

Appendix 12.6

Birds

Transport Scotland

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1. Introduction

- 1.1.1 This appendix provides the details of bird surveys undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme. The appendix includes a nature conservation evaluation and impact assessment.
- 1.1.2 This DMRB Stage 3 Assessment includes a desk study and results of detailed field surveys for wintering birds and breeding birds. Scottish crossbill and capercaillie were studied specifically, survey work for the former being incorporated into the wintering and breeding bird surveys, and independent field surveys undertaken for the latter. The assessment identifies important habitats which may be affected by the Proposed Scheme.
- 1.1.3 In order to identify important areas for birds, the following objectives were set:
- identify statutory and non-statutory sites designated for birds;
 - determine which bird species use habitats within the Survey Area;
 - identify important species; and
 - map the use of habitats by these important species to identify areas that support them over winter and during the breeding season.
- 1.1.4 For the purpose of this assessment, important bird species are defined as those which are either listed on the Scottish Biodiversity List (SBL)ⁱ, are identified as Red or Amber Birds of Conservation Concern (BoCC)ⁱⁱ, are Annex I listed species on Directive 2009/147/EC (the Birds Directive), and/or are those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended in Scotland). Certain species not falling under any of these categories but considered to have the potential to be impacted by the scheme in terms of being sensitive to disturbance were also included as important bird species, e.g. raven and buzzard.
- 1.1.5 Capercaillie has been given specific consideration in this appendix due to the particular rarity of this species and because the Proposed Scheme is within the Cairngorms National Park, which is a UK stronghold for capercaillie, and a qualifying feature of a number of European designated sites within the area.

2. Methods

2.1 Desk Study

Designated Sites

- 2.1.1 The following information on designated sites has been collected:
- International sites designated for birds (Special Protection Area (SPA) and Wetlands of International Importance (Ramsar sites)) – 10km from the Proposed Scheme to cover the distances larger birds can cover during foraging (e.g. osprey, golden eagle);
 - National sites designated for birds (Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR)) – 2km from the Proposed Scheme; and,

- Non-statutory designated sites (e.g. Local Wildlife Site (LWS), Site of Importance for Nature Conservation (SINC)) – 1km from the Proposed Scheme.

2.1.2 Information regarding the location of designated sites has been obtained from the following sources:

- Multi-Agency Geographic Information for the Countryside (MAGIC) websiteⁱⁱⁱ;
- Scottish Natural Heritage (SNH) 'SiteLink'^{iv}; and
- SNH 'Interactive Map'^v.

2.1.3 Information on non-statutory designated sites has been sourced from the Highland Biological Recording Group (HBRG) and North-East Scotland Biological Records Centre (NESBReC).

Biological Records and Consultation

Biological Records

2.1.4 Biological records of birds were requested covering 1km from the Proposed Scheme (the Study Area) from the following organisations:

- British Trust for Ornithology (BTO);
- Cairngorms National Park Authority (CNPA);
- Forestry Commission Scotland (FCS);
- HBRG;
- NESBReC;
- Scottish Wildlife Trust (SWT);
- Highland Raptor Study Group;
- SNH; and
- The Royal Society for the Protection of Birds (RSPB).

2.1.5 Records were returned by FSC, NESBReC, SNH and the RSPB. In addition, SNH provided various technical reports concerning bird species and, in conjunction with the RSPB, provided records of capercaillie.

2.1.6 Important capercaillie habitat was identified through consultation with SNH and the RSPB, and a review of existing habitat information. SNH and the RSPB have provided the following information within the 1km Study Area:

- records of capercaillie, including known lek sites; and
- the location and distribution of woodland that could support capercaillie.

2.1.7 Roy Dennis of the Roy Dennis Foundation (a local raptor specialist) was also contacted by email regarding the Slochd rockfaces and a response was received on the 5th January 2018. The response indicated that the lower crag on the east side of Slochd Summit was a regular peregrine breeding site in the 1970s and 1980s but has been unoccupied in recent decades. He suggested that Slochd Summit is also sometimes used by ravens but they are "much reduced" in the east due to persecution and licensed control measures. His response is included in Annex A.

Capercaillie Consultation

- 2.1.8 Gareth Marshall, the RSPB capercaillie officer, was contacted to assist in identifying important areas for capercaillie, and met with surveyors on the 13th March 2017 to brief them on current knowledge about the Cairngorm capercaillie population. He also helped guide the development of capercaillie survey methods used to match those of the RSPB, and gave instruction in capercaillie survey to field staff.
- 2.1.9 Keith Duncan of SNH was consulted by email on the 28th November 2016, and provided guidance on the key issues in relation to capercaillie conservation in Scotland. Keith proposed undertaking capercaillie surveys using two methods: firstly, a habitat suitability assessment to identify important lekking, breeding, and brood rearing habitat within the Survey Area; and secondly, walked transect surveys in areas of suitable habitat to record capercaillie presence/absence and to characterise this activity.
- 2.1.10 The RSPB coordinate annual lek surveys under the Capercaillie Species Action Plan which cover the habitats within the Survey Area. The RSPB have provided the data collected from these surveys, which has been used to aid the DMRB Stage 3 Assessment for the Proposed Scheme. Given the extensive coverage of the RSPB lek surveys and the data provided, it was agreed with Gareth Marshall (RSPB) and Keith Duncan (SNH) that separate lek surveys would not be required.
- 2.1.11 Records of these consultations are included in Annex A.

Scottish Crossbill Consultation

- 2.1.12 Keith Duncan (SNH) was also consulted by email on the 28th November 2016 regarding Scottish crossbill populations close to the Dalraddy to Slochd scheme, and noted that as a species they are not sensitive to disturbance and that effects can be avoided through sensitive timing of works and implementation of appropriate buffers if pairs are noted breeding during construction.
- 2.1.13 The consultation determined there was little value in trying to differentiate between common and Scottish crossbill, as for both species the approach to mitigation will be the same. Therefore, as shown in the email correspondence in Annex A, it was agreed with SNH that specialist surveys to identify Scottish crossbill would not be required.

Limitations

- 2.1.14 The desk study results returned from NESBReC, FCS, SNH, and the RSPB as of May 2017 have provided relatively few bird records. A number of correspondents have not responded to the data request (SWT and the Highland Raptor Study Group), whilst others do not hold bird records (HBRG).
- 2.1.15 Following discussions regarding blasting at rockfaces near Slochd in December 2017, the Highland Raptor Group were again consulted for records they hold in the area, particularly for birds which may breed on or around the rockfaces. No response was received.
- 2.1.16 The absence of other bird records received is not considered a significant constraint to the DMRB Stage 3 Assessment for the Proposed Scheme due to the level of survey undertaken within the Survey Area, using survey methodologies developed in consultation with SNH and RSPB.

2.2 Field Survey

2.2.1 Fieldwork comprised surveys for wintering and breeding birds which were undertaken by experienced ornithologists. Survey effort was divided into two discreet periods: wintering and breeding bird surveys were undertaken between November 2015 and July 2016, with further breeding bird surveys undertaken between March and July 2018 to maximise coverage in those areas with access issues during the first survey period. Specific surveys for capercaillie were also undertaken between March and July 2017, by experienced ornithologists following training from Gareth Marshall (RSPB). The following sections describe the methods employed for these surveys.

Defining the Survey Area

Wintering and Breeding Birds, November 2015 - July 2016

- 2.2.2 In order to inform the need, scope and extent of surveys to be carried out at DMRB Stage 3, an assessment of the suitability of habitats present within the vicinity of the Proposed Scheme was carried out in spring 2015. This was informed by a review of breeding and wintering birds data obtained, with particular focus on species of concern, and available information on habitats present.
- 2.2.3 The extent of the area covered by the bird surveys was determined using the habitat suitability assessment covering habitat within 250m of the centreline of the combined DMRB Stage 2 Proposed Options. The Proposed Options centreline was used because of the timing of the surveys, i.e. predominantly before a preferred option was identified. Habitat was mapped and cross referenced with the requirements of species that winter and breed in the Cairngorms National Park. Those habitats which supported only common and widespread species (i.e. those species which are found in similar habitats throughout the UK, and which are not of conservation concern) were defined as being of low value for birds (and unlikely to support important bird species), whereas those which supported species on the SBL were defined as being of high value for birds.
- 2.2.4 Aerial photography and Phase 1 habitat data from surveys previously undertaken^{vi} were examined to identify the location and extent of habitat types adjacent to the Proposed Scheme. The distance of 250m from the Stage 2 Proposed Options centreline was taken as an acceptable distance from the boundary of the works as this zone would encompass all land take required by the Proposed Scheme as well as a reasonable distance in which disturbance from construction and operation would be likely to occur.
- 2.2.5 Habitats were assessed for their suitability to support breeding and wintering birds. A list of bird species whose breeding and wintering ranges include the Proposed Scheme and its surroundings was compiled using distribution maps from “The Birds of the Western Palearctic”, a source of data about each species of bird found in the UK^{vii}. The habitat requirements of breeding and wintering bird species were then identified by referring to this source. Each species was assigned to one of the following suitable supporting habitat types accordingly:
- coniferous woodland;
 - broadleaved woodland;
 - coniferous and broadleaved (either or mixed) woodland;
 - grassland (excluding intensively used agricultural land such as improved pasture);
 - heathland;
 - water and reedbeds; and

- mixed habitats.

2.2.6 These categories were mapped to the equivalent Phase 1 habitat survey categories, thus identifying the extent of suitable habitats likely to support breeding and wintering bird species. Each habitat type was then considered with regard to whether birds that they can support are listed on the SBL. On this basis, habitats were assigned into one of the following two categories based on their conservation priority:

a) High conservation priority habitat. Habitats suitable to support breeding and/or wintering bird species listed on the SBL; or

b) Habitats suitable to support breeding and wintering bird species not listed on the SBL. These birds represent more common and widely distributed species which are not a conservation priority in Scotland, but remain fully protected under the Wildlife and Countryside Act 1981 (as amended).

2.2.7 The habitat suitability assessment relied upon readily available data including aerial photography, and the Proposed Scheme's Preliminary Ecological Appraisal^{vi}. This assessment was ground-truthed in November 2015 through site survey to classify habitats within 250m of the A9 centreline within the Proposed Scheme based on their value to the area's wintering and breeding bird community.

2.2.8 Land within 250m of the Proposed Scheme was assigned one of three categories:

- habitats of high value, and likely to support important bird species;
- habitats of low value, and unlikely to support important bird species; or
- no access: areas where access for survey was not possible; see Limitations section.

2.2.9 During the visit, transects were plotted through areas of high value habitat which formed the sampling areas of the breeding and wintering bird surveys. These transects aimed to maximise coverage of each area and used tracks, paths and other access features as much as possible. Where obstacles in the landscape prevented a direct transect route through an area (for example, a steep hill, cliff, quarry, thick plantation that could not be walked through, waterbody, river or deep area of bog) the transect route was changed to avoid it.

Additional Breeding Bird Surveys, March to July 2018

2.2.10 Updates to the breeding bird survey were undertaken in 2018 between March and July. The main focus of the surveys was to maximise coverage in those areas not surveyed in 2015 - 2016, for reasons described in the Limitations section.

2.2.11 The Study Area for the updated surveys in 2018 incorporated a 250m buffer around the Proposed Scheme in comparison to previous bird survey effort where coverage incorporated a 250m buffer around the Phase 2 option designs and the A9 mainline. This has resulted in some extensions to the survey area, both within those areas surveyed in 2015 - 2016 and those areas not surveyed in 2015 - 2016.

2.2.12 Updated survey coverage during 2018 has taken place where it is considered that the habitat is of high value and likely to support important bird species. To inform the selection process for additional survey areas, ornithologists undertook a scoping survey between February and March 2018 within those areas not previously surveyed to assess the habitats present and their value for bird species of conservation concern.

2.2.13 The ornithologists used their experience of working in similar habitat in the Scottish Highlands as well as interpreting results of the 2015 - 2016 bird survey and desk study

results to make this assessment. In broad terms, habitats considered of high value comprised woodland, heather moorland and wetlands. Habitats considered of low value comprised grazing pasture, arable farmland and built up areas.

- 2.2.14 The ornithologists also took cognisance of the potential for habitats generally considered of low value to provide micro-habitat for species of conservation concern e.g. grazing pasture with scattered mature trees that could provide nest sites for osprey within suitable distance of foraging resource (typically within 10km of a nest but potentially up to 20km from a nest for this species).
- 2.2.15 Any areas where it was considered there were access issues, particularly in respect of health and safety concerns, were also noted during the scoping survey. Those areas identified as not accessible are detailed in the Limitations section.

Capercaillie

- 2.2.16 The Survey Area for the capercaillie habitat suitability assessment and subsequent presence/absence surveys encompassed land within 250m of the Proposed Scheme. This Survey Area was determined in consultation with Gareth Marshall, the RSPB Capercaillie Project Officer, on 13th March 2017 (see Annex A).

Wintering Bird Survey Method

Transect Walks

- 2.2.17 Wintering birds were located by walking transects through the Survey Area parallel to the Proposed Scheme. Transects were of varying length, and defined so that surveyors covered the Survey Area as completely as possible. In addition, land further than 250m from the Survey Area (and up to 500m from the Proposed Scheme) was viewed by telescope to observe any larger species further away, such as raptors, geese and other waterfowl. In woodland within the 250m to 500m zone, where views were restricted, clearings and vantage points were used where possible to gain viewing distance.
- 2.2.18 All birds seen and/or heard were recorded on maps, noting the species observed, their locations and their numbers (i.e. pairs of birds or the size of flocks). This allowed the use of each habitat type by wintering bird species to be determined. The location of all species of bird encountered, either by sight or sound, during the survey was recorded on a map using standard BTO codes.
- 2.2.19 Monthly visits were undertaken through the winter between December 2015 and March 2016. Three survey teams were used on each visit and covered all transects in the Survey Area over five days. Dates and times of survey visits are presented in Table 2.1 along with weather conditions encountered during each visit. Surveys started an hour following dawn and continued for approximately three hours.

Table 2.1: Dates/Times of the Winter Transect Walks and Weather Conditions

Dates	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
07/12/15 – 11/12/15	08:45/12:00	6-7	0-3	2-4
11/01/16 – 15/01/16	08:45/12:00	1-2	7-8	1-2
22/02/16 – 26/02/16	07:45/10:45	1-2	7-8	3-4
14/03/16 – 18/03/16	06:45/10:00	5-6	0-4	1-2

WeBS Counts

- 2.2.20 In addition to transect walks, water birds using Loch Alvie and Loch Vaa (highlighted on Figure 12.15b) were counted by walking the length of the shore and observing them with a telescope. Individual birds using the lochs were recorded using the BTO's Wetland Bird Survey (WeBS) methodology; individuals flying over and not using the lochs were not recorded.
- 2.2.21 WeBS surveys began earlier in 2015 than the transect walks to cover the autumn migration, as well as the over wintering period. Counts were made monthly between September 2015 and March 2016. Dates and times of visits are presented in Table 2.2 and Table 2.3 along with weather conditions encountered during each visit. Surveys started an hour after dawn and continued for approximately three hours.

Table 2.2: Loch Vaa – Dates/Times of the WeBS Counts and Weather Conditions

Date	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
18/09/2015	07:15/10:15	10	7	1
30/10/2015	07:45/10:45	11	8	1
19/11/2015	08:30/11:30	6	1	1
08/12/2015	09:00/12:00	-4	8	2
15/01/2016	09:00/12:00	-2	8	2
22/02/2016	07:45/10:45	4	4	2
17/03/2016	06:45/09:45	4	8	2

Table 2.3: Loch Alvie – Dates/Times of the WeBS Counts and Weather Conditions

Date	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
16/09/2015	07:15/10:15	10	7	2
28/10/2015	07:45/10:45	11	8	1
20/11/2015	08:30/11:30	2	8	2
08/12/2015	09:00/12:00	-4	8	2
14/01/2016	09:00/12:00	-5	1	1
22/02/2016	07:45/10:45	4	4	2
17/03/2016	06:45/09:45	10	0	1

Breeding Bird Survey Method

Breeding Bird Survey 2016

- 2.2.22 The method employed for breeding bird surveys broadly conformed to that used for the Common Bird Census (CBC) survey, devised by the BTO^{viii}. This method was originally designed to provide detailed information on bird population numbers in areas of farmland and woodland, but can be adapted to most habitats^{ix}. It has been modified for the purpose of this study to include heather moorland, as this habitat is prominent in the Survey Area.
- 2.2.23 The Survey Area was divided by habitat type into sites that can be surveyed in one morning; 10-20ha of woodland or 50-100ha of farmland can be covered during one survey. Surveys were timed to coincide with the highest level of bird activity,

commencing an hour after dawn and taking approximately three hours. Surveys were not carried out in heavy rain, poor visibility or strong wind as birds are under-recorded in such conditions. The location of all species of bird encountered either by sight or sound during the survey was recorded on a map, using standard BTO codes.

- 2.2.24 As each transect was walked, the surrounding areas were scanned (using binoculars and/or telescope) for all bird species exhibiting breeding behaviour (i.e. singing males, displaying birds, adults carrying food/faecal parcels/nesting material, recently fledged young). Large birds undertaking mating displays, such as raptors, were recorded up to 500m from the Proposed Scheme where visibility allowed. Transects allowed surveyors to record data that described the breeding bird community in the area in a robust manner.
- 2.2.25 Territory mapping was subsequently used to determine the extent of breeding territories in the area. This method has been extensively used in national surveys undertaken by the BTO, and is presented in Bibby et al. (2000)^x.
- 2.2.26 Survey maps were combined to determine the extent and distribution of breeding territories for important bird species along the survey transects. Registrations of birds were judged to be 'breeding' if a breeding territory was present, or other positive evidence of reproduction of a pair of birds was identified. Where birds were identified but their reproductive status could not be confirmed, they have been marked simply as "present". In addition, where a species was obviously not breeding (e.g. it was seen flying over the site or foraging only), it has been marked as "not breeding".
- 2.2.27 Monthly visits were undertaken between April and July 2016. Three survey teams were used on each visit and covered all transects in Survey Area over five days. Dates and times of the visits are presented in Table 2.4 along with weather conditions encountered on each visit.
- 2.2.28 In addition to the above, the two osprey nest sites identified by Keith Duncan (SNH) were checked during the breeding season to determine whether they were in use. Both fall outside the Survey Area; one being over 400m from the Survey Area, the other being over 900m.

Table 2.4: Dates/Times of the 2016 Breeding Bird Surveys and Weather Conditions

Dates	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
11/04/16 – 15/04/16	06:30/09:30	2-7	7-8	1-4
16/05/16 – 20/05/16	05:00/08:00	8-9	7-8	1-2
19/06/16 – 23/06/16	04:00/07:00	9-12	7-8	1-3
03/07/16 – 07/07/16	04:30/07:30	6-11	7-8	1-2

Breeding Bird Survey 2018

- 2.2.29 As described in the Limitations section, seven parts of the Survey Area were determined to be unsuitable for transect surveys during the November 2015 visit, which was undertaken to ground truth the habitat suitability assessment and identify suitable transect routes. These areas were surveyed in 2018 using a revised method as described below.
- 2.2.30 The method used for surveys in 2018 were aligned to the methodology previously used for the breeding bird surveys in 2016 i.e. an adapted Common Bird Census (CBC), modified with respect to the number of visits. The duration of each survey was extended

slightly in 2018; surveys commenced an hour after dawn and generally extended beyond the limit of three hours employed in 2016, finishing no later than midday. The rationale for the survey timing and duration in 2016 was to capture some types of territorial behaviour e.g. song at their peak during the early morning period. It is considered that the change in survey duration captured sufficient bird activity to make an accurate assessment of the ornithological resource within the Study Area through the capture of a variety of territorial behaviour including song, birds alarm calling, birds carrying nest material and birds carrying food. A degree of flexibility to the start and finish times, within the limits described above, was maintained in response to a number of variables (e.g. suboptimal weather conditions at the start of the survey period that subsequently improved).

