

Appendix 12.4

Breeding Bird Survey

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1 Introduction

- 1.1.1 CH2M Hill Fairhurst Joint Venture (CFJV) is the Lead Design Consultant for the A9 Dualling Central Section (Glen Garry to Dalraddy). MacArthur Green was commissioned to assist CFJV with ornithology elements relating to the Design Manual for Roads and Bridges (DMRB) environmental assessment process.
- 1.1.2 This document provides a summary of the results of field surveys carried out in Project 7 (Glen Garry to Dalwhinnie) during the 2015 and 2016 breeding seasons.

2 Methods

- 2.1.1 Field surveys took place from May to July 2015, and March to May 2016, with the aims of mapping the distribution of breeding birds, estimating the approximate size of breeding bird populations, and identifying the areas of relatively high ornithological sensitivity. This comprised a programme of:
- Four separate breeding bird survey visits (May to July 2015)
 - A series of targeted scarce breeding bird surveys to record breeding species categorised as high conservation concern (May to July 2015 and March to May 2016)
 - A series of woodland grouse surveys to record lekking (or breeding), and associated maximum numbers (April and May 2016)
- 2.1.2 The ornithology surveys were undertaken and reported in line with sections applied to undertake the DMRB stage 2 options appraisal. The study area was split into 4 sections from south to north which includes a tie in to the south: Section 1 (ch. -1,216 to 2,180); Section 2 (ch. 2,180 to 4,180); Section 3 (ch. 4,180 to 6,882); Section 4 (ch. 6,882 to 9,890). The northern tie – in overlaps with the southern tie-in for Project 8.

2.2 Species under Consideration

2015 Breeding Bird Survey Target Species

- 2.2.2 The scope of the 2015 desk-based study and field surveys was restricted to “target species” (thereby excluding common species of low conservation concern) in order to more efficiently record and determine the location of higher sensitivity areas (i.e. containing populations of species of higher conservation concern). Target species are those listed in one or more of the following:
- EU Birds Directive Annex I and regularly occurring migratory species¹

¹ http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

- Schedule 1 of the Wildlife and Countryside Act²
- A qualifying interest of a nearby SPA or SSSI
- The Cairngorms National Park Priority Species List³
- Red-listed in the Birds of Conservation Concern 3⁴
- Any other species identified as an integral part of the local bird assemblages which is of wider conservation importance, e.g. Amber-listed wader species⁴

Scarce Breeding Birds Surveys 2015 and 2016

2.2.3 Scarce breeding birds were defined as those listed in one or more of the following:

- EU Birds Directive (Annex I and regularly occurring migratory species)⁵
- Schedule 1 of the Wildlife and Countryside Act⁶
- A qualifying interest of a nearby Special Protection Area (SPA) or Site of Special Scientific Interest (SSSI)
- A rare national breeder (<300 pairs) not included within the above categories

2.2.4 The Drumochter Hills Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI) is directly adjacent to both sides of sections 1 to 3, and to the east of section 4. The qualifying interests of the SPA are breeding merlin and dotterel, whereas the breeding bird assemblage is considered as a qualifying interest of the SSSI (includes dotterel, ptarmigan, snow bunting, golden eagle, merlin, peregrine, widgeon, golden plover, dunlin, and ring ouzel).

Woodland Grouse Surveys 2016

2.2.5 Black grouse and capercaillie are considered as woodland grouse species. Both species are known to breed in the Cairngorms and Speyside areas.

2.3 Breeding Bird Surveys

2.3.1 Methods deployed for “generic” breeding bird surveys were based on a combination of Brown and Shepherd (1993⁷) upland bird surveys developed for surveying extensive upland areas, and Common Bird Census (CBC) surveys⁸, developed for more enclosed farmland and woodland areas.

² http://jncc.defra.gov.uk/pdf/waca1981_schedule1.pdf

³ <http:// Cairngorms.co.uk/look-after/conservation-projects/biodiversity-action-plan/priority-species-information1>

⁴ <http://www.bto.org/sites/default/files/u12/bocc3.pdf>

⁵ http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

⁶ http://jncc.defra.gov.uk/pdf/waca1981_schedule1.pdf

⁷ Brown, A. F. & Shepherd, K. B. (1993) A method for censusing upland breeding waders. *Bird Study*, 40: 189-195.

⁸ Marchant, J.H. (1983). *Common Birds Census instructions*. BTO, Tring. 12pp.

