

**A66 Northern Trans-Pennine Project
TR010062**

**3.4 Environmental Statement
Appendix 6.14 Wintering Birds**

APFP Regulations 5(2)(a)

Planning Act 2008

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

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**The Infrastructure Planning
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A66 Northern Trans-Pennine Project
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**3.4 ENVIRONMENTAL STATEMENT
APPENDIX 6.14 WINTERING BIRDS**

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6.14 Wintering Bird Survey Report

6.14.1 Introduction

Project background

- 6.14.1.1 The A66 Northern Trans-Pennine project is a programme of works to improve the A66 between the M6 at Penrith and A1 at Scotch Corner.
- 6.14.1.2 Between the M6 and the A1(M) the existing A66 is approximately 80km in length. Along this length it is intermittently dualled, with approximately 30km of single carriageway, in six separate sections, making the route accident prone and unreliable.
- 6.14.1.3 The route carries high levels of freight traffic and is an important route for tourism and connectivity to local communities. The variable road standards, together with the lack of available diversionary routes when incidents occur, affects road safety, reliability, resilience and attractiveness of the route
- 6.14.1.4 The route carries high levels of freight traffic and is an important route for tourism and connectivity to local communities. The variable road standards, together with the lack of available diversionary routes when incidents occur, affects road safety, reliability, resilience and attractiveness of the route. For a full project description see Chapter 2: The Project (Application Document 3.2).

Scope of the document

- 6.14.1.5 This report presents desk study data and baseline survey results for wintering birds. Baseline surveys were conducted between December 2020 and March 2021. It is intended that the information in this report will be used in conjunction with data from other surveys to identify and assess potential implications of the Project in relation to wintering birds and inform any mitigation and compensation required. This baseline report can be used to accompany any future planning application and associated Environmental Impact Assessment (EIA) for the Project.
- 6.14.1.6 This Appendix should be read in conjunction with ES Appendix 6.13: Breeding Birds and ES Appendix 6.15: Barn Owls of the (Application Document 3.4)).

6.14.2 Legislation and Policy Framework

Legislation

- 6.14.2.1 The legislative provisions for the protection of wild birds in the UK are contained primarily in Sections 1 to 7 of the Wildlife and Countryside Act 1981 (as amended). Under the Act, it is an offence to intentionally kill, injure or take any wild bird and no licences are available to disturb any birds in regard to development. General licences are available in respect of 'pest species' but only for certain very specific purposes, for example public health, public safety, air safety.

- 6.14.2.2 Species listed on Annex 1 of The Birds Directive are those for which the UK Government are also required to take special measures, including through the designation of Special Protection Areas (SPAs) to ensure the survival and reproduction of these species throughout their area of distribution.
- 6.14.2.3 In addition to this legislation, 49 bird species are listed as being Species of Principal Importance (SoPI) for conservation in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. These species are of material consideration during the planning process. The list has been drawn up in consultation with Natural England, as required by the Act. The Section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- 6.14.2.4 The majority of the list of 49 SoPI found in England are those which were identified under the previous *UK Biodiversity Action Plan (UKBAP)* (Joint Nature Conservation Committee, 1994)¹. These species continue to be regarded as conservation priorities under the *UK Post-2010 Biodiversity Framework* (Joint Nature Conservation Committee, 2012)², which succeeded the *UKBAP* in July 2012.

National level policy

Birds of Conservation Concern

- 6.14.2.5 The Birds of Conservation Concern (BoCC) (Stanbury et al., 2022)³ lists are based on an assessment of the conservation status of all regularly occurring British birds. The Red, Amber and Green lists indicate the level of conservation importance for each species. This measure is derived from quantitative assessments from standardised criteria. The assessment is based on the most up-to-date evidence available and consider the historical decline, trends in population and range, rarity, localised distribution and international importance.
- 6.14.2.6 The lists are compiled by leading UK bird conservation organisations, including the Royal Society for the Protection of Birds (RSPB) and British Trust for Ornithology (BTO). The criteria for birds being included in the lists are as follows:
- 6.14.2.7 Red List:
- Globally threatened
 - Historical population decline in UK during 1800–1995
 - Severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first BoCC review, starting in 1969). Severe (at least 50%)

¹ Joint Nature Conservation Committee (1994) UK Biodiversity Action Plan

² Joint Nature Conservation Committee (2012) UK Post-2010 Biodiversity Framework

³ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, N., McCulloch, N., Noble, D and Win, L (2022) The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain.

contraction of UK breeding range over last 25 years, or the longer-term period

6.14.2.8 Amber List:

- Species with unfavourable conservation status in Europe (SPEC (Species of European Conservation Concern))
- Historical population decline during 1800–1995 but recovering; population size has more than doubled over last 25 years
- Moderate (25-49%) decline in UK breeding population over last 25 years, or the longer-term period
- Moderate (25-49%) contraction of UK breeding range over last 25 years, or the longer-term period
- Moderate (25-49%) decline in UK non-breeding population over last 25 years, or the longer-term period
- Rare breeder; 1–300 breeding pairs in UK
- Rare non-breeders; less than 900 individuals
- Localised; at least 50% of UK breeding or non-breeding population in ten or fewer sites, but not applied to rare breeders or non-breeders
- Internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively)

6.14.2.9 Green List:

- Species that occur regularly in the UK but do not qualify under any or the above criteria

6.14.2.10 The lists are a useful tool when evaluating the conservation significance of differing bird assemblages and are used to assess the potential significance of impacts of proposed developments and for informing types and locations of mitigation with respect to birds.

[*National planning statement for national networks*](#)

6.14.2.11 The primary policy basis for deciding whether or not to grant a Development Consent Order (DCO) is the *National Policy Statement for National Networks (NPSNN)* (Department for Transport, 2014)⁴, which sets out policies to guide how DCO applications will be decided and how the effects of national networks infrastructure should be considered by the relevant decision maker. The policies for biodiversity and ecological conservation include statements that:

“Biodiversity is the variety of life in all its forms and encompasses all species of plants and animals and the complex ecosystems of which they are a part. Government policy for the natural environment is set out in the Natural Environment White Paper (NEWP). The NEWP sets out a vision of moving progressively from net biodiversity loss to net gain, by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures...” (NPSNN paragraph 5.20)

6.14.2.12 The NPSNN also advises:

⁴ Department for Transport (2014) National Policy Statement for National Networks

“In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national and local importance, protected species, habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment.” (NPSNN paragraph 5.26)

6.14.2.13 NPSNN policy of relevance to wintering birds is detailed in Table 1: NPSNN of relevance to wintering birds.

Table 1: NPSNN of relevance to wintering birds

Relevant NPSNN paragraph reference	Requirement of the NPSNN (paraphrase)
5.22	Outline any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems.
5.23	Demonstrate how the project has taken advantage of opportunities to conserve and enhance biodiversity conservation interests.
5.29	Ensure proposals mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site’s biodiversity are acceptable.
5.33	Development proposals potentially provide many opportunities for building in beneficial biodiversity features. Opportunities to maximise beneficial biodiversity features should be considered. Planning obligations can be used where appropriate in order to ensure that such beneficial features are delivered.
5.34 and 5.35	Individual wildlife species receive statutory protection under a range of legislative provisions. Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales. Undertake measures to ensure these species and habitats are protected from adverse effects. Where appropriate, requirements or planning obligations may be used in order to deliver this protection.
5.36	Include appropriate mitigation measures as an integral part of their proposed development, including identifying where and how these will be secured
5.37	Consider what appropriate requirements should be attached to any consent and/or in any planning obligations entered into in order to ensure that mitigation measures are delivered.
5.38	Take account of what mitigation measures may have been agreed between the applicant and Natural England and/or the MMO, and whether Natural England and/or or the MMO has granted or refused, or intends to grant or refuse, any relevant licences, including protected species mitigation licences.