- 2.2.31 Four survey visits were completed between April 2018 and July 2018. Paths, tracks and woodland rides were utilised to maximise coverage of the Survey Area.
- 2.2.32 To overcome issues previously identified with regard to accessing steeper terrain (e.g. in the vicinity of Craigellachie National Nature Reserve to Lynwilg in the south of the Study Area) the survey comprised a walkover between 'mini' vantage points. The surveyor watched from strategic locations overlooking the hillside for a duration of one hour before walking to the next vantage point using accessible routes identified during the scoping survey (e.g. around the base of a slope).
- 2.2.33 During the breeding bird survey, emphasis was placed on recording species of conservation concern as defined in Section 1 (Target Species). More widespread species not considered as species of conservation concern as defined under Section 1 were treated as Secondary Species. For Target Species, all locations of sightings were registered using standard BTO behavioural codes. Secondary species were recorded once when first encountered during a survey to record presence in each of the sections of the Study Area, but no territory mapping was undertaken. After the last survey visit the monthly registrations for Target Species were compared and a final territories map was produced. This approach differed from that used for the breeding bird surveys in 2016 when registrations were mapped for all species.
- 2.2.34 The rationale for a differing approach (i.e. the separation of species into Target and Secondary) was that the value of recording every territory for abundant species was considered low particularly given the main habitats present in the additional areas for survey in 2018 comprising woodland. Such habitat is likely to hold very high densities of abundant species such as chaffinch, goldcrest and coal tit. It was considered that an attempt to register territories for all species would potentially affect the focus on recording species of high conservation concern and identifying important areas supporting such species. Additionally, data available from the 2016 breeding bird surveys from similar habitats can be extrapolated to predict the abundance and distribution of these less notable species in the areas surveyed in 2018 and does not alter the approach to the assessment of impact and standardised mitigation recommended for such species.

Table 2.5: Dates/Times of the 2018 Breeding Bird Surveys and Weather Conditions

Dates	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
Visit 1				
11/04/18	07:30-12:00	4-11	6-7	3-4
12/04/18	07:15-12:00	0-12	0-1	2-3
13/04/18	07:10-12:00	4-7	8-7	2
18/04/18	07:00-12:00	8-15	6-7	3-4

Dates	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
20/04/18	07:00-12:00	5-13	1-5	2-4
Visit 2				
21/05/18	07:00-10:30	11-18	5-6	3-4
22/05/18	05:40-11:40	6-11	7-8	3
23/05/18	06:00-10:00	9-13	3-8	2
24/05/18	06:00-11:00	8-15	0	2-3
25/05/18	05:30-11:30	8-17	0-5	2-4
Visit 3				
11/06/18	05:30-10:45	9-15	7-8	2-3
12/06/18	07:30-12:00	12-16	7-8	3
18/06/18	07:00-12:00	11-14	7	4
19/06/18	05:30-10:15	8-15	5-6	4
20/06/18	06:45-11:00	8-11	7-8	2
Visit 4				
02/07/18	07:30-12:00	10-15	7-8	3
03/07/18	05:30-10:30	10-16	0	2
04/07/18	06:30-11:00	13-27	0-2	2-3
05/07/18	05:45-10:45	11-16	5-7	3
06/07/18	06:00-10:00	11-14	6-7	2-3

Slochd Rock Face Vantage Point Survey 2018

- 2.2.35 Vantage Point (VP) surveys were undertaken in order to identify what species are using the rockface, in relation to proposed blasting at three rock face locations in the Slochd area: Slochd Beag (Ch. 21800 – 22000), Slochd Mor (Ch. 23000 – 23400) and Slochd Summit (Ch. 23900 – 24200).
- 2.2.36 Two VP locations were used: the northern area was viewed from the cycle path at Ordnance Survey (OS) National Grid Reference NH 83984 24976, while the southern area was viewed from the ridge adjacent to the Slochd Hostel at OS Grid Reference NH 84909 23872.
- 2.2.37 The duration of each VP survey was three hours. Each VP location received four visits between March and June 2018, amounting to a total of 12 hours observation time at each location (see Table 2.6). VP watch times were varied throughout hours of available daylight from half an hour before sunrise to half an hour after sunset.
- 2.2.38 The main focus of the VP surveys was to record cliff nesting species. Taking into consideration historic presence and suitability of the available habitat surveys were aligned with recommended methodology for peregrine falcon based on guidance in Hardey et al. (2013)^{xi}. Initial visits in late March and April were used to check for presence of peregrine around a nesting territory. The third visit was timed to take consideration of peregrines at the early breeding stage of incubation and young chicks in the first half of May. This timing is based on a likely time of year that peregrines would be at this stage of the nesting cycle. The fourth visit was timed to confirm any successful attempt through the observation of well-developed or fledged young in late June.

- 2.2.39 The VP locations were placed at a sufficient distance to avoid disturbance to a peregrine nesting attempt. In the case of the northern rock face VP, this was located 500m away from the rock face. In the case of the southern rock face VP, viewing difficulties resulted in a VP location within 100m of the rock face. However, the VP was separated from the rock face by the busy A9 and the surveyor was partially screened by trees, thus was not considered to cause disturbance.
- 2.2.40 The VP surveys were also used to record observations of all notable species (as defined in Section 1) to minimise disturbance to cliff nesting species during walkover surveys and in consideration of health and safety and access issues to steep areas.

Table 2.6: Dates/Times of the Vantage Point Surveys and Weather Conditions

Dates	Start/End Time	Temperature (°C)	Cloud (Octas)	Wind (Beaufort)
Northern Rock Face VP				
22/03/18	09:45-12:45	8	7	4
19/04/18	07:00-10:00	11	6-7	3
21/05/18	11:00-14:00	15-18	8	3
26/06/18	07:30-10:30	11-13	3-5	1-2
Southern Rock Face VP				
22/03/18	06:30-09:30	7	7	3-4
19/04/18	10:15-13:15	6-11	7-8	3
21/05/18	14:15-17:15	14-15	8	4
26/06/18	11:00-14:00	13-21	5-6	2

Capercaillie Field Surveys

Habitat Suitability Assessment

- 2.2.41 A habitat suitability assessment survey was undertaken in March 2017 to establish the extent of suitable habitat for capercaillie. This survey covered all areas of pine or mixed woodland within 250m of the Proposed Scheme as identified from aerial photography and Phase 1 habitat survey information^{vi}. The method used in the assessment follows Summers et. al. (2015)^{xii}, which considers the habitat requirements of capercaillie in Abernethy Forest, Strathspey.
- 2.2.42 Capercaillie are known to prefer native Scots pine woodlands with a structure of mature and well-spaced trees. They are also known to use woodland composed of other species including larch, lodgepole pine and juniper, with a preference for older, more mature stands whose needles have a lower resin content. Commercial plantations are often densely planted and this can restrict the flight lines of capercaillie and thus are not preferred habitat, but individuals can use them in the winter months when the increased density of trees can provide shelter from poor weather conditions. However, such woodland is used infrequently and for short periods, as the density often results in poor ground flora with associated poor-quality foraging opportunities and a lack of clear flight lines for escaping from predators.
- 2.2.43 The habitat suitability assessment for capercaillie focussed on two factors: i) woodland structure; and ii) ground flora composition. These two factors are the most important in determining whether capercaillie use woodland.
- 2.2.44 Woodland structure was classified into one of 12 possible classes^{xiii}:

- **old sparse** – trees of significant age widely spaced apart in the landscape;
- **old open** – trees of significant age adjacent to one another but not forming a closed canopy, allowing much light to reach the woodland floor;
- **high crown** – trees of significant age adjacent forming a closed canopy, reducing light fall to the woodland floor;
- **mature sparse** – mature trees widely spaced apart in the landscape;
- **mature open** – widely spaced mature trees with much light reaching the woodland floor;
- **pole** – mature trees densely packed together forming a closed canopy with little spaced between individual tree trunks;
- **young sparse** – saplings widely spaced apart in the landscape;
- **young open** – frequently occurring saplings but with spaced between individuals;
- **thicket** – densely packed saplings;
- **sparse pre-thicket** – widely spaced very young trees;
- **open pre-thicket** – frequent but spaced very young trees; and
- **pre-thicket** – densely packed very young trees.

2.2.45 Ground flora was recorded as percentage vegetation cover of the following plants: bilberry, heather, cotton grass and cowberry. Other species were grouped by family, for example grasses, mosses etc. Where bare ground or pine needles were present, these were recorded as such.

Table 2.7: Criteria Used to Classify the Value of Capercaillie Habitat

Habitat Assessment	Features
Brood habitat	Pine, spruce or larch present; canopy moderate density/open; mixed ground flora; open woodland or varying tree age; bilberry present.
Year-round habitat	Pine, spruce or larch present; mixed ground flora; open woodland or varying tree age.
Poor/winter only habitat	Dense or un-thinned plantation; lack of ground vegetation.
Unsuitable	No pine/spruce/larch present; non-woodland habitats.

2.2.46 In addition, capercaillie use forest tracks, as well as other similar sites such as root plates (bases of upturned trees) for collecting grit, dust-bathing or drinking from puddles of collected water. Locations of such features were recorded as Target Notes and subject to a search for signs of capercaillie during presence/absence surveys of woodland.

Presence/Absence Survey

2.2.47 Capercaillie are most sensitive to disturbance when brood rearing and hence surveys focussed on the habitat used for brood rearing. When in other habitats, capercaillie are less sensitive to disturbance as they roam widely and often come into contact with people, such as forestry workers or dog walkers, and hence such habitat was not surveyed. Using the data from the habitat suitability survey, the areas identified as suitable brood rearing habitat (even if these were small patches within larger blocks not suitable for brood rearing) were targeted for presence/absence surveys.

- 2.2.48 Where surveyors passed through other woodland blocks between areas of brood rearing habitat, any evidence and records of capercaillie were noted.
- 2.2.49 Surveys were undertaken on a monthly basis through the breeding season. Capercaillie have been historically recorded throughout the woodlands within and adjacent to the Survey Area. Whilst it is known that capercaillie will utilise low quality habitat under certain conditions such as inclement weather, these targeted surveys concentrated on areas of importance for breeding, during which time capercaillie are most susceptible to disturbance and legally protected as a Schedule 1 species.
- 2.2.50 The above survey protocol was agreed with Gareth Marshall (RSPB; see Annex A).
- 2.2.51 The dates of these monthly visits were as follows:
- 13 – 17 March 2017;
 - 24 – 28 April 2017;
 - 8 – 12 May 2017;
 - 12 – 16 June 2017; and
 - 10 – 14 July 2017.
- 2.2.52 The most common sign left by capercaillie is droppings and all areas which were assessed as providing brood rearing habitat in the habitat suitability assessment were surveyed for these. Surveyors worked in pairs and walked through woodland, on tracks and rides wherever possible; this is where both male and female capercaillie take grit from, hence evidence is more likely to be present along these tracks. Where areas were not accessible along tracks, close attention was given to areas beneath large trees suitable for roosting, and the holes found adjacent to the root plates of fallen trees where capercaillie are likely to make use of the open soil for dust baths.
- 2.2.53 A female capercaillie was observed on 14 March 2017, flushed from a roost site at OS Grid Reference NH 86363 24084 (Habitat Area 6) during the habitat suitability assessments. Despite being of 'low habitat importance', this area of woodland was monitored throughout the surveys in order to establish whether the female was using this area throughout the year.
- 2.2.54 No specific lek surveys have been undertaken. Agreement was made with SNH that the data sets received from themselves and the RSPB identified all known leks in the area and none of these were within the 250m survey buffer. Presence/absence surveys were specifically designed at the request of Gareth Marshall (RSPB) to begin no earlier than 9am to ensure that disturbance in woodlands would not affect any leks in the wider area.
- 2.2.55 Any droppings found were aged and assigned to the following categories^{xiii}:
- fresh – bright green and moist, sometimes with white uric acid smear at one end; or
 - old – duller in colour and often dried out and breaking up.
- 2.2.56 Droppings were also sexed using the following criteria:
- male – up to 8cm long and 1cm in diameter, i.e. wider than your little finger; or
 - female – generally shorter, and narrower than your little finger.

3. Impact Assessment Methodology

3.1 Introduction

3.1.1 Ecological features have been subject to nature conservation evaluation. Impact significance has then been assessed taking into account the nature and magnitude of potential impacts (including duration, extent and reversibility) and their consequent effects on important ecological features. The approach to nature conservation evaluation and impact assessment was agreed across the wider A9 Dualling Programme.

3.2 Nature Conservation Evaluation

3.2.1 The general approach to defining the importance of ecological features follows that of CIEEM (2016)^{xiv}. The approach is also in line with advice given in DMRB Interim Advice Note 130/10 'Ecology and Nature Conservation: Criteria for Impact Assessment' (The Highways Agency et al., 2010)^{xv}.

3.2.2 Ecosystems, habitats and species within the Ecological Zone of Influence (EZol¹) are assigned levels of importance for nature conservation based on the criteria set out in Table 3.1.

3.2.3 The rarity, ability to resist or recover from environmental change, and uniqueness of an ecological feature, function/role within an ecosystem, and level of legal protection or designation afforded to a given ecological feature are all factors taken into account in determining its importance.

Table 3.1: Importance Criteria

Importance	Criteria
International	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> internationally designated areas or undesignated areas that meet the criteria for designation; and/or viable populations of species of international conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance of qualifying habitats, communities and assemblages that occur within internationally designated sites or within undesignated areas that meet the criteria for such designation.
National	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> qualifying communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; and/or viable populations of species of national conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance of qualifying habitats, communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; or

¹ EZol is an area defined by the assessment in which there may be ecological features subject to impacts and subsequent effects as a result of the Scheme

Importance	Criteria
	<ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the Scottish Biodiversity Strategy (SBS)^{xvi}.
Regional	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> communities and assemblages that occur within regionally important sites or localities listed as being of conservation importance in the Highland Biodiversity Action Plan (BAP) or Cairngorms Nature Action Plan (CNAP) (including Local Nature Reserves (LNR)) or within undesignated areas that meet the criteria for such designation; and/or viable populations of species of regional conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems at a regional level, as defined in the Highland BAP or CNAP.
Authority Area	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> populations of species of conservation concern within the authority area. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems within a relevant area such as Aviemore in the CNAP.
Local	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> populations of species of conservation concern within the local area (for example a Local Nature Reserve). <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> the maintenance and restoration of biodiversity and ecosystems at a local level.
Less than Local	<p>Ecosystems and Habitats</p> <ul style="list-style-type: none"> Ecosystems or habitats that do not meet the above criteria, i.e., supporting at least populations of species of conservation concern within the local area. <p>Species</p> <ul style="list-style-type: none"> Features that are considered to be absent or do not meet any of the above criteria.

3.3 Impact Assessment

3.3.1 For the purposes of this assessment, the impact descriptors in Table 3.2 are taken to summarise the overall characterisation of positive or negative impacts in accordance with CIEEM (2016)^{xiv}, including:

- impact extent/scale (e.g. entire habitat loss, partial habitat loss or indication over specific area affected);
- direct or indirect impact (e.g. direct mortality of individuals from vehicle collisions, or indirect mortality of individuals from reduced prey resources due to pollution of watercourses);
- reversibility of impact (reversible or irreversible);

- frequency of impact (single event, recurring or constant);
- duration of impact (short-term, medium-term, long-term or permanent); and
- likelihood of occurrence (certain/near certain, probable, unlikely or extremely unlikely).

3.3.2 The character of impacts is defined using the criteria set out in Table 3.2. Impact character was identified as high, medium, low or negligible, following the above impact characterisation approach.

Table 3.2: Impact Magnitude and Character for Ecological Features

Impact Descriptor	Impact Characterisation
High	An impact resulting in a permanent effect on the distribution and/or abundance of a habitat, species assemblage/community or population, in such a way as to alter the integrity of the feature and its conservation status. If negative, this type of effect would reduce the integrity of the feature and its conservation status. If positive, it would result in an improvement to the conservation status of the feature.
Medium	An impact resulting in a long-term but reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population. If negative, this type of effect would have neutral long-term implications for the integrity of the feature or its conservation status. If positive, it would not alter the long-term conservation status of the feature.
Low	An impact resulting in a short-term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population.
Negligible	No discernible impact on the distribution and/or abundance of a habitat, species assemblage/community or population.

3.3.3 Each feature's importance and the potential impacts upon it have been determined through surveys and consultation, to provide a robust basis for making a professional decision on the appropriate focus of the impact assessment. The assessment is then focused on those impacts that result in potentially significant effects on important ecological features. For example, an area of amenity grassland would not meet the criteria for local ecological importance and would not progress through the assessment process, as the assessment only includes features of local importance or above. However, any impact on a SSSI would progress through the assessment process as these sites are designated as nationally important. Habitats, species and species groups that are considered to have a nature conservation value of less than local are not considered important ecological features² in the context of this assessment. Any impact on such a feature as a result of the Proposed Scheme is considered unlikely to have a significant effect on the conservation status of such habitats or species on a local, regional, national or international scale. Therefore, features assessed to be of less than local nature conservation value have been scoped out of the ecological impact assessment (EclA).

3.3.4 CIEEM (2016)^{xiv} notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects (negative or positive) on important ecological features. Significant effects are those that undermine the conservation status³

² An ecological feature is considered important based on many factors including its rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in A Nature Conservation Review (Ratcliffe, 1977).

³ Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and function as well as the long-term distribution and abundance of its population within a given geographical area. Conservation status for species is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its population within a given geographical area.

of important ecological features. Knowledge and assessment of construction methods and operational activities, together with the ecological knowledge of ecologists with experience of similar large-scale infrastructure projects, has been used to identify the potential impacts of the project on ecological features.

- 3.3.5 Following the above approach, the assessment aims to characterise ecological impacts rather than placing a reliance only on magnitude. The character of an impact is used to inform the determination of whether or not the impact on the feature in question is a significant one.
- 3.3.6 Where impacts on internationally, nationally or regionally important ecological features are characterised as ‘medium’ or ‘high’, they are considered to be potentially significant under the terms of the Environmental Impact Assessment (EIA) Regulations^{xvii}.
- 3.3.7 Impacts characterised as ‘low’ on internationally important features, can be determined as potentially significant as can impacts characterised as ‘high’ impacts on features of authority area importance. There may, in addition be a number of impacts on a feature that, whilst not of a character to be significant in themselves, may cumulatively result in a significant effect on that feature.
- 3.3.8 Under the terms of the EIA Regulations, where significant impacts are identified, mitigation will be developed to reduce impacts where feasible.
- 3.3.9 The mitigation measures described within this chapter have been incorporated into the design and operational phasing programme and taken into account in the assessment of residual effects. The mitigation aims to avoid or negate impacts on ecological features in accordance with best practice guidance and UK, Scottish and local government environmental impact, planning and sustainability policies.
- 3.3.10 Impacts that are not significant (including those where compliance with regulation is required) would be expected to be avoided or reduced through the application of a Construction Environmental Management Plan (CEMP) and best working practice (e.g. mitigation of potential pollution impacts through adherence to standard best practice and guidelines). Significant ecological impacts are expected to be mitigated through a combination of best practice/ typical mitigation methods and also mitigation targeted to specific locations as described in the assessment.

3.4 Mitigation

- 3.4.1 The principles of the mitigation hierarchy^{xviii} have been applied when considering potential impacts and subsequent effects on ecological receptors within the Ecological Zone of Influence (EZoI). The principles of the mitigation hierarchy are that impacts on biodiversity should be subject to the following sequential mitigation actions:
- avoidance;
 - mitigation;
 - compensation; and
 - enhancement.
- 3.4.2 For the purpose of this assessment, mitigation refers to measures that are considered essential to avoid and reduce negative impacts of the Proposed Scheme. Compensation refers to measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Unless otherwise stated, all compensatory measures are considered to be part of the essential mitigation package.

- 3.4.3 The mitigation measures described within the EIA have been incorporated into the design and operational phasing programme and taken into account for the assessment of residual impacts. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any negative impacts of the Scheme. The mitigation measures include those required to reduce or avoid the risk of committing legal offences.
- 3.4.4 Mitigation is also designed to produce a net gain for biodiversity where practicable in line with policy and guidelines.
- 3.4.5 Mitigation measures set out in this EIA Report will be specified as environmental commitments in the contract documents to ensure implementation by the appointed Contractor.

