A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010041

6.8 Environmental Statement – Appendix 9.6 Breeding and Wintering Birds Report

Part B

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

June 2020

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Environmental Statement - Appendix

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1. INTRODUCTION

1.1. SCHEME BACKGROUND

1.1.1. The A1 in Northumberland: Alnwick to Ellingham (Part B) aims to increase capacity along an approximately 8 km section of the existing A1 between Alnwick and Ellingham, in Northumberland. Part B includes widening the existing A1 from single carriageway to a dual carriageway. Part B also includes improving the existing junction at Charlton Mires with a new grade-separated junction and a new accommodation overbridge at Heckley Fence. Part B aims to increase capacity, enhance resilience, improve safety and improve journey times along the route. Details of the Part B location are provided on **Location Plan** of this Environmental Statement (ES) (**Application Document Reference: TR010041/APP/2.1**).

1.1.2. Part B comprises dualling of the existing A1 single carriageway; a new southbound carriageway would be constructed to the east of the existing A1, and the existing A1 would act as the new northbound carriageway. A number of Private Means of Access would need to be stopped up and replaced with new access routes including new roads for East and West Linkhall, and from the B6347 and Rock South Farm. To facilitate the construction of Part B, sections of an Extra High Voltage cable, utility pipes and telecommunication cables would need to be diverted. Part B also includes new drainage features, new and extended culverts, and temporary and permanent Public Right of Way (PRoW) diversions, together with new and/or improved ancillary features.

1.1.3. This appendix details methods, results, impact assessment and recommended mitigation to ameliorate potential effects on ornithological interest (breeding and wintering birds) resulting from Part B.

1.1.4. Within this document, Part B comprises three elements. The Part B Main Scheme Area refers to the Order Limits north of Alnwick and south of Ellingham only. The Order Limits also includes the Lionheart Enterprise Park Compound (eastern site and western site), located to the south of Alnwick, and the Main Compound, which is located within the A1 in Northumberland Morpeth to Felton (Part A).

1.2. ECOLOGICAL BACKGROUND

1.2.1. A desk study was undertaken in 2016 prior to the completion of breeding bird surveys (BBS) and wintering bird surveys. The findings of the 2016 desk study are presented in separate reports that form **Appendix A: Breeding Birds** and **Appendix B: Wintering Birds** of this report.

1.2.2. This document presents the findings of an updated desk study (2019) and collates the findings of the breeding and wintering bird surveys detailed in **Appendix A: Breeding Birds** and **Appendix B: Wintering Birds** of this report. The breeding and wintering bird surveys were carried out during 2016. At that

stage, two route options were under consideration (online option and offline option), and the scope of surveys covered both options. In consequence, the surveyed area was wider than strictly required for the online route alone (which represents Part B).

2. BASELINE IDENTIFICATION METHODOLOGY

2.1. DESK STUDY

2.1.1. A desk study was undertaken in 2019, to obtain ecological information pertaining to birds in relation to Part B and the surrounding landscape. Bird records were obtained for Part B plus 2 km. Ecological information collected also included the presence of local and national statutory and non-statutory sites, with birds listed on their citation, within 2 km of Part B. Where a citation was not available, a habitat assessment has been undertaken to understand the potential bird assemblage supported by the designated site. The search area was extended to 10 km for internationally designated sites (European sites), including records of bird species for which those sites are designated.

2.1.2. Records were primarily sought for bird species included within:

a. Schedule 1 of the Wildlife and Countryside Act (WCA) 1981 (as amended) ('Schedule 1 species') (**Ref. 1**);
b. Annex 1 of the Birds Directive ('Annex 1 species') (**Ref. 2**);
c. Section 41 of the Natural environment and Rural Communities Act (NERC Act) 2006 (Species of Principal Importance (SPI)) (**Ref. 3**);
d. The Northumberland Local Biodiversity Action Plan (LBAP) (**Ref. 4**); and
e. The Birds of Conservation Concern (BoCC) Red and Amber lists (**Ref. 5**).

2.1.3. These designated species are referred to in this report as species of conservation concern. Species which were not listed under any of these designations (*e.g.* birds listed only on the BoCC Green list) were not considered in detail as part of the desk study.

2.1.4. Data were obtained from the following data sources and organisations:

a. National Biodiversity Network – NBN Gateway;
b. The Multi Agency Geographic Information for the Countryside website;
c. Google Maps (satellite photography was used to assess the layout of Part B and provide context for the preliminary ecological walkover survey, in addition to a broad assessment of habitat types and locations);
d. Alnwick Wildlife Group;
e. The Environmental Records Information Centre North East (ERIC North East); and
f. Northumberland and Tyneside Bird Club (NTBC).

2.1.5. The data provided by NTBC were summarised results from the BTO/NTBC atlas survey of breeding and wintering birds of Northumbria (2007-2011) (**Ref. 6**). Data were provided for each species recorded in each tetrad within the desk Study Areas, in the form of breeding status and numbers of individuals.

2.1.6. Breeding bird records, which were taken as those recorded between the months of March to August (inclusive), were selected within the data set provided by ERIC North East. Records more than 10 years old (i.e. 2009 or earlier) were

considered to be historical and were discarded from the analysis. Where records were not associated with a specific date, a conservative approach was adopted, and those birds were assumed to have been present during the breeding season.

2.1.7. Wintering bird records, which were taken as those recorded between the months of September to February (inclusive), were selected within the data set provided by ERIC North East. Records more than 10 years old (i.e. 2009 or earlier) were considered to be historical and were discarded from the analysis. Where records were not associated with a specific date a conservative approach was adopted, and those birds were assumed to have been present during the winter.

2.2. FIELD SURVEY

BREEDING BIRD SURVEY (BBS)

2.2.1. BBS were undertaken within the Part B Main Scheme Area plus 500 m (the Survey Area) between mid-March and late May 2016, inclusive, and comprised six separate transect routes (Transects 11, 12, 13, 14, 15 and 16). The transect routes are shown on **Figures 3.1 to 3.15** of **Appendix A** of this report. Surveys were undertaken at approximately monthly intervals. An additional visit to areas omitted during the previous survey visits was made in early July 2016 to ensure that all transects were covered on three occasions. Thus, three complete surveys of each transect were carried out during the breeding season. Three survey visits were deemed sufficient to detect most, if not all, species regularly occurring within the Survey Area. However, it should be noted that not all birds had commenced breeding during the first survey visit.

2.2.2. Due to the large size of the Survey Area each survey visit was split over a period of up to ten days (two consecutive working weeks). Two surveyors covered separate transects concurrently on a number of survey dates in order to minimise the time taken to complete each visit. A summary of survey dates is provided below in **Table 2-1** (see **Appendix A** for full details of survey dates, times and weather conditions).

Table 2-1 - Breeding Bird Survey Dates

Visit Number	Date	Transects Surveyed
1	14/03/2016	11*, 16*
	15/03/2016	11*, 12, 13, 16*
	16/03/2016	14, 15
2	15/04/2016	13, 14, 15
	19/04/2016	11, 12

Visit Number	Date	Transects Surveyed
	20/04/2016	16
3	17/05/2016	13 ,14
	18/05/2016	12, 16
	25/05/2016	15
	27/05/2016	11
4	08/07/2016	16

*Transects split over consecutive survey days.

2.2.3. Surveys were based on the Common Bird Census (CBC) method, devised jointly by the BTO and JNCC (**Ref. 7**), and the BBS method, devised jointly by the BTO, the Royal Society for the Protection of Birds (RSPB) and the Joint Nature Conservancy Council (JNCC) (**Ref. 8**). Surveys were planned to take place at the optimal time of day for bird activity, beginning approximately an hour after dawn and finishing by late morning/early afternoon. During the first survey visit, evening surveys were conducted on Transects 11 and 16 (refer to **Appendix A - Figure 3.1** of this report), in line with Marchant (**Ref. 7**), to minimise the time taken to complete the visit. However, no evening surveys were subsequently undertaken as bird activity was found to be much greater in the morning. Survey visits were planned to avoid adverse weather conditions such as heavy rain and strong wind, as this can reduce bird activity and detectability.

2.2.4. During each visit surveyors walked along each pre-determined transect route at a slow walking pace. The route direction was varied throughout the visits in order to reduce survey bias.

2.2.5. Surveyors recorded all birds heard or seen with the aid of binoculars. Registrations, which are records of individual birds (identified either by call, song or visually), were recorded on field maps using standard BTO species codes. Care was taken to avoid double counting. Longer periods of observations were made in areas of high bird activity. Bird registrations are shown on **Figures 4.23 to 4.36** (Visit 1), **Figures 5.23 to 5.36** (Visit 2), **Figures 6.23 to 6.36** (Visit 3) and **Figures 7.23 to 7.36** (Visit 4) of **Appendix A** of this report.

2.2.6. During each of the survey visits the following details were recorded:

a. Bird numbers, species, age and sex; and
b. Bird behaviour e.g. in flight, singing or feeding, paying close attention to evidence of breeding.

2.2.7. Using this date, breeding statuses were categorised as 'non-breeding', 'possible breeding', 'probable breeding' or 'confirmed breeding' in accordance with the BTO's Bird Atlas 2007-2011 (**Ref. 6**) criteria. Evidence for these categories is outlined below:

a. Non-breeding:
- i. Flying over;
- ii. Species observed but suspected to be still on migration; and
- iii. Species observed but suspected to be summering non-breeder.

b. Possible breeding:
- i. Species observed in breeding season in suitable nesting habitat; and
- ii. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.

c. Probable breeding:
- i. Pair observed in suitable nesting habitat in breeding season;
- ii. Permanent territory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more apart at the same place;
- iii. Courtship and display (judged to be in or near potential breeding habitat);
- iv. Visiting probable nest site;
- v. Agitated behaviour of anxiety calls from adults, suggesting probably presence of nest or young nearby; and
- vi. Nest building or excavating nest-hole.

d. Confirmed breeding:
- i. Distraction-display or injury feigning;
- ii. Used nest or eggshells found (occupied or laid within period of survey);
- iii. Recently fledged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful;
- iv. Adults entering or leaving nest-site in circumstances indicating occupied nest (including high nests or nest holes, the contents of which cannot be seen) or adults seen incubating;
- v. Adult carrying faecal sac or food for young;
- vi. Nest containing eggs; and
- vii. Nest with young seen or heard.

WINTERING BIRD SURVEY

2.2.8. Wintering bird surveys were undertaken within the same Survey Area between early October 2016 and early February 2017, inclusive, and comprised seven

separate transect routes (Transects 11, 12a, 12b, 13, 14, 15 and 16). The transect routes are shown on **Figures 3.1 to 3.15** of **Appendix B** of this report. Surveys were undertaken at approximately monthly intervals. Five survey visits were deemed sufficient to detect most species regularly occurring within the areas surveyed during the winter season.

2.2.9. Due to the large size of the Survey Area each survey visit was split over a period of four to five days. Up to two teams of surveyors covered separate transects concurrently in order to minimise the time taken to complete each visit. A summary of survey dates is provided below in **Table 2-2** (refer to **Appendix B** of this report for full details of survey dates, times and weather conditions).

Table 2-2 - Wintering Bird Survey Dates

Visit Number	Date	Transects Surveyed
1	05/10/2016	15, 16
	06/10/2016	13, 19
	07/10/2016	11, 12a and b, 14
2	08/11/2019	12 a and b, 14*, 16
	09/11/2016	14*, 19*
	10/11/2016	11, 13, 15, 19*
3	12/12/2016	13
	13/12/2016	19
	14/12/2016	11, 12a and b, 14, 16
	15/12/2016	15*
	16/12/2016	15*
4	09/01/2017	16
	10/01/2017	15, 19
	11/01/2017	11, 12a and b
	12/01/2017	13, 14
5	07/02/2017	16
	08/02/2017	11, 19
	09/02/2017	12a and b, 14, 15

Visit Number	Date	Transects Surveyed
	10/02/2017	13

*Transects split over consecutive survey days.