Both methods use a territory-mapping approach with species' point records combined across survey visits to define breeding territories.

2.3.2 The key methodological aspects of the breeding bird surveys were:

- The survey area was surveyed four times in 2015 (during May, June and July) as per Calladine et al. (2009⁹) guidance
- Walk-routes which optimised ground visibility were used. Where possible, two surveyors followed an approximately parallel route walking through a 500 m wide strip extending out from the A9 corridor (hereafter 500m buffer) such that all parts are approached to within at least 150 m. This was undertaken on both the sides of the existing A9 road
- Existing infrastructure which runs roughly parallel with the A9 road within the 500m buffer (e.g. the old A9 road and cycle path along the northbound carriageway, the Beaully-Denny Overhead Power Line along the southbound carriageway, as well as other minor roads and farm tracks) were used to maximise the time spent scanning an area for birds, so long as the route did not significantly deviate from the "ideal" survey route
- Fieldwork was undertaken between 0730 and 1800hrs, thus avoiding the main periods of rapidly changing bird activity (Brown and Shepherd, 1993)
- Isolated trees, copses and patches of scrub and woodland which could offer suitable breeding habitat were approached and examined
- At regular intervals (approximately every 100 m) the observers scanned the surrounding area with binoculars and listened for calls or song
- Contacts with birds by sight or sound were recorded on large-scale maps
- Standard BTO activity codes were used to note species, sex and age where possible, and to record activity such as singing or nest-building
- When individuals or pairs were observed the observer made efforts to establish whether, in their opinion, these birds were new observations or the same individuals previously encountered within the survey area
- Fieldwork was not undertaken in conditions considered likely to affect bird detection rates, for example in winds greater than Beaufort Scale Force 4, persistent precipitation, poor visibility (less than 300 m), or in unusually hot weather. All meta data relating to weather conditions was recorded on hourly intervals and has been stored on the CFJV sharepoint
- After survey visits were completed the data were digitised and overview maps produced using GIS showing all records of each target species. These were analysed to produce

⁹ Calladine, J., Garner, G., Wernham, C. & Thiel, A. 2009. The influence of survey frequency on population estimates of moorland breeding birds. *Bird Study* 56: 381-388.

composite breeding territory maps, using the methodology described by Bibby et al. (2000¹⁰)

2.4 Scarce Breeding Bird Surveys

Desk Studies

2.4.2 In 2015 and 2016, habitat and species data obtained from desk-based studies and 2015 breeding bird surveys were used to focus survey effort within areas most likely to host breeding target species. This was based on the process of sensitivity characterisation of the survey areas carried out in the DMRB2 stage. Historic data were obtained from various sources, as presented in the 2016 Ornithology Summary Note.

Field Surveys

2.4.3 Scarce breeding bird surveys followed species-specific survey guidelines such as those outlined in Hardy et al. (2009¹¹) and Gilbert et al. (1998¹²), depending on habitat and likely species assemblage. The aims were to determine the distribution of occupied nests/territories for target species (particularly Schedule 1 listed species) and record breeding success.

2.4.4 Access was restricted to 500m from the A9 corridor. The main impact on breeding species such as raptors is likely to be disturbance during construction, and based on SNH guidance on species-specific disturbance distances (Ruddock and Whitfield, 2007¹³), this is likely to be confined to within 1 km of construction activity at most. The actual scarce breeding bird survey area was therefore a buffer of up to 1 km either side of the A9 corridor, depending on habitat type and topography. Because of access restrictions it was necessary to scan areas of land beyond 500m from the edge of the corridor.

2.4.5 Areas with potential for scarce breeding birds, as identified in the desk studies, were characterised as being of high sensitivity and therefore prioritised during surveys.

2.4.6 Areas of suitable habitat were visited to:

- Check for territory occupancy (1st and 2nd visits) – this consisted of watching over suitable habitat from a good vantage point for displaying males (and females)
- Locate incubating birds (2nd and 3rd visits) e.g. by listening for begging calls or watching for food provision by the other member of a pair

10 Colin J. Bibby, Neil D. Burgess, David A. Hill and Simon H. Mustoe (2000) Bird Census Techniques, 2nd Edition, London, Academic Press

11 Hardy, J. Crick, H. Wernham, C. Riley, H. Etheridge, B and Thompson, D. (2009) Raptors: A Field Guide for Surveys and Monitoring. The Stationary Office, Edinburgh.