3.5 Limitations

Coverage of Wintering and Breeding Surveys

- 3.5.1 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The ecological surveys undertaken to support this EIA have not therefore produced a complete list and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, the results of these surveys have been reviewed and are considered to be sufficient to undertake this EIA. Surveys were undertaken at an appropriate time of year for recording wintering and breeding birds and in suitable weather conditions.
- 3.5.2 Seven parts of the Survey Area were determined to be unsuitable for transect surveys during the November 2015 visit, which was undertaken to ground truth the habitat suitability assessment and identify suitable transect routes. These are described in Table 3.3, with locations indicated by chainage along the Proposed Scheme, and are shown on Figure 12.15a and 12.15b.

Table 3.3: Limitation to Coverage of Wintering and Breeding Bird Surveys

Location	Suitability for Transects	Habitat Description and Suitability	Limitation to Assessment
Ch. 3700-5200 Northbound carriageway	Not suitable for transects due to cliff faces and steep terrain within the Craigellachie National Nature Reserve.	A mixture of broadleaved woodland patches, bracken and heather moorland on steep slopes, ranging from 240m AOD at the base of the slope adjacent to the A9, to 370m AOD 250m from the Proposed Scheme. Woodland and heather moorland offer high value habitats for important bird species, whereas bracken offers low quality habitat.	It is considered that this section will mainly offer high value habitat and be occupied by important bird species during the breeding season (March-August inclusive). Although no breeding bird surveys were undertaken in 2016, a breeding bird survey was undertaken within this section in 2018 using modified methodology (i.e. a combination of walkover and 'mini' vantage points where walking routes were not possible). The lack of wintering bird survey coverage in this habitat section is considered to present only a negligible limitation to the assessment.
Ch. 23300-25800 Northbound carriageway	Not suitable for transects due to steep hills and cliff faces around Slochd Summit preventing safe access to much of the landscape.	Habitats in this area comprise heather moorland and scrub, alongside patches of bog and plantation woodland. All these habitats are of high value and could support important bird species.	It is considered that this section will mainly offer high value habitat and be occupied by important bird species during the breeding season (March-August inclusive). Although no breeding bird surveys were undertaken in 2016, a breeding bird survey was undertaken within this section in 2018. Walkovers were undertaken where accessible and coverage of steep areas and cliff faces were achieved through two strategically placed VPs as described in Section 2. Although no wintering bird survey coverage was possible in this habitats section, data from other similar habitats covered by the survey have been used to determine impacts to birds using habitats in this area. Taking this into consideration, as well as the likely seasonal importance of the habitats for most species apart from resident red grouse, the impact of not covering this area for wintering bird surveys is a negligible limitation to the assessment.
Ch. 11100-12000 Southbound carriageway	Not suitable for transects due to fragmentation of the landscape by the A95 and Highland Mainline.	Area dominated by semi-natural broadleaved woodland and coniferous plantation woodland, both of which are high value and could support important bird species.	Both types of woodland have been covered extensively during other transects walked through the Survey Area, and the patches not covered here are relatively small compared to those surveyed elsewhere. Thus, data collected for other habitats represents those not covered in this area, and impacts and effects have been inferred using this information. Although the terrain prevented the use of the transects method in this section in 2016, breeding bird surveys were undertaken within this section in 2018 by utilising tracks, paths and forest rides. Taking into consideration the combination of breeding bird survey coverage in 2018 and available data for both the non-breeding and breeding seasons from comparable sections, the lack of surveys in this area is a negligible limitation to the assessment.



Location	Suitability for Transects	Habitat Description and Suitability	Limitation to Assessment
Ch. 13300-16300 Southbound carriageway	Not suitable for transects due to fragmentation of the landscape by the Highland Mainline and B9153, with few access points to the plantation woodland comprising this part. Plantation woodland is also tightly grown, preventing surveyors walking much of the area.	Area dominated by coniferous plantation woodland, which is considered to be of high value and could support important bird species.	Plantation woodland has been covered extensively during other transects walked through the Survey Area, and the patches not covered here are relatively small compared to those surveyed elsewhere. Species recorded in plantation woodland elsewhere within the Survey Area are considered to be representative of species using the areas that could not be surveyed. Although the terrain prevented the use of the transects method in this section in 2016, breeding bird surveys have been undertaken within this section in 2018 by utilising tracks, paths and forest rides. Taking into consideration the combination of breeding bird survey coverage in 2018 and available data for both the non-breeding and breeding seasons from comparable sections, lack of surveys in this area is a negligible limitation to the assessment.
Ch. 16700-19300 Southbound carriageway	Not suitable for transects due to fragmentation of the landscape by the Highland Mainline, a river and the B938, with few access points to the plantation woodland in this woodland. Plantation woodland is also tightly grown, preventing surveyors walking much of the area.	Area dominated by coniferous plantation woodland, which is considered to be of high value and could support important bird species.	Plantation woodland has been covered extensively during other transects walked through the Survey Area, and the patches not covered here are relatively small compared to those surveyed elsewhere. Species recorded in plantation woodland elsewhere within the Survey Area are considered to be representative of species using the areas that could not be surveyed. Although the terrain prevented the use of the transects method in this section in 2016, breeding bird surveys have been undertaken within the majority of this section in 2018 by utilising tracks, paths and forest rides. Part of this section is still considered unsuitable for access due to health and safety considerations regarding safe parking and access routes into plantation woodland between the Highland Mainline and the A9 from Ch. 17500-19300. Taking into consideration the combination of breeding bird survey coverage in 2018 and available data for both the non-breeding and breeding seasons from comparable sections, lack of surveys in this area is a negligible limitation to the assessment.
Ch. 21600-2580 Southbound carriageway	Not suitable for transects due to steep hills around Slochd Summit preventing safe access to much of the landscape.	Habitats in this area comprise heather moorland and scrub, alongside patches of bog and plantation woodland. There are also cliff faces in this area. All these habitats are of high value and could support important bird species.	Data collected from other similar habitats covered by the survey have been used to determine impacts on birds using habitats in this area; red grouse in particular inhabit the moorland and bog habitats in this area, as shown from surveys in other areas, and the impact of not covering this area is a negligible limitation to the assessment. For cliff faces, consultation was sought with the Highland Raptor Group and Roy Dennis Foundation to fill the data gap. It is considered that this section will mainly offer high value habitat and be occupied by important bird species during the breeding season (March-August inclusive). Although no breeding bird surveys were undertaken in 2016, a breeding bird survey was



Location	Suitability for Transects	Habitat Description and Suitability	Limitation to Assessment
			<p>undertaken within this section in 2018. Walkovers were undertaken where accessible and coverage of steep areas and cliff faces were achieved through two strategically placed VPs, as described in Section 2. Although no wintering bird survey coverage was possible in this habitats section, data from other similar habitats covered by the survey have been used to determine impacts to birds using habitats in this area. Taking this into consideration, as well as the likely seasonal importance of the habitats for most species apart from resident red grouse, the impact of not covering this area for wintering bird surveys is a negligible limitation to the assessment.</p>

- 3.5.3 Incidental records from areas scoped out of survey, or where surveys access was not possible, were recorded where possible (e.g. sightings were made from the opposite side of the A9 where survey was possible on one side but not the other). In addition, sightings made by surveyors driving past a site were also recorded, where an accurate identification could be made.

Capercaillie

- 3.5.4 The capercaillie surveys were undertaken at an appropriate time of year for undertaking the habitat suitability assessment, and for identifying field signs that indicate the use of habitat by capercaillie.
- 3.5.5 Access was not available to blocks of woodland adjacent to the A9 south of Aviemore due to health and safety issues and access associated with construction and maintenance and management works. Within this area, three potentially suitable Habitat Areas were identified from maps (Habitat Areas 67, 68 and 69) and assessed using aerial photography and remote views of the habitats from adjacent roads.
- 3.5.6 Of the three areas not accessible, one was considered to offer high quality habitat (Habitat Area 67). However, its small size, thin shape (only ~85m wide) and isolated position between the B9152 and Highland Main Line make it unlikely it would be used by capercaillie for brood rearing. The two other areas (Habitat Areas 68 and 69) were considered unlikely to offer brood rearing quality habitat, as they appeared to lack the mature structure of a brood rearing woodland, lacked understorey vegetation, and had a closed canopy (see survey results in Annex A).
- 3.5.7 No specific lek surveys were undertaken, however this is not considered a limitation due to the detailed lek survey information provided as desk study data by the RSPB and SNH.
- 3.5.8 There are therefore no significant limitations to the capercaillie surveys and the results of this study are considered to be appropriate for the purposes of this assessment.

General Limitations

- 3.5.9 Ornithological surveys are affected by a variety of factors which affect the presence of birds such as season, weather, climate, migration patterns, food availability, species behaviour and the presence of predators. Therefore, the bird surveys may not have produced a complete bird list and the absence of evidence of any particular species or evidence of breeding of any particular species within the Survey Area (or a part of the Survey Area), should not be taken as conclusive proof that the species is not present or that it will not be present in the future.
- 3.5.10 No evening or nocturnal surveys have been undertaken. As such, crepuscular and nocturnal bird species, such as grasshopper warbler and owls, may have been under recorded.
- 3.5.11 The Proposed Scheme has undergone several (increasingly minor) design iterations alongside the development of the EclA. The latest design iteration has resulted in an extension of the original Study Area for some features, typically in the order of a few metres. Existing survey information has been extrapolated based on desk study information (e.g. contemporary aerial photography) to inform the valuation and assessment of impacts.

Effect of Limitations

- 3.5.12 The results of the bird surveys provide detailed information about the use of habitats within the Survey Area by birds. The limitations described above are not considered to be significant limitations to this EclA. The data collected provides a robust representation of the wintering and breeding communities found in the Study Area, and where necessary, a precautionary approach has been taken to the assessment, as noted above.
- 3.5.13 Additional bird surveys undertaken within the breeding bird season in 2018 performed a gap filling exercise which has further enhanced the robustness of the data in support of this EclA.

4. Results

4.1 Desk Study

Designated Sites

- 4.1.1 Table 4.1 lists the sites designated for birds which have been identified during the desk study.

Table 4.1: Designated Sites within the Study Area

Site	Distance and Direction from Proposed Scheme	Details
Loch Alvie SSSI Site Code 53	Adjacent to the Proposed Scheme	Breeding goldeneye
Loch Vaa SPA/SSSI UK9002751/Site Code 1065	0.05km east	Breeding Slavonian grebe, goldeneye
Kinveachy Forest SPA/SSSI UK9002581	0.44km west	Resident Scottish crossbill, capercaillie
N. Rothiemurchus Pinewood SSSI Site Code 1241	1km east	Resident capercaillie, crested tit, Scottish crossbill and breeding osprey
Cairngorms SPA UK9002241	1km east	Resident and breeding golden eagle, dotterel, peregrine, merlin, Scottish crossbill, osprey, capercaillie
River Spey-Insh Marshes Ramsar UK13053	2m south	Wetland bird community, wintering whooper swan
River Spey-Insh Marshes SPA/SSSI UK9002231/Site Code 1364	2.52km southwest	Breeding and wintering spotted crane, wood sandpiper, whooper swan, hen harrier, osprey, ducks and waders
Abernethy Forest SPA UK9002561	3.83km east	Resident Scottish crossbill and capercaillie, breeding osprey
Cairngorms Massif SPA UK9020308	4.87km east	Resident golden eagle.

- 4.1.2 The above sites are legally protected (see ES Appendix 12.1: Legislation). No non-statutory designated sites of importance for birds were identified.

Biological Records

- 4.1.3 NESBReC returned the following records (Table 4.2) of birds from within the Study Area.

Table 4.2: Records of Birds within the Study Area

Species	Date	Number of Records
Black grouse	2010	1
Bullfinch	2010	1
Capercaillie	2007-2009	10
Cuckoo	2010	1
Goldeneye	2007	1
Greylag goose	2010	1
Peregrine	2010	1
Red kite	2008-2010	2
Song thrush	2009	1
Spotted flycatcher	2010	1
Swift	2008	1
Wood warbler	2010	1
Yellowhammer	2010	1

- 4.1.4 In addition, 669 records from known capercaillie lekking sites between 2007 and 2017 were provided by the RSPB. These are mapped on confidential Figure 12.15c.
- 4.1.5 Two osprey nesting sites were identified through consultation with RSPB. These are located over 400m and 900m from the Proposed Scheme.
- 4.1.6 SNH also identified Slochd Summit as a location where ring ouzel are regularly seen. This is a migratory species, arriving from wintering grounds in southern Spain and north-west Africa between April and May, to breed.

Habitat Suitability Assessment

- 4.1.7 Areas determined to be of high value (and therefore subject to survey) and low value (and thus scoped out of survey) are detailed in Table 4.3 and shown on Figure 12.15a and 12.15b. Areas not suitable for transect surveys are also detailed here to provide information on the habitats types in these locations.

Table 4.3: Results of Habitat Suitability Assessment and Determination of Survey Areas. Land within 250m of the Proposed Scheme Broken Down into parts Surveyed, Scoped Out, or where Bird Survey Transect Walks were Not Possible

Part & Chainage	Carriageway	Scoping Result	Description and Reasoning
1 – 0-3200	Northbound	High value habitats - surveyed	Mixed woodland, scrub and managed moorland, with a number of small duck ponds; all of these are high value habitats and thus this part. Frequent tracks and paths, good access for surveyors on



Part & Chainage	Carriageway	Scoping Result	Description and Reasoning
			foot.
2 – 3200-3700	Northbound	Low value habitats - scoped out	Paddocks and grazing pasture, intensive agriculture, of low value as wintering and breeding bird habitats, thus scoped out.
3 – 3700-5200	Northbound	High value habitats - surveyed in 2018	Cliff faces and steep terrain within the Craigellachie National Nature Reserve up to the roadside which were surveyed using a combination of walkover and 'mini' VP's in this part. It comprises a mixture of woodland, heather moorland and bracken.
4 – 5200-7200	Northbound	High value habitats - surveyed	Mixed woodland, ponds and heathland within Craigellachie National Nature Reserve and along the western part of the Aviemore walking loop. These are high value habitats for breeding and wintering birds. Habitats walkable, often along footpaths with access for surveyors on foot.
5 – 7200-7500	Northbound	Low value habitats - scoped out	Housing development around Aviemore, comprising new buildings, access roads and well-manicured gardens. Habitats of low value for breeding and wintering birds, and thus scoped out of surveys.
6 – 7500-23300	Northbound	High value habitats - surveyed	Mixed woodland, wet pasture and heathland on the western side of the A9 between Aviemore and Slochd Summit, high value habitats for wintering and breeding birds. Frequent access tracks and footpaths, and trees in plantation woodland blocks spaced to allow surveyors to walk. Despite difficult areas to access (streams, rivers, bogs etc), access possible for surveyors on foot throughout this part.
7 – 23300-25800	Northbound	High value habitats - surveyed in 2018	Steep hills around Slochd Summit. Walkover surveys where accessible or observations from two strategically placed VPs.
8 – 0-3200	Southbound	High value habitats - surveyed	Woodland, scrub and managed heathland, along with the banks and open water of Loch Alvie. High value habitats for wintering and breeding birds. Frequent tracks and paths, good access for surveyors on foot.
9 – 3200-5100	Southbound	Low value habitats – largely scoped out. Pockets of woodland provide some high value habitat.	Mainly comprises paddocks and grazing pasture of low value as wintering and breeding bird habitats, thus scoped out and no transects planned. Small areas of birch woodland between 4300-4800 surveyed in 2018.
10 – 5100-7100	Southbound	High value habitats - surveyed	Eastern part of the Aviemore walking loop comprising woodland and a mixture of semi-natural habitats around the MacDonald Highland Resort. High value habitat for wintering and breeding birds. Easy walking access and thus good access for surveyors on foot.
11 –	Southbound	Low value habitats -	Housing development around Aviemore, comprising buildings, access roads and well-



Part & Chainage	Carriageway	Scoping Result	Description and Reasoning
7100-8100		scoped out	manicured gardens. Habitats of low value for breeding and wintering birds, and thus scoped out of surveys.
12 – 8100-9900	Southbound	High value habitats - surveyed	Woodland, grassland and farmsteads to the north of Aviemore; high value habitat for wintering and breeding birds. Tracks, open woodland and grassland allowed surveyors to walk this area despite difficult obstacles such as several flowing water courses and the B95/A9 link road.
13 – 9900-11100	Southbound	Low value habitats - scoped out	Paddocks and grazing pasture of low value as wintering and breeding bird habitats thus scoped out and no transects are planned in this area.
14 – 11100-12000	Southbound	High value habitats - surveyed in 2018	Mixture of semi-natural broadleaved woodland and coniferous plantation woodland. Surveys undertaken utilising access tracks, rides and walking between 'mini' VP's where access was restricted due to fragmentation of the landscape by the A95 and the Highland Mainline.
15 – 12000-13300	Southbound	Low value habitats - scoped out	Paddocks and grazing pasture of low value as wintering and breeding bird habitats.
16 – 13300-16300	Southbound	High value habitats- surveyed in 2018	Landscape fragmented by the Highland Mainline and B9153, with few access points to the coniferous plantation woodland comprising this part so not suitable for transect. Plantation woodland is also tightly grown, preventing surveyors walking much of the area. Surveys were undertaken utilising access tracks, rides where possible and walking between 'mini' VP's where access is restricted.
17 – 16300-16700	Southbound	Low value habitats - scoped out	Paddocks and grazing pasture of low value as wintering and breeding bird habitats, thus scoped out.
18 – 16700-19300	Southbound	High value habitats- some areas surveyed in 2018.	Surveys were undertaken utilising access tracks, rides and walking between 'mini' VP's where access is restricted. An area of plantation woodland between Highland Mainline and A9 from 17500-19300 was not surveyed due to health and safety related access issues.
19 – 19300-21600	Southbound	High value habitats - surveyed	Minor road and forestry access tracks in this part allowed surveys to proceed through this area of heather moorland and coniferous plantation woodland.
20 – 21600-25800	Southbound	High value habitats - surveyed in 2018	Steep hills comprising heather moorland around Slochd Summit. Walkover surveys where accessible or observations from two strategically placed VPs focused on recording activity at the Slochd rock faces where steep terrain prevented access.

4.2 Field Survey

Wintering Birds

Walked Transects

- 4.2.1 Fifty one species of bird were recorded during the wintering bird surveys and these are presented along with their abundance, in Table 4.4 below. This includes 23 important bird species, including 10 which are listed on the SBL (some of these are also listed as BoCC) and 13 listed only as BoCC.