2.2.10. Surveys were carried out in accordance with current good practice guidance survey methodology: the BTO Wintering Farmland Bird Survey methodology (**Ref. 9**) and generic wintering bird monitoring methods detailed in Gilbert *et al.* (**Ref. 8**). Surveys commenced from around dawn and lasted for approximately six to eight hours. Where possible, survey visits were planned to avoid adverse weather conditions such as heavy rain and strong as this can reduce bird activity and detectability.

2.2.11. During each visit surveyors walked along each pre-determined transect route at a slow walking pace. Survey route directions, survey timings and surveyors were varied throughout the visits in order to reduce survey bias.

2.2.12. Surveyors recorded all birds heard or seen, with the aid of binoculars. Registrations, which are records of individual birds (identified either by call, song or visually), were recorded on field maps using standard BTO species codes. Care was taken to avoid double counting. Longer periods of observations were made in areas of high bird activity.

2.2.13. During each of the survey visits the following details were recorded:

a. Bird numbers, species, age and sex; and
b. Bird behaviour e.g. in flight, singing, calling or alarm calling.

2.2.14. Bird registrations are shown on **s 4.23 to 4.36** (Visit 1), **Figures 5.23 to 5.36** (Visit 2), **Figures 6.23 to 6.36** (Visit 3), **Figures 7.23 to 7.36** (Visit 4) and **Figures 8.23 to 8.36** (Visit 5) of **Appendix B** of this report.

3. ECOLOGICAL IMPACT ASSESSMENT METHODOLOGY

3.1. OVERVIEW

3.1.1. This section describes the methodology used to identify significant effects of impacts on the relevant ecological receptor, latterly identifying mitigation to ameliorate/remove such effects or impacts. The Ecological Impact Assessment (EcIA) adopts guidance from Chartered Institute of Ecology and Environmental Management (CIEEM) (**Ref. 10**) and the Design Manual for Roads and Bridges (DMRB) Interim Advice Note (IAN) 130/10 'Ecology and Nature Conservation: Criteria for Impact Assessment (**Ref. 11)**.

3.1.2. Ecological receptors have been subject to nature conservation evaluation. The significance of effects has then been assessed taking into account the characterisation of potential impacts (including duration, extent and reversibility) and their consequent effects on important ecological receptors.

3.2. NATURE CONSERVATION EVALUATION

3.2.1. Ecosystems, habitats and species are assigned levels of importance for nature conservation based on the criteria detailed within CIEEM guidance (**Ref. 10**), IAN 130/10 (**Ref. 11**) and summarised in **Table 3-1**. The rarity, ability to resist or recover from environmental change and uniqueness of an ecological receptor, function/role within an ecosystem and level of legal protection or designation afforded to a given ecological receptor are all factors considered in determining its importance. Consideration has also been given to the importance of the species or habitat and its conservation status at a geographic level taking population size, life cycle, rarity and/or distribution into account.

3.2.2. In addition, the importance of an ecological receptor takes into account any statutory or non-statutory designations, the intrinsic value of the ecological receptor and whether it supports legally protected or notable species.

Table 3-1 - Importance Criteria

Importance	Criteria
International or European	Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of: - Internationally designated areas or undesignated areas that meet the criteria for designation; and/or - Viable populations of species of international conservation concern. Species: - Species whose presence contributes to the maintenance of qualifying habitats, communities and assemblages that occur within internationally

Importance	Criteria

	designated sites or within undesignated areas that meet the criteria for such designation;
	- Resident, or regularly occurring, populations of species that may be considered at an International or European level including those listed on Annexes II, IV and V of the Habitats Directive and Annex I of the Birds Directive, where:
	  - The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or
	  - The population forms a critical part of a wider population at this scale; or
	  - The species is at a critical phase of its life cycle at this scale.

UK or National	Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:
	- 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;
	- Areas of ancient woodland; and/or
	- Habitats listed for their principal importance for biodiversity (Section 41 of the NERC Act 2006).
	Species:
	- Species whose presence contributes to:
	  - 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
	  - The maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the Natural Environment and Rural Communities (NERC) Act 2006 Section 41 requirements.
	- Resident, or regularly occurring, populations of species that may be considered at an International/European (as detailed above), National or UK level including those receiving legal protection (listed within Schedules 1, 5 and 8 of the WCA) or listed for their

Importance	Criteria
	principal importance for biodiversity or conservation status, where: - The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or - The population forms a critical part of a wider population at this scale; or - The species is at a critical phase of its life cycle at this scale.
Regional	Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of: - Populations of species of conservation concern within the region. Species: - Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems within the region. - Resident, or regularly occurring, populations of species that may be considered at an International, European, UK or National level (as detailed above), where: - The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or - The population forms a critical part of a wider population at this scale; or - The species is at a critical phase of its life cycle at this scale.
County	Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of: - Populations of species of conservation concern within the authority area. Species: - Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems within a relevant area such as Northumberland. - Resident, or regularly occurring, populations of species that may be considered at an International, European, UK or National level (as detailed above), where:

Importance	Criteria
	- The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or - The population forms a critical part of a wider population at this scale; or - The species is at a critical phase of its life cycle at this scale.
Local	Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of: - Populations of species of conservation concern within the local area (for example a Local Nature Reserve). Species: - Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems at a local level. - Resident, or regularly occurring, populations of species that may be considered at an International, European, UK or National level (as detailed above), where: - The loss of the population would adversely affect the conservation status or distribution of the species at this geographical stage; or - The population forms a critical part of a wider population at this scale; or - The species is at a critical phase of its life cycle at this scale.
Less than Local	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

3.2.3. For the purpose of the bird assemblages, Fuller's (**Ref. 12**) geographical levels of importance have been used to inform the assessment. The approach to categorising the breeding and wintering bird assemblages is categorised in **Table 3-2** below. However, given that the Fuller guidance is 40 years old and bird populations have fallen, professional judgement has been implemented where total species numbers are close to the upper limit of a geographical importance classification. Fuller does not provide total species numbers with reference to International or Less than Local geographical levels. However, neither are relevant to this assessment.

Table 3-2 - Approach for Evaluation of the Bird Assemblages

Geographical Importance	Number of Breeding Species Present	Number of Wintering Species Present
Local	25-49	25-54
County	50-69	55-84
Regional	70-84	85-114
National	85+	115+

3.2.4. In addition, individual species importance classifications have been used to inform the importance of the breeding and wintering bird assemblages. Comparisons have been made between the results of the breeding and wintering bird surveys detailed within this report and population estimates at relevant geographical levels (where available). A population has been deemed important if it exceeds 1% of the population of that species at a given geographical level (1% is a commonly used threshold for the designation of sites of ornithological importance at a variety of geographical levels (**Ref. 13**)).

3.2.5. Population data for Northumbria and the UK are presented in **Appendices A** and **B** for each of the species of conservation concern. Wintering population data were unavailable for certain species. For these species, breeding population estimates were used to inform the evaluation. Although many of these species' populations are largely resident and are considered unlikely to undergo large fluctuations between the breeding and winter seasons, it is important to note that this is not necessarily the case.

3.2.6. Population data were not available to enable comparative quantification of bird populations at the County level and below. Where population estimates were unavailable, a combination of professional judgment, conservation status of a species, local knowledge and comparisons with population estimates at higher geographical levels has been used to inform the evaluation.

3.3. IMPACT ASSESSMENT

CHARACTERISATION OF POTENTIAL IMPACTS

3.3.1. CIEEM (**Ref. 10**) notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects (adverse or beneficial) on important ecological receptors. Significant effects are those

that undermine the conservation status[1] of important ecological receptors. Knowledge and assessment of construction methods and operational activities, together with the ecological knowledge of ecologists with experience of similar large-scale infrastructure schemes, has been used to identify the potential impacts of the project on ecological receptors.

3.3.2. Habitats and species that are considered to have a nature conservation importance of Less than Local are not considered important ecological receptors[2] in the context of this assessment. Any impact on such a feature as a result of Part B 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 importance have been scoped out of the EcIA.

3.3.3. Characterisation of potential impacts has considered the processes that could lead to effects on ecological receptors, using the range of standard parameters from IAN 130/10 (**Ref. 11**), as well as others deemed appropriate (informed by CIEEM's Guidelines (**Ref. 10**)). These included whether the impact was positive (beneficial) or negative (adverse), the probability of the impact occurring (certain, probable, unlikely), its complexity (direct, indirect, cumulative), extent, size, duration, reversibility and timing/duration.

SIGNIFICANCE OF EFFECTS

3.3.4. Having characterised importance and potential impacts, proposals for mitigation have been considered, with the aim of avoiding, preventing, reducing or, if possible, offsetting any identified significant adverse effects. After the application of mitigation proposals, where significant effects are likely to occur, the overall significance of the effect has been assessed.

3.3.5. For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' (explained in Technical Chapter 4 of CIEEM guidance (**Ref. 10**)) or for biodiversity in general. IAN 130/10 does not prescribe a method for determining the significance of ecological effects but does propose significant effect categories which are aligned with other topic areas in the DMRB. These are

1 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.

2 An ecological receptor is considered important based on many factors including its rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in CIEEM guidance (**Ref. 9.10**).

Neutral, Slight, Moderate, Large or Very Large (Table 3 of IAN 130/10) and are reproduced in **Table 3-3** below.

3.3.6. In all instances, when determining the level of significance of the ecological effect, **Table 3-2** has been used as a guide in association with professional judgement (this is consistent with guidance in IAN 130/10). For example, an effect on an ecological receptor of County importance could be considered Large if a particularly high proportion of the county resource were to be affected. To determine whether an effect is significant or not, CIEEM's Guidelines (**Ref. 10**) would also be considered (in lieu of comparable guidance in the DMRB).

Table 3-3 - Significance Categories of Effects on Ecological Receptors

Significance Category	Typical Descriptors of Effect (Nature Conservation)
Very Large	An impact on one or more receptor(s) of International, European, UK or National importance.
Large	An impact on one or more receptor(s) of Regional importance.
Moderate	An impact on one or more receptor(s) of County or Unitary Authority Area importance.
Slight	An impact on one or more receptor(s) of Local importance.
Neutral	No significant impacts on key nature conservation receptors.

3.4. MITIGATION

3.4.1. The principles of the mitigation hierarchy have been applied when considering potential impacts and subsequent effects on ecological receptors; through the following sequential actions:

a. Avoidance;
b. Mitigation;
c. Compensation; and
d. Enhancement.

3.4.2. For the purpose of this assessment, mitigation refers to measures that are considered essential to avoid and reduce adverse impacts of Part B. Compensation refers to measures taken to offset the loss of, or permanent damage to, biological resources through the provision of replacement areas.

3.4.3. The mitigation measures described within this EcIA have been incorporated into the design and construction programme and taken into account in the assessment of residual effects. The mitigation prescribed aims to avoid or negate impacts on ecological receptors in accordance with best practice guidance and UK, English and local government environmental impact, planning and sustainability policies. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any adverse impacts of Part B. The mitigation measures include those required to reduce or avoid the risk of committing legal offences.

3.4.4. Mitigation is also designed to ensure no net loss of biodiversity where practicable in line with policy and guidelines.

3.4.5. Mitigation measures set out in this ES are captured in the **Outline Construction Environmental Management Plan** (**Outline CEMP**) (**Application Document Reference: TR010041/APP/7.3**) as environmental commitments to ensure implementation by the main contractor. The Outline CEMP would be used to inform a Construction Environmental Management Plan (CEMP) produced by the main contractor.

3.4.6. 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 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 and typical, proven mitigation methods along with mitigation targeted to specific locations as described in this assessment.

3.5. LIMITATIONS AND DEVIATIONS

BREEDING BIRD SURVEY

3.5.1. Access restrictions resulted in incomplete coverage of the Survey Area (refer to **Appendix A - Figures 3.1 to 3.15** of this report respectively for transect coverage). However, the information obtained concerning the bird assemblage is considered sufficiently robust to inform the assessment based on the number of species recorded and the similar representative habitats surveyed throughout the Survey Area.