12 Gilbert, G., Gibbons, D. W. & Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy.

13 Ruddock, M. & Whitfield, D. P. (2007). A Review of Disturbance Distances in Selected Bird Species, A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.

- Check for young or breeding evidence (3rd visit in 2015) by listening for begging calls, watching for food passes or watching for adults provisioning the nest with food
- Check for fledged young (4th visit in 2015)

2.4.7 Surveys were undertaken by experienced and licensed field ornithologists. Extreme care was taken to avoid unnecessary disturbance to breeding birds.

2.5 Woodland Grouse Surveys

2.5.1 Prior to 2016 field surveys to record lekking woodland grouse, a sensitivity map showing priority areas of suitable habitat for surveying woodland grouse was created, with the rationale behind the map production described in **Appendix A**.

2.5.2 The desk-based study used two categories for capercaillie and black grouse to determine likelihood of presence, and corresponding survey effort. These were:

- **Suitable habitat:** habitat is suitable for presence of leks, and/or historic records are present. Areas identified will be surveyed at least twice.
- **Suitable habitat not present:** habitat is not generally suitable for woodland grouse, and there are no historic records. Areas will not be specifically surveyed, but will be covered as part of ongoing scarce breeding bird surveys. If evidence of woodland grouse is found, then further specific surveys will take place.

2.5.3 Following the survey rationale in **Appendix A**, it was concluded that, due to a combination of a lack of historic data within Project 7, and lack of extensive and contiguous suitable habitat, capercaillie was scoped out of the field surveys, this approach followed consultation with RSPB regarding the scope of surveys.

2.5.4 The preferred habitats identified for black grouse leks included mosaics of moorland or heathland, woodland, plantations, rough grazing, in-bye land and meadows. The following areas were considered unsuitable for black grouse leks: ground above 550 m; built-up areas; enclosed arable farmland; the interiors of unbroken post-thicket stage forest blocks and dense native woodland.

2.5.5 The survey methodology used is detailed in Gilbert et al. (1998). A summary is provided below.

- Black grouse were surveyed within the 500m A9 corridor, and scanned out to 1km, by counting total numbers of males and females at leks
- Most lekking activity takes place at or soon after dawn in spring, and so known lek sites and other areas of suitable habitat which can host leks were visited during April and May within two hours of dawn, on calm dry days with good visibility where possible
- Visits involved listening and scanning for lekking black grouse from strategic locations (avoiding disturbance of leks) and during walks between these locations ensuring that all potential habitat was covered
- The maximum count of males in the two hours around dawn gives the standard count estimate but the maximum number of females seen was also presented
- Leks that were at least 200m apart within the same year were treated as separate leks

3 Results

3.1 Survey Limitations

3.1.1 Survey guidelines were followed as closely as practicably possible. However, the following should be noted:

- The mainline railway track lies to the west of the A9 corridor within the survey area, and there was no access within the Network Rail boundary and across the tracks for Health and Safety reasons. There are a few road crossing points within the survey area that allowed movement from one side of the railway line to the other (e.g. bridges and underpasses). Consequently, for a number of locations where the railway line runs close to the road, access to areas on the non-A9 side of the railway line was obtained on follow up visits by way of these minor roads.
- The Brown and Shepherd (1993) survey guidelines suggest the first visit should be completed by mid-May. However, May 2015 was a relatively cold and windy month in comparison with the long term averages¹⁴, and this could have possibly have delayed the onset of breeding for a number of species. Therefore, a later start date was considered to be appropriate, with the first survey conducted between the 25th and 27th May.
- The first scarce breeding bird surveys in 2015 were conducted in early June, and so it is possible that some early season breeding activity, including any breeding failures, may have been missed. However, the cold spring weather could possibly have delayed the onset of breeding by target species. Early season surveys were undertaken in 2016 eliminating data gaps with respect to this part of the season. Ongoing breeding in 2015 was picked up by the continuing survey programme. Scarce breeding bird surveys in 2016 took place between March and May, and so any late breeding attempts may have been missed. The 2016 surveys were however intended to compliment the 2015 surveys, to build up a complete picture of the breeding season (i.e. the surveys have covered the full breeding period from March to July).