National planning policy framework

6.14.2.14 The *National planning policy framework (NPPF)* (Ministry of Housing, Communities & Local Government, 2021)⁵ originally published in March

⁵ Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework

2012 and most recently updated in July 2021, sets out the government’s planning policies for England and provides a framework within which locally prepared plans can be produced. The *NPPF* is “an important and relevant matter to be considered in decision making for NSIP⁶”.

Regional and local level policy

6.14.2.15 Although the UK Biodiversity Action Plan (BAP) has been superseded, BAPs are still widely used at county level to support biodiversity.

6.14.2.16 Several bird species recorded within the survey area of the Project are included within the BAPs for the specific counties within the development area (See Table 2: Bird species recorded on local BAPs).

Table 2: Bird species recorded on local BAPs

Common Name	Scientific Name	Cumbria BAP ⁷ ,	Durham BAP ⁸	Richmondshire BAP ⁹ .
Cormorant	<i>Phalacrocorax carbo</i>		D	
Fulmar	<i>Fulmarus</i>		D	
Golden Plover	<i>Pluvialis apricaria</i>		D	R
Kittiwake	<i>Rissa tridactyla</i>		D	
Razorbill	<i>Alca torda</i>		D	
Ringed Plover	<i>Charadrius hiaticula</i>		D	
Shelduck	<i>Tadorna tadorna</i>		D	
Turnstone	<i>Arenaria</i>		D	
Corn Bunting	<i>Emberiza calandra</i>		D	R
Linnet	<i>Linaria cannabina</i>		D	R
Tree Sparrow	<i>Passer montanus</i>		D	R
Skylark	<i>Alauda arvensis</i>		D	R
Reed Bunting	<i>Emberiza schoeniclus</i>		D	R
Yellow Wagtail	<i>Motacilla flava</i>		D	R
Lapwing	<i>Vanellus vanellus</i>		D	R
Curlew	<i>Numenius arquata</i>	C	D	R

⁶ Nationally Significant Infrastructure Projects (NSIP)

⁷ Cumbria Biodiversity Partnership (2001) The Cumbria Biodiversity Action Plan

⁸ North East England Nature Partnership (2013) Biodiversity Priorities

⁹ Richmond County Council (2014) Richmondshire Biodiversity Action Plan

Common Name	Scientific Name	Cumbria BAP ⁷ ,	Durham BAP ⁸	Richmondshire BAP ⁹ .
Common snipe	<i>Gallinago gallinago</i>		D	R
Redshank	<i>Tringa totanus</i>		D	R
Peregrine	<i>Falco peregrinus</i>		D	
Common Cuckoo	<i>Cuculus canorus</i>		D	R
Grasshopper Warbler	<i>Locustella naevia</i>		D	
Grey Partridge	<i>Perdix perdix</i>		D	R
Kestrel	<i>Falco tinnunculus</i>		D	
Mistle Thrush	<i>Turdus viscivorus</i>		D	
Swallow	<i>Hirundo rustica</i>		D	
Yellowhammer	<i>Emberiza citrinella</i>		D	
Nightjar	<i>Caprimulgus europaeus</i>		D	R
Spotted flycatcher	<i>Muscicapa striata</i>		D	R
Black Grouse	<i>Lyrurus tetrix</i>	C	D	R
Hen Harrier	<i>Circus cyaneus</i>		D	R
Merlin	<i>Falco columbarius</i>		D	
House Sparrow	<i>Passer domesticus</i>		D	R
Starling	<i>Sturnidae vulgaris</i>		D	R
Song Thrush	<i>Turdus philomelos</i>		D	R
House Martin	<i>Delichon urbica</i>		D	
Swift	<i>Apus apus</i>		D	
Black-necked Grebe	<i>Podiceps nigricollis</i>		D	
Little Ringed Plover	<i>Charadrius dubius</i>		D	
Common pochard	<i>Aythya ferina</i>		D	
Bittern	<i>Botaurus stellaris</i>		D	R
Grey Wagtail	<i>Motacilla cinerea</i>		D	

Common Name	Scientific Name	Cumbria BAP ⁷ ,	Durham BAP ⁸	Richmondshire BAP ⁹ .
Marsh Tit	<i>Poecile palustris</i>		D	R
Lesser Redpoll	<i>Acanthis cabare</i>		D	R
Pied Flycatcher	<i>Ficedula hypoleuca</i>		D	
Red Kite	<i>Milvus milvus</i>		D	
Tree Pipit	<i>Anthus trivialis</i>		D	R
Willow Warbler	<i>Phylloscopus trochilus</i>		D	
Willow Tit	<i>Poecile montanus</i>		D	R
Woodcock	<i>Scolopax rusticola</i>		D	
Black-throated Diver	<i>Gavia arctica</i>			R
Tundra Swan	<i>Cygnus columbianus</i>			R
Greater Scaup	<i>Aythya marila</i>			R
Common Scoter	<i>Melanitta nigra</i>			R
Red Grouse	<i>Lagopus lagopus scotica</i>			R
Lapwing				R
Black-tailed Godwit	<i>Limosa limosa</i>			R
Arctic Skua	<i>Stercorarius parasiticus</i>			R
Herring Gull	<i>Larus argentatus</i>			R
Barn Owl				R
Lesser Spotted Woodpecker	<i>Dryobates minor</i>			R
Dunnock	<i>Prunella modularis</i>			R
Ring Ouzel	<i>Turdus torquatus</i>			R
Wood Warbler	<i>Phylloscopus sibilatrix</i>			R
Twite	<i>Linaria flavirostris</i>			R
Bullfinch	<i>Pyrrhula pyrrhula</i>			R
Hawfinch	<i>Coccothraustes coccothraustes</i>			R
Yellowhammer				R

6.14.2.17 The following local planning policies are also relevant to this report:

- *Eden Local Plan (2014-2032)* (Eden District Council, 2014)¹⁰ Policy ENV1 and Policy ENV4
- *County Durham Plan (Adopted 2020)* (Durham County Council, 2020)¹¹ Policy 26, Policy 40, Policy 41, Policy 42 and Policy 43
- *Richmondshire Local Plan (2012-2028)* adopted 2014 (Richmondshire District Council, 2014)¹² Core Policy CP12

Other relevant policy and guidance

6.14.2.18 In addition to compliance with the *NPSNN* and *NPPF*, this report has been written in accordance with professional standards and guidance. The standards and guidance which relate to the assessment are:

- *Guidance for Ecological Impact Assessment in the United Kingdom Third Edition* (Chartered Institute of Ecology and Environmental Management, 2018)¹³
- *Design Manual for Roads and Bridges (DMRB) LA 108 Biodiversity* (DMRB LA 108), Revision 1, March 2020
- *DMRB LD 118 Biodiversity Design (DMRB LD 118)*, Revision 1, March 2020 (Highways England, 2020c)¹⁴.