3.5.2. In addition to constraints which prevented access throughout the survey period, other constraints temporarily affected areas of Part B which were covered during the BBS. As a result, certain transects or sections of transects were excluded during one of the planned survey visits. This occurred for a number of reasons, primarily involving lack of landowner permission (which particularly affected the first survey visit), or presence of sensitive or potentially dangerous livestock on parts of the transect routes. Such constraints also entailed minor deviations from a number of the transect routes which were originally planned, and precluded survey coverage of other small areas of land. This resulted in

less comprehensive coverage of the Survey Area. However, transects which were significantly affected by these types of constraints were surveyed more fully during an additional survey visit (Visit 4) in early July (**Appendix A**), which ensured that each transect was fully covered three times during the breeding season:

3.5.3. Although survey timings were based on standard guidance (**Ref. 7 and 8**), surveys commenced relatively early in the breeding season. During the first survey visit in March, observations of bird activity, such as relatively large flocks of farmland passerines, suggested that a number of species had not yet paired and established breeding territories. Summer migrant species were also largely absent during the first survey visit. However, territorial activity was nonetheless observed for the majority of species encountered during the first visit. Furthermore, with the exception of summer migrants, the assemblage of species recorded during Visit 1 did not differ markedly from that recorded during subsequent survey visits. It is therefore considered likely that most species regularly occurring within the Survey Area during the breeding season were detected during the surveys detailed within this report. However, certain summer migrants which typically arrive on their breeding areas later in the survey season (such as yellow wagtail *Motacilla flava* and swift *Apus apus* may have been under-recorded in those areas not covered during Visit 4).

3.5.4. The timing of Visit 4 in July, relatively late in the breeding season, may have influenced the comparability of the results between different areas of Part B (e.g. due to the presence of fledged juveniles or late-arriving summer migrants during Visit 4). However, in general, the distribution of concentrations of birds and local species assemblages in the areas covered during Visit 4 were generally consistent with those recorded during the earlier survey visits (considering the limitations relating to survey timing discussed in **Section 3.5.3** above).

3.5.5. Due to the size of the Survey Area, surveys were spread over a two-week period. This increased the likelihood of birds moving into or out of the Survey Area or between different parts of the Survey Area during a visit and may have resulted in over or under-counting of birds depending on the direction of their movements.

3.5.6. Although surveys were undertaken following standard guidelines (**Ref. 4**), surveys were occasionally undertaken in damp conditions, with periods of drizzle or light rain. In general, this was not considered to have significantly affected the survey results, given that bird activity remained consistent across all survey visits. Poor weather affected the results for Transect 16 during Visit 4 (refer to **Appendix A – 7.24 to 7.27** of this report), which took place to include the section of the transect omitted in earlier surveys and may also have arisen during surveys of Transects 11 and 16 (Visit 1) and Transect 2 (Visit 2) as these surveys were split over two days (**Table 2-1**). However, the effect of bird movements during each visit is not considered to be a significant limitation

overall, as birds holding breeding territories are relatively site-faithful throughout the breeding season. Furthermore, the survey results in general showed that concentrations of birds and local species assemblages remained relatively consistent throughout the course of the surveys when considering the limitations relating to survey timing missed due to livestock presence during Visit 3. Rain during the survey reduced bird activity and detectability. However, as the majority of the transect was covered in good weather during Visit 3, this is not considered a major significant limitation of the overall survey results.

WINTERING BIRD SURVEY

3.5.7. Access restrictions resulted in some incomplete coverage of the Survey Areas. However, the majority of the Survey Area was covered, and the areas to which access was restricted throughout the survey period were mostly small and relatively isolated. Access restrictions are therefore not considered a significant limitation on the survey results.

3.5.8. Excluded parts of the surveys are listed below:

a. Transect 15 (**Appendix B - 3.12 to 3.15** of this report): approximately 70% of the transect route, in the north and centre of the transect, was excluded from Visit 1;

b. Transect 19 (**Appendix B - Figures 3.6 to 3.12** of this report): approximately 10% of the transect route, in the east of the transect, was excluded from Visit 1.

3.5.9. The Surveys commenced in early October and concluded in early February. Coverage of the Survey Area during the spring and autumn passage migration periods was therefore limited. Surveys took place during the spring passage period in 2016, but spatial coverage was reduced during those surveys (**Appendix B**). As a result, certain species which occur primarily during the spring or autumn passage periods may have been under-recorded. This may include certain species for which nearby designated sites are notified, such as golden plover *Pluvialis apricaria*. It is possible that this may have influenced the evaluation of the importance for such species, or of certain parts of their respective Survey Areas. However, since the first wintering bird survey visit took place in early October, covering the late autumn passage period, and the Survey Area was partially covered during spring 2016, it is considered likely that passage species occurring regularly in large numbers would have been detected during the surveys, albeit potentially in reduced numbers. A precautionary approach has been taken when evaluating the importance of the Survey Area for such species to account for the potential limitations arising from reduced survey coverage during the spring and autumn passage periods.

3.5.10. Due to the size of the Survey Area surveys were carried out over a period of four to five days. This increased the likelihood of birds moving into or out of the Survey Area or between different parts of the Survey Area during a visit and may have resulted in over or under-counting of birds depending on the direction

of their movements. A similar effect may also have arisen when surveys of certain transects were split over several days (**Table 2-2**), which primarily arose due to shooting on parts of those transects on certain dates. Consequently, the evaluation aims to account for this variability by focussing on identifying those areas which supported species of conservation concern most consistently during the survey season.

3.5.11. Since surveys took place throughout daylight hours, and bird activity varies throughout the day, peaking in the morning (**Ref. 7**), the time of day at which each transect was completed may have influenced the survey results. In particular, during Visits 1 and 2 there was a clear peak in activity of passage migrants through the Survey Area which subsided by the afternoon. However, survey timings were varied between visits to reduce potential bias resulting from the effect of time of day.

3.5.12. Although surveys were planned to avoid adverse weather where possible, surveys were occasionally undertaken in suboptimal conditions (refer to **Appendix B**). In general, this was not considered to have significantly affected the survey results, with bird activity remaining relatively constant. However, poor weather is considered to have affected the results for transects completed on certain dates, notably on 13th December and 8th February when rain reduced bird activity during surveys of Transects 1, 2 and 19 (13th December) and Transects 1, 10 and 19 (8th February). In addition, on 11th January high winds reduced bird activity and detectability during surveys of Transects 2, 4, 10 and 12. However, since five survey visits were conducted during the survey period, it is considered likely that species regularly overwintering in significant numbers in the affected areas would have been detected during other survey visits. Furthermore, where surveys were considered to have been affected by suboptimal weather, subsequent surveys of the affected transects were planned to take place in optimal conditions, thereby aiming to reduce the effects of bias due to weather and ensure that changes in bird activity during the winter season were captured accurately by the surveys. Suboptimal weather is therefore not considered to have had a significant effect on the overall evaluation.

4. RESULTS

4.1. DESK STUDY

DESIGNATED SITES

4.1.1. The desk study identified two European designated sites within 10 km of Part B that have bird's species as a qualifying feature. These are the Northumbria Coast Special Protection Area (SPA) and Ramsar (considered as a single site) and the Northumberland Marine SPA. The **Habitats Regulations Assessment (HRA)** (**Application Document Reference: TR010041/APP/6.14**) concluded that no likely significant effects to European sites or their qualifying features would arise because of Part B during the construction and operational stages. Therefore, European designated sites are not considered further in this assessment.

4.1.2. Five non-statutory designated sites and a single statutory designated site are located within 2 km of the Order Limits. **Table 4-1** presents information on the designated sites and their proximity to Part B.

Table 4-1 - Statutory and Non-Statutory Designated Sites within 2 km of Part B

Site Details (Name, Designation)	Reasons for Designation and Area of Site	Distance and Direction from Order Limits
Within 2 km of the Part B Main Scheme Area		
Hulne Park Local Wildlife Site (LWS)	Amenity parkland; mosaic of mature woodland and grassland. No citation – potential to support common passerine assemblage.	1.5 km west
Littlemill Quarries LWS	Former Whinstone quarry. Likely associated botanical interest (e.g. Whin grasslands). No citation – potential to support nesting peregrine *Falco peregrinus*.	1.8 km north east
Ratcheugh Crag-Pepper Moor LWS	Whinstone crag with folly and associated grassland and scrub, designated for the presence of Whin grassland. No citation – potential to support ground nesting birds.	1.8 km east
Within 2 km of the Lionheart Enterprise Park Compound (eastern and western sites)		

Site Details (Name, Designation)	Reasons for Designation and Area of Site	Distance and Direction from Order Limits
Cawledge Burn Local Wildlife Site (LWS)	Watercourse with associated mixed woodland along banks. The site supports a wide range of birds, with warblers particularly well represented.	0.4 km south-west
Within 2 km of the Main Compound		
Coquet River-Felton Park LWS	Watercourse with associated woodland along banks. The only bird species noted on the citation are chiff chaff *Phylloscopus collybita*, chaffinch *Fringilla coelebs* and robin *Erithacus rubecula*.	0.5 km north
River Coquet and Coquet Valley Woodlands Site of Special Scientific Interest (SSSI)	Designated for its woodland, river and stream habits. Birds associated include large numbers of common sandpiper *Actitis hypoleucos*, grey and yellow wagtails *Motacilla cinerea and flava* which nest and feed. Waders are known to breed on the haugh land or floodplain. Dippers *Cinclus cinclus* are common along the entire length and kingfishers *Alcedo atthis* are known to hold territories in the lower reaches.	0.5 km north

BREEDING BIRDS

4.1.3. A total of 1300 records of birds from the breeding period were provided by ERIC North East. In total, records of 111 species were obtained, of which 71 were species of conservation concern, including:

a. Eight species listed on Annex 1 of the Birds Directive;
b. Eight species listed on Schedule 1 of the WCA 1981 (as amended);
c. Seventeen SPI (NERC Act 2006);
d. Twenty-one of the 70 species in the Northumberland LBAP;
e. Twenty-six species on the BoCC Red List; and
f. Forty-two species on the BoCC Amber list.

4.1.4. It should be noted that bird species can appear on one or more of the schedules/lists identified above.

4.1.5. The assemblage of species within the dataset were from a wide range of habitats. However, the majority of species were present in relatively low numbers, with the exception of farmland birds and generalist species typically

associated with woodlands and gardens. Farmland specialists were well distributed and relatively abundant across the desk Study Area. Although a number of other specialist species were recorded, numbers and distributions of such species were generally sparse.

WINTERING BIRDS

4.1.6. A total of 1,473 records of birds from the winter period were provided by ERIC North East. In particular, records of 112 species were obtained, of which 62 were species of conservation concern, including:

a. Ten species listed on Annex 1 of the Birds Directive;
b. Three species listed on Schedule 1 of the WCA 1981 (as amended);
c. Nineteen SPI (NERC Act 2006);
d. Twenty-seven of the 67 species in the Northumberland LBAP;
e. Twenty-three species on the BoCC Red list; and
f. Thirty-eight species on the BoCC Amber list.

4.1.7. It should be noted that bird species can appear on one or more of the schedules/lists identified above.

4.1.8. The assemblage of species within the dataset were from a wide range of habitats. The numbers and distributions of birds recorded in low to moderate numbers, with occasional large flocks of farmland specialists, gulls and winter thrushes recorded. However, numbers of farmland birds were generally lower than expected given the prevalence of farmland habitat within the Survey Area.

4.2. FIELD SURVEY

BREEDING BIRDS

4.2.1. A total of 83 bird species were recorded within the Survey Area during the surveys detailed within this report. These included 45 species of conservation concern including:

a. One species listed on Annex 1 of the Birds Directive;
b. Five species listed on Schedule 1 of the WCA 1981 (as amended);
c. Sixteen SPI (NERC Act 2006);
d. Twenty-six of the 70 species listed in the Northumberland LBAP;
e. Eighteen species on the BoCC Red list, and;
f. Twenty-two species on the BoCC Amber list.

