also the date on which it was confirmed that fledging from the nest had taken place which may explain the presence of the bird at a distance of more than 2 km from the breeding site (Ref 15). As the nest is located well outside of the typical disturbance distance for this species and because the Development likely lies outside of the core home range of birds occupying this site, construction is expected to result in a Negligible magnitude impact on breeding peregrine.

8.5.102 It is therefore concluded that this phase of the Development will have a **Negligible effect** on peregrine.

Operation

8.5.103 There will be no impacts to peregrine during the operation of the Development and this phase will therefore have a **Negligible effect** on this species.

Decommissioning

8.5.104 For the reasons outlined in the section on construction, above, the decommissioning phase of the Development is expected to have a **Negligible effect** on peregrine.

Osprey

8.5.105 Osprey breeding habitat is very varied and they can nest in conifers, broadleaved trees, on deserted buildings and on electricity pylons (Ref 11). The waterbodies used for foraging are generally shallow and nutrient-rich or have medium levels of nutrients as those with low levels of nutrients generally do not support sufficient fish populations (Ref 13). Ospreys do not defend a home range and forage widely, regularly up to 20 km from the nest site (Ref 13).

Construction

8.5.106 No osprey nests were established within 2 km of the Development in 2018. The single active nest which was identified by field survey was situated approximately 4.5 km north-east of the Headpond, well beyond the distance at which this species is considered likely to be disturbed by human activity. In addition, although osprey were observed apparently prospecting other potential nest sites on Drumashie Moor and immediately adjacent to Loch Ness, both of these locations are more than 2 km from any proposed infrastructure or construction areas. An osprey was observed sitting in a nest in a tree north of Park, approximately 210 m from the Temporary Access Track to be constructed between Compounds 1 and 3. However, this nest was not used for breeding in 2018. As highlighted above, ospreys are flexible in their choice of nest site and can adopt a range of natural and man-made features. In addition, this species can be very tolerant of human disturbance, with the median distance at which disturbance of incubating birds occurs between 175 – 225 m (Ref 17). Therefore, due to the availability of nesting habitat within the wider area around

the Development and their tolerance of human activity, it is very unlikely that breeding osprey will be disturbed during the construction of the Development. This is therefore considered to represent a Negligible magnitude effect.

8.5.107 Ospreys were observed on a number of occasions during the breeding season fishing in Loch na Curra, Lochan an Eoin Ruadha and Loch Ness. Lochan an Eoin Ruadha is screened from all construction works areas by mature woodland and / or topography and is more than 300 m from the nearest point of the Headpond. It is therefore very unlikely that disturbance would occur to ospreys foraging on this waterbody. Loch na Curra is approximately 220 m from the point at which the C1064 road will be diverted and approximately 550 m from the Headpond location. The works associated with the diversion of the public road will be relatively short-term in duration, with all works within 500 m of Loch na Curra expected to be completed within approximately one month. In addition, the Headpond location is screened from the waterbody by existing mature woodland. It is therefore considered unlikely that osprey foraging on Loch na Curra would be substantially disturbed by the relatively minor works to divert the C1064 road and, given the distance to the Headpond, by construction of this infrastructure. Although construction will take place in Loch Ness, this waterbody is extremely large and there is a huge alternative area available for osprey foraging at distances at which birds are not disturbed by on-going works. Finally, in the event that osprey were disturbed by construction works and this prevented them from fishing in any of the aforementioned waterbodies, there are numerous alternative fishing locations in the nearby area which are likely to be suitable and used by this species, including Loch Duntelchaig and Loch Ashie. Construction-related disturbance of foraging osprey is therefore predicted to result in a Low magnitude effect on this species.

8.5.108 Only Loch Ness will be directly affected by the Development, with the construction of the Tailpond Inlet / Outlet structure on this waterbody. However, Loch Ness is extremely large and the loss of an area of approximately 130 x 300 m which could be used for foraging represents a tiny proportion of the available resource. Both Loch na Curra and Lochan an Eoin Ruadha will be retained as a foraging resource for osprey. The loss of a very small area of foraging habitat will therefore lead to a Negligible magnitude effect on osprey.

8.5.109 The mature Scots pines of Dirr Wood provides optimal breeding habitat for osprey and birds were observed displaying breeding behaviour in this area, including carrying nesting material. A total area of 172.4 ha will be clear felled, with a thinning in a further 25.7 ha (Table 12.3 of Chapter 12: Forestry), as part of the Development and this will result in the loss of potential nesting habitat. However, as already highlighted, ospreys nest in a wide range of locations and there is abundant suitable habitat in the wider area around the Development. The loss of potentially suitable nesting habitat is therefore considered to be a Negligible magnitude effect.

8.5.110 Based on the above, therefore, the construction phase will have an overall **temporary Minor adverse effect** on osprey.

Operation

8.5.111 The Headpond will not contain or be suitable for fish because of the variation in water level which will be experienced. As a result, the new waterbody will not be suitable for osprey as a foraging resource. The operation of the Headpond will therefore have a **Negligible effect** on osprey.