6.14.3 Methodology

Desk study

6.14.3.1 In September 2021, bird data from the last ten years was requested from within 2km of the Order Limits of the Project (hereafter referred to as the 'study area') from Cumbria Biodiversity Data Centre (CBDC), Environmental Records Information Centre (ERIC) North East, and Environmental Records Centre and North and East Yorkshire Ecological Data Centre (NEYEDC). This information was used to contextualise and add to the data obtained during field surveys within the study area.

6.14.3.2 Aerial photography and Phase 1 habitat mapping were reviewed to identify habitats likely to be important to wintering birds, for example, large waterbodies, open farmland, hedgerows and woodland. The evaluation of this data was used to determine the potential for wintering birds to occur in notable concentrations in specific areas.

Field survey

6.14.3.3 The 'survey area' is defined as the land within the 250m of the Order Limits of the Project.

¹⁰ Eden District Council (2014) Eden Local Plan 2014 to 2032

¹¹ Durham Council (2020) County Durham Plan – Adopted 2020

¹² Richmond County Council (2014) Richmondshire Local Plan 2012 - 2028 Core Strategy (Adopted 9 December 2014)

¹³ Chartered Institute of Ecology and Environmental Management (2018) Guidance for Ecological Impact Assessment in the United Kingdom Third Edition

¹⁴ Highways England (2020c) Design Manual for Roads and Bridges LD 118 Biodiversity Design, Revision 1, March 2020

Field survey

- 6.14.3.4 Field survey methods for breeding birds were based on the British Trust for Ornithology's (BTO) Common Bird Census¹⁵.
- 6.14.3.5 Abundance and peak counts were recorded for notable species. Species were considered notable if they met at least one of the following criteria. A North Pennine Moors Special Protection Area (SPA) citation species, a species listed on Schedule 1 of the Wildlife and Countryside Act, a NERC S41 species or a BoCC Red and Amber species. For all other species only presence was noted.
- 6.14.3.6 Four repeat visits to each winter bird survey transect were undertaken, with surveys evenly spread across (7th December and 22nd of March), as shown in Table 3: Winter bird survey parameters.

¹⁵ Marchant, J.H. (1983) Common Birds Census Instructions. Tring: British Trust for Ornithology.

Table 3: Winter bird survey parameters

Month	Parameter	M6 Junction 40 to Kemplay Bank	Penrith to Temple Sowerby	Temple Sowerby to Appleby (2 days)		Appleby to Brough	Bowes Bypass	Cross Lanes to Rokeby	Stephen Bank to Carkin Moor	A1(M) Junction 53 Scotch Corner
December	Date	07/12/220	08/12/2020	09/12/2020	10/12/2020	15/12/2020	16/12/2020	18/12/2020	17/12/2020	14/12/2020
	Starting Temp (°C)	2	4	5	5	6		12	6	9
	Precipitation	No rain	Periodic rain	Light rain at start (for 30 mins) then no rain throughout	No rain	Light rain	Light rain	Light rain	No rain	No rain
	Cloud	50%	95%	90%	95%	100%	100%	100%	10%	50%
	Rain	3 mph N	7 mph SW	5 mph W	13 mph SE	8 mph SE	17 mph SE	13 mph S	8 mph SW	13 mph SW
	Start time	09:00	09:30	09:00	09:30	08:40	09:40	09:30	09:30	09:30
	Finish time	15:30	15:20	15:15	13:20	15:45	13:00	13:35	15:30	12:40
January	Date	11/01/2021	12/01/2021	13/01/2021	13/01/2021	19/01/2021	20/01/2021	22/01/2021	21/01/2021	18/01/2021
	Starting Temp (°C)	6	-1	0	1	6	8	2	2	5
	Precipitation	Light rain	No rain	Light rain	Light rain	Rain	Rain	No rain	No rain	No rain
	Cloud	100%	0%	100%	100%	100%	100%	15%	30%	50%
	Rain	15 mph SW	3 mph NW	3 mph SE	2 mph SE	2 mph NW	6 mph SW	14 mph W	18 mph SW	10 mph SW
	Start time	09:25	09:30	09:30	13:35	09:40	09:40	09:30	09:30	09:30
	Finish time	14:20	13:50	13:15	15:00	16:20	13:40	13:40	14:30	14:15
February	Date	08/02/2021	09/02/2021	10/02/2021	11/02/2021	16/02/2021	17/02/2021	19/02/2021	18/02/2021	15/02/2021
	Starting Temp (°C)	-1	-1	-2	-4	8	7	6	6	4
	Precipitation	Short shower	No rain	No rain	No rain	Light rain	No rain	Short showers	Fog	No rain
	Cloud	20%	5%	70%	25%	100%	30%	100%	100%	100%
	Rain	12 mph NE	5 mph NE	9 mph NE	3 mph SE	13 mph SW	14 mph SW	15 mph S	13 mph SW	4 mph E
	Start time	09:10	09:40	10:25	10:15	09:25	09:10	09:05	09:10	10:00
	Finish time	14:15	14:15	14:15	13:00	15:50	12:00	12:15	13:15	13:15
March	Date	15/03/2021	16/03/2021	17/03/2021	16/03/2021	23/03/2021	24/03/2021	24/03/2021	18/03/2021	22/03/2021
	Starting Temp (°C)	7	10	6	14	7	5	7	8	7
	Precipitation	No rain	No rain	No rain	No rain	No rain	No rain	No rain	No rain	No rain
	Cloud	50%	90%	100%	40%	100%	20%	50%	90%	10%
	Rain	10 mph NW	13 mph NW	10 mph NW	10 mph N	14 mph SW	20 mph SW	20 mph SW	3 mph NW	7 mph NW
	Start time	09:15	09:15	09:10	15:50	09:20	09:10	13:15	09:15	10:00
	Finish time	13:35	15:30	14:30	17:55	16:00	12:30	16:30	14:30	13:30

6.14.3.7 Due to access restrictions encountered on the Temple Sowerby to Appleby scheme during the original winter bird surveys commencing in winter 2020, update surveys were undertaken on the previously inaccessible land commencing in winter 2021. The survey parameters are summarised below in Table 4: Winter bird survey parameters.

Table 4: Winter bird survey parameters

Month	Parameter	Temple Sowerby to Appleby
Nov	Date	19/11/2021
	Starting Temp (°C)	12
	Precipitation	No Rain
	Cloud	30%
	Rain	4
	Start time	09:45
	Finish time	15:30
Dec	Date	14/12/2021
	Starting Temp (°C)	5
	Precipitation	No Rain
	Cloud	75%
	Rain	2
	Start time	09:30
	Finish time	14:00
Jan	Date	18/01/2022
	Starting Temp (°C)	0
	Precipitation	No Rain
	Cloud	10%
	Rain	2
	Start time	09:48
	Finish time	14:30

Transect surveys

6.14.3.8 The field survey method used for the wintering bird survey is based on the Common Bird Census (CBC) methodology in Gilbert et al. (1998)¹⁶ and Bibby et al. (2000)¹⁷. Standard British Trust for Ornithology (BTO) species codes and activity symbols (British Trust for Ornithology, 2009)¹⁸ were used to record birds and to note their activity (including

¹⁶ Gilbert, G., Gibbon, D.W. and Evans J. (1998) Bird Monitoring Methods: A Manual of Techniques for Key UK Species. Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire.

¹⁷ Bibby C.J. Burgess, N.D. Hill D.A. Mustoe S. and Lambton S. (2000). Bird Census Techniques. Academic Press London.