Table 4.4: Species and Counts for Each Survey Visit, and Peak Counts for Each Observed Species

Species	SBL Listed	BoCC	Dec-15	Jan-16	Feb-16	Mar-16	Peak Count
Greylag goose		Amber	0	0	35	43	43
Canada goose			0	0	0	1	1
Teal		Amber	0	0	0	8	8
Mallard		Amber	0	0	0	13	13
Goldeneye		Amber	0	0	0	1	1
Sparrowhawk			0	1	0	0	1
Buzzard			1	3	5	6	6
Red grouse	Y	Amber	0	4	6	4	6
Capercaillie	Y	Red	0	1	0	0	1
Red-legged partridge			0	7	0	0	7
Pheasant			1	22	1	5	22
Oystercatcher		Amber	0	0	1	5	5
Lapwing	Y	Red	0	0	7	18	18
Snipe		Amber	0	0	0	1	1
Woodcock	Y	Amber	0	0	0	4	4
Black-headed gull	Y	Amber	0	0	0	6	6
Herring gull	Y	Red	14	0	4	0	14
Wood pigeon			0	2	44	25	44
Collared dove			0	3	3	0	3
Green woodpecker		Amber	0	1	1	0	1
Great spotted woodpecker			1	3	1	5	5
Skylark	Y	Red	0	0	1	0	1
Meadow pipit		Amber	0	1	11	0	11
Grey wagtail		Amber	0	0	0	2	2
Pied wagtail			0	0	0	8	8
Wren			0	11	8	18	18
Dunnock		Amber	0	0	1	2	2
Robin			2	11	14	58	58

Species	SBL Listed	BoCC	Dec-15	Jan-16	Feb-16	Mar-16	Peak Count
Blackbird			1	11	2	11	11
Song thrush	Y	Red	0	0	2	15	15
Mistle thrush		Amber	0	0	1	7	7
Goldcrest			6	29	11	16	29
Long-tailed tit			29	17	12	16	29
Crested tit		Amber	1	11	1	0	11
Coal tit			28	112	72	73	112
Blue tit			7	60	72	39	72
Great tit			3	23	57	47	57
Treecreeper			6	6	7	2	7
Jay			0	1	1	0	1
Jackdaw			0	10	63	10	63
Rook			0	80	61	2	80
Carrion crow			0	2	2	0	2
Hooded crow			0	1	1	2	2
Raven			0	0	0	1	1
Starling		Red	0	0	8	9	9
House sparrow	Y	Red	0	8	10	3	10
Chaffinch			0	34	110	138	138
Greenfinch			0	0	0	1	1
Siskin			0	9	7	2	9
Crossbill			0	0	7	8	8
Bullfinch	Y	Amber	12	2	0	3	12

WeBS Counts

- 4.2.2 Thirteen species were identified using Loch Alvie and are presented in Table 4.5. Three of these species, dunlin, lapwing and whooper swan, are SBL listed. Dunlin and whooper swan are also BoCC Amber listed, and lapwing BoCC Red listed. Mallard was the most common species using the loch, followed by goldeneye and whooper swan. Remaining species were represented by only small numbers of birds on each visit, with individuals or pairs of other species. Loch Alvie appears to support whooper swan during the spring migration, and goldeneye throughout the winter period. Lapwing and dunlin were encountered on individual visits with single sightings.
- 4.2.3 Ten species were identified using Loch Vaa and are presented in Table 4.6. None of these species are SBL listed, with five BoCC Amber listed and one BoCC Red listed species. Little grebe and goldeneye were the most common species with a peak count of six individuals, and goosander a peak count of five individuals. However, these relatively high counts were during early winter or late winter. Most observations were of individual birds or pairs of birds, and sightings were significantly affected by the build-up of ice which prevented use by many bird species during December 2015 to February 2016.

Table 4.5: Species and Counts for Each WeBS Survey Visit to Loch Alvie, and Peak Counts for Each Observed Species

Species	SBL Listed	BoCC	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Peak Count
Cormorant			0	2	1	0	0	0	1	2
Dunlin	Y	Amber	1	0	0	0	0	0	0	1
Great black-backed gull		Amber	0	1	0	0	0	0	0	1
Goldeneye		Amber	2	4	4	0	3	0	6	6
Greylag goose		Amber	0	0	0	0	0	0	5	5
Grey heron			0	0	1	0	0	0	0	1
Lapwing	Y	Red	1	0	0	0	0	0	0	1
Mallard		Amber	2	5	26	0	2	3	2	26
Mute swan		Amber	2	0	0	0	0	0	0	2
Oyster catcher		Amber	0	2	1	0	0	0	1	2
Teal		Amber	1	0	0	0	0	0	0	1
Tufted duck			0	1	0	0	0	0	0	1
Whooper swan	Y	Amber	2	4	4	0	3	0	6	6

Table 4.6: Species and Counts for Each WeBS Survey Visit to Loch Vaa, and Peak Counts for Each Observed Species

Species	SBL Listed	BoCC	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Peak Count
Dipper		Amber	0	0	0	0	0	1	0	1
Goldeneye		Amber	2	0	2	0	0	1	6	6
Goosander			0	0	4	0	0	2	5	5
Grey heron			2	0	2	0	0	1	0	2
Grey wagtail		Red	1	0	0	0	0	0	0	1
Little grebe			6	0	2	0	0	0	0	6
Mallard		Amber	1	4	0	0	0	0	2	4
Teal		Amber	0	2	0	0	0	0	0	2
Tufted duck			0	0	5	0	0	2	0	5
Wigeon		Amber	1	0	0	0	0	0	0	1

Bird Community Composition

- 4.2.4 A total of 62 bird species were recorded during the wintering bird transects and WeBS surveys; these represent the wintering bird community of the Survey Area. This community can be broken down into distinct groups of species, which are described in



Table 4.7. Information about the biology and ecology of individual species is taken from Birds of the Western Palearctic^{vii}.

Table 4.7: Description of the Results and Bird Community Composition

Species	Comment
<p>Waterfowl (13 species: greylag goose, Canada goose, teal, mallard, goldeneye, cormorant, mute swan, whooper swan, tufted duck, wigeon, little grebe, grey heron, goosander)</p>	<p>The community of waterbirds using the Survey Area was fairly diverse, including common species and also rarer ones using the area on migration. The presence of grazing habitat in open paddocks and grass, along with the two lochs and other open water create opportunities for migratory birds to stop over both in autumn and spring, and for over wintering birds.</p> <p>Greylag goose was the most abundant species, with between 35 and 43 observations from the walked transects in February 2016 and March 2016 respectively, and sightings on Loch Alvie from March 2016. It is not clear whether the birds observed were feral, or from a wild population. Greylag goose is a BoCC Amber listed species. Mallard is a common and widespread species present all winter in the Survey Area that often lives in and close to built environments. It was represented by a peak count of 26 individuals on the WeBS counts at Loch Alvie. This species was also seen at Loch Vaa, and identified along the walked transects. Mallard is a BoCC Amber listed species.</p> <p>Teal, goldeneye, goosander and tufted duck were encountered frequently during the WeBS counts, but teal were also observed during the walked transects and small numbers of these species use the Survey Area all winter except during the coldest periods when waterbodies freeze, and they fly to the coast. Teal and goldeneye are BoCC Amber list species.</p> <p>Loch Alvie appears to be important for whooper swan as a small group these birds were observed there throughout the winter. This is a BoCC Amber listed species. Mute swan, another BoCC Amber listed species was also seen here in September 2015 but were not seen again during the surveys.</p> <p>Canada goose, cormorant, wigeon (BoCC Amber listed), little grebe and grey heron were encountered sporadically or only in single survey visits.</p>
<p>Raptors (Two species: sparrowhawk, buzzard)</p>	<p>Sparrowhawk is common and widespread in the UK, often associated with gardens and semi-natural habitats. One was seen during the walked transects.</p> <p>Buzzard, once a rare bird in the UK but now common and widespread, was frequently encountered on walked transects. Peak count for this species was 6 individuals during March 2016.</p> <p>Neither of these species is SBL nor BoCC listed.</p>
<p>Grouse and Pheasants (Four species: capercaillie, red-legged partridge, red grouse, pheasant)</p>	<p>Three of the four species encountered are actively managed as game birds, with pheasant and red-legged partridge being introduced species bred and released solely for this purpose. Red grouse are common in the Survey Area and moorland surrounding the A9 within the Survey Area is managed to support populations of this species. Red grouse are on the SBL as there have been declines of >25% of the population of this species in the last 25 years and due to its BoCC Amber listing.</p> <p>Capercaillie were recorded with a single sighting during the wintering surveys from woodland close to Slochd Summit. Species specific surveys were undertaken to further investigate this bird. It is an SBL species as there have been declines of >25% of the population of this species in the last 25 years, and is a BoCC Red listed species.</p>
<p>Waders/gulls (Eight species: oystercatcher, lapwing, snipe,</p>	<p>Snipe and woodcock were present in March 2016, but absent through other months, clearly returning for warmer weather. Both species likely breed in the landscape surrounding the Survey Area.</p> <p>Oystercatcher and lapwing were absent from the Survey Area during</p>

Species	Comment
woodcock, black-headed gull, herring gull, great black-backed gull)	<p>December and January, arriving in February and March at the start of the breeding season. Habitat within the Survey Area provides foraging resources, and likely also breeding habitat once temperatures warm.</p> <p>Lapwing and woodcock are on the SBL due to their presence on the BoCC, and declines of >25% in Scotland in the last 25 years. Lapwing is a BoCC Red listed species, and snipe, woodcock and oystercatcher are BoCC Amber listed species.</p> <p>Dunlin was represented by a single individual at Loch Vaa, likely starting migration, observed in February 2016. Dunlin is a BoCC Amber listed species.</p> <p>The three gull species (black-headed gull, SBL listed and BoCC Amber listed; herring gull, SBL listed and BoCC Red listed; and great black-backed gull, BoCC Amber listed) were only observed from individuals flying over the Survey Area, and they were not seen using habitats there directly.</p>
Pigeons and woodpeckers (Four species: collared dove, wood pigeon, great spotted woodpecker, green woodpecker)	<p>Wood pigeon is one of the most common and widespread bird species in the UK, but the data show number significantly increase in February likely in preparation for the upcoming breeding season. Collared dove was present throughout the winter associated with residential and other development.</p> <p>Great spotted woodpecker and green woodpecker were uncommon but present throughout winter, using woodland in the Survey Area for foraging and, at the onset of spring breeding.</p>
Passerines - Larks, pipits, wagtails, dipper (Five species: dipper, skylark, meadow pipit, grey wagtail, pied wagtail)	<p>Skylark and meadow pipit occupied grassland and moorland habitat, but the former species was absent throughout most of the survey season, and only represented from a single observation in February 2016. Both species appear to arrive in February in preparation for the start of the breeding season. Skylark is SBL listed and it is given Red BoCC status. Meadow pipit is BoCC Amber listed.</p> <p>Grey and pied wagtails were absent throughout the coldest period of winter (December to February), and were only observed in March, presumably returning to breed once the weather starts warming. Therefore, the Survey Area is not important for these species as a winter foraging site. Both species were associated with areas of wet grassland, common on the east side of the scheme. Grey wagtail is BoCC Red listed.</p> <p>Dipper was seen on one occasion feeding at Loch Vaa on the WeBS surveys, but was not observed closer to the A9.</p>
Passerines – “garden” birds (12 species: wren, dunnock, robin, blackbird, song thrush, long-tailed tit, blue tit, great tit, starling, chaffinch, greenfinch, bullfinch)	<p>These species represent the most common and widespread song birds in the UK. They occur in a wide variety of habitats, and are often associated with farmland and residential areas where they inhabit the mix of trees, scrub, hedgerows, gardens and ruderal habitat that predominates there. In the Survey Area, these species were associated with houses and gardens (particularly on bird feeders), farm buildings and woodland/scrub adjacent such developments.</p> <p>The majority of garden birds were resident, and observed throughout the survey timeframe, indicating human developments in the Survey Area are particularly important for maintaining these species throughout the winter months.</p> <p>Dunnock and starling are SBL species. Dunnock is BoCC Amber listed and starling BoCC red listed.</p>
Passerines – house sparrow	<p>This bird is found associated with residential and other developments within the Survey Area. The populations we have identified here are within Aviemore itself in parks and gardens. House sparrow remains a widespread bird in the UK but is declining and for this reason it is SBL listed and has BoCC Red status.</p>



Species	Comment
Passerines – woodland species (Six species: mistle thrush, goldcrest, coal tit, treecreeper, siskin, bullfinch)	These are all common and widespread woodland bird species. Goldcrest, coal tit, treecreeper and siskin were frequently encountered throughout the winter and are residents. Coal tit is a very abundant species with registrations in the hundreds during each visit. Mistle thrush numbers increased from one bird in February 2016 to 7 in March 2017 indicating they return to the area to breed. Bullfinch is an SBL species and has BoCC Amber list status.
Passerines – corvids (Five species: jay, jackdaw, rook, carrion crow, hooded crow, raven)	Corvids are mainly scavengers and occur in large numbers (jackdaw was the most frequently encountered bird during the survey), often needing to be controlled for agricultural or conservation purposes. The six species observed are resident in the Scottish Highlands. One raven nest was found on cliffs at Slochd Summit during bat roost inspections undertaken there in September 2017. Remaining sightings were from birds flying high over the survey area.
Passerines – crested tit	This is a pinewood specialist bird and although it is common in such habitats throughout Europe, the Scottish Highlands are the only part of the UK where this species is found. Thus, it is of particular conservation value and is BoCC Amber listed. It is a resident species, breeding in coniferous woodland such as the mature plantation found in the Survey Area. It was observed throughout the winter, with a peak count of 11 individuals in January 2016.
Passerines – crossbill species	Crossbills were observed in February and March 2016 and associated with woodland and woodland edge habitat. Crossbill is known to breed earlier than other species to take advantage of the standing crop of pine cone seeds which cannot be accessed by other species over winter; it's crossed bill specialising in extracting these and allowing it to rear its young early in the season.

Breeding Birds 2016

- 4.2.5 Seventy species of bird were recorded in surveys during the breeding season. These are shown, along with their assessed breeding status, in Table 4.8. However, no more than 48 species recorded on any single visit. This indicates that there are a number of passage species which may be using the Survey Area either infrequently for foraging (such as raptors), have large territories which may extend outside of the Survey Area, or are present in low numbers and are therefore recorded infrequently.
- 4.2.6 Unidentified crossbill species were recorded. Crossbill species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). This is the only species listed on Schedule 1 recorded during the breeding bird surveys in 2016.
- 4.2.7 Two osprey nest sites, which were identified through consultation, were checked for use during the breeding season. They were located outside of the survey area, 460m and 990m respectively from the Proposed Scheme. One of the nests was active, with a pair of rearing chicks. Both nests are screened from the road by surrounding woodland.

Table 4.8: Breeding Birds Recorded During Surveys from April to July 2016. “Breeding” Indicates that this Species has a Breeding Territory within the Survey Area; “Present” that the Species is Present but with No Evidence of Breeding Within the Survey Area

Species	SBL	BoCC	Apr-16	May-16	Jun-16	Jul-16	Peak Count	Status and No. Territories
Great crested grebe					Y		42	Present



Species	SBL	BoCC	Apr-16	May-16	Jun-16	Jul-16	Peak Count	Status and No. Territories
Grey heron						Y	1	Present
Greylag goose		Amber	Y	Y			31	Present
Teal		Amber	Y		Y		3	Present
Mallard		Amber	Y	Y	Y	Y	13	Present
Sparrowhawk				Y			1	Present
Buzzard			Y	Y	Y	Y	5	Present
Osprey	Y	Amber		Y	Y	Y	1	Present
Kestrel	Y	Amber			Y	Y	1	Present
Red grouse	Y	Amber	Y				3	Present
Pheasant			Y			Y	12	Present
Oystercatcher		Amber	Y	Y		Y	6	Present
Lapwing	Y	Red	Y	Y	Y	Y	5	Breeding
Snipe		Amber	Y				2	Present
Woodcock	Y	Red	Y				1	Present
Curlew	Y	Red		Y			1	Present
Common sandpiper		Amber		Y	Y	Y	1	Present
Black-headed gull	Y	Amber	Y	Y	Y	Y	5	Present
Common gull		Amber		Y	Y		4	Present
Wood pigeon			Y	Y	Y	Y	25	Breeding
Collared dove			Y		Y	Y	2	Present
Cuckoo	Y	Red		Y			1	Present
Green woodpecker				Y			1	Present
Great spotted woodpecker			Y		Y	Y	5	Present
Skylark	Y	Red				Y	1	Present
Sand martin				Y			5	Present
Swallow				Y		Y	10	Present
House martin		Amber			Y		1	Present
Tree pipit	Y	Red			Y		2	Present
Meadow pipit		Amber	Y	Y	Y	Y	61	Breeding
Grey wagtail		Red	Y	Y			15	Present
Pied wagtail			Y	Y	Y	Y	10	Present
Wren			Y	Y	Y	Y	71	Breeding
Dunnock		Amber	Y	Y	Y	Y	8	Breeding
Robin			Y	Y	Y	Y	29	Breeding
Whinchat		Red		Y			1	Present
Wheatear				Y	Y		1	Present
Spotted flycatcher	Y	Red		Y	Y	Y	5	Breeding
Pied flycatcher		Red		Y		Y	1	Breeding

Species	SBL	BoCC	Apr-16	May-16	Jun-16	Jul-16	Peak Count	Status and No. Territories
Blackbird			Y	Y	Y	Y	23	Breeding
Song thrush	Y	Red	Y	Y	Y	Y	20	Breeding
Redwing	Y	Red	Y				1	Present
Mistle thrush		Red	Y	Y	Y	Y	11	Present
Grasshopper warbler	Y	Red		Y		Y	3	Present
Sedge warbler					Y	Y	7	Present
Reed warbler				Y			1	Present
Garden warbler					Y		2	Present
Blackcap				Y	Y	Y	2	Breeding
Chiffchaff			Y	Y		Y	6	Present
Willow warbler		Amber		Y	Y	Y	67	Breeding
Goldcrest			Y	Y	Y	Y	25	Present
Long-tailed tit			Y	Y	Y	Y	8	Present
Crested tit			Y		Y		2	Present
Coal tit			Y	Y	Y	Y	47	Breeding
Blue tit			Y	Y	Y	Y	27	Breeding
Great tit			Y	Y	Y	Y	51	Breeding
Treecreeper			Y	Y	Y	Y	3	Present
Jay						Y	2	Present
Jackdaw			Y	Y	Y	Y	10	Present
Rook			Y	Y			5	Present
Carrion crow			Y		Y	Y	40	Present
Starling		Red	Y	Y		Y	5	Present
House sparrow	Y	Red	Y	Y	Y	Y	10	Breeding
Chaffinch			Y	Y	Y	Y	106	Breeding
Greenfinch			Y	Y	Y		2	Present
Goldfinch			Y		Y		5	Present
Siskin			Y	Y	Y	Y	44	Present
Crossbill			Y		Y	Y	8	Breeding
Bullfinch	Y	Amber			Y	Y	4	Present
Reed bunting	Y	Amber	Y	Y			1	Breeding

Breeding Birds 2018

4.2.8 A total of 60 species were recorded as holding territory within the Survey Area. Of this total, 35 were Target Species and 25 were Secondary Species. Definitions of the criteria for recording Target and Secondary Species are described in Section 2. Secondary Species showing evidence of breeding behaviour in the Survey Area were noted but individual territories were not mapped.

Table 4.9: Breeding Target Species Recorded During Surveys from April to July 2018. Totals of Final Territories as Derived from Comparison of Mapping from the Four Visits.

Species	SBL	BoCC	Schedule 1	Number of Territories
Greylag Goose		Amber		4
Teal		Amber		1
Goldeneye		Amber		1
Buzzard				4
Oystercatcher		Amber		3
Lapwing	Y	Red		4
Curlew	Y	Red		2
Woodcock	Y	Red		1
Snipe		Amber		2
Common Sandpiper		Amber		4
Black-headed Gull	Y	Amber		Colony-52 birds
Common Gull		Amber		Colony-48 birds
Cuckoo	Y	Red		5
Raven				1
Crested Tit			Y	4
House Martin		Amber		Colony-10 birds
Willow Warbler		Amber		128
Wood Warbler	Y	Red		1
Starling	Y	Red		3
Ring Ouzel	Y	Red		1
Redwing	Y	Red	Y	4
Song Thrush	Y	Red		13
Mistle Thrush		Red		13
Spotted Flycatcher	Y	Red		37
Redstart		Amber		2
Dipper		Amber		1
House Sparrow	Y	Red		3
Duncock	Y	Amber		7
Grey Wagtail		Red		3
Meadow Pipit		Amber		5
Tree Pipit	Y	Red		21
Bullfinch	Y	Amber		6
Lesser Redpoll	Y	Red		15
Crossbill species	Y	Amber	Y	2
Reed Bunting	Y	Amber		3

4.2.9 The following Secondary Species were recorded as holding territory in the Survey Area:

- Goosander;
- Pheasant;
- Woodpigeon;
- Great spotted woodpecker;
- Green woodpecker;
- Jackdaw;
- Crow;
- Coal tit;
- Blue tit;
- Great tit;
- Swallow;
- Long-tailed tit;
- Chiffchaff;
- Sedge wabler;
- Blackcap;
- Garden warbler;
- Goldcrest;
- Wren;
- Treecreeper;
- Blackbird;
- Robin;
- Pied wagtail;
- Chaffinch;
- Goldfinch; and
- Siskin.

Notable Non-Breeding Species Recorded in 2018

4.2.10 During the course of the breeding bird survey there were a number of observations of species of conservation concern with no evidence that these were breeding in the Survey Area. Records included a number of observations of raptors including red kite, golden eagle, white-tailed eagle, goshawk, hen harrier and peregrine falcon.