Decommissioning

8.5.112 Decommissioning of the Development will not require any tree felling or alteration of habitat which could be used by osprey and it is concluded that this phase will have a **Negligible effect** on the species.

8.6 Cumulative Effects

8.6.1 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: Approach to EIA. Of these, only three are considered to have any potential to lead to cumulative ornithological effects with the Development, as described in Table 8.8 below.

Table 8.8 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

8.6.2 It is not considered that there is any possibility of cumulative effects on ornithological features as a result of the Tulloch Homes or Coire Glas developments for the following reasons:

- The Tulloch Homes development site comprises agricultural fields on the edge of Inverness which could not be used by any of the protected or notable bird species present at the Development Site; and
- Coire Glas is situated more than 50 km from the Development and there is therefore no potential for birds present at the Site to be affected by activities at this location.

8.6.3 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 the Development. Therefore, assuming there is no overlapping construction period between the two schemes, there is no potential for cumulative effects.

8.6.4 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 ornithological 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 thus be produced, combining all mitigation and enhancement measures for important landscape, ecological and ornithological features. This will seek to achieve maximum benefit to ornithological 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 birds.

8.7 Mitigation and Monitoring

Embedded Mitigation

8.7.1 The design of the Development has sought to minimise its effects on ornithological features. Wherever possible, the design has evolved to avoid important ornithological features identified during the EIA process. As a result, the major ornithological 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. Loch na Curra is used as a red-throated breeding site and both waterbodies are used by other notable species including black-throated diver, Slavonian grebe and osprey. The loss of these waterbodies would therefore have resulted in significant negative effects on these species;
- In addition, this initial option for the location of the Headpond would have resulted in the loss of terrestrial habitat used by a range of notable species including curlew, lapwing and snipe. Compared to this area of Ashie Moor, the proposed Headpond location supports a relatively limited assemblage of breeding birds;
- 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 area supports a range of breeding bird 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 and coniferous trees will be planted, immediately adjacent to the Headpond location. Once established, this broadleaved woodland will be suitable for a range of breeding bird species, potentially including several of conservation concern such as redstart and spotted flycatcher;
- 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 loss of habitat which could be used by birds; and
- The proposed Compound locations have been sited in areas of relatively low value to bird species, including agricultural grassland (Compound 3) and on clear felled plantation forestry (Compound 1).

8.7.2 The implementation of mitigation measures with regard to reinstatement and enhancement for ornithological features affected by the Development 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 mitigation measures which are required to minimise the effects of the Development on important ornithological features.

8.7.3 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:

- Berry-bearing species such as rowan *Sorbus aucuparia* and juniper provide important food resource for several bird species, including black grouse, and will be included within the mix of species planted;
- Open areas / glades will be left to create habitat diversity which benefits species such as spotted flycatcher, tree pipit and redstart, which were all recorded during field survey;
- Newly planted trees will be protected from grazing by the erection of fencing which prevents deer from accessing the Landscape Embankment. This fence will be clearly marked to reduce the risk of black grouse collision; and
- When trees are of sufficient age / size to be able to support such structures, a minimum of 30 nest boxes will be installed. These will have varying sizes / types of entry so as to be suitable to a range of species. The boxes will be constructed of a mixture of wood and concrete to maximise their durability.

8.7.4 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 breeding locations of protected and / or notable bird species may have changed. A pre-construction survey for protected and notable species within the potential zone of influence of the Development will therefore be carried out. The pre-construction survey will use the same survey areas as adopted for this EIA and 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 ornithological 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 ornithological features.
- 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 ornithological features. The ECoW will also carry out pre-works checks for breeding birds and provide other advice in relation to ornithological features, as appropriate.
- Wherever possible, tree felling and works which will directly impact upon areas of vegetation which could be used by nesting birds will be undertaken outside of the

breeding season, this being between March and August, inclusive. However, as the duration of the construction period is expected to be five years, it is highly unlikely that it will be possible to avoid all such works during the bird breeding season. In this case, a pre-works check for the presence of nesting birds will be conducted by the ECoW or other suitably experienced ornithologist. Each new construction / felling area should be checked for the presence of nesting birds not more than 72 hours prior to commencement of works as nests can be quickly established. Where any active nest sites are identified, suitable species-specific exclusion zones should be implemented and these must be maintained until the breeding attempt has concluded. If a bird listed on Schedule 1 of the WCA is confirmed as or suspected to be breeding, the works exclusion zone to be implemented must be informed by the information provided and the site-specific characteristics including topography and the presence of other natural screening (e.g. woodland) (Ref 17). The size of the works exclusion zone around breeding Schedule 1 birds must be agreed with SNH. Full details of the requirements in relation to the protection of breeding birds, including recommended sizes for works exclusion zones, will be included within the LEMP.

Additional Mitigation, Compensation and Enhancement

8.7.5 Specific mitigation measures will also be implemented to minimise the significant effects on ornithological 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 ornithological enhancement.

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

Designated Sites

8.7.7 Loch Ashie is designated in particular for supporting a post-breeding population of moulting Slavonian grebe. Peak numbers of birds occur on Loch Ashie in early-September and decline during late-September and October as they disperse to wintering coastal areas (Ref 11). On that basis, the moult period is considered to last for the duration of September and October. However, adopting a precautionary approach in case of early arriving (potentially failed breeders), for the purposes of this assessment the moult period will be taken as mid-August to the end of October.