¹⁸ British Trust for Ornithology (2009) BTO Species Codes. BTO, Thetford.

feeding, loafing, roosting and in flight), sex and age where appropriate. These were recorded on electronic handheld devices for digital analysis at a later date.

- 6.14.3.9 The surveyors walked transect routes following hedgerows and field margins (to avoid walking over and damaging winter-sown crops) where possible, whilst ensuring comprehensive survey coverage. Survey routes were mapped and the direction walked alternated on each visit, to ensure that all parts were covered at various times of day across the duration of the surveys.
- 6.14.3.10 Surveyors used binoculars to record all observations of birds by either sight or sound by walking through the survey area at a slow and steady pace. The positions of the recorded birds were plotted as accurately as possible (to the nearest 10 to 20m) on digitised maps.
- 6.14.3.11 Observations of birds located immediately adjacent to the wintering bird survey area were also recorded to ensure that any such species that were in proximity to the Project (in particular scarce species or those listed on the North Pennine Moors SPA citation) can be assessed.
- 6.14.3.12 During the original winter bird surveys, four survey visits were carried out between December 2020 and March 2021 which allowed for sufficient observations of birds and minimised the risk of overlooking scarce and or notable species.
- 6.14.3.13 During the update winter bird surveys, three survey visits were carried out between November 2021 and January 2022 on a small area of previously inaccessible land. Three visits in combination with the previous four visits in the same area was considered sufficient.
- 6.14.3.14 The survey visits were not undertaken in unfavourable conditions, such as heavy rain, poor visibility and strong winds, that would negatively affect the results.

Vantage point surveys

- 6.14.3.15 Vantage point (VP) surveys were undertaken in conjunction with the transect surveys between December 2020 and March 2021 and November 2021 and January 2022. The VP surveys were based on the point count methodology which involves the recording of birds from a fixed position, as detailed within Bibby et al. Bird Census Techniques¹⁹. The desk study and scoping survey, undertaken in November 2020, were used to determine optimal locations for each VP. Each VP was chosen by assessing various factors such as the habitats in the vicinity, unobstructed views, land access permission and health and safety.
- 6.14.3.16 There were several VPs along each scheme, positioned to provide data from across the key wintering bird habitats present within each scheme. Each VP was surveyed once per visit, with a total of four survey visits undertaken per VP.

¹⁹ Bibby C.J. Burgess, N.D. Hill D.A. Mustoe S. and Lambton S. (2000) Bird Census Techniques. Academic Press London.

- 6.14.3.17 The VPs were surveyed during daylight hours, between sunrise and sunset. Surveys began five minutes after the surveyor had reached the location so that any disturbance caused by the surveyor's arrival had ceased.
- 6.14.3.18 At the start of each VP survey, the surveyor scanned a 360° arc, recording all target species observed. During the VP surveys, the maximum count of each species observed was recorded electronically and this was used to determine the peak count of individual species per survey. This method provides a maximum number of individuals observed at any one time and is useful for determining species abundance.
- 6.14.3.19 The birds recorded during surveys were primarily notable species as described in section 1.3.5. Those species more sensitive to disturbance from road schemes, such as raptors and waterbirds, were also considered to be target species.
- 6.14.3.20 The combination of using both transect and VP surveys ensured that a robust baseline of the wintering bird community occurring within the survey area could be established. The surveys were undertaken by experienced ornithologists with extensive professional bird survey and assessment experience who used optical equipment of appropriate magnification, including binoculars and telescopes.
- 6.14.3.21 All common 'non target' or secondary species for example robin *Erithacus rubecula*, blackbird *Turdus merula* and blue tit *Cyanistes caeruleus* and were also recorded.

6.14.4 Assumptions and Limitations

- 6.14.4.1 Data obtained from the desk study was dependent upon records submitted for the area of interest. Therefore, absence of records of a particular species does not necessarily mean that the species do not occur in the study area. Similarly, the presence of records for a given species does not necessarily mean that these would still be present or relevant in the context of the Project.
- 6.14.4.2 Due to land access restrictions, surveys commenced in December rather than the more optimal starting months of October or November. Therefore, there is a chance that some species may have been missed during those months. This is not considered to significantly undermine the robustness of the survey results as survey data was collected in the key winter months of December, January and February. During other ecological surveys no notable species not recorded within the winter bird surveys were identified. Additional winter bird surveys were undertaken between November 2021 and January 2022 of key wintering bird habitat within the Temple Sowerby to Appleby scheme. In addition, bird species were recorded during the scoping assessment undertaken in November 2021 which identified no notable species not recorded within the winter bird surveys. It is therefore considered that, despite this limitation, the data collected is adequate to inform a robust baseline.

- 6.14.4.3 The findings presented in this report represent those at the time of survey and reporting. Variations in these conditions will occur as a result of seasonal factors and with the general passage of time.
- 6.14.4.4 Fauna may travel over wide areas and can have large home ranges and so can be overlooked during surveys. Species which are absent at the time of survey may also return to or colonise a site at any future time.
- 6.14.4.5 The fifth edition of the BoCC Lists were released during the writing of this report. The Red, Amber and Green List species discussed are in line with this latest update. However, when the bird surveys were undertaken, only records associated with those Red and Amber List species on the previous BoCC Lists were collected and analysed. This means that the following species relevant to the study area which have moved from the Green to Amber or Red List were not considered during the original winter bird surveys:
- woodpigeon *Columba palumbus*
 - moorhen *Gallinula chloropus*
 - sparrowhawk *Accipiter nisus*
 - rook *Corvus frugilegus*
 - common whitethroat *Sylvia communis*
 - wren *Troglodytidae troglodytes*
 - sedge warbler *Acrocephalus schoenobaenus*
 - wheatear *Oenanthe oenanthe*
 - greenfinch *Chloris chloris*
- 6.14.4.6 This is not considered to be a significant limitation as all of these species are still common and widespread, and as noted in 1.3.16 non-target species presence was recorded when observed. Further, during the update surveys in November 2021, December 2021 and January 2022 abundance was collected for these species.

6.14.5 Results

Routewide

Desk study

- 6.14.5.1 A total of 171 species of birds have been recorded within the study area of the Project between 2010 and 2021, including 47 Red List BoCC and 58 Amber List BoCC. Thirty of these are listed as Schedule 1 species on the WCA 1981. Seven species were recorded that are mentioned under the Richmondshire LBAP, one under the Cumbria Biodiversity Action Plan and 45 under the Durham Priority Species List.

Field surveys

- 6.14.5.2 Each scheme was subject to four repeat wintering bird surveys, each undertaken in December 2020, January 2021, February 2021 and March 2021.
- 6.14.5.3 Within the survey area of the Project, a total abundance of 27,640 birds and a total diversity of 87 species were recorded during the wintering bird surveys. This comprised 55 target species and 32 secondary

species. A breakdown of species richness and target species abundance is summarised in Table 5: Total species richness per scheme. A full list of all species recorded is provided in Table A-1 in Annex 1.

6.14.5.4 A summed peak count was determined by the summation of each species' peak count, irrespective of the survey in which they occurred. This represents the minimum number of individual species using the survey area during the survey period.