4.2.2. Of the 83 bird species, 69 species were considered likely to be breeding (i.e. classified as confirmed, probable or possible breeding in accordance with the BTO's Bird Atlas 2007- 2011 criteria (**Ref. 6**)). Of these species 23 were confirmed breeding, 34 probably breeding and 12 possibly breeding.

4.2.3. All species recorded during each of the survey visits, their numbers and conservation statuses are presented in **Appendix A** of this report.

4.2.4. The locations of the registrations of all species of conservation concern are presented in; **Figures 4.23 to 4.36, 5.23 to 5.36, 6.23 to 6.36** and **7.23 to 7.36**

of **Appendix A** of this report. Further detail in relation to the species of conservation concern recorded is provided below.

Wildfowl

4.2.5. Seven species of wildfowl of conservation concern were recorded during the surveys. The numbers of birds recorded (**Table 4-2**) were considered to be low to moderate in relation to the size of the Survey Area. This was considered to reflect the greater availability of suitable wetland habitat within the Survey Area. Breeding evidence was recorded for the majority of species.

Table 4-2 - Counts and Breeding Statuses of Wildfowl of Conservation Concern

Species	Scientific Name	Breeding Status	Visit 1	Visit 2	Visit 3	Visit 4
Gadwall	*Anas strepera*	Probable	0	4	1	0
Greylag goose	*Anser anser*	Confirmed	45	9	9	0
Mallard	*Anas platyrhynchos*	Probable	72	44	44	0
Mute swan	*Cygnus olor*	Possible	4	1	0	0
Pink-footed goose	*Anser brachyrhynchus*	Non-breeding	1	0	0	0
Shelduck	*Tadorna tadorna*	Probable	1	5	0	0
Teal	*Anas crecca*	Possible	10	0	0	0

4.2.6. One to two pairs of gadwall were observed during the second survey visit. On Transect 14 evidence of probable breeding was observed. This comprised a male which exhibited agitated behaviour, and a female flushed at close range from suitable nesting habitat (**Appendix A - Figure 5.32** of this report). On Transect 15 a pair was observed at the same location, in suitable nesting habitat, during both visits 2 and 3 (**Appendix A - Figures 5.33** and **6.33** of this report). Although it is unknown whether these were the same birds observed on Transect 14 or a different pair a precautionary approach has been taken. For the purposes of the evaluation, it has been assumed that these observations relate to two different pairs.

4.2.7. Greylag geese (Amber listed) were observed almost exclusively around Transect 13, where they frequented a complex of ponds and the surrounding fields. Two pairs were identified, and at least one pair bred successfully, raising

two young (**Appendix A - Figure 6.28** of this report). The 'feral' breeding population of greylag goose in Northumberland, which results from reintroductions, is augmented in winter by wild migratory Icelandic birds (**Ref. 14**). It was concluded that the higher numbers recorded during Visit 1 – including a flock of 21 birds observed in fields in the north of Transect 13 (**Appendix A - Figure 4.30** of this report), were likely to have involved birds from this migratory wintering population.

4.2.8. Mallard (Amber listed) were observed widely, and in moderate numbers, across the Survey Area on ponds, ditches and waterlogged fields. Although breeding was not confirmed, pairs were observed on numerous occasions, frequenting the same areas, and it was concluded likely that breeding attempts were made at various locations within the Survey Area.

4.2.9. Mute swan (Amber listed) was recorded during Visits 1 and 2, on a pond in the east of Transect 14. Four birds were observed during Visit 1 (**Appendix A - Figure 4.32** of this report) and one bird during Visit 2 (**Appendix A - Figure 5.32** of this report). No nests were identified, although it was not possible to see the entire pond from the transect route. As these birds were observed in suitable breeding habitat, and due to the status of mute swan as a relatively common breeding species, it was considered a possible breeder within the Survey Area.

4.2.10. A single pink-footed goose (Amber listed; Northumberland LBAP) was observed with greylag geese on Transect 13, during Visit 1 (**Appendix A - Figure 4.28** of this report). Pink-footed goose is a winter visitor to the UK (Cramp & Simmons 2004); no evidence to suggest breeding of this species was observed.

4.2.11. Shelduck (Amber listed; Northumberland LBAP) was recorded in low numbers within the Survey Area, with a maximum of five birds observed during Visit 2. This included a pair observed in potentially suitable habitat on Transect 13 (**Appendix A - Figure 5.28** of this report) and shelduck has therefore been categorised as a probable breeder.

4.2.12. Teal (Amber listed) was recorded only during Visit 1, in relatively low numbers. Although several pairs were observed in suitable habitat across the Survey Area, teal was categorised as a possible, rather than probable, breeder due to the early date of the initial records and lack of subsequent activity. This suggested the pairs of teal recorded during Visit 1 were wintering birds which had paired up on their wintering grounds as is common for this species (**Ref. 15**).

Waders

4.2.13. Six species were recorded within the Survey Area (**Table 4-3**), all of which are of conservation concern. Most of these were recorded in low numbers, although numbers of lapwing *Vanellus vanellus* and oystercatcher *Haematopus ostralegus* were relatively high, with the former approaching levels of county significance. Counts of 90 and 93 lapwing during Visits 2 and 3 respectively

represent 0.88% and 0.91% of the Northumbria population (the peak count of 136 lapwing during Visit 1 represents 1.33% of the Northumbria population, but included several wintering flocks). Wader records were noticeably concentrated in certain parts of the Survey Area: in the south of Transect 11 (**Appendix A -** of this report **s 4.23, 5.23** and **6.23**), the north of Transect 13 and the south of Transect 14 (**Appendix A - Figures 4.30, 4.32, 5.30, 5.32, 6.30** and **6.32** of this report), and both the south and north of Transect 16 (**Appendix A - Figures 4.23, 5.23** and **6.23**, and **4.27, 5.27** and **6.27** respectively of this report). These areas were predominantly areas of arable farmland, with some wet grassland in the north of Transect 13. Evidence of breeding was recorded for five of the species (**Table 4-3**).

Table 4-3 - Counts and Breeding Statuses of Waders of Conservation Concern

Species	Scientific Name	Breeding Status	Visit 1	Visit 2	Visit 3	Visit 4
Curlew	*Numenius arquata*	Possible	6	0	3	0
Golden plover	*Pluvialis apricaria*	Non-breeding	0	3	0	0
Lapwing	*Vanellus vanellus*	Confirmed	136	90	93	1
Oystercatcher	*Haematopus ostralegus*	Probable	5	16	21	1
Redshank	*Tringa totanus*	Possible	0	9	0	0
Woodcock	*Scolopax rusticola*	Non-breeding	1	0	0	0

4.2.14. Curlew was observed in low numbers within the Survey Area, predominantly around Transect 16 (**Appendix A - Figures 4.23 to 4.27** and **6.23 to 6.27** of this report). Although alarm calls, which may indicate breeding, were incidentally heard to the east of Transect 16, it was not possible to confirm breeding by this species. A precautionary approach has therefore been taken and curlew classified as a possible breeder.

4.2.15. Breeding was confirmed for lapwing in several locations within the Survey Area. Records were localised; where birds were present, they were often observed breeding in relatively high densities. The main areas of Part B where breeding lapwing were recorded are the south of Transect 11 (**Appendix A - Figures 4.23, 5.23** and **6.23** of this report), the north of Transect 13 and the south of Transect 14 (**Appendix A - Figures 4.30** and **4.32, 5.30** and **5.32** and **6.30** and

6.32 of this report), and both the south and north of Transect 16 (**Appendix A - Figures 4.23 to 4.27, 5.23 to 5.27** and **6.23 to 6.27** of this report). These were predominantly areas of arable farmland, with some wet grassland in the north of Transect 13. Lower numbers were also recorded elsewhere, for example, around Transect 17 (**Appendix A - Figures 4.33 to 4.34, 5.33 to 5.34** and **6.33 to 6.34** of this report).

4.2.16. Several pairs of oystercatcher appeared to be holding territories, although breeding was not confirmed. These pairs were generally recorded in the locations identified in Section 4.2.14 above, but also more widely, including areas of improved grassland where few other waders were recorded (for example in the centre of Transect 16 (**Appendix A - Figures 4.25, 6.25** and **7.25** of this report). It is thought that oystercatchers probably bred within the Survey Area.

4.2.17. A total of nine redshank were recorded during Visit 2 in the north of Transect 13 (**Appendix A - Figure 5.32** of this report). One of the records related to a pair of birds close to potential nesting habitat (wet grassland of limited suitability). However, no evidence of breeding was observed, and the birds were not observed on subsequent visits. Redshank has therefore been categorised as a possible breeder.

4.2.18. A total of three golden plover were recorded flying over the Survey Area during Visit 2 (**Appendix A - Figure 5.26** of this report). No evidence to suggest breeding was observed and these birds were considered to have been on passage.

4.2.19. A single woodcock was observed during Visit 1, on Transect 13 (**Appendix A - Figure 4.28** of this report). No evidence to suggest breeding was observed, and no woodcock were recorded in the locality on subsequent survey visits. However, the woodland around Transect 13 may constitute suitable breeding habitat for the species. Furthermore, woodcock display before sunrise and around sunset (**Ref. 15**), thus breeding evidence is unlikely to have been observed during the surveys detailed within this report, which mostly took place during the daytime. A conservative approach has therefore been taken, and woodcock classified as a possible breeder.

Gulls

4.2.20. Five species of gull of conservation concern were recorded (**Table 4-4**). Amber list species comprised black-headed gull, common gull *Larus canus*, lesser black-backed gull *Larus fuscus* and great black-backed gull *Larus marinus*. Red list species comprised herring gull *Larus argentatus*.

Table 4-4 - Counts and Breeding Statuses of Gulls of Conservation Concern

Species	Scientific Name	Breeding Status	Visit 1	Visit 2	Visit 3	Visit 4
Black-headed gull	*Chroicocephalus ridibundus*	Non-breeding	1124	37	43	1
Common gull	*Larus canus*	Non-breeding	3	24	0	4
Great black-backed gull	*Larus marinus*	Non-breeding	0	1	3	0
Herring gull	*Larus argentatus*	Non-breeding	27	188	262	0
Lesser black-backed gull	*Larus fuscus*	Non-breeding	2	15	55	3

4.2.21. Numbers of gulls recorded within the Survey Area were generally low, with most records involving single birds or small flocks flying over, and occasionally loafing or feeding in fields. Although the majority of records were of birds flying over, probably to access nearby feeding areas, gull activity was often greater around Transects 14 and 15 (**Appendix A - Figures 4.32 to 4.35, 5.32 to 5.35** and **6.32 to 6.35** of this report), where small numbers of birds were regularly recorded loafing or feeding.

4.2.22. Large flocks of gulls were observed loafing and feeding within the Survey Area on two occasions, when fields were being ploughed. During Visit 1 high numbers of black-headed gulls were observed in the south of Transect 16, where two large flocks were observed (one comprising 280 birds, and the other 800), together with several medium-sized flocks (**Appendix A - Figures 4.23 to 4.25** of this report). Given the early timing of Visit 1 it is believed that these large numbers of black-headed gull were likely to comprise of high numbers of migratory birds as well as some resident and returning British breeding birds. During Visit 3, ploughing activity in the southwest of Transect 14 attracted flocks of herring gull, black-headed gull and lesser black-backed gull, with one mixed flock containing 150, 20 and 10 birds of each species respectively.

4.2.23. No evidence of breeding was observed for any of the five species of gull recorded.

Other Non-Passerines

4.2.24. Other non-passerine species of conservation concern predominantly comprised birds associated with farmland (**Table 4-5**). All were recorded in relatively low

numbers, with the exception of higher numbers of stock dove *Columba oenas* observed during Visit 1.