8.7.8 As general noise created by typical construction activities within the Headpond are not considered likely to cause any disturbance to Slavonian grebes on Loch Ashie, the only potential for construction-related disturbance is likely to be as a result of blasting. To therefore remove this risk, blasting within the Headpond area will not be permitted during the Slavonian grebe moulting period, which will be taken as 15 August – 31 October each year.

8.7.9 Slavonian grebe present during the pre-breeding period which are engaged in breeding-related behaviour (e.g. displaying) are considered, with regards to the WCA, to be breeding and are therefore protected from disturbance as a species listed on Schedule 1. It will therefore be necessary to avoid disturbance to birds present during the pre-breeding season which may be caused as a result of blasting activities. However, at this time of year, birds are considered to be less vulnerable to disturbance relative to the autumn, post-breeding period as they are not rendered flightless by moulting their feathers. It is therefore not proposed to restrict blasting completely during the spring pre-breeding period. However, prior to the commencement of construction and at a time during the winter when Slavonian

grebes are absent, trial blasting will be conducted in the area of the Headpond. The aim of this will be to identify, using sound monitoring equipment, the charge size which can be used which generates a maximum sound value of 75 dB(A) or lower. The basis for this is research which showed that flight response in waterfowl occurred once sound levels exceed 84 dB(A) (Ref 8). During the pre-breeding period, which will be taken to be 01 April – 15 May each year (based on species information provided), blasting in the Headpond area will therefore be restricted to the use of charge sizes identified by the trial blasting as producing a maximum sound level of 75 dB(A) or lower(Ref 11).

8.7.10 To complement mitigation measures to be implemented to avoid effects on the Loch Ashie SPA / SSSI, monitoring will be carried out between April – October each year for the presence of Slavonian grebe. This will involve at observations of birds on Loch Ashie during blasting operations to ensure no signs of disturbance. In addition, although not expected, survey for breeding by Slavonian grebe on Loch Ashie will be conducted in accordance with the methods described (Ref 12).

8.7.11 Standard prevention measures will be implemented to protect Loch Ashie (and all surface and groundwater) from pollution.

Notable Red-listed Passerines

8.7.12 Given the expected minor effects, and likely net benefit from the intended tree planting and other aspects of the Development Felling and Woodland Restructuring Plan (Figures 12.5 and 12.6, Volume 3) to some species (such as tree pipit), no further mitigation is considered necessary for notable passerines and waders.

Crested Tit, Crossbill and Other Notable Red-listed Passerines

8.7.13 No significant effects are predicted for Schedule 1 or Red-listed passerine species. However, as compensation for the loss of woodland to accommodate the Development, 77.5 ha of new woodland is to be provided, with a further 209.7 ha of woodland being returned to native status (through the removal of non-native species) (Table 12.7 of Chapter 12: Forestry). This will include areas comprising mixed native broadleaves, productive Scots pine and an expansion of the juniper scrub on Ashie Moor. Fast-growing downy birch *Betula pubescens* will be included in the species mix in all areas and can be expected to be of use to species within five years (e.g. tree pipit use treetops for singing). The slight increase in woodland cover and the replacement of a large area of singe species commercial plantation (which in cases includes dense stands of Sitka spruce *Picea sitchensis*) with varied, open woodland will likely result in a net gain to passerines.

8.7.14 In addition to the planting of new woodland, a total of 30 nest boxes will be installed in the retained woodland on-site (including retained Scots pine plantation and ancient semi-natural broadleaved woodland). This will provide short-term compensation for loss of nesting habitat to passerine species. The boxes will be of varying size / entry type so as to be suitable to a range of species. Note that these boxes are additional to those which will be installed within the new planting areas once trees in these locations have reached a sufficient size to support such structures.

Red-throated Diver

8.7.15 Given the proximity of the C1064 to Loch na Curra, it is predicted that the increase in construction-related traffic using this public road during the breeding season would have a Moderate Adverse effect on red-throated divers nesting on this waterbody. To avoid this, therefore, construction-related traffic (not including a small number of abnormal loads, see

further below) will be prevented from using the C1064 between the point where it will be diverted near to Ach-na-Sidhe B&B and the junction with the B862 during the red-throated diver breeding season, taken to be April – September, inclusive (SNH, 2014). This restriction may be lifted if it is confirmed by the ECoW or other qualified ornithologist that no nest has been established on Loch na Curra by the end of July or if it is otherwise confirmed that a breeding attempt has concluded (either through failure or successful fledging of young). Note, however, a small number of abnormal loads may have to use the C1064 during the red-throated diver breeding season due to the presence of a sharp corner on the B862 near to Kindrummond, which would be impassable to such vehicles. However, abnormal loads would be very infrequent and the removal of all other construction-related traffic from the public road around Loch na Curra is expected to remove the risk of disturbance to nesting red-throated divers.