Table 5: Total species richness per scheme

Scheme name	Total species richness	Notable species richness	Secondary species richness	Abundance
The Project	87	58	32	27,640
M6 Junction 40 to Kemplay Bank	49	25	24	662
Penrith to Temple Sowerby	60	34	26	2096
Temple Sowerby to Appleby	666	444	22	13005
Appleby to Brough	66	39	27	4569
Bowes Bypass	46	26	20	2555
Cross Lanes to Rokeby	53	31	22	2550
Stephen Bank to Carkin Moor	57	34	23	1257
A1(M) Junction 53 Scotch Corner	45	24	21	946

SPA species

6.14.5.5 Golden plover and merlin were the only SPA citation species recorded within the survey area.

6.14.5.6 A total of two merlin were observed. One merlin was recorded within the Appleby to Brough scheme and a second was recorded within the Bowes Bypass scheme.

6.14.5.7 Notable numbers of golden plover were recorded as summarised in Table 6: Total peak count of SPA citation species per scheme. A total abundance of 1,098 golden plover were recorded within the survey area of the Project, mainly associated with extensive areas of improved grassland, arable land and wet grassland. Golden plover were recorded in December, January and February but not during any survey occurrences in March, indicating golden plover used habitats within the survey area during winter only, before moving elsewhere to suitable breeding habitat for spring and summer.

Table 6: Total peak count of SPA citation species per scheme

Scheme	Species	
	Golden plover	Merlin
M6 Junction 40 to Kemplay Bank	0	0
Penrith to Temple Sowerby	0	0
Temple Sowerby to Appleby	60	0
Appleby to Brough	40	1
Bowes Bypass	15	1
Cross Lanes to Rokeby	750	0
Stephen Bank to Carkin	122	0
A1(M) Junction 53 Scotch Corner	0	0

Schedule 1 species

- 6.14.5.8 Ten species recorded are listed on Schedule 1 of the WCA 1981. These species, along with their total abundance and peak counts, are summarised in Table 7: Schedule 1 species peak counts (PC) and abundance (A) per scheme.
- 6.14.5.9 Reasonable numbers of wintering thrushes fieldfare *Turdus pilaris* and redwing *Turdus iliacus* were recorded throughout the survey area of the Project and were largely associated with agricultural habitats present such as hedgerows and agricultural fields.

Table 7: Schedule 1 species peak counts (PC) and abundance (A) per scheme

Species	M6 Junction 40 to Kemplay Bank		Penrith to Temple Sowerby		Temple Sowerby to Appleby		Appleby to Brough		Bowes Bypass		Cross Lanes to Rokeby		Stephen Bank to Carkin Moor		A1(M) Junction 53 Scotch Corner	
	PC	A	PC	A	PC	A	PC	A	PC	A	PC	A	PC	A	PC	A
Brambling <i>Fringilla montifringilla</i>	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
Fieldfare	0	0	51	56	201	1338	101	158	93	151	75	96	66	218	12	16
Kingfisher <i>Alcedo atthis</i>	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Lesser Redpoll	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Marsh harrier <i>Circus aeruginosus</i>	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Merlin	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0
Red Kite	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Redwing	35	64	208	354	102	434	53	79	38	100	17	25	72	82	17	30
Whooper Swan <i>Cygnus cygnus</i>	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0

BoCC and Section 41

6.14.5.10 A total of 16 species which are listed on Section 41 of the NERC Act 2006 were recorded within the survey area. These were:

- bullfinch
- curlew
- grey partridge
- herring gull
- house sparrow
- lapwing
- lesser redpoll
- linnet
- marsh tit
- redshank
- reed bunting
- skylark
- song thrush
- starling
- tree sparrow
- yellowhammer

6.14.5.11 A total of 17 Red List and 31 Amber List BoCC species were recorded across the survey area of the Project.

6.14.5.12 Further details for BoCC and Section 41 abundance and distribution is provided in Table 8: BoCC and Section 41 species within the study area of the Project.

Table 8: BoCC and Section 41 species within the study area of the Project

Species	BoCC	S41	Total abundance	Peak count
Bean Goose <i>Anser fabalis</i>	Amber		1	1
Black-headed Gull <i>Chroicocephalus ridibundus</i>	Amber		1636	937
Bullfinch	Amber	Yes	67	18
Chaffinch	Amber		219	2
Common gull <i>Larus canus</i>	Amber		2135	983
Common Snipe	Amber		32	13
Common Tern <i>Sterna hirundo</i>	Amber		1	1
Curlew	Red	Yes	203	198
Dipper <i>Cinclus cinclus</i>	Amber		12	5
Dunnock	Amber		134	
Fieldfare	Red		2070	642
Great black-backed gull	Amber		20	20
Greenfinch	Red		2	2

Species	BoCC	S41	Total abundance	Peak count
Grey Partridge	Red	Yes	12	6
Grey Wagtail	Amber		24	6
Greylag Goose <i>Anser anser</i>	Amber		756	497
Herring Gull	Red	Yes	97	73
House Sparrow	Red	Yes	895	368
Kestrel	Amber		25	5
Kingfisher	Amber		1	1
Lapwing	Red	Yes	8704	3560
Lesser Black-backed Gull <i>Larus fuscus</i>	Amber		73	35
Lesser Redpoll	Red	Yes	1	1
Linnet	Red	Yes	247	114
Mallard <i>Anas platyrhynchos</i>	Amber		406	178
Marsh Harrier	Amber		1	1
Marsh Tit	Red	Yes	1	1
Meadow Pipit <i>Anthus pratensis</i>	Amber		262	97
Merlin	Red		2	1
Mistle Thrush	Red		1518	38
Moorhen	Amber		N/A	
Mute Swan <i>Cygnus olor</i>	Amber		2	
Oystercatcher <i>Haematopus ostralegus</i>	Amber		74	26
Pink-footed Goose <i>Anser brachyrhynchus</i>	Amber		358	311
Redshank	Amber	Yes	319	319
Redwing	Red		1103	354
Reed Bunting	Amber	Yes	15	9
Rook	Amber		98A	70
Shelduck	Amber		8	5
Shoveler <i>Anas clypeata</i>	Amber		1	4
Skylark	Red	Yes	336	138
Song Thrush	Amber	Yes	72	26
Sparrowhawk	Amber		5	1
Starling	Red	Yes	5448	2288
Stock Dove <i>Columba oenas</i>	Amber		170	32

Species	BoCC	S41	Total abundance	Peak count
Teal <i>Anas crecca</i>	Amber		143	139
Tree Sparrow	Red	Yes	58	30
Whooper Swan	Amber		2	2
Woodcock	Red		6	3
Woodpigeon	Amber		279	95
Wren	Amber		7	1
Yellowhammer	Red	Yes	163	104

Species abundance

- 6.14.5.13 No counts of wintering bird species recorded across the survey area of each scheme approaches the 1% level of the national wintering population estimates as detailed by the RSPB (Royal Society for the Protection of Birds, 2018)²⁰ and BTO (British Trust for Ornithology, 2022)²¹.
- 6.14.5.14 It is noted that the combined total abundance of lapwing recorded between Schemes 3 and 9 was 7,356 birds. This exceeds the 1% estimate of the UK wintering population of 635,000 to 650,000. However, this total abundance is the combined number of all survey occurrences, and a large number of these individuals are assumed to be the same birds. Therefore double counting is likely to have occurred. The peak count for lapwing is 1,045, taken from Cross Lanes to Rokeby (Scheme 8) in January 2021.