3.2 Survey Results

2015 Breeding Bird and Scarce Breeding Bird Surveys

3.2.2 A total of 30 target species were recorded during the 2015 breeding bird and scarce breeding bird surveys. Their highest conservation status, level of breeding status (possible, probable or confirmed) and number of territories recorded within each section of Project 7 are presented in **Table 3-1**. within a small area and this has been represented as a single entry). SSSI references

¹⁴ <http://www.metoffice.gov.uk/climate/uk/summaries/datasets>

relate to the species listed as part of the breeding birds assemblage notified interest of the Drumochter Hills SSSI which the majority of Project 7 is located within or adjacent to.

Table 3-1: Highest conservation status and number of pairs for species recorded during 2015 Breeding Bird Surveys in Project 7

Highest Conservation Status	Species	Latin name	Tie-in (S)	Section 1	Section 2	Section 3	Section 4	Tie-in (N)
SPA breeding feature	Merlin*	<i>Falco columbarius</i>	✓	✓	-	-	-	-
SSSI breeding feature	Golden eagle*	<i>Aquila chrysaetos</i>	P €	✓	-	-	-	-
	Wigeon ^Ω	<i>Anas penelope</i>	-	3	-	-	-	-
	Dunlin*	<i>Calidris alpina</i>	-	2	-	-	-	-
	Ring ouzel*	<i>Turdus torquatus</i>	-	-	P	1	-	-
Schedule 1 & Annex I	Hen harrier*	<i>Circus cyaneus</i>	✓	✓	✓	-	-	-
Schedule 1	Garganey*	<i>Anas querquedula</i>	-	✓	-	-	-	-
	Black-tailed godwit*	<i>Limosa limosa</i>	-	1	-	-	-	-
	Common crossbill	<i>Loxia curvirostra</i>	-	1	P	-	1	-
CNPPS	Lapwing*	<i>Vanellus vanellus</i>	5	11	4	-	20-25**	-
BoCC Red	Curlew*	<i>Numenius arquata</i>	1	1	-	-	15**	-
	Ringed plover	<i>Charadrius hiaticula</i>	-	2	-	-	P	-
	Lesser redpoll*	<i>Carduelis cabaret</i>	-	2	P	-	4	1
	Linnet*	<i>Carduelis cannabina</i>	-	1	-	-	-	-
	Song thrush*	<i>Turdus philomelos</i>	-	1	-	-	-	2
	Mistle thrush	<i>Turdus viscivorus</i>	-	-	-	-	P	✓
	Spotted flycatcher*	<i>Muscicapa striata</i>	-	-	-	-	1	-
	Tree pipit*	<i>Anthus trivialis</i>	-	1	-	-	1	-
	Grey wagtail	<i>Motacilla cinerea</i>	-	-	-	P	P	-
BoCC Amber†	Kestrel*	<i>Falco tinnunculus</i>	✓	✓	P	✓	✓	✓
	Greylag goose [€]	<i>Anser anser</i>	-	15¥	-	-	P	-
	Teal [€]	<i>Anas crecca</i>	-	3	-	✓	-	-
	Mallard	<i>Anas platyrhynchos</i>	-	12	-	-	✓	-
	Red grouse*	<i>Lagopus lagopus</i>	-	1	3	P	2	-
	Black-headed gull* [€]	<i>Chroicocephalus ridibundus</i>	✓	2	6	✓	✓	✓

Highest Conservation Status	Species	Latin name	Tie-in (S)	Section 1	Section 2	Section 3	Section 4	Tie-in (N)
	Common gull	<i>Larus canus</i>	1	3	✓	✓	C.82	✓
	Common sandpiper	<i>Actitis hypoleucos</i>	-	3	3	2	8	2
	Redshank	<i>Tringa totanus</i>	-	2	-	-	-	
	Oystercatcher	<i>Haematopus ostralegus</i>	3	3	3	1	20**	1
	Snipe	<i>Gallinago gallinago</i>	1	3	4	-	-	1

BoCC = listed in Red or Amber Birds of Conservation Concern

CNPPS = Cairngorms National Park Priority Species

* = Scottish Biodiversity List Priority Species

✓ = present but no signs of breeding

P = possible or probable breeder, in suitable habitat, but no confirmation

C = colony, with total number of adults

¥ = based on number of adults present in crèche – likely maximum number of pairs

€ = pair present within approximately 1km

** = “pairs” present, possibly as post-breeding aggregations only

† = Target Amber-listed species only (i.e. excludes common passerines which were not systematically recorded)

Ω = Amber listed for its wintering population only

2016 Scarce Breeding Bird Surveys

3.2.3 Four scarce breeding bird species were recorded during the 2016 surveys. Their highest conservation status, level of breeding status and location within each section of Project 7 are presented in **Table 3-2**. SSSI references relate to the species listed as part of the breeding birds assemblage notified interest of the Drumochter Hills SSSI which the majority of Project 7 is located within or adjacent to.