8.7.16 Although no significant effects on nesting red-throated divers are expected from the diversion of the C1064 road, to minimise the risk as far as possible, works within 500 m of Loch na Curra will be scheduled to take place outside of the breeding season for this species. Where this is not possible, the diversion will be programmed to ensure that works within 500 m of Loch na Curra take place as late in the breeding season as possible, to avoid the early period of incubation when birds are generally considered to be most susceptible to disturbance. Effort will be made to achieve this, for example by completing construction works on the road diversion outside of 500 m from the lochan first and leaving this area until last.

8.7.17 Red-throated divers are known to adopt artificial rafts for nesting (Ref 16). An artificial raft will therefore be installed prior to the commencement of construction in Loch nan Geadas, approximately 1.5 km to the south-south-west of Loch na Curra. This small waterbody, with a surface area of approximately 1.3 ha, is connected to the much larger Loch Duntelchaig but is separated from it by a dense bed of bottle sedge. Being small in size and having dense emergent vegetation and good visibility of the surrounding landscape, Loch nan Geadas appears to be suitable for red-throated diver breeding. By providing a raft at this location, alternative nesting habitat will be provided which could be used by red-throated diver. In addition, this raft will be retained and maintained following the completion of construction. This will represent a potential enhancement measure as divers nesting on rafts have been shown to have higher breeding success than those nesting on shorelines (Ref 16).

Black-throated Diver

8.7.18 Effects on black-throated diver will be Negligible and therefore no specific mitigation is required.

8.7.19 However, as an enhancement measure, an artificial diver raft will be installed in Lochan an Eoin Ruadha with the aim of benefitting nesting black-throated diver. This species has been shown to readily adopt raft structures when they are provided and the breeding productivity of pairs nesting on rafts has been shown to increase significantly (Hancock, 2000). In addition, Lochan an Eoin Ruadha was seen to be used by foraging and displaying black-throated divers in 2018 and is likely only to be unused for breeding due to a lack of suitable nesting habitat on the shoreline. Lochan an Eoin Ruadha is likely to be too large to be used by red-throated diver so it is not expected that this species would adopt a raft provided at this location. The raft would be provided on completion of construction works. The ‘hard edges’ of existing woodland will be removed.

Slavonian Grebe

8.7.20 As described above for red-throated diver, construction-related traffic (with the exception of a small number of abnormal loads) will be prevented from using the C1064 public road between the point where it will be diverted near to Ach-na-Sidhe B&B and the junction with the B862 at the time of year in which Slavonian grebe may be present on Loch na Curra. This will be taken to be between April – September, inclusive. This restriction may be lifted if it is confirmed by the ECoW or other qualified ornithologist that no nest has been established on Loch na Curra by the end of July or if it is otherwise confirmed that Slavonian grebe are not using Loch na Curra.

Black Grouse

8.7.21 Approximately 103.7 ha of long-establish plantation forest in Dirr Wood is to be clear felled to accommodate the Development. In addition, a further 25.7 ha of Scots pine plantation is to be thinned to achieve a stand density of approximately 2,500 stems/ha. During felling operations, black grouse may be disturbed and / or displaced from parts of Dirr Wood which provide suitable foraging habitat. However, the Development Felling and Woodland Restructuring Plan (Figure 12.6, Volume 3), which is discussed in more detail in Chapter 12: Forestry, will result in improved habitat quality for black grouse in the area, in particular from the planting of birch, rowan and juniper on the drier parts of Ashie Moor, which will imitate natural open woodland with clearings. This will significantly expand the area of habitat suitable for black grouse foraging, lekking, roosting and potentially breeding. As such, in the medium-term it is reasonable to expect a net benefit to black grouse.

Barn Owl

8.7.22 Loss of the one recorded roost will be compensated by provision of a barn owl box in a suitable location. The location will be determined by inspection of available trees outside felling zones in the area near the roost site, and the box will be erected as far in advance of tree felling as possible. The precise location for the barn owl box will be detailed in the LEMP.

Hen Harrier

8.7.23 Effects on hen harrier will not be significant and therefore no specific mitigation is required.

Red Kite

8.7.24 Effects on red kite will not be significant and therefore no specific mitigation is required.

Peregrine

8.7.25 Effects on peregrine will not be significant and therefore no specific mitigation is required.

Osprey

8.7.26 Effects on osprey will not be significant and therefore no specific mitigation is required.

8.7.27 As an enhancement measure, an artificial osprey nest will be erected either in a suitable tree or on a pole in a suitable location. The precise location will be determined following completion of construction but will likely be in the vicinity of the retained but thinned area of Dirr Wood. Ospreys were observed on several occasions above Dirr Wood and the presence of numerous fish-containing waterbodies nearby makes this an optimal location for osprey nesting.

8.8 Residual Effects

8.8.1 The potential effects of the Development during the construction, operation and decommissioning phases are summarised in Tables 8.9 – 8.11, respectively. The specific mitigation measures proposed to minimise the identified effects are outlined in these tables and the residual, post-mitigation effect is assessed.