Table 4-5 - Counts and Breeding Statuses of Non-Passerines of Conservation Concern

Species	Scientific Name	Breeding Status	Visit 1	Visit 2	Visit 3	Visit 4
Barn owl	*Tyto alba*	Probable	1	0	0	0
Grey partridge	*Perdix perdix*	Probable	6	2	5	1
Kestrel	*Falco tinnunculus*	Probable	2	0	3	1
Stock dove	*Columba oenas*	Probable	25	2	8	4
Swift	*Apus apus*	Non-breeding	0	0	4	0

4.2.25. The only record of barn owl (Northumberland LBAP; Schedule 1) made during Visits 1-4 was from Transect 11, during Visit 1 (**Appendix A - Figure 4.23** of this report). However, a barn owl was incidentally observed entering a barn to the east of Transect 16 during the BBS. Barn owl pellets were also found beneath a tree cavity on Transect 16 during the wintering bird surveys in early October 2016. These records suggest that barn owls held territory at least in this part of the Survey Area in 2016. Anecdotal observations from landowners also suggest that barn owls regularly breed in the local area to Part B. Despite limited field survey evidence, a precautionary approach has been adopted and barn owl has been classified as a probable breeder.

4.2.26. Grey partridge (Red listed; Northumberland LBAP) was recorded on arable farmland across the Survey Area, with the majority of records from Transects 11 and 16 in the far south of the Survey Area (**Appendix A - Figures 4.23** to **4.27, 5.23** to **5.27, 6.23** to **6.27** and **7.25** to **7.27** of this report), and Transect 15 in the northeast (**Appendix A - Figures 4.33** to **4.34, 5.33 to 5.34** and **6.33** to **6.34** of this report). Observations of pairs indicated that the species probably bred within the Survey Area.

4.2.27. Kestrel (Amber listed; Northumberland LBAP) was observed in a small number of locations in the southern half of the Survey Area. A pair frequented the area around Transect 16, indicating probable breeding.

4.2.28. Stock dove (Amber listed) was observed in several locations across the Survey Area and was associated with areas of arable farmland. The higher numbers of birds recorded on Transect 16 during Visit 1 were noteworthy (**Appendix A - Figures 4.23** to **4.27** of this report). Based on the numbers and widespread

distribution of stock dove across the Survey Area, behaviour and the numbers recorded it is considered likely that the species bred within the Survey Area. Therefore, on a precautionary basis stock dove are assessed as being probable breeders.

4.2.29. A total of four swifts (Amber listed; Northumberland LBAP) were recorded at three separate locations during Visit 3. No evidence of breeding was observed. It is possible that swifts were under-recorded due to the early timing of visits 1 and 2.

Passerines

4.2.30. In total 22 passerines of conservation concern, representing a variety of habitat types, were recorded (**Table 4-6**). Breeding evidence was recorded for 19 of the 22 species observed (10 confirmed, eight probable and one possible). The majority of species were Red listed, and many were also listed on Section 41 of the NERC Act 2006 and/or the Northumberland LBAP. Four Schedule 1 species were observed: brambling *Fringilla montifringilla*, common crossbill, fieldfare *Turdus pilaris* and redwing *Turdus iliacus*. Common crossbill was classified as a possible breeder. As the majority of records for fieldfare and redwing were from Visit 1 (with one additional fieldfare recorded in Visit 3), it was considered that all records were of longer-staying elements of larger flocks of winter migrant birds. There was no evidence that either fieldfare or redwing bred within the Survey Area. A single brambling was recorded on Visit 2 only and was therefore concluded to be a winter migrant rather than a breeding bird.

Table 4-6 - Counts and Breeding Statuses of Passerines of Conservation Concern

Species	Scientific Name	Breeding Status	Visit 1	Visit 2	Visit 3	Visit 4
Brambling	*Fringilla montifringilla*	Non-breeding	0	1	0	0
Bullfinch	*Pyrrhula pyrrhula*	Confirmed	2	1	5	0
Common crossbill	*Loxia curvirostra*	Possible	0	1	1	0
Dunnock	*Prunella modularis*	Probable	46	69	71	4
Fieldfare	*Turdus pilaris*	Non-breeding	39	0	1	0
Grey wagtail	*Motacilla cinera*	Confirmed	0	40	3	0
House martin	*Delichon urbicum*	Confirmed	1	2	66	0

Species	Scientific Name	Breeding Status	Visit 1	Visit 2	Visit 3	Visit 4
House sparrow	*Passer domesticus*	Confirmed	79	76	55	0
Lesser redpoll	*Acanthis caberet*	Probable	0	0	18	0
Linnet	*Linaria cannabina*	Probable	283	85	58	0
Meadow pipit	*Anthus pratensis*	Probable	4	46	36	0
Mistle thrush	*Turdus viscivorus*	Confirmed	4	13	12	2
Redwing	*Turdus iliacus*	Non-breeding	97	0	0	0
Reed bunting	*Emberiza schoeniclus*	Probable	39	21	14	0
Skylark	*Alauda arvensis*	Confirmed	68	81	80	1
Song thrush	*Turdus philomelos*	Confirmed	14	24	33	6
Starling	*Sturnus vulgaris*	Confirmed	43	24	35	0
Swallow	*Hirundo rustica*	Confirmed	0	9	103	1
Tree sparrow	*Passer montanus*	Confirmed	45	80	41	1
Willow warbler	*Phylloscopus trochilus*	Probable	0	18	41	0
Yellow wagtail	*Motacilla flava*	Probable	0	0	6	1
Yellowhammer	*Emberiza citrinella*	Probable	90	75	63	2

4.2.31. Brambling, fieldfare and redwing are winter visitors considered unlikely to have bred within the Survey Area.

4.2.32. The most abundant species were farmland specialists, including linnet (the high number of recorded birds during Visit 1 was due to the presence of a single large winter flock), skylark, yellowhammer and tree sparrow, together with other more ubiquitous species such as house sparrow and dunnock, which are typically associated with woodland edges and gardens. Woodland species of conservation concern were generally less abundant, with the most frequently recorded being those associated with several habitat types, such as song thrush, or which are less dependent on larger areas of woodland (for example, willow warbler).

4.2.33. The highest densities of passerines of conservation concern were generally found around houses and farmsteads, such as those in the centre of Transect 12 (**Appendix A - Figures 4.26, 5.26** and **6.26** of this report), the south of Transect 13 (**Appendix A - Figures 4.28, 5.28** and **6.28** of this report), and the southwest of Transect 14 (**Appendix A - Figures 4.32, 5.32** and **6.32** of this report), and on arable farmland, particularly in areas with well-developed hedgerows and fallows, such as those on Transects 11 and 16 (**Appendix A - Figures 4.23 to 4.27, 5.23 to 5.27** and **6.23 to 6.27** of this report). Species of conservation concern were less abundant in areas with a greater prevalence of grazing pasture, such as those around Transect 14 (**Appendix A - Figures 4.32, 5.32** and **6.32** of this report) and the centre of Transect 16 (**Appendix A - Figures 4.25, 5.25, 6.25** and **7.25** of this report). The more extensive patches of woodland also supported low numbers of species of conservation concern, despite supporting relatively high numbers of birds in general. Examples include woodland in the north of Transect 12 (**Appendix A - Figures 4.26, 5.26** and **6.26** of this report), on Transect 13 (**Appendix A - Figures 4.28** to **4.30, 5.28** to **5.30** and **6.28** to **6.30** of this report) and Transect 14 (**Appendix A - Figures 4.32** to **4.35, 5.32** to **5.35** and **6.32** to **6.35** of this report).

4.2.34. The following parts of the Survey Area were identified as particularly important for passerines of conservation concern, primarily due to the presence of farmland specialists:

a. Transect 11 (**Appendix A - Figures 4.23** to **4.24, 5.23 to 5.24** and **6.23** to **6.24** of this report).
b. The centre of Transect 12, especially around Heckley Fence farm (**Appendix A - Figures 4.26, 5.26** and **6.26** of this report).
c. The south and the northern half of Transect 13 (**Appendix A - Figures 4.28** to **4.30, 5.28** to **5.30** and **6.28** to **6.30** of this report).
d. The southwest and north of Transect 14 (**Appendix A - Figures 4.32, 5.32** and **6.32**, and **4.35, 5.35** and **6.35** of this report).
e. The north of Transect 15 (**Appendix A - Figures 4.34, 5.34** and **6.34** of this report).
f. The northern tip and the southern half of Transect 16 (**Appendix A - Figures 4.23** to **4.27, 5.23** to **5.27, 6.23** to **6.27** and **7.25** to **7.27** of this report).

4.2.35. Of the areas listed in **Section 4.2.35**, the land around Transect 11, the north of Transect 13 and south of Transect 14, and the northern tip and the southern half of Transect 16 were particularly important for passerines of conservation concern.

4.2.36. Besides these areas of general importance for passerines of conservation concern, the Survey Area supported numbers of yellow wagtail which are of significance in the context of their county population. Yellow wagtails were observed in arable farmland on Transects 11 (**Appendix A - Figure 6.23** of this report) and 16 (**Appendix A - Figures 6.27** and **7.25** of this report). Although it

was not possible to identify individual territories definitively based on the data obtained during the BBS, at least four breeding territories were suspected (a minimum of two on Transect 11, and two on Transect 16). Numbers of tree sparrow were also high in the context of their county population.

4.2.37. The only Schedule 1 species which may have bred within the Survey Area was common crossbill. Single birds were recorded in suitable habitat in the west of the Survey Area during visits 2 and 3 (**Appendix A - Figures 5.26** and **6.24** of this report). Consequently, common crossbill was classified as a possible breeder.

WINTERING BIRDS

4.2.38. A total of 82 bird species were recorded within the Survey Area during survey Visits 1-5. These included 46 species of conservation concern including:

a. Two species listed on Annex 1 of the Birds Directive;
b. Seven species listed on Schedule 1 of the WCA 1981 (as amended);
c. Eighteen SPI (NERC Act 2006);
d. Twenty-three of the 67 species in the Northumberland LBAP;
e. Twenty species on the BoCC Red list; and
f. Nineteen species on the BoCC Amber list

4.2.39. All species recorded during each of the survey visits, their numbers and conservation statuses are presented in **Appendix B** of this report.

4.2.40. The locations of the registrations of all species of conservation concern are presented in **Figures 4.23** to **4.36, 5.23** to **5.36, 6.23** to **6.36, 7.23** to **7.36** and **8.23** to **8.36** of **Appendix B** of this report. Further detail in relation to the species of conservation concern recorded is provided below.

Wildfowl

4.2.41. Six species of wildfowl of conservation concern were recorded during the surveys (**Table 4-7**). Seasonal patterns of abundance were variable, although it should be noted that changes to the transect route following Visit 3 resulted in the inclusion of a waterbody on the transect route of Transect 14, in the north of the Survey Area, which was found to support relatively high numbers of ducks, including all four species of conservation concern recorded during the survey period. Numbers and species present in this area during survey Visits 1-3 are unknown but are considered likely to be higher than those indicated by the survey data.

Table 4-7 - Wintering Counts of Wildfowl of Conservation Concern

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Greylag goose	*Anser anser*	0	0	0	5	33

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Mallard	*Anas platyrhynchos*	63	22	69	62	69
Pink-footed goose	*Anser brachyrhynchus*	1227	174	0	0	0
Shoveler	*Anas clypeata*	0	0	0	1	1
Teal	*Anas crecca*	2	0	57	187	279
Wigeon	*Anas penelope*	0	0	0	10	27

4.2.42. Greylag geese (Amber listed) were observed around Transects 13, 15 and 19, during survey Visits 4 and 5. One bird was present on the ponds in the south of Transect 13 during Visit 4 (**Appendix B - Figure 7.28** of this report), with three observed in flight in this area during Visit 5 (**Appendix B - Figure 8.28** of this report). Two pairs were present there during the breeding season, thus it is considered likely that these birds were part of the 'feral' breeding population of greylag geese in Northumberland. However, this population is augmented in winter by wild migratory Icelandic birds (**Ref. 14**). It is considered likely that the records of birds on Transects 15 and 19, which included a flock of 21 birds in a field in the south of Transect 19 (**Appendix B - Figure 8.29** of this report), involved birds from this migratory winter population.