Table 3-2: Highest conservation status and number of pairs for species recorded during 2016 Breeding Bird Surveys in Project 7

Highest Conservation Status	Species	Latin name	Breeding Status	Tie-in (S)	Section 1	Section 2	Section 3	Section 4	Tie-in (N)
SSSI feature	Wigeon	<i>Anas penelope</i>	Probable	-	P	-	-	-	-
	Dunlin	<i>Calidris alpina</i>	Probable	-	P	-	-	-	-
	Ring ouzel	<i>Turdus torquatus</i>	Probable	P	-	-	-	-	-
BoCC Amber	Kestrel	<i>Falco tinnunculus</i>	Confirmed	1	-	-	-	-	-

P = possible or probable breeder, in suitable habitat, but no confirmation

BoCC = listed in Red or Amber Birds of Conservation Concern (Eaton *et al.* 2015¹⁵)

¹⁵ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015)

Woodland Grouse

- 3.2.4 Only a very limited amount of habitat was deemed suitable for black grouse (isolated patches of woodland adjacent to the A9 corridor) during the desk study, and no historic records of black grouse within Project 7 were provided. It was therefore considered that the presence of this species in Project 7 was unlikely and so no specific black grouse surveys were carried out. During scarce breeding bird surveys however, the identified areas of potentially suitable habitat were searched for signs of black grouse (droppings, feathers), but none were recorded. Thus it can be reasonably concluded that there are no leks within Project 7.

SPA Species

- 3.2.5 One species (merlin) listed as an SPA breeding feature was recorded in 2015 only. Merlin is a qualifying interest of the Drumochter Hills SPA, and a female flight was recorded in June in the southern tie-in of Project 7, with another flight in section 1 in the same month. No breeding within 1km of the A9 corridor around Project 7 was observed during scarce breeding bird surveys in 2015 or 2016.

SSSI Species

- 3.2.6 In 2015 an adult golden eagle was recorded flying over Druim Coire Mhic-sith, within the SPA in July. During a habitat survey on 23 July, a pair was recorded soaring over Craig Chaorach, at the southernmost point of Project 7, within the SSSI, and it is believed that birds may be holding a territory in the Dalnacardoch Forest area, and so the southern part of Project 7 may form part of an eagle territory range. There were no records in 2016 however.
- Wigeon were recorded within the wetland at Dalnaspidal with three pairs in 2015, and the species was likely to have bred in both survey years.
 - Dunlin was recorded in the wetland at Dalnaspidal in 2015 and 2016, where two territories were likely present in 2015, and the species was likely to have bred in both survey years.
 - In 2015, at least one ring ouzel pair considered likely to have bred in moorland in Section 3, and possibly another in Section 2. Two probable ring ouzel territories were recorded within the southern tie-in section in 2016, within the steep slopes to the east of the A9 corridor.

Schedule 1 and Annex 1 Species

- 3.2.7 One Schedule 1 raptor species (in addition to merlin and golden eagle) was recorded in flight within Project 7: hen harrier.

Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746.

- 3.2.8 Hen harriers were recorded on three occasions in 2015 within the southern half of Project 7. An adult male was recorded on two occasions on the same day in late May, near the foot of the Sow of Atholl. A female was recorded the following month, further south on the southbound side of the A9 corridor at Craig Chaorach. It is possible that this area is part of a breeding territory, although no evidence of breeding was recorded within 1km during any surveys in 2015 or 2016.
- 3.2.9 In July 2015 a black-tailed godwit pair was recorded in the wetland near Dalnaspidal Lodge, protecting young from a heron and common gull. The pair, likely belong to the *Limosa limosa islandica* population that breeds mainly in Iceland, breed sporadically in very small numbers in the UK, mainly in the Northern Isles (Holling *et al*, 2014¹⁶).
- 3.2.10 A single garganey was recorded as an incidental record on the wetland near Dalnaspidal Lodge in July 2015, but no breeding evidence was observed.
- 3.2.11 Crossbills (considered most likely to be common crossbill) were recorded within areas of plantation adjacent to the road throughout Project 7. Crossbills often breed early in the year and so confirmation of nesting is uncommon for this species during the standard breeding season. It is likely that breeding took place earlier in the season, but this could not be confirmed during the 2015 breeding bird surveys, and so numbers are likely to be minimum estimates.