Incidental Results from Other Surveys

4.2.11 Slochd Summit rockface was subject to climbing surveys to investigate the possibility of the presence of bat roosts there. During the survey three nest sites were found on the rockface, identified as one raven and two kestrel nests.

Important Bird Species

- 4.2.12 Taking the breeding bird surveys in 2016 and 2018 in combination, of the 105 bird species listed on the SBL, 20 were recorded during the breeding bird surveys. In addition, 18 Red List BoCC species and 19 Amber List BoCC species were recorded. The breeding status of the SBL species recorded within the Survey Area is discussed in Table 4.10.

Table 4.10: SBL Listed Species Recorded in the Survey Area

Species	Assessment
Osprey	<p>The area surrounding the Proposed Scheme is used by breeding osprey. The Aviemore area, particularly Abernethy Forest, has been the stronghold of the UK osprey population for several decades and an important site for this species as it recovers its numbers following a historic crash caused by poisoning from pesticides. However, no breeding sites were identified in the Survey Area and birds seen during the spring/summer walked transects were birds flying over, likely between their nests elsewhere and feeding spots (such as the Rothiemurchus Fishery, where tourists come to watch osprey fish). Osprey is BoCC Amber listed, and on the SBL due to historic threats.</p> <p>Osprey breed in the local area but not in the Survey Area; of two known nesting sites close to the A9, only one ~530m from the Proposed Scheme was occupied (the other, ~990m from the scheme, was not in use).</p>
Kestrel	<p>Although a widespread resident breeding falcon in the UK, common kestrel is declining in a number of areas including Scotland. This species is on the SBL as there have been declines of >25% of the population of this species in the last 25 years. It is also a BoCC Amber listed species.</p> <p>Surveys identified a single kestrel on two survey visits, and two possible nest sites at the rockface at Slochd Summit. It breeds in the survey area, and forages in open spaces along roadsides.</p>
Peregrine	<p>Details of four historic peregrine falcon nest sites relevant to the Survey Area were provided in 2018 following correspondence with Darrell Stevens of the RSPB. The exact locations of these sites are considered confidential and are, therefore, not provided here. Given the distance of nesting sites from the scheme, it is not considered that any nest sites would be impacted.</p>
Red grouse	<p>Red grouse are found on moorland adjacent to A9 around Loch Alvie. The majority of habitat in the area is woodland and unsuitable for this species. This explains the limited number of sightings, only 3 individuals in April 2016. No breeding birds were identified within the Survey Area.</p> <p>Red grouse are on the SBL as there have been declines of >25% of the population of this species in the last 25 years. The breeding population in the UK is generally found on heather moorland</p>
Lapwing	<p>In 2016 lapwings were recorded throughout the survey as feeding individuals and small groups, with a single breeding pair identified on moorland to the north-west of Loch Alvie. This pair were defending a territory and likely had young. In 2018 a small colony comprising four pairs was noted on moorland north-west of Slochd Summit.</p> <p>Lapwing is listed on the SBL due to declines of >25% in Scotland in the last 25 years. It is BoCC Red listed.</p> <p>Lapwing are breeding in the Survey Area, with 5+ territories identified.</p>
Woodcock	<p>This woodland specialist was observed on only a single visit in April 2016, likely a bird migrating through the area to its breeding grounds. No breeding territories were found within the Survey Area. In 2018 a bird was disturbed from the same general area of woodland during visits in June and July. This observation was registered as representing a territory. This species was likely to be overlooked</p>



Species	Assessment
	<p>during Breeding Bird Surveys in 2016 and 2018 due to its crepuscular habits. It is considered likely that woodcock are widespread in small numbers as a breeding species in the Survey Area.</p> <p>Woodcock are on the SBL as there have been declines of >25% of the population of this species in the last 25 years.</p>
Curlew	<p>In 2016 this species was observed on only a single visit in May, likely a bird breeding in the surrounding area but using habitats close to the A9 to feed. No breeding territories were found within the Survey Area. In 2018 two territories were identified within the Survey Area on wet moorland to the north-west of Slochd Summit.</p> <p>Curlew are on the SBL as there have been declines of >25% of the population of this species in the last 25 years.</p>
Black-headed gull	<p>Breeding birds were observed within the Survey Area in 2018. A mixed colony with common gull was noted in an area of wet moorland and a small pond north-west of Slochd Summit. A peak of 52 adult black-headed gull and 48 adult common gull were noted. Counts of young birds comprised 15 black-headed gull and 14 common gull. Black-headed gull is on the SBL as there have been declines of >25% of the population of this species in the last 25 years.</p>
Cuckoo	<p>This species is breeding in the Survey Area with five territories recorded in 2018.</p> <p>Cuckoo is on the SBL because it is a UK Priority Species, and was previously a UK BAP species.</p>
Skylark	<p>One individual skylark was recorded in July 2016, and no breeding territories were identified. Skylark are most frequently found breeding in moorland and open grasslands; such habitats are not common in the Survey Area, being dominated by woodland. The skylark shares much of its habitat with the meadow pipit which was recorded within suitable habitat (mainly around the Loch Alvie area).</p> <p>Skylark is listed on the SBL, and is also BoCC Red listed.</p>
Tree pipit	<p>Two individuals of this species were observed during June 2016 but no breeding territories were identified. In 2018 21 territories were identified in the Survey Area within additional areas of coverage from 2016. Tree pipit is on the SBL as it is a UK Priority Species and is also BoCC Red listed.</p>
Dunnock	<p>Two breeding territories were recorded in the Survey Area in 2016 with seven in additional areas of coverage in 2018.</p> <p>Dunnock is an SBL species and BoCC Amber listed. There has been a marked decrease in the UK population, though the general breeding trend within Scotland is of a steady increase since 1994.</p>
Spotted flycatcher	<p>Two spotted flycatcher territories were identified in the Craigellachie National Nature Reserve to the west of Aviemore in 2016. In 2018 37 territories were identified in additional areas of coverage to 2016, widely spread from Loch Alvie to Carrbridge. This reflects the extensive suitable habitat for the species comprising deciduous woodland and pine woodland in the remaining areas requiring survey.</p> <p>Spotted flycatcher is listed on the SBL because it is listed as a UK Priority Species.</p>
Ring ouzel	<p>This species was identified as using habitats at Slochd Summit by the RSPB during consultation and a single territory was recorded in this area in 2018. Ring ouzel is an SBL species and is BoCC Red listed.</p>
Song thrush	<p>In 2016 song thrush was a commonly observed species; there were 17</p>



Species	Assessment
	<p>observations in April, 18 in May, 20 in June and 8 in July within woodland, scrub and fringe sites. Eleven breeding territories were identified making it one of the most abundant breeding species in the Survey Area. In 2018 13 territories were recorded in additional areas of coverage to 2016.</p> <p>Song thrush is an SBL species and also BoCC Red listed.</p>
Redwing	<p>In 2016 no breeding territories were identified with a single migrant bird seen in April. In 2018 four territories were identified between Aviemore and Loch Alvie. The Scottish Highlands support a small breeding population which is important in a UK context as the only regular area where breeding occurs. The Rare Breeding Birds Panel recorded a five year mean of 13 breeding pairs in their 2014 annual report^{xix}.</p> <p>Redwing is a SBL species due to a greater than 25% decline in numbers over the last 25 years.</p>
Grasshopper warbler	<p>In May 2016, three grasshopper warblers were recorded. However, this was not followed up by repeat observations in the same areas and July was the only other month for this species to be heard in the Survey Area. No breeding territories were identified. No territories identified in 2018.</p> <p>This trans-Saharan migrant breeds in dense vegetation such as reed, scrub and wet grassland, often near water. Grasshopper warbler is a SBL species due to a greater than 25% decline in numbers over the last 25 years, and also because it is a UK Priority Species.</p>
Wood Warbler	<p>A single territory was identified in 2018. Wood Warbler is a SBL species due to a greater than 25% decline in numbers over the last 25 years and is a UK priority species.</p>
House sparrow	<p>Once a common species associated with towns throughout the UK, this species has declined and is now of conservation concern. It is a colonial breeding resident bird, and is most successful where parks and gardens with bushes, trees and scrub adjoin residential or other development where they find food. It was observed throughout the survey in 2016 and three breeding territories in residential parts of Aviemore were identified. Three territories were also identified in 2018 in additional areas of coverage to 2016. House sparrow breeds in the Survey Area with 3+ territories identified. It is SBL listed due to it being a UK Priority Species.</p>
Siskin	<p>Siskin was present in the Survey Areas in 2016 and 2018. Due to the practicalities of recording individual territories for this numerous species, it was treated as a Secondary Species in 2018. Siskin breed almost exclusively in pine woodlands and this species was closely associated with this habitat throughout the survey visits. It is a SBL species due to a greater than 25% decline in numbers over the last 25 years.</p>
Bullfinch	<p>No evidence of breeding was recorded within the Survey Area in 2016. Six territories were recorded within the Survey Area in 2018 in additional areas of coverage to 2016.</p> <p>Bullfinch is an SBL species and is also BoCC Amber listed. Its general trend in Scotland is of a steady increase since 2000^{xx}.</p>
Crossbill species	<p>Crossbill species were recorded as a breeding species in 2016 in the Survey Area. Two territories were recorded in additional areas of coverage in 2018 in Scots pine woodland in the Carrbridge area. Due to the complexities of identifying crossbills in Scotland with the potential presence of three species in this part of the Highlands incorporating the Survey Area, records are treated as crossbill species for the purposes of assessment and mitigation with all three species receiving the same protection. However, the ornithologist undertaking surveys within additional areas of coverage in 2018 considers that the two territories in the Survey Area related to Scottish or parrot crossbill and not</p>

Species	Assessment
	common crossbill based on vocalisations and bill shape and structure. Scottish crossbill is endemic while the Highlands are the only regular breeding area for parrot crossbill in the UK. Crossbill species are listed as Schedule 1 species on the Wildlife and Countryside Act (1981, as amended).
Reed bunting	This species is resident or sometimes a short-range migrant, and associated with wetland habitats or agricultural fields with wet ditches containing reeds. Reed bunting breeds in reeds or in the open where tussocky grassland is prevalent. In 2016 one breeding territory was identified near Loch Alvie. Three territories were recorded in additional areas of coverage in 2018. It is SBL listed due to it being a UK Priority Species.

Capercaillie

Habitat Assessment

- 4.2.13 The assessment undertaken in March 2017 established 69 separate habitat blocks within the Survey Area. Of these habitat blocks, 29 were found to support a bilberry understorey, and were considered able to support a brood of capercaillie. Remaining habitat blocks comprised 21 which could support non-breeding capercaillie year-round, and 19 which could only support capercaillie in winter. Results are shown in Figure 12.15d.
- 4.2.14 The percentage cover of bilberry varies across the habitat blocks from between 1% and 70% ground cover. Of the 29 habitats blocks that support bilberry, most are dense woodland and of plantation origin, however mature open, old open, thicket and high crown are also represented. Scots pine is the dominant tree species in the 26 identified habitat blocks, being present in 21 woodland areas, though in several blocks other species were also present. The remaining five blocks are comprised of lodgepole pine plantation.

Capercaillie Survey Results

- 4.2.15 Annex B details individual findings of capercaillie presence alongside the date of discovery and location.
- 4.2.16 Evidence of capercaillie was recorded in areas able to support brood rearing (i.e. those with the correct canopy structure, age, understorey etc) with the exception of those small areas subject to severance from the wider pine woodlands, due to the existing A9, A95 and the Network Rail land. Results of the survey are shown in Annex A. and mapped in Figure 12.15d.
- 4.2.17 The density of field sign evidence was greatest in woodlands near Carrbridge, on the eastern side of the Proposed Scheme, at Habitat Area 25 and those surrounding it. Habitat Areas 15 and 6 were also centres of capercaillie activity. In other areas, especially those around Aviemore, which is heavily disturbed, field signs were limited.
- 4.2.18 No evidence of lekking was found during the surveys; however no specific lek surveys were undertaken. Detailed desk study data showing lek locations was provided by the RSPB, and indicated that no leks were present within the Survey Area. The closest lek site identified by the RSPB was ~530m to the east of the Proposed Scheme near Carrbridge.

- 4.2.19 Fresh evidence of capercaillie was recorded with lower frequency during the May surveys than compared with March, April, June and July surveys as during May the birds are at lek sites and are pairing with mates. There are no lek sites within the survey area, and hence capercaillie field signs were recorded at a lower frequency during this month.
- 4.2.20 Clocker droppings were only recorded during the June surveys in Habitat Area 2. These droppings are a product of brood-rearing females, where the female 'stores' her faecal matter and discharges it in a larger dropping so that she does not leave her nest site repeatedly. Based on the survey data Habitat Area 2 is used for brood rearing, and following the precautionary principal it is assumed that the areas adjacent to this (Habitat Areas 1, 3 and 4) are likely to support brood rearing due to their proximity to area 2. However, no evidence of brood rearing was found at any other locations in the Survey Area.
- 4.2.21 The survey results suggest that capercaillie use different areas of woodland at different times of the year. Anecdotal evidence suggests that the species will use high density woodland in winter as protection from weather, but during the spring and summer, move into bilberry-rich, open woodland where food is more abundant. These survey results are consistent with this anecdotal evidence; capercaillie have been recorded in winter in low quality habitats that were adjacent to higher quality habitats.

Incidental Records

- 4.2.22 A female capercaillie was observed on 12 January 2016 during the wintering bird surveys, at OS Grid Reference NH 85722 23669 near Slochd (this location is within Habitat Area 15 and supports coniferous plantation woodland, which has been assessed as wintering habitat).
- 4.2.23 A female capercaillie was observed on 14 March 2017, flushed from a wintering roost site at OS Grid Reference NH 86363 24084, near Carrbridge (this location is within Habitat Area 6 and supports coniferous plantation woodland). This area of woodland was monitored throughout the surveys and no further evidence of capercaillie use was recorded after this observation. This appears to correlate with the anecdotal evidence collected during surveys, showing the female moving out of her wintering habitat and not being recorded there, by way of fresh droppings, during the breeding months.
- 4.2.24 A male capercaillie was observed on 13 June 2017, flushed from a dust-bath at OS Grid Reference NH 91249 17950 (Habitat Area 56, coniferous semi-natural and plantation woodland near Loch Vaa).

5. Nature Conservation Evaluation

5.1 Overview

- 5.1.1 Species of bird have been grouped both based on importance and into communities based on the broad habitat types they occupy. For example, breeding blackbird, great tit and blue tit are all important at the local scale, and can be classified as garden birds as they are found in a wide variety of different habitats, but particularly favour gardens, parks, farms and other forms of human development. They have therefore been classified into the "Common and Garden Birds" community. Similarly, breeding siskin and spotted flycatcher are primarily associated with woodlands, and thus have been classified into the "Woodland Birds" community.

- 5.1.2 However, particularly notable species, such as capercaillie and osprey, have been assessed independently rather than as part of a particular bird community.
- 5.1.3 The importance of birds wintering in the Survey Area ranges between the categories Less than Local to Authority Area.
- 5.1.4 Thirteen wintering species are of **Authority Area** importance as they are SBL species and/or listed on the Highland BAP^{xxi} / CNAP^{xxii}. However, few of these species are found in the area throughout winter, and many use the area during migration to shelter or feed, or vacate the area during the coldest months; waders such as lapwing and oystercatcher fall into this category, as well as finches (crossbill species and siskin) and waterfowl (greylag goose, goldeneye). Thus, such habitats support only part, not all, of their winter lifecycle. Wintering species important at this level fall into the following communities:
- **Moorland specialists - red grouse.** This species is an upland moorland specialist, and the only bird species of its type in the area which uses these habitats throughout winter. Red grouse was associated with bog and heathland habitats east of Slochd Summit (chainage 19,000 to 20,000) with a peak count here of 6 individuals. It is also likely to be found in areas of heathland above Slochd Summit itself which was not surveyed.
 - **Common/garden birds - dunnock, house sparrow, song thrush.** These birds are associated with a wide variety of semi-natural habitats surrounding human development in winter, but in the Survey Area particularly around parks, gardens, farms and other man-made areas. Peak counts of 15 individual song thrush were recorded, mainly from the southern to central parts of the Survey Area, peak counts of two individual dunnock and ten house sparrow were also recorded.
 - **Woodland birds - bullfinch, crossbill species, siskin.** Wintering birds associated primarily with broadleaved, coniferous and mixed woodlands. Bullfinch and common crossbill were represented by peak counts of eight and 12 individuals respectively from coniferous plantation woodland habitats throughout the Survey Area, with the greatest density of sightings between chainage 9,000 and 10,000. Siskin were represented by a peak count of nine individuals, and identified mainly using coniferous plantation and broadleaved semi-natural woodland around Aviemore, with individual sightings from woodland near Loch Alvie and Slochd.
 - **Waterbirds - greylag goose, goldeneye.** Birds associated primarily with water bodies such as rivers, lochs and ponds. They may also graze on agricultural pasture or other grasslands, depending on the species. Greylag geese were observed flying over the Survey Area but two groups of ~30 individuals were seen foraging on improved grassland pasture on the northern bank of the River Dulnain (chainage 16,700 to 17,000) in February and March. Goldeneye were observed using both Loch Alvie and Loch Vaa (peak counts of 6 birds each) throughout winter, and these sites likely function as foraging and refuge areas as long as they remain ice free.
 - **Wading birds - lapwing, oystercatcher.** These wetland birds use agricultural pasture or other grasslands within the Survey Area to feed in winter. Lapwing were represented by a peak count of 18 individuals, using heathland on the southern end of the Proposed Scheme near Loch Alvie (chainage 1,100 to 2,200). There was also a group of seven individuals using an improved field to the north of Aviemore (chainage 8,000). Oystercatcher were observed using the same habitats as lapwing, with a peak count of five individuals using the Loch Alvie area, and one individual using the improved field.
 - **Gulls - black-headed gull, herring gull.** These species are shorebirds, but are often found inland and use a variety of habitats opportunistically for roosting and foraging in winter. Black-headed gull is represented by two sightings from heathland to the north

of Loch Alvie at Chainage 1,200 to 1,400. Four sightings of herring gull were made from a wider variety of habitats; semi-improved grassland adjacent to Loch Alvie (chainage 2,700), habitats associated with development within Aviemore (chainage 6,000 to 6,500) and flying over coniferous plantation woodland to the north of Aviemore (chainage 9,300).

5.1.5 Twenty-eight wintering species are of **Local** importance; they are common and widespread UK species with no listing on the SBL, Highland BAP or CNAP. They can be found in most parts of the UK, and many benefit from the human influence on the landscape, including farming and residential development; many are typical garden birds (e.g. robin, blackbird, great tit) and/or birds that thrive in modified habitats such as plantation woodland (e.g. coal tit, chaffinch), artificial ponds and lakes (e.g. mallard) and buildings (e.g. starling, pied wagtail). Many are found in the Cairngorms throughout winter, but some (e.g. meadow pipit, goldcrest, teal) vacate the area during the coldest months. Crested tit is only found in pine woodlands in the Scottish Highlands within the UK, where it is a common and abundant species; it is widespread in coniferous woodland throughout the rest of Europe. Wintering species important at this level fall into the following communities:

- **Common/garden birds - blackbird, blue tit, collared dove, chaffinch, green woodpecker, goldcrest, grey wagtail, greenfinch, great spotted woodpecker, great tit, jay, long-tailed tit, pied wagtail, robin, starling, sparrowhawk, wood pigeon, wren.** Birds associated with a wide variety of semi-natural habitats surrounding human development in winter, particularly around parks, gardens, farms and other man-made areas, including planted broadleaved woodland and coniferous woodland around properties. These species are often abundant, with relatively high number of sightings; for example, blue tit is represented by peak counts of 72 individuals, and robin 58 individuals, using suitable habitat throughout the Survey Area. These birds are the least sensitive to disturbance, seeking out habitats close to human development, and the most resilient to habitat loss as they readily take up residence in recreated or ornamental planting.
- **Woodland birds - coal tit, crested tit, mistle thrush, treecreeper.** Wintering species associated primarily with broadleaved, coniferous and mixed woodlands. Coal tit was common and widespread, represented by a peak count of 112 individuals in both broadleaved semi-natural and coniferous plantation woodland throughout the Survey Area, and often in association with human developments. Crested tit was found in a similar spread of habitats but was much less common and less likely to be found near human development; a peak count of 11 individuals was recorded for this species. Mistle thrush was also fairly common in woodland habitats in the Survey Area, represented by a peak count of seven individuals. The greatest density was associated with areas around Loch Alvie (chainage 1,600 to 2,700) and the Aviemore area (chainage 8,000 to 12,700), with one sighting made within woodland around property adjacent to the River Dulnain (chainage 16,400). Treecreeper was mainly associated with broadleaved woodland around Aviemore, and represented by a peak count of seven individuals.
- **Farmland, grassland and heathland birds – skylark, meadow pipit, red-legged partridge.** Birds associated with open farmland habitat and heathland/moorland environments lacking tree cover. Meadow pipit was observed only on semi-improved grassland and heathland habitats around Lough Alvie (chainage 1,300 to 2,700) where they find forage during the winter. Although skylark is listed on the SBL, it was only represented by a single sighting during surveys (likely an early passage migrant) and the Survey Area does not support significant wintering populations of this species. As such, it has been evaluated only as of Local importance. There was only a single sighting of red-legged partridge from semi-improved grassland at Loch Alvie (chainage 1,900); this species is non-native and the bird observed is likely feral, released from a farm or shoot.