Wintering bird assemblages

- 6.14.5.15 The wintering bird assemblage recorded across the survey area of the Project is largely typical of species associated with agricultural areas. The presence of agricultural features such as arable fields, wet grassland, hedgerows and improved grassland along with pockets of built-up areas has resulted in the recording of notable numbers of wintering thrushes, waders, gulls and wildfowl.
- 6.14.5.16 Notable individual species recorded along with their total abundance include lapwing (7,356), starling (5,325), common gull (2,198), black-headed gull (1,627), fieldfare (1,337), golden plover (1,098) and redwing (960).
- 6.14.5.17 Notable species associated with woodland include song thrush, mistle thrush and bullfinch.
- 6.14.5.18 The broad habitat types present in the survey area of the Project have been evaluated for their potential to support wintering bird assemblages are presented in Table 9: Key ornithological habitat features.

²⁰ Royal Society for the Protection of Birds (2018) Birds A- Z | Bird Guides - The RSPB

²¹ British Trust for Ornithology (2022) BirdFacts

Table 9: Key ornithological habitat features

Broad habitat type	Key features
Waterbodies	Number of rivers, ditches and wetlands present within the survey area. Support notable species such as mallard, gulls, lapwing, golden plover, moorhen and kingfisher. Support individual species of conservation interest, but limited species abundance and diversity.
Arable farmland	The dominant habitat type within the survey area and wider landscape. Supports notable wintering flocks such as golden plover and lapwing in large open fields. Seed-eating passerines including skylark found throughout. Support individual species of conservation interest, but limited species abundance and diversity.
Scrub and hedgerow	Frequently occurring habitat across the survey area of varying quality. Supports species such as yellowhammer, dunnock, song thrush, wren and bullfinch. Support individual species of conservation interest, but limited species abundance and diversity.
Mature trees and woodland	Restricted parcels of woodland and individual mature trees throughout the survey area. Supports species such as woodcock, great spotted woodpecker, jay, rook as well as species often found in scrub / hedgerows. Support individual species of conservation interest, but limited species abundance and diversity.

M6 Junction 40 to Kemplay Bank

- 6.14.5.19 Surveys were undertaken on 7th December 2020, 11th January 2021, 8th February 2021 and 15th March 2021 in fair, clear conditions.
- 6.14.5.20 This scheme had a total abundance of 662 birds and a total species diversity of 49. This comprised 25 target species and 24 secondary species. A summary of target species abundance and conservation status is given in Table 10: Target species and abundance (A) within the survey area for M6 Junction 40 to Kemplay Bank.
- 6.14.5.21 No North Pennine Moors SPA citation species were recorded within the survey area.
- 6.14.5.22 Five species are listed on the Section 41 of the NERC Act 2006 and one, redwing, is listed on Schedule 1 of the Wildlife and Countryside Act 1981.
- 6.14.5.23 Five Red List and 19 Amber List BoCC species were recorded

Table 10: Target species and abundance (A) within the survey area for M6 Junction 40 to Kemplay Bank

Species	BoCC	Schedule 1	S41	SPA	A
Bean Goose	Amber				1
Black-headed Gull	Amber				211
Bullfinch	Amber		Yes		18
Common gull	Amber				86
Common Tern	Amber				1
Dipper	Amber				5

Species	BoCC	Schedule 1	S41	SPA	A
Dunnock	Amber				19
Grey Wagtail	Amber				5
Greylag Goose	Amber				4
Herring Gull	Red		Yes		73
House Sparrow	Red		Yes		36
Kestrel	Amber				2
Lesser Black-backed Gull	Amber				35
Mallard	Amber				25
Mistle Thrush	Red				2
Oystercatcher	Amber				2
Pink-footed Goose	Amber				23
Redwing	Red	Yes			64
Rook	Amber				Present
Song Thrush	Amber		Yes		1
Sparrowhawk	Amber				Present
Starling	Red		Yes		26
Stock Dove	Amber				23
Woodpigeon	Amber				Present
Wren	Green				Present

Distribution

- 6.14.5.24 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominant presence of fringe urban habitats, watercourses and wetlands, improved grassland, woodland and scrub.
- 6.14.5.25 Gull species represented the highest abundance within the survey area and these were largely associated with watercourses, wetlands and improved grassland areas.
- 6.14.5.26 Redwing, a Schedule 1 species, was present in high numbers and was associated with pockets of woodland and hedgerow to the south of the existing A66.

Penrith to Temple Sowerby

- 6.14.5.27 Surveys were undertaken on 8th December 2020, 12th January 2021, 9th February 2021 and 16th March 2021 in fair, clear conditions.
- 6.14.5.28 This scheme had a total abundance of 2,096 birds and a total species diversity of 60. This comprised 34 target species and 26 secondary species. A summary of target species abundance and conservation status is given in Table 11: Target species and abundance (A) within the survey area for Penrith to Temple Sowerby.

6.14.5.29 No North Pennine Moors SPA citation species were recorded within the survey area.

6.14.5.30 Ten species are listed on the Section 41 of the NERC Act 2006 and four species listed on Schedule 1 of the WCA 1981.

6.14.5.31 Eleven Red List and 19 Amber List BoCC were recorded.

Table 11: Target species and abundance (A) within the survey area for Penrith to Temple Sowerby

Species	BoCC	Schedule 1	S41	SPA	A
Black-headed gull	Amber				129
Brambling	Green	Yes			3
Bullfinch	Amber		Yes		14
Common gull	Amber				983
Dipper	Amber				2
Dunnock	Amber				28
Fieldfare	Red	Yes			56
Grey Wagtail	Amber				3
Greylag Goose	Amber				26
Herring Gull	Red		Yes		5
House Sparrow	Red		Yes		88
Kestrel	Amber				5
Lapwing	Red		Yes		13
Lesser Black-backed Gull	Amber				5
Lesser Redpoll	Red	Yes	Yes		1
Mallard	Amber				27
Meadow Pipit	Amber				17
Mistle Thrush	Red				38
Moorhen	Amber				Y
Oystercatcher	Amber				1
Redwing	Red	Yes			354
Reed Bunting	Amber		Yes		2
Rook	Amber				Y
Skylark	Green				112
Song Thrush	Amber		Yes		6
Sparrowhawk	Amber				Y
Starling	Red		Yes		112
Stock Dove	Amber				16
Teal	Amber				3
Tree Sparrow	Red		Yes		2
Woodcock	Red				1
Woodpigeon	Amber				Y

Species	BoCC	Schedule 1	S41	SPA	A
Wren	Green				Y
Yellowhammer	Red		Yes		44

Distribution

- 6.14.5.32 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominant presence of improved grassland, arable land, wetlands, woodland and scrub.
- 6.14.5.33 Redwing, a Schedule 1 species, was abundant within the survey area of this scheme and records were largely associated with pockets of woodland and hedgerows.
- 6.14.5.34 Notable numbers of gulls, skylark and fieldfare were present owing to the abundance of agricultural habitats such as large arable fields, improved grassland and hedgerows. Starling and house sparrow were also present.

Temple Sowerby to Appleby

- 6.14.5.35 Surveys were undertaken on 9th and 10th December 2020, 13th January 2021, 10th and 11th February 2021 and 16th and 17th March 2021 in fair, clear conditions. Update surveys were undertaken on the 19th of November, 14th of December and 18th of January in suitable weather conditions.
- 6.14.5.36 This scheme had a total target species abundance of 13005 and total species diversity of 66. This comprised 44 target species and 22 secondary species. A summary of target species abundance and conservation status is given in Table 12: Target species and abundance (A) within the Temple Sowerby to Appleby scheme.
- 6.14.5.37 Golden plover, a North Pennine Moors SPA citation species, was recorded within the survey area of this scheme.
- 6.14.5.38 Eleven species are listed on the Section 41 of the NERC Act 2006 and three species listed on Schedule 1 of the WCA 1981.
- 6.14.5.39 Eleven Red List and 22 Amber List BoCC were recorded within the survey area.