4.2.43. Records of Mallard (Amber listed) were relatively localised, with the majority of birds observed on ponds on Transects 13 and 14. However, small flocks were observed across the Survey Area. Medium-sized flocks (up to 56 birds (**Appendix B - Figure 4.28** of this report) were recorded during most survey visits, especially on the ponds on Transects 13 and 14.

4.2.44. Pink-footed geese (Amber listed; Northumberland LBAP) were observed during Visits 1 and 2, in relatively large numbers. Flocks generally comprised between 40 and 220 birds, although several smaller flocks were also recorded. The majority of records were of birds flying over the Survey Area on passage. However, a flock of 400 birds – the largest observed during the surveys – was recorded in an arable field between Transects 14 and 15, in the north of the Survey Area, during Visit 1 (**Appendix B - Figure 4.34** of this report). 54 birds were recorded in an arable field just outside the Survey Area, to the north of Transect 16, during Visit 2 (**Appendix B - Figure 5.27** of this report).

4.2.45. A male shoveler was recorded on the waterbody on Transect 14 during both survey Visits 4 and 5 (**Appendix B - Figures 7.32** and **8.32** of this report). These were the only records of the species within the Survey Area.

4.2.46. Teal (Amber listed) were recorded infrequently during the first three survey visits, but relatively large numbers were recorded during Visits 4 and 5.

Although the increase in numbers observed during Visits 4 and 5 is partly an artefact of the inclusion of the pond on Transect 14 during these surveys, larger numbers were also recorded at other locations relative to Visits 1-3, with 70 birds observed on the ponds on Transect 13 during Visit 5 (**Appendix B - Figure 8.28** of this report), for example. Most records were aggregated on a small number of ponds within the Survey Area, particularly those on Transect 13 and Transect 14 (where a maximum of 152 birds were observed together during Visit 4 (**Appendix B - Figure 7.32** of this report), although an exceptional record of a flock of 150 birds was recorded on flooded grassland on Transect 19 during Visit 5 (**Appendix B - Figure 8.29** of this report).

4.2.47. Wigeon (Amber listed) was only recorded on the waterbody on Transect 14. The species was recorded during both survey Visits 4 and 5, with a maximum of 27 birds (**Appendix B - Figures 7.32** and **8.32** of this report).

Waders

4.2.48. Six species were recorded within the Survey Area (**Table 4-8**), all of which are of conservation concern. Most of these were recorded in low numbers, with the exceptions of lapwing and golden plover, which occurred in relatively high numbers.

Table 4-8 - Wintering Counts of Waders of Conservation Concern

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Golden plover	*Pluvialis apricaria*	383	68	41	0	0
Lapwing	*Vanellus vanellus*	847	1009	616	215	146
Oystercatcher	*Haematopus ostralegus*	0	0	1	0	0
Redshank	*Tringa totanus*	0	4	1	4	6
Snipe	*Gallinago gallinago*	6	1	0	6	5
Woodcock	*Scolopax rusticola*	0	4	0	5	2

4.2.49. Golden plover (Annex 1; Northumberland LBAP) was recorded only during Visits 1-3. There was no rise in numbers during the second half of the survey period; no birds were recorded in January or February. Numbers during Visits 1-3 were moderate to high, although relatively few flocks were recorded, mostly of between 10 and 30 birds. Several larger flocks were recorded during Visit 1, with 91 birds on Transect 11 and 80 in the south of Transect 16 (**Appendix B - Figure 4.23** of this report), both using arable farmland habitats within the Survey Area. A flock of 130 birds circling over arable fields was recorded

nearby, to the north of Transect 11 (**Appendix B - Figure 4.24** of this report). Besides these flocks, the only other record of birds using the habitats within the Survey Area rather than flying over was on Transect 19, where 30 birds were present, also during Visit 1 (**Appendix B - Figure 4.29** of this report).

4.2.50. Numbers of lapwing (SPI; Red listed; Northumberland LBAP) were high across most of the winter season but declined after Visit 2. Records were distributed across the Survey Area, with large flocks (often over 100 birds) recorded on most transects. Records were mostly from arable farmland, found across much of the Survey Area, with most of the largest flocks using fields on Transects 15, 16 and 19. Fewer, smaller flocks were recorded later in the season as numbers across the Survey Area declined.

4.2.51. Oystercatcher (Amber listed) was recorded once during the surveys, on a flooded area in the south of Transect 11 during Visit 3 (**Appendix B - Figure 6.23** of this report).

4.2.52. Redshank (Amber listed, Northumberland LBAP) was recorded in low numbers during Visits 2-5. Most records were from a flooded area in the south of Transect 11 (**Appendix B - Figures 5.23, 6.23, 7.23** and **8.23** of this report), where numbers increased from one to four birds during the course of the survey season. Of the remaining three records, two were from the pool on Transect 14 which was included in the transect route following Visit 3: one bird was recorded there during Visit 4 (**Appendix B - Figure 7.32** of this report), and two birds during Visit 5 (**Appendix B - Figure 8.32** of this report). The only other record was of three birds in an arable field in the south of Transect 19, during Visit 2 (**Appendix B - Figure 5.27** of this report).

4.2.53. Snipe (Amber listed; Northumberland LBAP) were recorded infrequently, at scattered locations across the Survey Area. Records were of one to four birds, mostly flushed from wetter areas in arable land or pasture, although snipe were also recorded on the pool on Transect 14 which was included in the transect route following Visit 3.

4.2.54. Low numbers of woodcock (Red listed) were recorded during the surveys, at scattered locations across the Survey Area. All records involved single birds, mostly flushed from field edges or stands of woodland.

Gulls

4.2.55. Five species of gull of conservation concern were recorded (**Table 4-9**). Numbers of black-headed, common and herring gulls were relatively high, although they remained so across the survey period. Great black-backed gull and lesser black-backed gull were recorded in low numbers. Gull activity in general was high across most of the Survey Area, but especially in the north around Transects 13, 14 and 15.

Table 4-9 - Wintering Counts of Gulls of Conservation Concern

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Black-headed gull	*Chroicocephalus ridibundus*	20	191	124	178	252
Common gull	*Larus canus*	250	218	370	125	539
Great black-backed gull	*Larus marinus*	4	0	0	4	2
Herring gull	*Larus argentatus*	219	2064	958	251	543
Lesser black-backed gull	*Larus fuscus*	4	0	0	0	0

4.2.56. Records of all five species mostly involved single birds or small groups of fewer than 10 individuals and distributed throughout the Survey Area. Many of these were of birds flying over, although gulls were regularly observed loafing or feeding in fields as well, generally in small to medium-sized flocks of up to 30 birds. Flocks were recorded in fields across the Survey Area and were generally not restricted to certain areas. Relative to herring gull, a greater proportion of black-headed and common gull records were of birds using fields rather than flying over, and the two species were often observed in together or in isolation; conversely, herring gulls in fields were generally observed as part of mixed-species flocks.

4.2.57. Large flocks of gulls were observed loafing and feeding within the Survey Area on several occasions. Particularly noteworthy occurrences included: a mixed flock of 100 black-headed gulls, 100 common gulls and 500 herring gulls in an arable field to the north of Transect 16 (**Appendix B - Figure 5.27** of this report) and 430 herring gulls on Transect 15 (**Appendix B - Figure 5.36** of this report) during Visit 2, and several flocks in close proximity on Transect 12 during Visit 5, totalling 210 black-headed gulls, 88 herring gulls and three common gulls (**Appendix B - Figure 8.26** of this report). Large numbers were also observed on Transect 15 during Visit 5, although many were just outside the Survey Area (**Appendix B - Figure 8.36** of this report). Large gull flocks were recorded just outside the Survey Area on several occasions, for example at the southern end of Transect 12 (**Appendix B - Figure 5.24** of this report) and the centre of Transect 13 (**Appendix B - Figure 5.30** of this report) during Visit 2.

4.2.58. Within the Survey Area, maximum flock sizes of each of the three commonly recorded gull species were 133 black-headed gulls, 185 common gulls, and 500 herring gulls.

4.2.59. Great black-backed gull and lesser black-backed gull were recorded rarely, with almost all records comprising single birds flying over the site. Neither species was recorded using the habitats within the Survey Area.

Other Non-passerines

Other non-passerine species of conservation concern occurred in relatively low numbers. The assemblage of species recorded was also similar, and comprised raptors, owls and other species associated with farmland (**Table 4-10**).

Table 4-10 - Wintering Counts of Other On-Passerines of Conservation Concern

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Barn owl	*Tyto alba*	0	1	0	0	0
Goshawk	*Accipiter gentilis*	0	0	1	0	0
Grey partridge	*Perdix perdix*	0	5	2	10	6
Kestrel	*Falco tinnunculus*	3	4	8	6	5
Peregrine	*Falco peregrinus*	0	1	3	1	0
Stock dove	*Columba oenas*	23	10	5	12	23

4.2.60. The only record of barn owl (Schedule 1; Northumberland LBAP) made during the surveys was of a bird on Transect 16 (**Appendix B - Figure 5.25** of this report). A roost was identified in a tree nearby, with field signs indicating regular usage.

4.2.61. A female goshawk (Schedule 1) was recorded in the north of the Survey Area, on Transect 15, during Visit 3 (**Appendix B - Figure 6.34** of this report). A goshawk was also recorded just outside the Survey Area, on Transect 16 in the south, during Visit 4 (**Appendix B - Figure 7.25** of this report).

4.2.62. Grey partridge (Red listed; Northumberland LBAP) was recorded infrequently, and records involved a maximum of four birds together. Numbers were low relative to the abundance of suitable habitat within the Survey Area. The species was generally recorded in the same areas, in the north of Transect 16/south of Transect 19, on Transect 13, and on Transects 15 and 14.

4.2.63. Kestrel (Amber listed; Northumberland LBAP) were observed widely across the Survey Area. The species was regularly recorded on Transects 11, 15, 16 and 19. All records involved single birds, with the exception of two birds together on Transect 16 during Visit 3.

4.2.64. Peregrine (Annex 1; Schedule 1; Northumberland LBAP) were mainly recorded in the north of the Survey Area, especially around Transect 15, with the

exception of a record in the centre of Transect 12 during Visit 4 (**Appendix B - Figure 7.26** of this report). An immature male was recorded in the far north of Transect 15 during Visit 2 (**Appendix B - Figure 5.36** of this report), and three observations were made around Transect 15 during Visit 3: males were observed on Transects 14 and 15, nearby but on different days, and a female was observed on Transect 15 (**Appendix B - Figure 6.34** of this report). Although it is unknown whether the records of a male relate to the same birds, at least two different peregrines were therefore confirmed.

4.2.65. Records of stock dove (Amber listed) were mostly of single birds, although small flocks of up to nine individuals were recorded. The species was associated with areas of arable farmland, with most records in the north of the Survey Area, from Transect 15 and the northern half of Transect 14, and also in the south, from Transects 16 and 11.

Passerines

4.2.66. In total 23 passerines of conservation concern, associated with a variety of habitat types, were recorded (**Table 4-11**). The majority of species were Red listed, and many were also listed on Section 41 of the NERC Act 2006 and/or the Northumberland LBAP. Species were mostly representative of farmland, gardens and woodland. Peak counts of farmland specialists were generally higher and considered to reflect the overall habitat composition of the Survey Area.