- **Waterbirds - mallard, teal.** Birds associated primarily with water bodies such as rivers, lochs and ponds. They may also graze on agricultural pasture or other grasslands. Both species were observed using Loch Alvie and Loch Vaa during WeBS surveys, with a peak count of eight teal from ponds adjacent to chainage 1,200. Mallard were also found at this location, with a peak count of nine individuals recorded, and a further three sightings of this species flying over the Survey Area.
- **Raptors – buzzard.** This species was observed flying over a variety of habitats, but centred on woodland where it forages and roosts in winter. There were 15 sightings in total, with a peak count of 6 individuals. The locations of sightings indicate that this species roams across woodland and open habitats such as farmland and heathland (specifically around Loch Alvie) foraging for carrion and hunting prey. Locations at which this species was observed are: chainage 600 to 2,700 (Loch Alvie; heathland and woodland), 6,100 to 6,400 (Aviemore; semi-improved grassland and habitats associated with development, as well as adjacent broadleaved woodland), 8,000 to 11,900 (broadleaved semi-natural woodland and coniferous plantation woodland to the north of Aviemore) and 21,400 (coniferous plantation woodland at Slochd).

5.1.6 These species do not face specific threats to their conservation status, other than that experienced by all birds whole, the numbers of which have suffered historic declines.

5.1.7 Six wintering species are of **Less than Local** importance as they are not only common and widespread, but are also controlled for conservation purposes to limit their numbers (especially in the Cairngorms where corvids such as rook and carrion crow are known predators on the chicks of birds such as capercaillie). These species are resident throughout winter, and are dependent on habitats and food sources provided by human development to maintain their high numbers; for example, corvids are scavengers on rubbish from restaurants and residential development, as well as using ploughed fields to feed. In addition, pheasant is an introduced species which is bred for shooting. Species falling into this importance level are: carrion crow, Canada goose, hooded crow, jackdaw, pheasant and rook.

5.2 Breeding Birds

5.2.1 The importance of birds breeding in the Survey Area ranges between the categories Less than Local to National. Capercaillie have been considered separately below.

5.2.2 Three species are considered of **National** importance:

- Osprey is a migrant species that has its UK breeding stronghold in the Cairngorms. Abernethy Forest nearby is one of the key breeding sites for this raptor species. Several statutory sites of national importance near the Survey Area are designated for osprey, and an active nest was located over 400m away in coniferous woodland which is used by this species for breeding. Although osprey do not breed in habitats within the Study Area, they are known to forage in waterbodies within and adjacent to the Survey Area. The remainder of the Survey Area is considered to be of poor quality for foraging osprey.
- Redwing has its very small UK breeding population almost exclusively in the Scottish Highlands. Redwing is a SBL species and BoCC Red listed.
- Crossbill species. It is considered likely that crossbill species recorded in 2018 were either Scottish or parrot crossbills. Scottish crossbill is endemic to the region and parrot crossbill has its only regular breeding areas in the UK in the Scottish Highlands. Crossbills are SBL species, BoCC Amber listed and protected under Schedule 1 of the Wildlife and Countryside Act (1981, as amended).

- 5.2.3 Three breeding species are of **Regional** importance; lapwing, curlew and ring ouzel. These are SBL species, and are also listed on the Highland BAP/CNAP:
- Lapwing is a wading bird that uses moorland, agricultural pasture and other grasslands within the Survey Area at Loch Alvie (chainage 1,100- 1,600) to feed and breed; a peak count of 5 individuals was made at this location in 2016, and one breeding territory was confirmed here. In addition, foraging individuals were seen using semi-improved grassland and bare ground habitat around chainage 8,400 to the north of Aviemore. In 2018, four territories were recorded north-west of Slochd Summit on wet moorland.
 - Curlew has undergone a severe decline in the UK. Two territories were recorded in 2018 on wet moorland to the north-west of Slochd Summit.
 - Ring ouzel breeds on small crags, scree and broken ground in upland and moorland areas of the UK. A single territory was identified in 2018 on rock faces and scree at Slochd Summit (chainage 23,000-23,400).
- 5.2.4 Sixteen breeding species are of **Authority Area** importance as they are SBL species and/or listed on the Highland BAP/CNAP. They represent breeding birds that remain fairly common in suitable habitat throughout the UK. Birds in this category include resident birds (bullfinch, dunnock, red grouse) as well as short range migrants (siskin, woodcock) and long-range migrants (cuckoo, grasshopper warbler, wood warbler and spotted flycatcher). Breeding species important at this level are divided into the following communities:
- **Moorland specialists - red grouse.** During the breeding season red grouse was less commonly encountered in the Survey Area than during winter, with only two observations from heathland habitats east of Slochd Summit (chainage 19,000 to 20,000). No breeding birds were identified.
 - **Common/garden birds - dunnock, house sparrow, song thrush.** These species are found in a wide variety of semi-natural habitats in spring and summer, but particularly around parks, gardens, farms and other developments.
 - **Woodland birds - bullfinch, spotted flycatcher, siskin, tree pipit and wood warbler.** Breeding birds identified from within semi-natural broadleaved woodland, coniferous plantation woodland and mixed woodlands.
 - **Farmland, grassland and moorland birds - grasshopper warbler, kestrel, reed bunting.** These species are associated with open farmland habitat (improved and semi-improved grassland, arable etc.) and moorland environments lacking tree cover.
 - **Waterbirds - greylag goose.** Breeding territories were identified in 2018 at Loch Alvie and on wet moorland north-west of Slochd Summit.
 - **Wading birds – oystercatcher.** No confirmed breeding in 2016, three territories were recorded in 2018 at Loch Alvie, Aviemore and on wet moorland to the north-west of Slochd Summit.
 - **Gulls - black-headed gull.** A mixed breeding colony with common gull on wet moorland to the north-west of Slochd Summit in 2018 with fledged young recorded.
- 5.2.5 Forty-nine species of breeding birds are of **Local** importance as they are common and widespread UK breeding bird species. This list includes those resident birds which remain in the area throughout winter, but also common migrants such as warblers (e.g. garden warbler, willow warbler, reed and sedge warbler) and flycatchers (pied flycatcher) which are not listed on the SBL, Highland BAP or CNAP. Although many of the residents are primarily associated with man-made habitats such as farmland and residential development, these migrants mainly use woodland and scrub, both within areas of development and more natural habitats beyond. They represent species which

are more generalist in their habitat requirements and which are not thought to be under particular threat (other than that faced by birds as a whole), and are found in many different parts of the UK during the breeding season.

- **Common/garden birds - blackbird, blackcap, blue tit, buzzard, chiffchaff, collared dove, chaffinch, green woodpecker, grey wagtail, goldfinch, greenfinch, great spotted woodpecker, great tit, garden warbler, house martin, jay, long-tailed tit, pied wagtail, robin, starling, sparrowhawk, swallow, wood pigeon, wren.** Birds associated with a wide variety of semi-natural habitats in spring and summer, but particularly around parks, gardens, farms and other developments. Birds associated with a wide variety of semi-natural habitats surrounding human development in the breeding season, but particularly around parks, gardens, farms and other man-made areas, including planted broadleaved woodland and coniferous woodland around properties. These species are often abundant, with relatively high number of sightings. For example, blue tit is represented by a peak count of 21 individuals and three breeding territories, and robin a peak count of 23 individuals and 14 breeding territories throughout the Survey Area. These birds are the least sensitive to disturbance, seeking out habitats close to human development, and the most resilient to habitat loss as they readily take up residence in recreated or ornamental planting.
- **Woodland birds - coal tit, crested tit, goldcrest, mistle thrush, pied flycatcher, treecreeper, willow warbler.** Breeding birds associated primarily with broadleaved, coniferous and mixed woodlands. These were all common and widespread breeding birds within the survey area, especially coal tit which is highly abundant.
- **Farmland, grassland and heathland birds - Meadow pipit, wheatear, whinchat, skylark.** Birds associated with open farmland habitat and heathland/moorland environments lacking tree cover. With a peak count of 61 individuals and 11 identified breeding territories, meadow pipit is a common bird throughout grassland and moorland habitats within the Survey Area. Wheatear and whinchat were represented by peak counts of only a single individual and were not confirmed as breeding in the Survey Area. Lastly, although skylark is listed on the SBL, it is only represented by a single sighting during surveys (likely an early passage migrant) and the Survey Area does not support significant breeding populations of this species.
- **Reedbed and riparian birds - reed warbler, sedge warbler.** Migratory breeding warblers, the former forming nests in reedbed and the latter in scrub adjacent to rivers, streams and wet ditches. Reed warbler was rare, represented only by a single sighting in a ditch to the north of Loch Alvie (chainage 800). Sedge warbler was more common with a peak count of seven individuals, mainly from bog habitat to the east of Slochd and from habitats north of Loch Alvie.
- **Sand martin** - migratory breeding species nesting in holes in sandy banks, such as those in the meanders of rivers and streams, or man-made sites such as quarries. Within the Survey Area, this species was seen only in May foraging around heathland on the north side of Loch Alvie (chainage 1,800).
- **Waterbirds** - grey heron, mallard, teal, great crested grebe, snipe. Birds associated primarily with water bodies such as rivers, lochs and ponds. They may also graze on agricultural pasture or other grasslands, depending on species. Mallard was common with a peak count of 13 individuals. Other species in this group were relatively scarce, represented by individual sightings or only a few individuals. A teal territory was noted in 2018 on a small pond to the north-west of Slochd Summit with one fledged young observed. A single snipe territory was identified in 2018 on wet moorland to the north-west of Slochd Summit.
- **Raptors – buzzard.** This species was observed in similar areas and habitats as were occupied in winter. There were 14 sightings in total, a peak count of five birds, but no

breeding territories identified in 2016. Locations of sightings indicate that this species roams across woodland and open habitats such as farmland and heathland (specifically around Loch Alvie) foraging for carrion and hunting prey as for the winter period. Locations at which this species was observed are: chainage 1,500 to 3,200 (Loch Alvie; heathland and woodland), 6,300 (Aviemore; semi-improved grassland and habitats associated with development, as well as adjacent broadleaved woodland), 7,800 to 11,300 (broadleaved semi-natural woodland and coniferous plantation woodland to the north of Aviemore) and 22,700 (coniferous plantation woodland at Slochd). Breeding territories were recorded in areas of additional coverage in 2018.

- **Wading birds - common sandpiper.** In 2016, common sandpiper was represented by three sightings during the breeding season, with no evidence of the presence of breeding activity within the Survey Area found. Sightings were from the shore of Loch Alvie (chainage 22,000), from Loch Puladdern in Craigellachie National Nature Reserve (chainage 5,400) and from coniferous plantation woodland ride near Slochd (chainage 19,800). In 2018, four territories were recorded in additional areas of coverage.
- **Gulls - common gull.** No breeding was confirmed in 2016. A mixed colony with black-headed gull was recorded in 2018 on wet moorland north-west of Slochd Summit with fledged young observed.
- **Corvids – raven.** Identified from a nest site at Slochd Summit (chainage 23,000-23,400). This species ventures widely to forage over moorland and upland environments, and is also known to scavenge from human development. It was not encountered during transect walks, and consultation with the Roy Dennis Foundation indicates that this species is legally controlled within the Survey Area, including in the area around Slochd Summit.

5.2.6 Four breeding species, comprising three corvids (carrion crow, jackdaw, rook) and pheasant are of **Less than Local** importance for the same reasons as those described in 5.1.7.

5.3 Capercaillie

5.3.1 Habitat within the Survey Area is suitable to support capercaillie in a variety of life stages. Surveys have shown that the Survey Area is used by capercaillie for foraging during both wintering and breeding periods, and when undertaking daily activities such as roosting and dust bathing, by both male and female. Desk study data did not include records of any leks within the Survey Area; the closest lekking site identified is ~530m to the east of the Proposed Scheme near Carrbridge.

5.3.2 The Survey Area supports capercaillie populations within the Abernethy Forest and Cairngorms area. These populations form the Scottish stronghold of this species which is rare in other parts of the Highlands, and absent from all other areas of the UK. It is a key species of conservation value, and a qualifying feature of SPAs within the Study Area. It is a core species in the Highland BAP and the CNAP. Given the rarity of the species, and its conservation value, the population supported within the Study Area is considered to be of International importance.

6. Potential Impacts

6.1 Construction

6.1.1 During construction, birds may be affected as a result of the following:

- destruction of or damage to nests;
- disturbance to nesting birds, including those on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), through noise, vibration and human presence;
- direct mortality; and
- loss of habitat, suitable for foraging, nesting and roosting.

6.2 Operation

6.2.1 During operation birds may be affected as a result of the following;

- increased collision risk due to the widening of the road; and
- fragmentation of bird habitat either side of the widened road.

7. Mitigation

7.1.1 A list of standard mitigation measures has been developed for all projects within the A9 Dualling Programme; those related to ecology are detailed below in Table 7.1. In addition to these, Scheme-specific mitigation measures have also been developed as detailed in Table 7.1. Specific mitigation measures are presented in Figure 13.4, Landscape and Ecological Mitigation plan.

7.1.2 A full list of ecological mitigation measures is provided in Environmental Statement (ES) Chapter 12 Ecological and Nature Conservation. Those measures of relevance to birds have been extracted and are detailed in Table 7.2. Those relevant to capercaillie have been extracted and are detailed in Table 7.3.

Table 7.1: A9 Standard Mitigation Commitments

Mitigation Item ⁴	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
SMC-E1	Throughout Proposed Scheme	Pre-Construction	Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions set out in the ES. The scope of the pre-construction surveys will be confirmed with SNH prior to them being undertaken.	To update the baseline ecological conditions set out in the ES.	SNH
SMC-E2	Throughout Proposed Scheme	Pre-Construction	<p>Prior to construction a suitably qualified (or team of suitably qualified) Ecological Clerk of Works (ECoW) will be appointed and will be responsible for implementation of the Ecological Management Plan. The ECoW will:</p> <ul style="list-style-type: none"> • provide ecological advice over the entire construction programme, at all times as required; • undertake or oversee pre-construction surveys for protected species in the areas affected by the Proposed Scheme; and ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and • monitor the implementation of the mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the ES. <p>The ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and will have previous experience in similar ECoW roles. All ECoWs will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.</p>	To ensure the implementation of the Ecological Management Plan.	None required
SMC-E7	Throughout Proposed Scheme	Pre-Construction & Construction	Tree felling and vegetation clearance to be minimised as far as practicable and undertaken outside the core bird nesting season (01 March to 31 August) to avoid damage or destruction of occupied nests or harm to breeding birds. If this cannot be achieved, works within the core bird nesting season will require an inspection of vegetation to be cleared for nesting birds by a suitably qualified ecologist no more than 24 hours prior to any works being undertaken. If any nesting birds are identified during the survey, they will be left in situ for their	To protect habitat and fauna during bird nesting season.	None required

⁴ Only items relevant to birds are listed



Mitigation Item ⁴	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			entire nesting period until the young birds have fledged. Alternative approaches to the work will need to be proposed e.g. leaving an exclusion zone around the nest to avoid disturbance. All cleared vegetation will be rendered unsuitable for nesting birds, for example, by covering or chipping depending on the end purpose of the vegetation, or will be removed from the works area.		
SMC-E8	Throughout Proposed Scheme	Pre-Construction & Construction	Any tree felling will be carried out by experienced contractors to reduce direct mortality of protected species according to agreed felling methods between contractors and the ECoW.	To protect fauna during removal of habitat.	None required
SMC-E9	Throughout Proposed Scheme	Pre-Construction, Construction & Post-Construction	Plant and personnel will be constrained to a prescribed working corridor through the use of, where practicable, temporary barriers to minimise the damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the Proposed Scheme working corridor.	To protect habitats and fauna.	None required
SMC-E12	Throughout Proposed Scheme	Construction & Post-Construction	Planting will be undertaken to replace any trees that were intended to be retained which are felled or die as a result of construction works. The size, species and location of replacement trees will be approved by Transport Scotland and other relevant stakeholders.	Replacement of trees lost that are to be retained.	Transport Scotland and other relevant stakeholders
n/a (note)	Throughout Proposed Scheme	Construction	Best practicable means will be employed to avoid the disturbance of sensitive species and habitats with noise, dust and air pollution. The Standard Mitigation Measures as detailed in ES Chapter 11 (Road Drainage and the Water Environment), ES Chapter 13 (Landscape and Visual), ES Chapter 16 (Air Quality) and ES Chapter 17 (Noise and Vibration) will be implemented to protect aquatic and terrestrial habitats and species.	To protect aquatic and terrestrial habitats and species.	n/a

Table 7.2: Project Mitigation Commitments with Relevance to Birds

Mitigation Item ⁵	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
P11-E16	Throughout Proposed Scheme	Pre-Construction & Construction	The working area will be kept to the minimum necessary for construction of the project to reduce habitat loss. A Habitat Management Plan will be produced pre-construction and agreed with SNH. This will include specific plans and measures for working on the border of the Craigellachie SSSI/NNR and Alvie SSSI, as well as other sensitive habitats (such as aspen woodland), detailing avoidance, mitigation and rehabilitation measures to further reduce residual impacts.	To protect all habitats, including those located on the boundary of Craigellachie SSSI/NNR and Alvie SSSI.	SNH
P11-E34	Throughout Proposed Scheme	Pre-Construction & Construction	Species Protection Plans to be produced pre-construction and agreed with SNH. Plans will be produced for the following species: bats, otter, red squirrel, pine marten, great crested newts, reptiles, wildcat, water vole, badger and any other species as deemed necessary from the pre-construction surveys. Where appropriate, the Species Protection Plans will include monitoring plans. As an extension to the standardised mitigation listed in SMC-E7 consideration will be given to specialised habitat use and untypical breeding strategy employed by crossbill species. In consideration of crossbill species that can potentially nest outside of the main breeding season as (defined as March-August inclusive), felling and vegetation clearance within optimal habitat for these species i.e. pine woodland, will require a nest check at all times of the year.	To comply with conservation legislation and to protect fauna.	SNH
P11-E46	Three blasting locations: Slochd Beag CH21800-22000 Slochd Mor	Pre-construction & Construction	Birds nesting on rock faces at the three blasting locations present a potential constraint to works, and measures to prevent nesting will be put in place to avoid damage to or destruction of nests during blasting. Measures will comprise a combination of the following actions as determined to be appropriate through regular monitoring of the rock faces by ornithologists: <ul style="list-style-type: none">attempts will be made during the winter prior to blasting to make	To comply with legislation	SNH