Table 12: Target species and abundance (A) within the Temple Sowerby to Appleby scheme

Species	BoCC	Schedule 1	S41	SPA	A
Black-headed Gull	Amber				1016
Bullfinch	Amber		Yes		23
Chaffinch	Amber				19
Common gull	Amber				478
Common Snipe	Amber				21
Curlew	Red		Yes		1

Species	BoCC	Schedule 1	S41	SPA	A
Dipper	Amber				5
Duncock	Amber				55
Fieldfare	Red	Yes			1338
Golden Plover	Green			Yes	189
Great black backed gull	Amber				20
Greenfinch	Red				2
Grey wagtail	Red				3
Greylag Goose	Amber				211
Herring Gull	Red		Yes		2
House Sparrow	Red		Yes		428
Kestrel	Amber				4
Lapwing	Red		Yes		4896
Lesser Black-backed Gull	Amber				25
Linnet	Red		Yes		28
Mallard	Amber				9
Meadow Pipit	Amber				14
Mistle Thrush	Red				15
Mute Swan	Amber				2
Oystercatcher	Amber				9
Pink-footed Goose	Amber				319
Redshank	Amber		Yes		1
Redwing	Red	Yes			434
Reed Bunting	Amber		Yes		9
Rook	Amber				98
Shelduck	Amber				5
Shoveler	Amber				1
Skylark	Green				161
Song Thrush	Amber		Yes		32
Sparrowhawk	Amber				5
Starling	Red		Yes		2500
Stock Dove	Amber				55
Teal	Amber				139
Tree Sparrow	Red		Yes		43
Whooper Swan	Amber	Yes			2
Woodcock	Red				1
Woodpigeon	Amber				279

Species	BoCC	Schedule 1	S41	SPA	A
Wren	Amber				7
Yellowhammer	Red		Yes		104

Distribution

- 6.14.5.40 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominant presence of improved grassland, arable land, wetlands, watercourses, built up areas, woodland and scrub.
- 6.14.5.41 The abundance of arable fields, improved grassland and damp grassland habitats within the survey area has resulted in recording a notable number of waders, wildfowl and gulls. Of note are 3,560 lapwings which represents the highest species abundance, and 189 golden plover, a SPA citation species. In addition, further agricultural habitats such as fields, and urban areas resulted in notable numbers of skylark, fieldfare, yellowhammer, starling, redwing and house sparrow.
- 6.14.5.42 Golden plover, a North Pennine Moors SPA citation species, were recorded on three separate survey occasions, in two separate locations, both associated with improved grassland. The records comprised a flock of 53 in flight and a flock of 50 in an adjacent field on separate survey occasions, located toward the western extent of the existing A66. An additional flock of 86 golden plover was also recorded in an arable field to the north-east of Bolton on a separate survey occasion.

Appleby to Brough

- 6.14.5.43 Surveys were undertaken on 15th December 2020, 19th January 2021, 16th February 2021 and 23rd March 2021 in fair, clear conditions.
- 6.14.5.44 This scheme had a total target species abundance of 4,569 and a total species diversity of 66. This comprised 39 target species and 27 secondary species. A summary of target species abundance and conservation status is given in Table 13: Target species and abundance (A) within the survey area of the Appleby to Brough scheme.
- 6.14.5.45 Two North Pennine Moors SPA citation species were recorded within the survey area.
- 6.14.5.46 Eight species listed on the Section 41 of the NERC Act 2006 and six species listed on Schedule 1 of the WCA 1981 were recorded within the survey area.
- 6.14.5.47 Eleven Red List and 22 Amber List BoCC were recorded within the survey area.

Table 13: Target species and abundance (A) within the survey area of the Appleby to Brough scheme

Species	BoCC	Schedule 1	S41	SPA	A
Barn Owl	Green	Yes			1
Black-headed Gull	Amber				70

Species	BoCC	Schedule 1	S41	SPA	A
Bullfinch	Amber		Yes		9
Common gull	Amber				335
Common Snipe	Amber				1
Curlew	Red		Yes		198
Dunnock	Amber				6
Fieldfare	Red	Yes			158
Golden Plover	Green			Yes	92
Grey Wagtail	Amber				4
Greylag Goose	Amber				497
Herring Gull	Red		Yes		2
House Sparrow	Red		Yes		36
Kestrel	Amber				4
Kingfisher	Amber	Yes			1
Lapwing	Red		Yes		1929
Mallard	Amber				103
Marsh Harrier	Amber				1
Meadow Pipit	Amber				97
Merlin	Red	Yes		Yes	1
Mistle Thrush	Red				22
Moorhen	Amber				Y
Oystercatcher	Amber				24
Pink-footed Goose	Amber				16
Red Kite	Green	Yes			1
Redwing	Red	Yes			79
Rook	Amber				Y
Sand martin <i>Riparia riparia</i>	Green				3
Shelduck	Amber				1
Skylark	Green				20
Song Thrush	Amber		Yes		5
Sparrowhawk	Amber				Y
Starling	Red		Yes		813
Stock Dove	Amber				32
Teal	Amber				1
Tree Sparrow	Red		Yes		4
Woodcock	Red				3
Woodpigeon	Amber				Y
Wren	Green				Y

Distribution

- 6.14.5.48 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominant presence of improved grassland, arable land, wetlands, watercourses, woodland and scrub.
- 6.14.5.49 The North Pennine Moors SPA is located outside the survey area, to the north of the scheme, and supports extensive acid grassland, marshy grassland and moorland.
- 6.14.5.50 Golden plover, a North Pennine Moors SPA citation species, were recorded on three separate survey occasions in three separate locations associated with improved grassland. The records comprised flocks of 39 and 44 individuals within separate fields on the southern side of the existing A66 and a flock of nine golden plover were also recorded in flight on the northern side of the existing A66.
- 6.14.5.51 A single merlin, a North Pennine Moors SPA citation species, was recorded in January and was associated with hedgerow habitats to the north-west of Warcop.
- 6.14.5.52 The abundance of arable fields, improved grassland and hedgerow habitats within the survey area has resulted in the recording of notable numbers of lawing, golden plover, other waders, fieldfare, wildfowl and gulls. In addition, the presence of built-up areas resulted in notable numbers of starling, redwing and house sparrow.

Bowes Bypass

- 6.14.5.53 Surveys were undertaken on 16th December 2020, 20th January 2021, 17th February 2021 and 24th March 2021 in fair, clear conditions.
- 6.14.5.54 This scheme had a total target species abundance of 2,555 and a total species diversity of 46. This comprised 26 target species and 20 secondary species. A summary of target species abundance and conservation status is given in Table 14: Target species and abundance within the survey area of the Bowes Bypass scheme.
- 6.14.5.55 Two North Pennine Moors SPA citation species were recorded within the survey area.
- 6.14.5.56 Six species recorded are listed on the Section 41 of the NERC Act 2006 and four species listed on Schedule 1 of the WCA 1981.
- 6.14.5.57 Nine Red List and 14 Amber List BoCC were recorded within the survey area.