Table 4-11 - Wintering Counts of Passerines of Conservation Concern

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Brambling	*Fringilla montifringilla*	5	3	5	8	16
Bullfinch	*Pyrrhula pyrrhula*	3	8	21	10	4
Common crossbill	*Loxia curvirostra*	0	1	2	1	0
Dunnock	*Prunella modularis*	105	100	83	63	76
Fieldfare	*Turdus pilaris*	71	124	140	215	284
Grey wagtail	*Motacilla cinera*	1	4	3	5	3
House sparrow	*Passer domesticus*	131	65	80	79	36
Lesser redpoll	*Acanthis caberet*	1	6	6	0	0
Linnet	*Linaria cannabina*	507	15	65	28	125
Marsh tit	*Poecile palustris*	1	0	0	0	0

Species	Scientific Name	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5
Meadow pipit	*Anthus pratensis*	46	48	11	19	17
Mistle thrush	*Turdus viscivorus*	21	17	25	32	26
Redwing	*Turdus iliacus*	582	685	724	1244	403
Reed bunting	*Emberiza schoeniclus*	22	16	22	54	21
Ring ouzel	*Turdus torquatus*	1	1	0	0	0
Skylark	*Alauda arvensis*	130	142	32	8	15
Song thrush	*Turdus philomelos*	83	25	47	29	37
Starling	*Sturnus vulgaris*	591	1170	1301	563	507
Swallow	*Hirundo rustica*	4	0	0	0	0
Tree sparrow	*Passer montanus*	150	46	30	42	24
Twite	*Linaria flavirostris*	0	0	14	4	0
Willow tit	*Phylloscopus trochilus*	0	0	0	0	1
Yellowhammer	*Emberiza citrinella*	101	203	88	404	77

4.2.67. The most abundant species were farmland specialists, particularly those which form flocks in winter, such as linnet, skylark, tree sparrow and yellowhammer. Other species which occurred in large numbers were generally the more ubiquitous species such as house sparrow and dunnock, which are typically associated with a variety of habitats. Starling and redwing were recorded in particularly high numbers, being flock-forming species associated with a variety of habitats. Woodland species of conservation concern were generally much less abundant, with many being recorded in single figures during most survey visits.

4.2.68. In general, numbers of species of conservation concern associated with gardens and woodland were relatively stable across the winter season. Numbers of farmland species were often more variable, likely due to their flocking behaviour: as the season progressed fewer records were made but more records involved larger flocks of birds. The data later in the season could therefore be influenced considerably by whether or not a flock was encountered. In addition to these patterns, populations of many species are augmented by passage migrants during the autumn, and typical passage

migrants, such as meadow pipit, skylark and dunnock were consequently more abundant during the first two visits. This was not the case for redwing, suggesting that the Survey Area was of greater importance for resident flocks of the species later in the season. With the exception of winter flocking species, numbers of passerines of conservation concern were generally lower after Visits 1 and 2, following the cessation of autumn migration. Numbers remained low, with no general increase observed in February (Visit 5).

4.2.69. Spatial patterns of abundance for passerines of conservation concern varied considerably throughout the season. This is likely to be due to a number of factors, including variation in the times of day at which different areas were surveyed, weather conditions and surveyor bias. However, certain patterns were evident from the data. In open areas, passerines of conservation concern were generally more widespread during the first two survey visits. Subsequently they were more aggregated in pockets: birds were generally restricted to edge habitats and areas where habitat mosaics were present, including around houses and farmsteads, although farmland specialists and other flocking species such as starlings and winter thrushes were often found in flocks in arable fields as well. This pattern is considered likely in part to be a response to food availability declining during the winter, but also to be an artefact of the cessation in passage migration, with fewer records of birds flying over open areas. Extensive patches of woodland often supported more birds consistently across the season in comparison with other, more exposed habitats, although the proportion of species of conservation concern relative to Green listed species was often lower.

4.2.70. Although passerines of conservation concern were widely distributed across the Survey Area, with many areas supporting concentrations, the following parts of the Survey Area were identified as particularly important:

a. The northern half of Transect 15;
b. Transect 16, especially the north;
c. The north of Transect 19.

4.2.71. In addition to the areas of general importance for passerines of conservation concern, the Survey Area supported high numbers of several species. Numbers of redwing were particularly noteworthy, with starling, fieldfare, willow tit, tree sparrow and linnet also significant in the context of their county populations. Yellowhammer numbers were also high, although they did not exceed 1% of the county population. Redwing occurred throughout much of the Survey Area, often at the interface between arable farmland and areas of trees or woodland, and generally in association with fieldfare and starling. Their spatial distribution varied between visits, but Transects 11, 12, 16 and 19 (especially the north) supported larger numbers most consistently. Transect 15 was also important for starling. Similarly, tree sparrow, linnet and yellowhammer were found throughout most of the Survey Area, often in the same areas, their distribution coinciding with areas of arable farmland, well-developed hedgerows, and

farmsteads. Transect 16 was the best part of the Survey Area for these species, with large flocks regularly recorded, although other areas were also relatively important, including Transects 15 and 11. Willow tit was observed once, during Visit 5, when a single bird was present in woodland in the centre of Transect 16 (**Appendix B - Figure 8.25** of this report).

5. NATURE CONSERVATION EVALUATION

5.1. BREEDING BIRDS

5.1.1. The 2019 desk study data did not identify any change in what was observed during the 2016 BBS.

5.1.2. The assessment of the value of the breeding bird assemblage for the Survey Area was made in reference to Fuller (**Ref. 12**). A total of 69 bird species were recorded as likely breeding within the Survey Area. Whilst the threshold for Regional level value is stated as 70+ breeding species, these thresholds were set in 1980. As a result of falling bird populations across habitats, particularly agricultural, it is judged appropriate that the Regional importance level be assigned.

5.1.3. In addition, several species were recorded at levels that exceed 1% of their Northumbria (regional) population. Of particular interest was gadwall, which were recorded in numbers that represent almost 4% of the regional population. However, no species was recorded at levels that exceed 1% of their national population. As such, this further supports the Regional importance for the breeding bird assemblage.

5.2. WINTERING BIRDS

5.2.1. The 2019 desk study data did not identify any change in what was observed during the 2016/17 wintering bird surveys.

5.2.2. The geographical value of the wintering bird assemblage was assessed in relation to Fuller (**Ref. 12**). A total of 82 bird species were recorded wintering within the Survey Area, which would suggest an assemblage of County importance. The lower threshold for Regional importance is a total of 85 wintering bird species. As detailed in **Section 3.2.3 and 5.1.1**, these thresholds are 40 years old and therefore it is judged appropriate to consider a Regional importance classification.

5.2.3. Several species were recorded at levels that exceed 1% of their Northumbria (regional) population. However, no species was recorded at levels that exceed 1% of their national population. As such, this further supports a Regional importance classification for the wintering bird assemblage.

6. POTENTIAL IMPACTS

6.1. CONSTRUCTION

6.1.1. During construction, potential impacts on breeding and wintering birds are limited to:

a. Habitat degradation and/or loss
b. Habitat fragmentation; and
c. Disturbance.

6.1.2. The pathways by which such impacts could occur are:

a. Direct habitat damage/loss under the footprint of Part B;
b. Damage to retained habitats during construction, as a result of, for example, accidental pollution, discharge or materials or hydrological effects;
c. Disturbance through increased human presence, noise, light and vibration.

6.1.3. Construction impacts would not give rise to significant impacts on the breeding bird or wintering bird assemblages which are spread along the length of the Survey Area and throughout habitats which are abundant in the wider landscape.

6.2. OPERATION

6.2.1. Operational impacts may arise to both breeding and wintering birds due to increased noise disturbance from a greater number of vehicular movements throughout Part B. Birds are known to augment their song in response to increased background noise (**Ref. 16**). Increased background noise may also reduce the species richness of the bird assemblage using the habitats directly adjacent to Part B (**Ref. 17**). Impacts resulting from increased noise, light and vibration from additional traffic volumes could cause disturbance and displacement of birds from habitats adjacent to the carriageway. However, the abundance of available alternative habitats within the Survey Area and the wider landscape mean impacts are not expected to be significant.

6.2.2. Increased traffic movements could also increase the likelihood of mortality through collisions with vehicles for species which are typically slow and slow flying, such as barn owl.

6.2.3. Operational impacts are not judged to threaten significant impacts on the overall wintering bird assemblage which is spread along the length of the Survey Area and throughout habitats which are abundant in the wider landscape.

7. MITIGATION

7.1.1. The below mitigation items feed into a larger list of prescribed measures to be adhered to during construction of Part B. A full list is provided in **Chapter 9**: **Biodiversity, Volume 3** of this ES (**Application Document Reference: TR010041/APP/6.3**). Those measures of relevance to breeding or wintering birds have been extracted and are detailed in **Table 7-1** below alongside Part B-wide mitigation measures. Mitigation measures are illustrated in **Figure 7.10: Landscape Mitigation Plan, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**).