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

- Effects on the qualifying features of the Loch Ashie SPA and SSSI (post-breeding moulting Slavonian grebe and pre-breeding displaying Slavonian grebe, respectively) due to blasting operations within the Headpond;
- The potential for the accidental destruction of the nests of general breeding birds during tree felling and / or other vegetation clearance;
- The disturbance of nesting red-throated diver on Loch na Curra due to the increase in vehicular traffic on the C1064 during construction;
- Disturbance of Slavonian grebe using Loch na Curra due to the increase in vehicular traffic on the C1064 during construction; and
- Loss of woodland habitat suitable for black grouse.

8.8.3 However, with the implementation of mitigation, there will be no significant effects on ornithological features.

8.8.4 A single significant beneficial effect of the Development will be the provision of an artificial raft for black-throated diver nesting. This will be installed in Lochan an Eoin Ruadha where this species was observed during field survey. Given the readiness with which such features are adopted by black-throated diver, it is expected that the raft will quickly become utilised and will be retained as a long-term enhancement to breeding by this species in the local area. This is assessed as being a Moderate effect (and therefore significant) given that this species did not breed in the in the vicinity of the Development in 2018. The provision of a suitable nest location and consequent establishment of a new breeding site will therefore be a material enhancement for black-throated diver.

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

- Replanting of areas with a mix of native broadleaved and conifer species which will represent an improvement on the current commercial plantation woodland for a range of general breeding birds of conservation concern;
- The provision of nest boxes for birds of conservation concern;
- Installation of an artificial raft for red-throated diver nesting in Loch nan Geadas;
- The overall expansion in area of woodland habitat which is suitable for black grouse as a result of replanting proposals; and
- The provision of an artificial osprey nest site.