Cairngorms National Park Priority Species

- 3.2.12 One Priority Species (in addition to golden eagle) was recorded during 2015 breeding bird surveys: lapwing.
- 3.2.13 Breeding lapwings were recorded in high concentrations within the southern half of Project 7, along the Allt Dubhaig floodplain in particular, where it was estimated from breeding bird survey results that around 20 pairs were present. Lapwing chicks fledged in June, which resulted in larger aggregations of adults and juveniles being recorded after this time, both in this area, and further north in Section 4 where 20-25 “pairs” were estimated to be present during a scarce breeding bird survey in mid-June.

Birds of Conservation Concern: Red-listed Species

- 3.2.14 A total of nine Red-listed species were recorded during 2015 surveys, all of which have been listed due to national declines rather than being inherently rare.
- 3.2.15 Curlew was found in low numbers only in the southern half of the Project during the first breeding bird surveys, although a concentration of approximately 15 pairs was observed in Section 4 in late June, which may comprise post-breeding aggregations.
- 3.2.16 Ringed plover was recorded within the wetland at Dalnaspidal, where at least two territories were thought to be present. One record was also made in Section 4. Also in the wetland area were three pairs of teal.

¹⁶ Holling, M. and the Rare Breeding Birds Panel (2014). Rare breeding birds in the United Kingdom in 2012. British Birds 107: 504 – 560.

- 3.2.17 Other passerine species such as song thrush, lesser redpoll and spotted flycatcher were associated with woodland patches within the survey area.

Birds of Conservation Concern: Amber-listed Species

- 3.2.18 Many of the Amber-listed species encountered during the surveys were passerines. These species are generally included on the Amber list due to national declines and were locally abundant along the A9 corridor. Furthermore, these species are not regarded as particularly sensitive to disturbance and attempting to record all observations could potentially lead to more sensitive species being missed. Consequently, only non-passerine Amber-listed species were recorded.
- 3.2.19 Surveys in 2015 showed that waders were common in the southern half of Project 7, along the Allt Dubhaig and River Truim floodplain with oystercatcher and common sandpiper abundant, particularly in Sections 1, 2 and 4. Snipe was also mainly recorded in wetter areas in the southern half of the Project. A concentration of approximately 20 pairs of oystercatcher was observed in Section 4 in late June, which may comprise post-breeding aggregations. A common gull colony was also recorded in Section 4, which may explain the lack of wader breeding attempts earlier in the season.
- 3.2.20 At least two redshank breeding territories were likely to be present in 2015 within the wetland area at Dalnaspidal.
- 3.2.21 Kestrels were recorded foraging throughout Project 7, and although not confirmed, at least one territory was likely present in 2015 within the steep, craggy slopes at Drumochter in the southern half of the survey area. In 2016, a confirmed kestrel nest was recorded on a crag at Craig Chaorach, to the east of the A9 corridor in the southern tie-in. It is located approximately 350m from the current A9 route.
- 3.2.22 Greylag goose observations were concentrated around the wetland at Dalnaspidal. Breeding adults and young gathered together in crèches and so it is difficult to ascertain how many pairs were present, but around 10-15 pairs may have been in the local area in 2015.
- 3.2.23 Red grouse were recorded in low numbers across Project 7, largely confined to managed moorland.

4 Discussion

- 4.1.1 This report summarises the ornithological survey results from the 2015 and 2016 breeding seasons. In general, data obtained suggest that the survey area is host to a typical upland breeding bird assemblage, and in particular a healthy breeding wader population along the River Truim, which may need to be safeguarded from construction disturbance by avoiding key areas or key breeding periods.