⁵ Only items relevant to birds are listed

Mitigation Item ⁵	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
	CH23000-23400 Slochd Summit CH23900-24200		<p>nesting ledges used repeatedly by birds unsuitable to support nests. Wire mesh, netting, spikes or similar control measures will be used;</p> <ul style="list-style-type: none"> • bird deterrents will be deployed to prevent breeding birds, starting in late winter/early spring before nesting sites are occupied. Deterrent methods employed by farmers will be used, and may include visual distractions (kites, spinning reflectors, etc) and automated explosive bird scarers (gas guns or similar) aimed at the rock face. Falconry will also be considered to disperse birds prospecting for nest sites; • blasting will be a controlled and targeted activity. In addition to consideration of ecological constraints, vibration limits will be in place to safeguard surrounding infrastructure. It is considered these limits will minimise the impact to ledges suitable for nesting birds outside of the blasting zone. <p>These measures are, in-combination, expected to be successful in preventing the use of the three rock faces for nesting. However, monitoring throughout the late-winter, spring and summer of the pre-construction and construction periods by ornithologists will determine the success of the above measures.</p> <p>If nest sites are established then blasting at that particular rock face will be suspended. Immediate consultation with SNH would take place to discuss possible mitigation/licensing options/agreements in order to allow blasting operations to recommence (given potential implications upon project programme, agreements with neighbouring landowners (e.g. Network Rail), and HRA mitigation).</p>		

Table 7.3: Project Mitigation Commitments with Relevance to Capercaillie

Mitigation Item	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose / Objective	Specific Consultation or Approval Required
P11-E20	Throughout Proposed Scheme	Construction	Compensation for the loss of ecologically important habitats will occur through habitat creation including roadside planting, where appropriate, and has been integrated with landscape planting as shown on Figure 13.4.	To compensate for the loss of	None

Mitigation Item	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose / Objective	Specific Consultation or Approval Required
			<p>Where feasible important habitats will be replaced on a like for like basis, with habitats of a similar type and character to be created within the vicinity of the area where the loss has occurred. Where this is not possible, habitat creation will occur within other suitable areas identified within the LMA.</p> <p>Landscape planting and newly created habitat will be comprised of locally obtained native species of local provenance, and will comprise a mixture of species.</p> <p>Sowing/planting should be undertaken in the appropriate planting season but as soon as possible following completion of the works to reduce the likelihood of the areas being colonised by invasive, non-native species which are of lower value to wildlife.</p> <p>Replacement habitats will be monitored and managed during the aftercare and operation phase of the Proposed Scheme.</p> <p>Where practicable habitat creation will fill in existing gaps in linear vegetation features, adjoin or connect existing blocks of woodland or act as stepping stones between habitat areas.</p>	ecologically important habitats (including woodland, dry heath, and blanket bog).	
P11-E47	<p>Three blasting locations:</p> <p>Slochd Beag CH21800-22000</p> <p>Slochd Mor CH23000-23400</p> <p>Slochd Summit CH23900-24200</p>	Pre-construction	<p>Blasting is required at three locations to modify rock faces in preparation for construction. Mitigation to reduce this potential interruption of capercaillie lekking behaviour outside of the peak March to May period will be incorporated into the scheme blasting plan and in the Capercaillie Protection Plan. This will involve the following measures:</p> <ul style="list-style-type: none"> • one blast per week only: to reduce frequency of blasts; • blasts timed to minimise disturbance during lekking periods i.e. scheduled for midday as far as is practical. It is noted that blast timing is subject to suitable intervals in Network Rail's schedule for the Highland Main Line which represents a significant constraint on the work. Of note, Network Rail has requested that consideration be given to blasting operations taking place at night. If this is necessary, blasts will not be conducted from one hour before dawn until 9am between 1st March to end of May, to reduce disturbance during peak lekking periods; • good practice measures during blasting, such as: <ul style="list-style-type: none"> - acoustic bunds to reflect the wave; - direction of firing away from sensitive locations; - not overcharging blast holes; 	To avoid disturbance of lekking capercaillie during blasting works.	SNH

Mitigation Item	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose / Objective	Specific Consultation or Approval Required
			<ul style="list-style-type: none"> - good use of stemming (material that backfills the drill holes for blasting) avoiding venting of explosive gases along rock fractures; - avoiding venting of explosive gases along rock fractures; - correct burden thicknesses; - avoiding the use of detonation cords (or making sure that they are covered by sufficient burden); - avoiding the use of secondary blasting; - minimise area of heave and total charge; and - avoid blasting in adverse weather condition (e.g. when wind is towards sensitive locations). 		
P11-E48	Throughout Proposed Scheme	Pre-Construction & Construction	<p>All protection measures for capercaillie during construction will be included with the Capercaillie Protection Plan/Bird Protection Plan. This will include a toolbox talk to explain all measures.</p> <p>Exclusion zones will be applied to reduce disturbance to capercaillie from both noise and visual disturbance sources. These zones will be defined as:</p> <ul style="list-style-type: none"> • 1km exclusion zone from a known lek (all human activities); • 500m exclusion if a potential lek is observed (all human activities). If confirmed as a lek following a survey, this should be increased to 1km exclusion within 24 hours; • 100m exclusion if nesting site discovered during activities; • If indication of nesting discovered prior to start of human activities, work should cease or temporarily be moved away from suitable habitat until 15 June of that year; and • 100m exclusion where a brood is accidentally disturbed during human activities, for several hours to allow re-grouping of the brood and facilitate their movement away from the disturbance source. <p>Special measures will be put in place to protect leks:</p> <ul style="list-style-type: none"> • construction within 1km of known lek sites will have a seasonal working window will be applied: no works will be conducted within this exclusion zone from 1st March to 31st August. Where this is not possible, sound barriers will be used to reduce noise to an acceptable level and the following activities will be prohibited between dusk through to 9am the following morning during this period: 	To avoid disturbance of capercaillie whilst lekking and foraging	SNH



Mitigation Item	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose / Objective	Specific Consultation or Approval Required
			<ul style="list-style-type: none"> • tipping, dumping, transfer and/or movement of aggregate; • drilling, hammering, piling, digging or rock breaking/crushing (including the use of vibratory machinery), and • mechanical means of vegetation clearance and tree felling (for example using a chainsaw). • sensitive lighting during construction phase around Carrbridge Junction to reduce visual disturbance/light pollution to capercaillie; • personnel and vehicles/machinery will not enter areas of woodland out with the working area at any time of day, including along paths or tracks, in woodland where capercaillie are known to be present; and • if a capercaillie is observed during works at any time, works must cease and the Ecological Clerk of Works (ECoW) consulted. The ECoW will determine if there is evidence of nesting and enforce the appropriate exclusion buffer. • screening of construction areas during the lekking season (1st March to end May) that have direct line of sight to known leks. Screening in this area should be high enough to visually mask any machinery from the woodland to the south and be of a different colour to the surrounding vegetation so it is obvious to flying birds thus reducing potential for collision. Screening of other areas within 1km of leks is not deemed to be either necessary, due to existing woodland cover creating a natural visual barrier, or viable, due to local topography. <p>The following measures will be incorporated into the Capercaillie Protection Plan:</p> <ul style="list-style-type: none"> • Parking in designated areas only. Designated areas will not include land within Carn bad nan Luibhean or Baddengorm Woods woodland areas; and • Screening of construction compounds from the surrounding area (all year). 		

8. Residual Impacts

- 8.1.1 The assessment of impacts assumes adoption of the mitigation measures detailed in Table 7.1 and Table 7.2 and capercaillie specific measures detailed in Table 7.3. These mitigation measures will offset the impacts of the Proposed Scheme for many features identified within the Survey Area, and as such detailed assessment is only provided for features with residual impacts after application of these measures. For such features, pre-mitigation impact characterisation is provided for these impacts for clarity.
- 8.1.2 In addition, features of Less than Local importance are assumed to be sufficiently resilient to not be affected by the Proposed Scheme, and thus impacts on these receptors has not been assessed.
- 8.1.3 Effects are discussed in terms of locations which fall within the Proposed Scheme. Potential impacts have been identified by reviewing design drawings and the proposed timescale for construction. The assessment of effects has focused on impacts that would occur during the construction phase (site preparation and earthworks), and the operational phase (from completion of the Proposed Scheme).
- 8.1.4 Where residual impacts remain following avoidance and mitigation measures (including non-significant residual impacts), they are discussed in Table 8.1 (for wintering birds) and Table 8.2 (for breeding birds).

Construction

- 8.1.5 The mitigation commitments in Table 7.1 and Table 7.2 are considered to reduce the risk of effects on birds from damage and disturbance to nests and direct mortality to a non-significant level.
- 8.1.6 Habitats adjacent to the existing A9 and within the Proposed Scheme are subject to frequent anthropogenic disturbance. In addition to the existing A9 being a source of noise and visual disturbance, farming and forestry activities regularly bring people and machinery onto lowland pasture and into woodland. Leisure activities bring tourists and residents onto paths and trails and people can be found within a wide range of habitats throughout the year, but especially during spring and summer.
- 8.1.7 Grouse shooting is of limited importance in the area, with few open grouse moors close to the A9. However, managed grouse moor exists in the northern parts of the Proposed Scheme, particularly south-east of Slochd.
- 8.1.8 Therefore, the background level of disturbance is high, and with mitigation it is not considered that construction activities, including blasting, would lead to residual disturbance effects on birds.
- 8.1.9 Osprey is a particularly charismatic and important breeding species found in the area and will not be directly affected by the works. Taking into account the background level of disturbance, osprey nests are sufficiently distant from the works area (the closest being over 400m away), and with woodland barriers between them and the A9, to not be disturbed by construction. Similarly, ospreys flying over the area would not be disturbed as they currently breed in a disturbed environment, and construction of the Proposed Scheme would not lead to additional disturbance above that they currently experience.
- 8.1.10 Breeding lapwing found on the north-side of the A9 at Loch Alvie will not be directly affected by works, which are several hundred metres way. Construction disturbance will be screened for this species by the existing topography, as the A9 is within a valley at

this point and the breeding site is screened by the steep drop down the hillside. In addition, this area is a farmstead and receives disturbance from human activity to which lapwing has habituated.

- 8.1.11 An area of wet moorland north-west of Slochd Summit was noted as important habitat for a small number of waders and a mixed common and black-headed gull colony in 2018. These species will be in line of sight of works but are already exposed to high activity on the existing A9 and the Highland Main Line. Therefore, it is not anticipated that these species will be affected by the works.
- 8.1.12 Ring ouzel breeding at Slochd Summit will not be affected by works due to timing of the works here which will fall outside the breeding season.
- 8.1.13 Blasting operations at the Slochd rockface are considered unlikely to have a residual effect on cliff nesting species due to the localised nature of the operation and mitigation measures to be implemented as described in Table 7.2. Extensive areas of the rock face are considered to have low potential for nesting birds e.g. Slochd Mor is a gentle gradient slope and Slochd Summit is covered by wire mesh. The results of the widening will be the creation of three large cuttings that have the potential to provide new nest sites for cliff nesting species.
- 8.1.14 The construction phase has the potential to affect a small amount of habitat used by redwing. Of the four territories identified, two were on the very edge of the Survey Area and sufficient distance from the Proposed Scheme not to be affected. Two other territories were in the Loch Alvie area and potentially affected by Proposed Scheme works. However, taking into consideration mitigation put in place to protect all nesting bird species i.e. avoiding vegetation clearance in the breeding season (March-August inclusive) where possible and ECoW nest checks ahead of works, it not considered that the works will significantly affect this species. In addition, extensive suitable habitat for this species is present in the wider area and passerines are not susceptible to disturbance over large distances like some other species e.g. raptors.
- 8.1.15 Construction will lead to habitat loss both from the footprint of permanent works and from temporary working areas. The amount of woodland required to allow construction is large (58.9 ha) and this could lead to significant effects on birds, and thus residual effects of the loss of this habitat are considered in below in Table 8.1 and Table 8.2.
- 8.1.16 The effects on birds as a result of the loss of other habitats is unlikely to have significant residual effects on birds. The loss of habitat such as grasslands, heathlands, scrub and those habitats around human development is small, and loss is confined to those patches close to the current A9 which are poorly used by wintering and breeding birds. These habitat patches are also the most highly disturbed, further limiting their importance to wintering and breeding birds.
- 8.1.17 Populations of birds other than woodland birds are unlikely to be affected as a result of the reduction in the availability of wintering and breeding habitat due to habitat loss.
- 8.1.18 Construction phase impacts on capercaillie have been considered in detail within the Proposed Scheme's Habitats Regulations Assessment (HRA). This appraisal identified three impacts that could have significant adverse effects on capercaillie:
- potential for long-term, irreversible likely significant effect through habitat loss and deterioration of functional land during construction affecting the distribution and extent of habitats supporting capercaillie;
 - potential for short-term, reversible likely significant effect due to temporary noise disturbance to the qualifying species from construction activities within functional land and adjacent areas during construction phase; and

- potential for short-term, reversible likely significant effect due to temporary visual disturbance to the qualifying species from human activity within functional land and adjacent areas during construction phase.

8.1.19 Mitigation to offset the potential for these effects has been included in Table 7.3, and overall the HRA determined there will be no significant adverse effects on capercaillie during construction. Loss and deterioration of functional land, when considered both within the woodland areas detailed above and along the full length of the Proposed Scheme, is considered to be small enough that it will not affect capercaillie. Although temporary disturbance from construction activity may increase the area of functional land avoided by the capercaillie due to increases in noise or visual disturbance, with mitigation this will be unlikely. The construction phase will therefore have no significant effects on capercaillie.

Operation

- 8.1.20 During operation birds may be affected as a result of increased collision risk due to the widening of the road.
- 8.1.21 Widening of the A9 will lead to greater fragmentation of bird habitat either side of the widened road. During field surveys, it was noted that birds periodically cross the existing A9, although species appear to have become habituated to the presence of the road as they fly above the traffic. The widened road will however present a greater distance for birds to cross and there may therefore be an elevated risk of collision with vehicles.
- 8.1.22 In terms of notable species, the SBL listed red grouse may be at greater risk of collision as the species generally flies close to the ground. It is considered unlikely that the widened road will lead to a significant increase in the number of bird casualties, as birds are likely to habituate to the presence of the widened road, as they have done with the existing road. Given this, the impact is not considered to be significant.
- 8.1.23 Operational phase impacts on capercaillie have been considered in detail within the Proposed Scheme's Habitats Regulations Assessment (HRA). The HRA identified a single impact that could have significant adverse effects on capercaillie: the potential for long-term, irreversible likely significant effects due to disturbance to the qualifying species from human activity (recreational use of functional land) during operation. Specifically, public access will change through closure of direct road access onto the existing A9, creation of junctions, creation of new tracks for Sustainable Urban Drainage Systems (SuDS) maintenance and forestry haulage; and upgrades to existing local access roads and forestry haulage tracks.
- 8.1.24 Disturbance from human activities can affect the breeding success of capercaillie. However, the HRA concluded that accessibility to woodlands used for lekking and brood rearing is not expected to increase as a result of the Proposed Scheme, and overall, recreational human disturbance during operation is not likely to have an adverse effect on capercaillie.

Table 8.1: Wintering Birds - Specific Impacts, Mitigation and Residual Impacts - Construction

Community, Location and Importance	Potential Impact	Area of habitat loss (ha)	Characterisation of Impact (Pre-mitigation)	Essential Mitigation	Residual Impacts
Woodland Birds Scheme-wide Importance: National	Loss of woodland habitat	58.9ha (scheme-wide woodland loss)	Removal of woodland will lead to loss of winter foraging and roosting habitat for woodland bird species. One species of National importance is predicted to be affected: crossbill species.	P11-E20 Re-planting of woodland will be undertaken following completion of construction, with a focus on providing higher quality habitat than the plantation woodland currently available to birds.	Not significant
Woodland Birds Scheme-wide Importance: Authority Area			Survey data (peak counts) indicate that 12 bullfinches and 9 siskin (two species of Authority Area value) will be affected.		
Woodland Birds Scheme-wide Importance: Local			Five species of Local importance (coal tit, crested tit, mistle thrush, treecreeper and buzzard) will also be affected throughout the Proposed Scheme. Buzzard roosts and forages within woodland but also forages over adjacent open ground.		
Buzzard CH: 600-2600, 6100-6400, 8000-9400, 11800-12000, 21300-21400 Importance: Local			For all species woodland habitat is abundant in the wider areas so it is considered that alternative habitat is present for use over the construction period. Effect: Direct negative Duration: Permanent Frequency and timing: Permanent Reversibility: Irreversible Probability: Certain Impact Descriptor: High		

Table 8.2: Breeding Birds - Specific Impacts, Mitigation and Residual Impacts - Construction

Location and Value	Potential Impact	Area of Habitat Loss (ha)	Characterisation of Impact (Pre-mitigation)	Essential Mitigation	Residual Impacts
Woodland Birds Scheme-wide Importance: National	Loss of woodland habitat	58.9ha (scheme-wide woodland loss)	Removal of woodland to make way for construction operations and the dualled A9 itself will lead to loss of breeding habitat for two species of National importance: <ul style="list-style-type: none"> • Redwing • Crossbill species Five woodland bird species of Authority Area importance: <ul style="list-style-type: none"> • Bullfinch • Wood warbler • Spotted flycatcher • Siskin • Tree pipit Eight species of Local importance (coal tit, crested tit, goldcrest, mistle thrush, pied flycatcher, treecreeper, willow warbler) will be affected throughout the Proposed Scheme. Buzzard roosts and forages within woodland but also forages over adjacent open ground.	P11-E20 Re-planting of woodland will be undertaken following completion of construction, with a focus on providing higher quality habitat than the plantation woodland currently available to birds. More woodland will be planted than lost to construction, giving a net gain to biodiversity in the long term, although it will take several decades for such woodland to establish.	Not significant
Woodland Birds Scheme-wide Importance: Authority Area					
Woodland Birds Scheme-wide Importance: Local					
Buzzard CH: 600-2600, 6100-6400, 8000-9400, 11800-12000, 21300-21400 Importance: Local					

9. Conclusion

- 9.1.1 The landscape through which the Proposed Scheme passes supports a diverse range of bird species, the assemblages taking advantage of a mixture of upland habitats associated with the environment within the Scottish Highlands (moorlands/heathland, mixed and coniferous woodland). However, parts of the landscape are intensively used (mainly lowland areas), for agriculture and forestry, leisure and residential/commercial development.
- 9.1.2 Assessment of impacts during construction and operation of the Proposed Scheme has been undertaken against this background. Birds wintering and breeding in the landscape, for the most part, coexist with these sources of disturbance, although lekking species, particularly capercaillie, are still susceptible. Osprey, for example, are known to fly over the site and breed nearby, but are not expected to be affected by works, and this is true for the majority of bird species.
- 9.1.3 Mitigation measures put in place to control disturbance during construction, and to avoid destruction of nests during site clearance work, will offset adverse effects of the Proposed Scheme on birds. Directed measures will be put in place to address potential impacts on capercaillie, as this species is particularly sensitive to disturbance whilst lekking. Control of blasting operations, preceded by prevention of birds occupying the three rockfaces affected by such works, will be undertaken to avoid impacts on birds.
- 9.1.4 Loss of woodland habitat presents a potentially significant impact of the Proposed Scheme on birds, and it is the dominant habitat type within the landscape surrounding the Proposed Scheme. However, with identified mitigation measures including woodland creation following construction, this has been determined to be not significant.

ⁱ <http://www.biodiversityscotland.gov.uk/advice-and-resources/scottish-biodiversity-list/> (Accessed 14/06/2016)

ⁱⁱ Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. and Gregory, R. (2015) Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* 108;708-746.

ⁱⁱⁱ Multi-Agency Geographic Information for the Countryside (2016) Interactive Map. Available at: <http://magic.defra.gov.uk/MagicMap.aspx> (Accessed 22/06/2016)

^{iv} Scottish Natural Heritage (2016) Site Link. Available at: <http://gateway.snh.gov.uk/sitelink/index.jsp> (Accessed 22/06/2016).

^v Scottish Natural Heritage (2016) Interactive Map. Available at: <http://www.snh.gov.uk/publications-data-and-research/snhi-information-service/map/> (Accessed 22/06/2016)

^{vi} CH2MHill (2015) Preliminary Ecological Appraisal. North Scheme – Dalraddy to Moy.

^{vii} Snow, D. W. and Perrins, C. M. (1994) *The Birds of the Western Palearctic*. Oxford University Press, Oxford.

^{viii} Marchant, J. (1983) *Common Bird Census Instruction*. British Trust for Ornithology, Thetford.

^{ix} Gilbert, G., Gibbons D.W. and Evans, J. (1998) *Bird Monitoring Methods: A Manual of Techniques for Key UK Species*. RSPB, Sandy.