Table 8.9 Summary of Assessment for Construction Phase

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
Loch Ashie SPA and SSSI	Noise levels generated by typical construction activities within the Headpond area are unlikely to result in disturbance to Slavonian grebe on Loch Ashie. Retained coniferous woodland will also provide permanent visual screening.	Temporary Minor Adverse	None required.	Temporary Minor Adverse	Not Significant
	Blasting within the Headpond area has the potential to cause disturbance to Slavonian grebe during the pre- and post-breeding seasons.	Temporary Major Adverse	No blasting will be permitted during the period 15 August – 31 October each year to avoid effects to moulting Slavonian grebe. Trial blasting will be carried out prior to the commencement of construction and during the winter when Slavonian grebe will be absent. The aim will be to identify the charge size which can be used for blasting which will result in a maximum noise level of 75 dB(A) or lower when heard from Loch Ashie. This sound level is not expected to result in a flight response by Slavonian grebe based on the results of research into waterfowl disturbance. During the period 01 April – 15 May each year, all blasting will be restricted to use of the charge size identified by pre-works trials as producing a maximum sound of 75 dB(A) or lower when heard from Loch Ashie.	Negligible	Not Significant
	Limited potential for run-off of sediment and pollutants to Loch Ashie from construction activities in Headpond area.	Temporary Minor Adverse	Although not a significant effect, pollution prevention measures will be implemented to protect Loch Ashie and all other surface and groundwater systems.	Temporary Minor Adverse	Not Significant
	Tree felling within the Loch Ashie catchment has the potential to increase run-off to the waterbody.	Temporary Minor Adverse	None required, however felled areas will be restocked with a mix of native tree species. This will provide long-term run-off protection.	Temporary Minor Adverse	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
General breeding birds	There is the potential for the accidental destruction of active nests as a result of tree felling and other vegetation clearance where this work is undertaken during the bird breeding season.	Temporary Moderate Adverse	Pre-works checks for the presence of nesting birds will be carried out by the ECoW or other suitably experienced ornithologist. Where any active nest sites are identified, suitable species-specific works exclusion zones will be implemented and maintained until the breeding attempt has concluded.	Temporary Minor Adverse	Not Significant
Crested tit	Possible shift in the boundary of a single possible territory owing to tree-felling for the re-routing of the C1064.	Temporary Minor Adverse	None required, however this species may benefit from the provision of nest boxes.	Negligible	Not Significant
Crossbill	Loss of breeding habitat to the construction of the Headpond / Compounds, largely compensated in medium term by replanting of temporary Compound areas and planting of Scots pine and other trees elsewhere as part of Felling and Woodland Restructuring Plan.	Negligible	None required, 66.6 ha of productive Scots pine plantation will be established to compensate for woodland loss during construction.	Negligible	Not Significant
Notable Red-listed passerines	Loss of tree pipit and lesser redpoll territories owing to the construction of the Headpond and Compounds.	Temporary Minor Adverse	None required, however notable Red-listed passerines are likely to benefit from the replanting of mixed native species, the expansion of juniper woodland on Ashie Moor and from the provision of nest boxes.	Permanent Minor Beneficial	Not Significant
Waders	The majority of wader territories are situated beyond the distance at which disturbance is likely to occur as a result of construction activities. There is the potential for the displacement of one common sandpiper territory on the shore of Loch Ness.	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
Red-throated diver	There is predicted to be an average increase of 580 vehicles per day during the peak period of construction (month 37 of the construction programme). Should the peak period of construction occur during the red-throated diver breeding season, there is the potential for birds to be prevented from nesting at Loch na Curra due to the increase in traffic flows or for disturbance to be caused should a nest be established.	Temporary Moderate Adverse	Construction-related traffic will not be permitted to use the C1064 between the point where the public road will be diverted (near to Ach-na-Sidhe B&B) and the junction with B862 during the red-throated diver breeding season of April – September, inclusive (with the exception of a small number of abnormal loads). This restriction may be lifted only once it has been confirmed by the ECoW or other suitably experienced ornithologist that no breeding attempt has been made by the end of July or any established breeding attempt has concluded (either through failure or the successful fledging of young).	Negligible	Not Significant
	There is predicted to be an average increase of approximately 242 vehicles per day during the construction phase as a whole. This would represent an approximately 100 % increase on baseline levels. Given the high degree of tolerance shown by the red-throated divers at Loch na Curra to potential human disturbance sources, it is not considered likely that this would prevent the establishment of a nest or the disturbance of birds which set up a nest on Loch na Curra.	Temporary Moderate Adverse	As above, construction-related traffic will not be permitted to use the section of the C1064 near to Loch na Curra during the red-throated diver nesting season.	Negligible	Not Significant
	The diversion of the C1064 public road will take place approximately 220 m from Loch na Curra at the closest point. However, the red-throated divers which nested on this waterbody in 2017 and 2018 showed a high degree of habituation to human activities. In addition, works to divert the road within 500 m of Loch na Curra are expected to last no longer than one month.	Negligible	This effect is not significant and as such, no mitigation is required. However, as far as possible, diversion of the C1064 within 500 m of Loch na Curra will be programmed to take place outside of the red-throated diver breeding season.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
	Noise modelling carried out for the Development has estimated that, on average during the construction phase, activities within the Headpond will result in noise levels of approximately 61 dB(A) at the location of the 2017 and 2018 red-throated diver nest sites. This is equivalent to the noise level of a normal conversation.	Negligible	None required, however an artificial raft will be installed prior to the commencement of construction in Loch nan Geadas, approximately 1.5 km to the south-south-west of Loch na Curra. By providing a raft at this location, alternative nesting habitat will be provided which could be used by red-throated diver. In addition, this raft will be retained and maintained following the completion of construction.	Permanent Minor Beneficial	Not Significant
	Lochan an Eoin Ruadha and Loch Duntelchaig, which were both found to be used by foraging divers, are screened from works by mature woodland. Disturbance to foraging birds is therefore very unlikely to occur. Although Loch Ness is not screened from construction works, with the Tailpond Inlet / Outlet Structure being built on the waterbody itself, it is extremely large and there is opportunity for birds to forage beyond any distance at which they may be disturbed by on-going works.	Negligible	None required.	Negligible	Not Significant
Black-throated diver	No black-throated diver breeding was identified within 1 km of the Development and the habitat is generally unsuitable for nesting by this species.	Negligible	None required. However, as an enhancement measure, an artificial raft suitable for black-throated diver nesting will be provided in Lochan an Eoin Ruadha on completion of the construction of the Development.	Permanent Moderate Beneficial	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
	All of the waterbodies on which black-throated diver were recorded – Loch a'Chlachain, Loch Ashie, Lochan an Eoin Ruadha and Loch Ness – are all screened from construction works areas by mature woodland (with the exception of Loch Ness). However, Loch Ness is extremely large and there is a very large alternative area on which such activities could be carried out, even if birds were displaced by construction activities at the Tailpond Inlet / Outlet location. There is little potential for disturbance to black-throated divers foraging or displaying on these waterbodies.	Negligible	None required.	Negligible	Not Significant