- 4.1.2 Direct habitat loss is unlikely to be a significant issue for waders since much nesting has taken place adjacent to the River Truim, and at the far side of the railway line, where dualling is unlikely to occur. The construction of SUDs ponds and access tracks associated with the scheme may however extend into wader breeding territory and thus some territories may be lost, either permanently, or until habitat reinstatement occurs after the construction phase.
- 4.1.3 Depending on the nature, location, timing and duration of construction works, there is a possibility that breeding may be interrupted for species due to disturbance, potentially out to 300m from source (e.g. Summers et al. 2011¹⁷). Conducting this work during the non-breeding season (August to March) in particularly sensitive areas would avoid this issue. Once operational, densities may be suppressed up to at least 500m from the road (e.g. Reijnen et al. 1995¹⁸). In this case however as there is an existing road in place such displacement is likely to be more limited if detected.
- 4.1.4 Golden eagle, merlin and hen harrier were present within the southern half of Project 7, within the Drumochter Hills SPA boundary. Although not confirmed, evidence suggested that a golden eagle pair were present within a territory (at least in 2015), centred over 1km from the southbound side of the A9 corridor. At this distance, direct disturbance due to construction activity is unlikely, although additional infrastructure may compromise a small part of the pair's territory.
- 4.1.5 Only two merlin flights were recorded within 500m of the A9 corridor (both in 2015) which suggests that the study area does not form an important part of any territory. The study area, while overlapping with the Drumochter Hills SPA which is designated for breeding populations of merlin, does not appear to be within a sensitive range of any existing merlin breeding territories. The status of merlin surrounding the scheme will be confirmed in advance of construction and monitored during construction to ensure the SPA population is protected during the construction phase.
- 4.1.6 The same conclusion can be drawn for hen harrier, where only a small number of flights were recorded (again in 2015 only), with no observed breeding activity.
- 4.1.7 It is likely that at least some of the other SSSI breeding assemblage species (wigeon, dunlin) may have attempted to breed within 500m of the A9 corridor. Based on the distance of the Dalnaspidal wetland from the A9 route, and the separation because of the railway line, it is unlikely that these SSSI birds would be disturbed by any construction activities.
- 4.1.8 Woodland patches held a range of passerines of conservation concern (e.g. Red-listed species). These species may be subject to direct habitat loss if dualling requires any tree felling. Densities may also be suppressed up to at least 500m from the road.

¹⁷ Summers, P.D., Cunnington, G.M. and Fahrig, L. 2011. Are the negative effects of roads on breeding birds caused by traffic noise? *Journal of Applied Ecology*, 48, 1527-1534.

¹⁸ Reijnen, R., Foppen, R., Terbraak, C. and Thissen, J. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. *Journal of Applied Ecology*, 32, 187-202.

- 4.1.9 Common crossbills were recorded within woodland areas close to the A9 corridor through the survey area in 2015, and it is possible that breeding occurs within these habitats. Crossbills breed early, from January onwards, and so the breeding bird surveys undertaken in 2015 and 2016 may have missed breeding attempts. Crossbills are listed in Schedule 1 of the Wildlife & Countryside Act 1981 which means that they are afforded extra legal protection from disturbance during the breeding season. As such, pre-construction surveys and monitoring during the construction phase may be required to locate, and avoid disturbance to nesting crossbills. Forestry Commission Guidance (2006¹⁹) suggests that for forestry operations, a buffer of 50-150m around nest sites should be deployed, with the main period being mid-February to mid-May. If tree-felling is required then buffer distances towards the upper buffer range are likely to be more applicable, whereas if other forms of construction work close by the existing A9 corridor are taking place, a 50m buffer may be sufficient.
- 4.1.10 Kestrel was confirmed breeding in 2016 (and probably in 2015), and depending on the exact location of construction activities, it is possible that kestrel may be disturbed during the breeding season, although based on location of the nest site in 2016, birds are evidently tolerant of some level of human activity.
- 4.1.11 Only very limited areas of suitable black grouse habitat are present in Project 7, and surveys in 2015 and 2016, as well as historic datasets, suggest that the species is unlikely to be found within 500m of Project 7.

¹⁹ Forestry Commission Scotland (2006). FCS Guidance Note 32: Forest operations and birds in Scottish forests: November 2006.