^x Bibby, C.J. (2000) *Bird census techniques*. Elsevier.

^{xi} Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) *Raptors: A Field Guide for Surveys and Monitoring*. The Stationary Office, Edinburgh.

^{xii} Summers, R.W., Golder, P., Wallace, N., Iason, G. & Wilson, J. (2015) Correlates of capercaillie productivity in Scots pinewoods in Strathspey. Scottish Natural Heritage Commissioned Report No. 742.

^{xiii} Haysom, S. (2013) *Capercaillie Survey Methods*. Scottish Natural Heritage.

^{xiv} Chartered Institute of Ecology and Environmental Management (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

^{xv} Design Manual for Roads & Bridges (2010) Interim Advice Note (IAN) 130/10 - Ecology and Nature Conservation: Criteria for Impact Assessment.

^{xvi} Scottish Government (2013, 2015) *Scottish Biodiversity Strategy*. Available at: <http://www.gov.scot/Publications/2013/06/5538> (Accessed 14/06/2016).

^{xvii} <http://www.legislation.gov.uk/ukxi/2011/1824/contents/made> (Accessed 18/04/2017)

^{xviii} Department for Communities and Local Development (2012) *National Planning Policy Framework*, Paragraph 118. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed 14/06/2016)

^{xix} *Rare Breeding Birds in the United Kingdom in 2014*. *British Birds* 109. September 2016. Pages 491-545

^{xx} <https://www.bto.org/volunteer-surveys/bbs/latest-results/trend-graphs> (Accessed 14/06/2016)

^{xxi} Highland Environment Forum (2015) *Highland Nature: The Biodiversity Action Plan 2015 – 2020*. Available at: <http://www.highlandbiodiversity.com/highland-bap.asp> (Accessed 14/06/2016)

^{xxii} Cairngorms National Park Authority (2013) *Cairngorms Nature Action Plan 2013 – 2018*. Available at: <https://cairngorms.co.uk/resource/docs/publications/13052013/CNPA.Paper.1898.Cairngorms%20Nature%20Action%20Plan%202013-2018.pdf> (Accessed 14/06/2016)

Annex A. Consultation Responses

Keith Duncan, SNH

Joyce, Paul

From: Keith Duncan <Keith.Duncan@snh.gov.uk>
Sent: 29 November 2016 09:12
To: Kirby, Dave; 'Marshall, Gareth'
Subject: RE: A9 Dualling - Dalraddy to Slochd - Capercaillie and Scottish Crossbill scope
Thanks David

I have nothing to add to this note.

Regards

Keith

From: David Kirby [mailto:David.Kirby@mouchel.com]
Sent: 28 November 2016 14:57
To: Keith Duncan; Marshall, Gareth
Subject: A9 Dualling - Dalraddy to Slochd - Capercaillie and Scottish Crossbill

scope

Keith, Gareth,

Thanks very much for the call last week, it was very useful to talk to you both. I've made a few notes below and would appreciate it if you could review and let me know if you have any comments or additions.

For ease of reference, I've referred to us as follows in the notes below: Dave Kirby (DK), Keith Duncan (KD), and Gareth Marshall (GM).

Capercaillie

KD has provided guidance on the key issues that need to be considered in relation to capercaillie, particularly in respect of the HRA. KD noted that it is important not just to consider the effect of the project on capercaillie habitat within the bounds of the SPAs, but also suitable and important habitat which is outside of the bounds of the SPA and within the near vicinity of the A9.

DK, KD, and GM discussed the following approach to ensure that capercaillie are appropriately considered in the assessment:

- Source existing data from GM and team to identify known important habitat for capercaillie – to include sightings, known leck locations, and known areas of important breeding / brood rearing habitat.
- AMJV to supplement this existing data with targeted surveys for capercaillie in 2017. These surveys to comprise the following:
 - o A habitat suitability assessment of habitats within 250m of the project. The aim of the HSA will be to identify important lecking, breeding, and brood rearing habitat within the survey area. GM has agreed to assist with training surveyors to ensure that important habitat is identified correctly.

- Following the HSA, walked transect surveys will be undertaken in areas of suitable / important habitat to record capercaillie presence / absence and to characterise this activity.
- It is proposed that the presence / absence surveys should comprise a monthly visit from April – July.
- This information will feed into the HRA / EIA to assess the effect of the project on capercaillie and to inform mitigation for this species going forward.

Scottish Crossbill

KD noted that Scottish crossbill are generally less sensitive to disturbance and that effects to this species and their habitat could likely be avoided through sensitive timing of works and implementation of appropriate buffers if pairs are noted breeding during construction.

DK stated that Atkins Mouchel Joint Venture (AMJV) have undertaken wintering surveys (Nov 2015 – March 2016) and breeding bird surveys (April – July 2016) which covered a 250m corridor either side of the existing A9. These surveys recorded crossbill species, although it was uncertain whether these were Scottish or the common crossbill.

KD stated that, for the purposes of the assessment, there was little value in trying to differentiate between the species as the approach to mitigation will be the same, irrespective of the crossbill species. KD and DK therefore agreed that specialist survey to identify Scottish Crossbill will not be required.

KD noted that there would be value in sourcing data from a study conducted by the RSPB (and funded by SNH) into the breeding territories of Scottish crossbill in the Cairngorms – Ron Summers provided as a contact.

Other Bird Species

KD queried whether AMJV had picked up two possible osprey nests within the vicinity of the existing A9 (NH90142104 and NH87842294). DK agreed that the Highland Raptor Study Group would be consulted further in 2017 to source desk study data (Roy Dennis provided as a contact).

I hope you are happy with the summary provided above. If you do have any queries or comments, please do let me know.

Many thanks for your assistance.

David

David Kirby CEnv MCIEEM

Principal Ecologist

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Gareth Marshall, RSPB

Joyce, Paul

From: Marshall, Gareth <Gareth.Marshall@rspb.org.uk>
Sent: 29 November 2016 08:54
To: Kirby, Dave
Cc: Keith Duncan
Subject: RE: A9 Dualling - Dalraddy to Slochd - Capercaillie and Scottish Crossbill scope

Hi David,

My only comment is that I think you might already have the relevant caper data to do this. If not, let me know and I (or one of my colleagues) will send it over. Other than that, all looks fine by me.

Thanks,
Gareth

Gareth Marshall

Capercaillie Project Officer

Joint funded by RSPB, Scottish Natural Heritage and Forestry Commission Scotland

North Scotland Regional Office, Etive House, Beechwood Park, Inverness, IV2 3BW

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The Royal Society for the Protection of Birds (RSPB) is a registered charity: England and Wales no. 207076, Scotland no. SC037654

From: David Kirby [mailto:David.Kirby@mouchel.com]
Sent: 28 November 2016 14:57

To: Keith Duncan; Marshall, Gareth

Subject: A9 Dualling - Dalraddy to Slochd - Capercaillie and Scottish Crossbill

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Many thanks for your assistance.

David

David Kirby CEnv MCIEEM
Principal Ecologist

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TO	Paul Joyce, Dave Kirby	FROM	Becky Bailey
DATE	19 February 2018	CONFIDENTIALITY	Internal
SUBJECT	Capercaillie Training & Discussion with Gareth Marshall		

A training session and meeting was arranged with Gareth Marshall, the RSPB Capercaillie Project Officer, for Monday 13th March 2017.

The training was undertaken in Baddengorm Woods, north of Carrbridge, and was attended by the following members of Legacy Mouchel staff: Rebecca Bailey, Alex Turner, David Lovett, Zoe Courchene and Marion Gohier.

Gareth Marshall led a session focussing on identification of droppings and the seasonal use of different habitats by capercaillie, including marshy grassland and plantation woodlands.

Gareth Marshall agreed that the SNH Comissioned Report no. 742 (Summers *et al.* 2015) was of use to identify the structure of woodlands as part of the habitat assessment and reiterated the importance of blaeberry and cottongrass to both young and brooding capercaillie. A discussion was had with regards to dense plantation woodland being of supporting benefit to capercaillie during the winter due to protection from wind and snow, but that the lack of ground vegetation associated with such plantations meant that breeding capercaillie would not use such habitats.

Discussions were had with regards to survey techniques as identified in Scottish Natural Heritage (SNH) Guidance on Capercaillie Survey Methods (Heysom, 2013) and how this was focussed on identifying lekking behaviour and that Mouchel surveys should aim to not survey at leks due to disturbance issues and that the likelihood of a new lek being identified within the scheme survey area was highly unlikely.

An agreement was reached that suitable surveys would comprise transects through areas of suitable brood rearing habitat looking to identify capercaillie droppings and feathers, with supporting checks for dust baths at fallen trees with exposed root plates and for roost piles below any mature scots pine (granny pines) found throughout the woodland. This methodology would be broadly in line with the surveys for presence as identified in Section 2 of Heysom, 2013; but that by repeating through the breeding season, additional searches for change in use such as clocker droppings, may be identified.

Agreement was given that surveys would not commence before 9am in order to allow birds to disperse from leks with little disturbance and that no licences would be required for surveys should this be held to.

Becky Bailey
 Principal Ecologist



Roy Dennis, Roy Dennis Wildlife Foundation

Joyce, Paul

From: ROYDENNIS@aol.com
Sent: 05 January 2018 09:54
To: Joyce, Paul
Subject: Re: Slochd Summit Breeding Raptor Records

Hi Paul

The lower crag on the east side was a regular peregrine breeding site in the 1970s and 1980s but in recent decade has been unoccupied like many peregrine sites on grouse moors due to illegal killing (not necessarily at that site but in general in east Highlands, Grampians and Tayside). It was also sometimes used by ravens but they are also much reduced in the east due to persecution - some of it licensed. So not a happy state of affairs. I check all the osprey locations near Carrbridge and have an annual state of play for each site. If you wish to make a donation to our Foundation please do so. best wishes

Roy

Roy Dennis MBE

Half Davoch Cottage, Dunphail, Forres, Moray, IV36
2QR, Scotland Tel: 01309 611771 Email:
roydennis@aol.com Twitter: @royhdennis **see what we are
doing at - <http://www.roydennis.org>**



Annex B. Capercaillie Survey Results

Date	Capercaillie Sign	Grid Reference
13th March 2017	Male type dropping – Fresh	NH 85638 23638
13th March 2017	Male type dropping – Fresh	NH 85625 23638
13th March 2017	Male type dropping – Fresh	NH 85577 23630
13th March 2017	Female type dropping – Fresh	NH 85566 23629
13th March 2017	Roost pile + caecal droppings – Fresh	NH 85526 23618
14th March 2017	Female type dropping – Fresh	NH 86142 24078
14th March 2017	Roost pile + caecal droppings - Fresh	NH 86142 24067
14th March 2017	Female type dropping – Old	NH 86171 24090
14th March 2017	Indeterminate droppings - Fresh	NH 86210 24084
14th March 2017	Male type dropping – Fresh	NH 86227 24102
14th March 2017	Female type dropping – Old	NH 86291 24091
14th March 2017	Male type dropping – Fresh	NH 86334 24094
14th March 2017	Roost pile + caecal droppings - Fresh	NH 86363 24084
24th April 2017	Dust bath + female feathers	NH 87811 24131
26th April 2017	Dust bath + feathers	NH 89288 23487
26th April 2017	Female type droppings – old	NH 89097 23639
26th April 2017	Indeterminate droppings - old	NH 89081 23670
26th April 2017	Female type droppings - fresh	NH 89199 23503
26th April 2017	Male + female droppings – old, feathers + dust bath	NH 89570 23122
26th April 2017	Female type droppings – old	NH 89588 23266
26th April 2017	Female type droppings – old	NH 89568 23283
26th April 2017	Female type droppings – fresh	NH 89508 23324
27th April 2017	Female type dropping – fresh	NH 85565 23619
27th April 2017	Male type dropping – old	NH 85676 23555
27th April 2017	Male type dropping – fresh	NH 85759 23539
27th April 2017	Roost pile (Male) – fresh	NH 85820 23562
27th April 2017	Indeterminate droppings – old	NH 85805 23477
27th April 2017	Female type droppings – fresh	NH 85631 23529
8th May 2017	Feather – female	NH 85832 23719
8th May 2017	Feather – female	NH 85817 23726
8th May 2017	Female type droppings – old	NH 85561 23619
8th May 2017	Male type droppings – old	NH 85530 23617
8th May 2017	Indeterminate droppings – old	NH 85672 23546
8th May 2017	Male type droppings – old	NH 85828 23551
8th May 2017	Roost pile (Male) – old	NH 85820 23564
8th May 2017	Male type droppings – old	NH 85807 23554



Date	Capercaillie Sign	Grid Reference
8th May 2017	Male type droppings – old	NH 85766 23551
8th May 2017	Roost pile (Male) - old	NH 85687 23550
8th May 2017	Female type droppings - old	NH 86394 24087
8th May 2017	Female type droppings - old	NH 86355 24090
8th May 2017	Female type droppings - old	NH 86249 24080
8th May 2017	Female type droppings - old	NH 86219 24079
8th May 2017	Female type droppings - old	NH 86162 24072
9th May 2017	Female type droppings - old	NH 87366 24240
10th May 2017	Female type droppings - old	NH 89596 23262
10th May 2017	Indeterminate droppings - old	NH 89591 23259
10th May 2017	Male type dropping - old	NH 89609 23256
10th May 2017	Female type droppings - old	NH 89685 23214
10th May 2017	Indeterminate droppings - old	NH 89365 23193
10th May 2017	Dust bath	NH 89295 23350
10th May 2017	Female type droppings - old	NH 89204 23452
10th May 2017	Female type droppings – old + dust bath	NH 89129 23509
10th May 2017	Female type droppings - old	NH 89056 23642
10th May 2017	Indeterminate droppings - old	NH 89255 23569
10th May 2017	Dust bath	NH 89278 23546
10th May 2017	Female type droppings - old	NH 89498 23264
10th May 2017	Male type droppings - old	NH 89572 23218
10th May 2017	Female type droppings - old	NH 89604 23073
10th May 2017	Female type droppings - old	NH 89679 23084
10th May 2017	Male droppings, feathers + dust bath	NH 89578 23127
10th May 2017	Female type droppings – old	NH 89574 23124
10th May 2017	Female type droppings – old	NH 89514 23127
10th May 2017	Male + female type droppings - old	NH 89481 23119
10th May 2017	Female type droppings - old	NH 89465 23157
10th May 2017	Female type droppings - old	NH 89430 23230
10th May 2017	Female type droppings - old	NH 89389 23292
10th May 2017	Female type droppings - old	NH 89196 23509
10th May 2017	Female type droppings - old	NH 89164 23527
10th May 2017	Female type droppings - old	NH 89136 23555
10th May 2017	Female type droppings - old	NH 89071 23667
10th May 2017	Female type droppings - old	NH 89082 23674
10th May 2017	Female type droppings - old	NH 89109 23650
10th May 2017	Female type droppings - old	NH 89116 23637
10th May 2017	Female type droppings - old	NH 89142 23625



Date	Capercaillie Sign	Grid Reference
10th May 2017	Female type droppings - old	NH 89170 23604
10th May 2017	Female type droppings - old	NH 89199 23580
10th May 2017	Female type droppings - old	NH 89216 23586
10th May 2017	Female type droppings - old	NH 89254 23535
10th May 2017	Female feather	NH 89099 14508
12th June 2017	Female type droppings - fresh	NH 85566 23621
12th June 2017	Clocker droppings	NH 85518 23604
12th June 2017	Male type droppings - old	NH 85667 23555
12th June 2017	Roost site (Male) – old	NH 85815 23552
12th June 2017	Female capercaillie – killed by fox/raptor	NH 85673 23511
12th June 2017	Female type droppings - old	NH 89559 23235
12th June 2017	Female type droppings - old	NH 89565 23227
12th June 2017	Male type droppings - old	NH 89605 23203
12th June 2017	Male type droppings - fresh	NH 89675 23131
12th June 2017	Female type droppings - old	NH 89673 23137
12th June 2017	Female type droppings - old	NH 89667 23127
12th June 2017	Dust bath, both male/female type droppings – fresh	NH 89579 23128
12th June 2017	Female type droppings - fresh	NH 89555 23139
12th June 2017	Male + female type droppings - old	NH 89483 23125
12th June 2017	Indeterminate droppings - old	NH 89462 23161
12th June 2017	Indeterminate droppings - old	NH 89442 23163
12th June 2017	Male type droppings - old	NH 89327 23277
12th June 2017	Female type droppings - old	NH 89182 23516
12th June 2017	Male + female type droppings - fresh	NH 89201 23513
12th June 2017	Female type droppings - old	NH 89085 23680
12th June 2017	Female type droppings - old	NH 89198 23582
12th June 2017	Female type droppings - old	NH 89217 23582
13th June 2017	Female type droppings - old	NH 86478 24101
13th June 2017	Dust bath + male feathers	NH 91252 17966
13th June 2017	Male feathers	NH 91490 18159
13th June 2017	Male type droppings - fresh	NH 91262 17698
11th July 2017	Female type droppings - fresh	NH 89378 23416
11th July 2017	Female type droppings - fresh	NH 89266 23561
11th July 2017	Female type droppings - fresh	NH 89263 23559
11th July 2017	Female type droppings – fresh + old	NH 89250 23560
11th July 2017	Female type droppings - fresh	NH 89184 23597
11th July 2017	Indeterminate droppings - old	NH 89104 23634
11th July 2017	Female type droppings – fresh	NH 89111 23638

Date	Capercaillie Sign	Grid Reference
11th July 2017	Female type droppings - old	NH 89100 23650
11th July 2017	Indeterminate droppings - old	NH 89084 23653
11th July 2017	Female type droppings - old	NH 89250 23560
11th July 2017	Indeterminate droppings - old	NH 89070 23660
11th July 2017	Male type droppings - fresh	NH 89090 23610
11th July 2017	Female type droppings - old	NH 89090 23576
11th July 2017	Male type droppings - old	NH 89105 23561
11th July 2017	Female type droppings - fresh	NH 89178 23498
11th July 2017	Male type droppings - fresh	NH 89200 23470
11th July 2017	Male + female type droppings - fresh	NH 89185 23507
11th July 2017	Female type droppings – fresh	NH 89206 23453
11th July 2017	Female type droppings – fresh	NH 89226 23428
11th July 2017	Female type droppings - old	NH 89255 23400
11th July 2017	Indeterminate droppings - old	NH 89270 23340
11th July 2017	Female type droppings - old	NH 89260 23297
11th July 2017	Feather	NH 89447 23072
11th July 2017	Female type droppings - old	NH 89483 23085
11th July 2017	Female type droppings - old	NH 89512 23088
11th July 2017	Female type droppings - old	NH 89250 23560
11th July 2017	Male + female type droppings - fresh	NH 89568 23122
11th July 2017	Female type droppings - old	NH 89540 23160
11th July 2017	Indeterminate droppings - old	NH 89600 23150
11th July 2017	Male + female type droppings - old	NH 89608 23260
11th July 2017	Female type droppings - old	NH 89587 23260
11th July 2017	Female type droppings – fresh	NH 89580 23280
11th July 2017	Female type droppings - old	NH 89590 23280
11th July 2017	Indeterminate droppings - old	NH 89450 23390
11th July 2017	Female type droppings - old	NH 89084 23577
11th July 2017	Indeterminate droppings - old	NH 85502 23604
11th July 2017	Indeterminate droppings - old	NH 85535 23634
11th July 2017	Female type droppings – fresh	NH 85862 23774
12th July 2017	Female type droppings – fresh + feather	NH 91205 17937
12th July 2017	Female type droppings – fresh	NH 91239 17939
12th July 2017	Female type droppings - old	NH 91249 17954
12th July 2017	Dust bath + male feathers	NH 91257 17956
12th July 2017	Female type droppings - old	NH 91250 17961
12th July 2017	Male type droppings – old	NH 91254 17967
12th July 2017	Dust bath + male feathers	NH 91258 17966



Date	Capercaillie Sign	Grid Reference
12th July 2017	Female type droppings - old	NH 91261 17967
12th July 2017	Female type droppings - old	NH 91306 18004
12th July 2017	Feathers – male	NH 91358 18071
12th July 2017	Feathers – male	NH 91481 18147