Slavonian grebe	There is predicted to be an average increase of 580 vehicles per day during the peak period of construction (month 37 of the construction programme). Should the peak period of construction occur at the time when Slavonian grebe are likely to be present, there is the potential for birds to be prevented from using Loch na Curra due to the increase in traffic flows or for disturbance to be caused should a nest be established.	Temporary Major Adverse	Construction-related traffic will not be permitted to use the C1064 between the point where the public road will be diverted (near to Ach-na-Sidhe B&B) and the junction with B862 between April – September, inclusive (with the exception of a small number of abnormal loads). This restriction may be lifted only once it has been confirmed by the ECoW or other suitably experienced ornithologist that no Slavonian grebe breeding attempt is underway and / or the loch is not being used by this species for other purposes.	Negligible	Not Significant
	There is predicted to be an average increase of approximately 242 vehicles per day during the construction phase as a whole. This would represent an approximately 100 % increase on baseline levels. However, given that this is still a relatively small number of vehicles and that Slavonian grebe can show a high tolerance to human activities, it is not considered likely that this would prevent the establishment of a nest or the disturbance of birds which set up a nest on Loch na Curra.	Temporary Moderate Adverse	As above, construction-related traffic will not be permitted to use the section of the C1064 near to Loch na Curra between April and September, inclusive.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
	The diversion of the C1064 public road will take place approximately 220 m from Loch na Curra at the closest point. The works at this location will be relatively minor and of short duration. In addition, Slavonian grebe are typically only disturbed at distances up to 150 – 300 m.	Negligible	This effect is not significant and as such, no mitigation is required. However, as far as possible, diversion of the C1064 within 500 m of Loch na Curra will be programmed to take place outside of the period April – September, inclusive.	Negligible	Not Significant
	Noise modelling carried out for the Development has estimated that, on average during the construction phase, activities within the Headpond will result in noise levels of approximately 61 dB(A) at Loch na Curra. This is equivalent to the noise level of a normal conversation.	Negligible	None required.	Negligible	Not Significant
Black grouse	Up to three black grouse leks were identified on Drumashie Moor, north of the Development. These leks are situated in close proximity to the C1064 road and there is the potential for disturbance as a result of construction-related traffic arriving to site during the early-part of the lekking season. However, as the season progresses and the time of sunrise becomes earlier, the potential for this to occur reduces.	Temporary Minor Adverse	None required.	Negligible	Not Significant
	The nearest lek site to a construction area was found on Drumashie Moor, approximately 1 km north of the Headpond. This is outside of the 300 – 500 m distance suggest that there is the potential for disturbance to be caused to lekking black grouse (Ref 17).	Negligible	None required.	Negligible	Not Significant
	Tree felling in Dirr Wood and the construction of the Headpond may result in the disturbance of black grouse foraging within this area.	Temporary Minor Adverse	None required.	Temporary Minor Adverse	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
	Construction of the Development will require the felling of woodland habitat which is currently suitable for black grouse.	Temporary Moderate Adverse	A total area of 209.2 ha of productive native and mixed native woodland will be established, including a range of native broadleaved and conifer species. These will provide abundant food supply for black grouse. Furthermore, the relatively open stand structure and varied forest edge which is created is likely to result in overall habitat improvement for this species.	Permanent Minor Beneficial	Not Significant
	No breeding by black grouse was identified within Dirr Wood in 2018. Although the habitat in this area is sub-optimal, there is the potential for nests to be established during the construction period and / or at the time of tree felling and this could result in the accidental destruction of nest sites containing chicks.	Temporary Minor Adverse	Pre-works nesting bird checks will be undertaken in advance of any tree felling or construction activities.	Negligible	Not Significant
Barn owl	Loss of one non-breeding roost site in a tree near to Ach-na-Sidhe B&B.	Permanent Minor Adverse	A barn owl box will be installed on a suitable tree in nearby area, outside felling / construction areas.	Negligible	Not Significant
	There is not expected to be any significant reduction in barn owl foraging habitat given that the agricultural grassland and open bog / heath habitats on-site will be almost entirely retained (with the exception of the footprint of the Headpond). Furthermore, as construction works will be limited to between 07:00 – 19:00 each day, there is low potential for disturbance to be caused to actively foraging barn owls which are most likely to be roosting during these hours.	Negligible	None required.	Negligible	Not Significant
Hen harrier	No breeding by hen harriers was confirmed within 2 km of the Development in 2018. The most suitable habitat for nesting by this species is generally beyond 1 km from works areas and outside of the distance at which disturbance is generally considered likely.	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
	Hen harriers were recorded very rarely on-site during the breeding season and it is therefore of apparently very low importance to foraging by this species.	Negligible	None required.	Negligible	Not Significant
Red kite	No nesting by red kite was identified within 2 km of the Development. A nest site which could be used by this species was located at 2.5 km from the Development and therefore, even if this became occupied in future years, there is no risk of disturbance.	Negligible	None required.	Negligible	Not Significant
	Red kite were only observed on two occasions on-site and, given this species' tolerance to human activities, disturbance to foraging birds is not expected.	Negligible	None required.	Negligible	Not Significant
Peregrine	The identified nest site is more than 4 km from the Development and is well beyond the distance at which disturbance to this species is likely to be caused by construction activities.	Negligible	None required.	Negligible	Not Significant
Osprey	No osprey nests were established within 2 km of the Development in 2018 and only a single observation was made of an osprey sitting in a nest (which was subsequently unused) approximately 210 m from the nearest proposed infrastructure. However, ospreys are flexible in their choice of nest site and can adopt a range of natural and man-made features. In addition, this species can be very tolerant of human disturbance, with the median distance at which disturbance of incubating birds occurs at between 175 – 225 m (Ref 17).	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
	Foraging ospreys used a number of the waterbodies around the Development Site but are not expected to be significantly disturbed by construction activities due to the presence of screening woodland and / or the distance between works and foraging areas.	Temporary Minor Adverse	None required.	Negligible	Not Significant
	The only waterbody used by foraging osprey which will be directly affected by the Development is Loch Ness, as a result of the construction of the Tailpond Inlet / Outlet structure. However, Loch Ness is extremely large and the loss of an area of approximately 130 x 300 m which could be used for foraging represents a tiny proportion of the available resource.	Negligible	None required.	Negligible	Not Significant
	The mature Scots pines of Dirr Wood provides optimal breeding habitat for osprey and birds were observed displaying breeding behaviour in this area, including carrying nesting material. A total area of 172.4 ha will be felled as part of the Development and this will result in the loss of potential nesting habitat.	Negligible	This effect is not significant and no mitigation is required. However, as an enhancement measure, an artificial osprey nest will be erected either in a suitable tree or on a pole in a suitable location.	Permanent Minor Beneficial	Not Significant