5 Appendix A - Woodland Grouse Survey Rationale

5.1.1 The Woodland Grouse sensitivity map was formulated using the following information:

- Ordnance survey 1:25,000 scale basemaps to determine habitat types and study area (500m buffer from A9 corridor). [GIS Ref – OS_25k].
- A combination of aerial imagery of route provided by CFJV [GIS ref – A9_10cm_Ortho] and Google Imagery (Accessed March 2016), to determine habitat types;
- Phase 1 habitat survey results from 2015 provided by CFJV, to confirm habitat types [GIS ref – Annex 1 and GWDTE (Phase_1_Habitats_A9_Polygon)]. Note that survey coverage did not extend to 500m buffer, but does provide an indication of habitat type within the local area;
- National Vegetation Classification (NVC) survey results carried out in 2015 [GIS ref – NVC_Poly_Project_7, NVC_Poly_Project_8, NVC_Poly_Project_9], and associated Project 7 to Project 9 National Vegetation Classification Survey Reports to confirm habitat types and quality (e.g. understory of plantation woodland);
- Historic ornithological data provided by RSPB and the Scottish Ornithologists Club [GIS ref - Derived from data received from CH2M, RSPB: RSPB_Black_Grouse_C_1km, SOC: Moy Filter Data Combined]. Data were filtered by species and clipped to a 2km buffer of the A9 corridor, to establish distribution within the A9 corridor and wider area;
- Results from 2015 breeding bird surveys along the P7-P9 route with 500m buffer, including all observations and field signs of woodland grouse [SBBS_2015_L, SBBS_2015_P, BBS_2015_L, BBS_2015_P].
- Discussions with field surveyors that conducted the 2015 breeding bird surveys, to confirm habitat suitability in particular areas, gain information on their local knowledge of species distribution, and outcomes of informal discussions with gamekeepers/estate workers/farmers during previous site visits;
- Survey methodologies for capercaillie (SNH, 2013) and black grouse (Gilbert *et al.* 1998) which identify key habitat types to search (see below); and
- Literature review (e.g. Forrester *et al.* 2007 (Birds of Scotland), <http://www.blackgrouse.info/> and www.capercaillie-life.info). These sources provide further information on species' distribution, preferred habitat types and food sources.

5.1.2 There are two categories for capercaillie and black grouse that have been used to determine likelihood of presence, and corresponding survey effort. These are:

- **Suitable habitat:** habitat is suitable for presence of leks, and/or historic records are present. Areas identified will be surveyed at least twice.
- **Suitable habitat not present:** habitat is not generally suitable for woodland grouse, and there are no historic records. Areas will not be specifically surveyed, but will be covered as part of ongoing scarce breeding bird surveys. If evidence of woodland grouse is found, then further specific surveys will take place.

5.1.3 The following habitat types have been considered to be suitable for capercaillie and black grouse leks:

Capercaillie:

5.1.4 Capercaillie can utilise almost any type of forest at certain times of the year. Males generally need at least 50 hectares of woodland to range within, and so suitable lek habitat is considered to be areas of woodland comprising at least this size. Focussed searching should be carried out in key areas of suitable habitat:

- Wooded knolls and ridges, particularly where tree growth has been stunted
- Wooded hill tops
- Rocky outcrops which are surrounded by trees
- Mature plantations (especially pine and larch with heather and blaeberry ground cover)
- Areas with granny (mature old growth) pine trees
- Bogs and open rides in forests
- Exposed root plates from fallen trees
- Tracks where capercaillie have been gritting

Black grouse:

5.1.5 The preferred habitats for black grouse leks include mosaics of moorland or heathland, woodland, plantations, rough grazing, in-bye land and meadows. They are transitional or marginal between the enclosed fields on valley slopes and the lower edges of heather moorland. These habitats correspond to a distinct altitudinal range of 200-550 m.

Moorland

5.1.6 Within northern Britain, heather moorland, often managed for red grouse, is the main habitat for black grouse. They tend to be found on the edges of moorland from which they have access to other habitats such as scrub or woods, rough grazing and herb-rich in-bye pastures.

Native woodland

5.1.7 Black grouse favour two types of native woodland in the uplands: birch and birch/scots pine mixes. They prefer either small woods, woodland edges or even rows of shelterbelt trees. Open canopied woods are preferred as these allow sufficient light to reach the forest floor and create a field rich in herbs and dwarf scrubs. They avoid closed-canopy woods.

Forestry

5.1.8 Afforestation may result in short-term benefits for black grouse. Under relaxation from grazing and heather burning in the early stages of afforestation, heather, bilberry and scrub can provide increased food and nesting cover. However, the benefits are short-lived, and conditions rapidly deteriorate on canopy closure 10-15 years after planting.

Unsuitable areas

5.1.9 The following areas are generally unsuitable for black grouse leks and may not be occupied: ground above 550 m; built-up areas; enclosed arable farmland; the interiors of unbroken post-thicket stage forest blocks and dense native woodland