Table 7-1 - Design and Mitigation Measures and their Delivery Mechanisms

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
Delivery Mechanisms and Preliminary Activities						
Delivery Mechanism and Preliminary Activity	EC01	Throughout Part B	Pre-Construction	All permits and assents would be requested and granted prior to the commencement of works. This may include for example, but not limited to, an Environment Agency Permit for works in and around watercourses.	To protect sites, habitats and fauna.	Natural England/Environment Agency
Delivery Mechanism and Preliminary Activity	EC02	Throughout Part B	Pre-Construction	Pre-construction surveys would be undertaken to verify and, where required, update the baseline ecological conditions set out in this ES. The scope of the pre-construction surveys would be discussed with Natural England prior to being undertaken and would be specific to each ecological receptor under consideration.	To update the baseline ecological conditions set out in this ES.	Natural England
Delivery Mechanism and Preliminary Activity	EC03	Throughout Part B	Pre-Construction	Prior to construction a suitably qualified (or team of suitably qualified) Ecological Clerk of Works (ECoW) and a named bat licensed ecologist would be appointed and would be responsible for implementation of the Ecological Management Plan (EMP) and measures within the **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3**) and subsequent CEMP prepared by the main contractor. The ECoW would: – 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 Part B; – Monitor ecological conditions during the construction stage to identify additional constraints that may arise as a result of natural changes to the ecological baseline over time; – Provide an ecological toolbox talk to site personnel to make them aware of ecological constraints and information, identify appropriate mitigation developed do minimise impacts and make site personnel aware of their responsibility with regards to wildlife. The toolbox talk would include, as required, all ecological receptors considered within this ES;	To ensure the implementation of the EMP.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
				– Monitor the implementation of mitigation measures during the construction stage to ensure compliance with protected species legislation and commitments within this ES. The ECoW would have previous experience in similar ECoW roles, be approved by the Applicant, and be appropriately qualified for the role. The ECoW would 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.		
Delivery Mechanism and Preliminary Activity	EC04	Throughout Part B	Pre-Construction	The main contractor would obtain and comply with the requirements of any protected species derogation licences in respect of works that have the potential to breach applicable conservation legislation necessary to construct Part B. Licensing may be for UK and/or European protected species.	To comply with conservation legislation.	Natural England
Delivery Mechanism and Preliminary Activity	EC05	Throughout Part B	Pre-Construction & Construction	Any tree felling would be carried out by experienced main contractors to reduce direct mortality of protected species according to agreed felling methods between main contractors and the ECoW.	To protect fauna during removal of habitat.	None required
Delivery Mechanism and Preliminary Activity	EC06	Throughout Part B	Pre-Construction	A pre-commencement inspection by the ECoW would be undertaken within woodland prior to any felling to confirm the absence of dreys between February to September. Where deemed necessary, felling would be supervised by the ECoW.	To protect red squirrel.	None required
Delivery Mechanism and Preliminary Activity	EC07	Throughout Part B	Pre-Construction and Construction	Implementation of and adherence to the measures contained within the **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3**) that details efforts taken to avoid, minimise and reduce impacts as a result of Part B construction. This is considered particularly important for works in and around watercourses. This includes measures to avoid disturbance of sensitive species and habitats by noise, dust and air pollution. A pre-commencement walkover survey would be undertaken to confirm the absence of invasive non-native species. Should invasive species be recorded within the construction area, this would be addressed through implementation of the Biosecurity Method Statement (EC08), to be developed at detailed design. These measures have been included within the **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3**).	To protect flora and fauna.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
Mitigation						
General	EC09	Throughout Part B	Pre-Construction & Construction	Site/ vegetation clearance and tree felling would be kept to a minimum and only where essential to facilitate construction, to reduce the impacts of habitat loss and fragmentation. Areas of clearance, particularly those within temporary works, shall be identified within a method statement and agreed with the ECoW. Site clearance of dense vegetation would be undertaken carefully (use of hand tools) and by experienced main contractors to reduce the risk of mortality to wildlife. Care should be afforded to dense stands of bramble or similar vegetation, which may be used by sheltering hedgehog or other wildlife, particularly during the winter months.	To reduce the impact to fauna and flora.	None required
General	EC10	Throughout Part B	Pre-Construction, Construction & Post-Construction	Plant and personnel would be constrained to a prescribed working corridor through the use of, where practicable, temporary barriers to minimise damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the Order Limits.	To protect habitats and fauna.	None required
General	EC11	Throughout Part B	Pre-Construction & Construction	Stand-off distances around watercourses and other sensitive habitats (such as woodland) would be implemented prior to commencement of works and clearly demarked on site through the use of physical barriers (fencing, tape or similar). The buffer around trees/ woodland/ hedgerows would be in accordance with good practice to take into account root protection zones.	To protect habitats and fauna.	None required
General	EC12	Throughout Part B	Construction	Works during the construction period would be undertaken during daylight hours (07:00 to 19:00), Monday to Friday to reduce the impact to nocturnal and crepuscular species; particularly bats, barn owl and badger. However, extended hours, including nighttime, would be required for some construction operations. Should night working be required, this would be discussed with the ECoW and appropriate mitigation put in place (particularly concerning lighting). Appropriate mitigation would be determined by the ECoW but is likely to include:	To reduce disturbance impacts during construction.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
				– Avoidance of direct lighting on any buildings or trees that contain bat roosts or barn owl nest/ roost sites; – Avoidance of artificial lighting of watercourses, particularly during the hours of darkness to prevent impacts to fish behaviour or passage; – Avoidance of light spill using directional and or baffled lighting; – The use of movement triggers, thus lighting only turns on when people (large objects) move through the area (use within compound); – Reducing the height of lighting columns to reduce light spill onto adjacent habitats; – Variable lighting regimes (VLR) - switching off when human activity levels are low i.e. 21:00 to 05:30; and/or – Avoid use of blue-white short wavelength lights and high UV content. Work during hours of darkness would be avoided as far as practicable and where necessary directed lighting would be used to minimise light pollution/glare. – Temporary lighting used for construction would be switched-off when not in use and positioned so as not to spill on to adjacent land, sensitive receptors or retained vegetation within the area surrounding the works. – Directed lighting would be used to minimise light pollution/glare, including for construction compounds. – Lighting levels would be kept to the minimum necessary for security and safety.		
General	EC13	Throughout Part B	Construction	To prevent entrapment of wildlife, any trenches or voids would be excavated and infilled within the same working day. If this is not possible, the void would be securely covered overnight, or a suitable means of escape provided (such as a ramp at no greater than a 45o angle). Any void would then be visually inspected prior to re-starting works to confirm the absence of entrapped wildlife. All escape measures would be discussed and agreed with the ECoW to ensure they are suitable for the size of void and wildlife that may become trapped. If deemed appropriate, the ECoW may enforce additional measures, such as the	To protect wildlife.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
				installation of temporary amphibian/reptile fencing around the void to prevent entry.		
General	EC14	Throughout Part B	Construction & Post-Construction	Planting of detention basins to include a diverse floral community and enhance their attraction to wildlife. A diverse floral community refers to providing a range and mixture of floral species, including flowering plants and grasses, that provide resources and niches to a variety of invertebrates which in turn provide a resource for species that prey on the invertebrates. This would be achieved using a native and locally appropriate seed mix.	To improve the value of detention basins to support biodiversity.	None required
General	EC15	Throughout Part B	Operation	Implementation of an Ecological/Environmental Management Plan to detail the monitoring and maintenance of habitat and mitigation/compensation features following creation and installation. The Ecological/Environmental Management Plan would be developed at detailed design. The requirement for an Ecological/Environmental Management Plan is captured within the **Outline CEMP** (**Application Document Reference: TR010041/APP/7.3**).	To maintain the ecological value of retained and created habitats long-term.	None required
Ecological Receptor Specific Mitigation						
Ornithology	BI01	Throughout Part B	Construction	Vegetation and site clearance works would be undertaken outside the bird nesting period, March to August inclusive, to avoid damage or destruction of nests. Where this is not possible, site clearance would be preceded by an inspection from an experienced ecologist within 24 hours prior to clearance works commencing to confirm the absence of active nests. If an active nest is recorded, a minimum buffer of 5 m would be implemented (the buffer size at the discretion of the ecologist) and remain in place until the nest is confirmed as inactive. All cleared vegetation would be rendered unsuitable for nesting birds, for example, by covering or chipping depending on the end purpose of the vegetation or would be removed from the works area.	To protect nesting birds.	None required
Ornithology	BI02	Throughout Part B	Pre-Construction	Following the last harvest of arable fields within the Order Limits, the area would be sprayed with a non-residual and neonicotinoid-free herbicide to prevent regrowth, rendering the arable habitat of negligible value to wintering birds. This may cause dispersal during the construction stage, however, impacts as a result of dispersal are not considered significant due to the substantial distribution of arable farmland in the wider landscape.	To reduce the impact to wintering birds.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
Ornithology	BI03	Throughout Part B	Post-Construction	Thick screening planting of native, scrubby species adjacent to the widened carriageway. This would be as dense as possible.	To provide suitable habitat to support nesting birds.	None required
Ornithology	BI04	Throughout Part B	Post-Construction	Landscape planting associated with Part B would include native species of local origin and include berry bearing shrubs. This is in order to provide food resources for thrushes and finches and cover for species such as dunnock (SPI, BoCC amber list, UKBAP) and compensate for the loss of hedgerows and scrub habitat, where this is unavoidable to enable construction of Part B. Wherever possible new habitats would be designed as connective corridors, linking to other habitat areas, rather than in isolated parcels.	To provide foraging resources for wintering birds.	None required
Ornithology	BI05	Throughout Part B	Construction & Post-Construction	Habitat compensation for breeding birds would be implemented and is incorporated into **Figure 7.10: Landscape Mitigation Plan, Volume 6** of this ES (**Application Document Reference: TR010041/APP/6.6**), including hedgerows, woodland, scrub and grassland. The baseline surveys identified that farmland habitats were of particular importance to wintering birds across the Study Area. Farmland would be re-instated and habitat loss kept to a minimum. Farmland boundary features, such as hedgerows, would be reinstated and created within the Order Limits to provide these habitats of value.	To compensate for the loss of breeding bird habitat.	None required
Aquatics – Applicable to breeding gadwall.	AQ05	In or in close proximity to waterbodies/watercourses	Construction	Water quality would be monitored throughout construction works where working with concrete in or within close proximity (within 10 m) to waterbodies or watercourses is required. Monitoring would be undertaken by suitably trained personnel, with the use of a multiparameter probe that can accurately detect changes in pH. Should a rise in pH be detected then work would stop until the cause has been identified and resolved. Appropriate arrangements would be made for the cleaning of equipment that comes into contact with concrete and suitable arrangements would be made for the disposal of cementitious waste. No cementitious materials would enter watercourses. Appropriate sediment management systems would be deployed and maintained throughout the works to prevent suspended sediment being transported	To protect aquatic habitats and species from concrete pollution.	None required

Measure Type	Measure Reference	Approximate Location	Timing of Measure	Description	Mitigation Purpose or Objective	Specific Consultation or Approval Required
				downstream (potentially affecting spawning grounds or causing wider pollution).		

8. RESIDUAL IMPACTS

8.1.1. This impact assessment assumes the adoption of the mitigation measures detailed in **Table 7-1** and as such detailed assessment is only provided on residual impacts. Pre-mitigation impact characterisation is provided for clarity, whilst those features assessed as of 'Less than Local' importance have not been assessed further.

8.1.2. A summary of specific impacts, mitigation and residual impacts (if any) is provided within **Table 8-1**.

8.1. CONSTRUCTION

8.1.1. Construction may result in noise levels greater than existing levels. However, this would represent a temporary impact that is relatively short in duration. In addition to measures detailed within **Table 7-1**, measures to reduce construction noise levels are presented in **Chapter 6: Noise and Vibration, Volume 3** of this ES (**Application Document Reference: TR010041/APP/6.3**). This includes (but is not limited to) applying the principles of best practicable means as to avoid or reduce any disturbance from noise as far as is practicable, use of plant or machinery that complies with the relevant EC/UK noise limits, timing of activities and use of acoustic barriers and other noise containment measures. Following the implementation of mitigation, increased disturbance as a result of noise would result in a **Slight adverse (not significant)** effect.

8.1.2. No other significant residual impacts are predicted to breeding or wintering birds, provided mitigation detailed in **Table 7-1** is implemented.

8.2. OPERATION

8.2.1. Residual operational impacts may primarily arise through a slight increase in noise disturbance from the increase in speed limit by 10 mph. Given the existing carriageway, birds present would already be habituated to road associated noise. Further, birds are known to augment their song in response to increased background noise (**Ref. 18**). Increased background noise may also reduce the species richness of the bird assemblage using the habitats directly adjacent to Part B (**Ref. 19**). However, following implementation of mitigation, increased disturbance would result in a **Neutral** effect (**not significant**).

Table 8-1 - Summary of Specific Impacts, Mitigation, and Residual Impacts (Operation)

Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
Adjacent hedgerow and arable habitats that may support breeding and wintering birds.	Increased noise pollution	Ecological receptor: breeding and wintering bird assemblages Extent: Throughout Part B Effect: Indirect negative Duration: Permanent Frequency and timing: Dependent on traffic volumes using Part B at a given time Reversibility: Irreversible Likelihood: Certain Geographical scale: Local	BI01, BI02, BI05	Neutral (not significant)

REFERENCES

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Ref. 11 Design Manual for Roads & Bridges (2010). *Interim Advice Note (IAN) 130/10 - Ecology and Nature Conservation: Criteria for Impact Assessment*.

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Operational Approach and Criteria for Site Selection. Joint Nature Conservation Committee, Peterborough.

Ref. 14 Dean, T., Myatt, D., Cadwallender, M. & Cadwallender, T. (2015). *Northumbria Bird Atlas*. Northumberland & Tyneside Bird Club, Newcastle upon Tyne.

Ref. 15 Cramp, S. & Simmons, K.E.L. (eds.) (2004). *BWPi: Birds of the Western Palearctic interactive* (DVD-ROM). BirdGuides Ltd, Sheffield.

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Ref. 17 Kociolek, A. V., Clevenger, A. P., ST. Clair, C. C. and Proppe, D. S. (2011). *Effects of Road Networks on Bird Populations*. Conservation Biology, 25: 241-249.

Ref. 18 Halfwerk, W, Holleman, L. J., Lessells, C. M. and Slabbekoorn, H. (2011). *Negative impact of traffic noise on avian reproductive success*. Journal of Applied Ecology, 48: 210-219.

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Appendix A

BREEDING BIRDS

Appendix A can be found here:

6.7 Environmental Statement Appendix 9.13 – Breeding Bird Survey Report, Volume 7 of this ES (**Application Document Reference: TR010041/APP/6.7**)

Appendix B

WINTERING BIRDS

Appendix B can be found here:

6.7 Environmental Statement Appendix 9.14 – Wintering Bird Survey Report, Volume 7 of this ES (**Application Document Reference: TR010041/APP/6.7**)

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