Table 8.10 Summary of Assessment for Operational Phase

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Loch Ashie SPA and SSSI	As the Headpond lies within the catchment of Loch Ashie, it will intercept a portion of the rainfall and associated surface water flows which under baseline conditions run into the waterbody. However, a Scottish Water proposal to pump water from Loch Ness to supply demand from the city of Inverness will reduce the requirement for Loch Ashie to provide drinking water during drought conditions.	Negligible	None required.	Negligible	Not Significant
	There is potential for the spread of aquatic INNS between the Headpond and Loch Ashie. The primary species of concern are considered to be the flatworm *Phagocata woodworthi*, the crustacean *Crangonyx pseudogracilis* and the macrophyte *Elodea Nuttallii*. It is highly unlikely that these INNS would affect the population of moulting Slavonian grebe, their supporting habitats or prey items.	Negligible	None required.	Negligible	Not Significant
Waders	Planting of juniper, birch and rowan on Ashie Moor will be restricted to areas of existing scrub and drier slopes (e.g. along embankment of C1064 road). Wader territories are generally located in low-lying, wetter parts in central area of bog. Establishment of scrub will therefore not encroach on wader breeding habitat.	Permanent Minor Adverse	None required.	Negligible	Not Significant
Red-throated diver	The Headpond will not contain or be suitable for fish because of the variation in water level which will be experienced. As a result, the new waterbody will not be suitable for red-throated diver as a foraging resource. In addition, as this species requires waterbodies with stable water levels on which to nest, the Headpond will similarly be completely unsuitable for breeding by this species.	Negligible	None required.	Negligible	Not Significant
	The velocity at which water will be taken into and released from the Tailpond Inlet / Outlet on Loch Ness will be approximately 0.15 m/s or below, against which it is presumed a red-throated diver could swim. A Screen which prevents fish from being drawn into the system will also be fitted to the Tailpond Inlet / Outlet so there is no possibility of red-throated diver entering the structure.	Negligible	None required.	Negligible	Not Significant

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effects	Significance
Black-throated diver	For the same reasons as described in relation to red-throated diver, above, the operation of the Development will have no effect on black-throated diver.	Negligible	None required.	Negligible	Not Significant
Slavonian grebe	Water levels within the Headpond will rise and fall on a regular basis. As such, it will not contain any fish but it is possible that the waterbody may support invertebrates upon which Slavonian grebe may feed.	Negligible	None required.	Negligible	Not Significant
	The significant and regular changes in water level within the Headpond will prevent the establishment of emergent vegetation and the waterbody will be completely unsuitable for nesting by Slavonian grebe.	Negligible	None required.	Negligible	Not Significant
	A Screen which prevents fish from being drawn into the system will be fitted to the Tailpond Inlet / Outlet structures on Loch Ness and the Headpond so there is no possibility of Slavonian grebe entering these structures.	Negligible	None required.	Negligible	Not Significant
	Loch Ashie and other waterbodies near to the Development are used by Slavonian grebe outside of the breeding season for moulting and displaying. Although the water level fluctuations in the Headpond will likely render it unsuitable for moulting birds which remain on the waterbody for several weeks, it is possible that it may be used by pre-breeding birds for displaying purposes.	Negligible	None required.	Negligible	Not Significant
Osprey	The Headpond will not contain or be suitable for fish because of the variation in water level which will be experienced. As a result, the new waterbody will not be suitable for osprey as a foraging resource.	Negligible	None required.	Negligible	Not Significant

Table 8.11 Summary of Assessment for Decommissioning Phase

Ecological Feature	Description of Effect	Effect	Additional Mitigation	Residual Effect	Significance
Loch Ashie SPA and SSSI	Water may be drained from the Headpond as part of the decommissioning of the Development. Should the waterbody be used by Slavonian grebe (e.g. for displaying or loafing) this would represent a loss of habitat used by this species.	Negligible	None required.	Negligible	Not Significant
Red-throated diver	It is anticipated that the number of personnel and machinery required for decommissioning of the Development will be low. As a consequence, the increase in vehicular traffic on the C1064 is therefore also likely to be low and there is little risk of disturbance to nesting red-throated divers at Loch na Curra.	Negligible	None required.	Negligible	Not Significant
Black-throated diver	For the same reasons as described in relation to red-throated diver, above, the decommissioning of the Development will have no effect on black-throated diver.	Negligible	None required.	Negligible	Not Significant
Slavonian grebe	Assuming that the Headpond becomes used by Slavonian grebe (e.g. for displaying), then the draining of the waterbody during decommissioning of the Development would result in the loss of habitat used by this species.	Negligible	None required.	Negligible	Not Significant
Hen harrier	The Embankment of the Headpond will be restored following the completion of construction and it is proposed that this will be seeded, at least in places, with heather. It is therefore possible that should extensive areas of dense heather become established, the Embankment could become highly suitable for hen harrier nesting. Draining of the Headpond during decommissioning would not require the regular presence of personnel and the risk of disturbance to nesting hen harrier is very low.	Negligible	None required.	Negligible	Not Significant

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