Table 14: Target species and abundance within the survey area of the Bowes Bypass scheme

Species	BoCC	Schedule 1	S41	SPA	A
Barn Owl	Green	Yes			1
Black-headed Gull	Amber				77
Common gull	Amber				219
Common Snipe	Amber				8

Species	BoCC	Schedule 1	S41	SPA	A
Curlew	Red		Yes		2
Duncock	Amber				5
Fieldfare	Red	Yes			151
Golden Plover	Green			Yes	15
Greylag Goose	Amber				12
Herring Gull	Red		Yes		6
House Sparrow	Red		Yes		114
Kestrel	Amber				2
Lapwing	Red		Yes		745
Lesser Black-backed Gull	Amber				6
Mallard	Amber				40
Meadow Pipit	Amber				14
Merlin	Red	Yes		Yes	1
Mistle Thrush	Red				3
Oystercatcher	Amber				14
Redwing	Red	Yes			100
Rook	Amber				Y
Song Thrush	Amber		Yes		15
Starling	Red		Yes		1001
Stock Dove	Amber				4
Woodpigeon	Amber				Y
Wren	Green				Y

Distribution

- 6.14.5.58 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominant presence of improved grassland, arable land, wetlands, watercourses, woodland and scrub.
- 6.14.5.59 The North Pennine Moors SPA is present outside the survey area, to the north-west of the scheme, and supports extensive acid grassland, marshy grassland and moorland.
- 6.14.5.60 A flock of 15 golden plover, a North Pennine Moors SPA citation species, was recorded in January to the north-east of Bowes associated with arable land.
- 6.14.5.61 A single merlin, a North Pennine Moors SPA citation species, was recorded in flight in January to the eastern extent of the scheme.
- 6.14.5.62 The abundance of arable fields, improved grassland and hedgerow habitats within the survey area has resulted in the recording of notable numbers of lapwing, gulls, fieldfare and redwing. In addition, built up areas resulted in notable numbers of starling, and house sparrow.

Cross Lanes to Rokeby

- 6.14.5.63 Surveys were undertaken on 16th December 2020, 20th January 2021, 17th February 2021 and 24th March 2021 in fair, clear conditions.
- 6.14.5.64 This scheme had a total target species abundance of 2,550 and a total species diversity of 53. This comprised 31 target species and 22 secondary species. A summary of target species abundance and conservation status is given in Table 15: Target species and abundance (A) within the survey area of the Cross Lanes to Rokeby scheme.
- 6.14.5.65 Golden plover, a North Pennine Moors SPA citation species, was recorded within the survey area.
- 6.14.5.66 Nine species listed on the Section 41 of the NERC Act 2006 and three species listed on Schedule 1 of the WCA 1981 were recorded
- 6.14.5.67 Eleven Red List and 16 Amber List BoCC were recorded within the survey area.

Table 15: Target species and abundance (A) within the survey area of the Cross Lanes to Rokeby scheme

Species	BoCC	Schedule 1	S41	SPA	A
Barn Owl	Green	Yes			1
Black-headed Gull	Amber				123
Bullfinch	Amber		Yes		1
Common gull	Amber				38
Dunnock	Amber				3
Fieldfare	Red	Yes			96
Golden Plover	Green			Yes	680
Grey Wagtail	Amber				6
Greylag Goose	Amber				4
Herring Gull	Red		Yes		4
House Sparrow	Red		Yes		57
Kestrel	Amber				3
Lapwing	Red		Yes		1105
Lesser Black-backed Gull	Amber				5
Linnet	Red		Yes		3
Mallard	Amber				178
Marsh Tit	Red		Yes		1
Meadow Pipit	Amber				25
Mistle Thrush	Red				13
Moorhen	Amber				Y
Oystercatcher	Amber				4
Redwing	Red	Yes			25
Rook	Amber				Y
Skylark	Green				16

Species	BoCC	Schedule 1	S41	SPA	A
Song Thrush	Amber		Yes		2
Starling	Red		Yes		153
Stock Dove	Amber				2
Tree Sparrow	Red		Yes		1
Woodcock	Red				1
Woodpigeon	Amber				Y
Wren	Green				Y

Distribution

- 6.14.5.68 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominant presence of improved grassland, arable land, wetlands, watercourses, built up areas, woodland and scrub.
- 6.14.5.69 The abundance of arable fields, improved grassland and damp grassland habitats within the survey area has resulted in the recording of notable numbers of waders, wildfowl and gulls. Of note are 1,105 lapwing which represents the highest species abundance.
- 6.14.5.70 In addition, further agricultural habitats such as fields, and urban areas resulted in notable numbers of skylark, meadow pipit, fieldfare, starling, house sparrow and redwing.
- 6.14.5.71 A flock of 680 golden plover, a North Pennine Moors SPA citation species, was recorded in January, to the east of Boldron, and was associated with arable land.

Stephen Bank to Carkin Moor

- 6.14.5.72 Surveys were undertaken on 17th December 2020, 21st January 2021, 18th February 2021 and 28th March 2021 in fair, clear conditions.
- 6.14.5.73 This scheme had a total target species abundance of 1,257 and a total species diversity of 57. This comprised 34 target species and 23 secondary species. A summary of target species abundance and conservation status is given in Table 16: Target species and abundance (A) within the survey area of the Stephen Bank to Carkin Moor scheme.
- 6.14.5.74 Golden plover, a North Pennine Moors SPA citation species, was recorded within the survey area of this scheme.
- 6.14.5.75 Eleven species listed on the Section 41 of the NERC Act 2006 and two species listed on Schedule 1 of the WCA 1981 were recorded within the survey area.
- 6.14.5.76 Twelve Red List and 19 Amber List BoCC species were recorded within the survey area.

Table 16: Target species and abundance (A) within the survey area of the Stephen Bank to Carkin Moor scheme

Species	BoCC	Schedule 1	S41	SPA	A
Black-headed Gull	Amber				75
Bullfinch	Amber		Yes		6
Common gull	Amber				44
Common Snipe	Amber				1
Curlew	Red		Yes		1
Dunnock	Amber				11
Fieldfare	Red	Yes			218
Golden Plover	Green			Yes	122
Grey Partridge	Red		Yes		6
Grey Wagtail	Amber				3
Greylag Goose	Amber				13
Herring Gull	Red		Yes		1
House Sparrow	Red		Yes		85
Kestrel	Amber				2
Lapwing	Red		Yes		4
Linnet	Red		Yes		114
Mallard	Amber				21
Meadow Pipit	Amber				21
Mistle Thrush	Red				18
Moorhen	Amber				Y
Oystercatcher	Amber				3
Pink-footed Goose	Amber				1
Redwing	Red	Yes			82
Rook	Amber				Y
Shelduck	Amber				2
Skylark	Green				19
Song Thrush	Amber		Yes		4
Sparrowhawk	Amber				Y
Starling	Red		Yes		341
Stock Dove	Amber				32
Tree Sparrow	Red		Yes		5
Woodpigeon	Amber				Y
Wren	Green				Y
Yellowhammer	Red		Yes		2

Distribution

- 6.14.5.77 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominance of agricultural habitats which resulted in the highest numbers of species associated with farmland such as fieldfare, linnet, redwing and skylark. Urban areas resulted in notable numbers of starling.
- 6.14.5.78 Golden plover, a North Pennine Moors SPA citation species, was recorded on one survey occasion (January) in two separate locations towards the centre of the scheme near East Layton, associated with improved grassland. The records comprised a flock of 110 individuals and separately a flock of 12 golden plover recorded in flight.

A1(M) Junction 53 Scotch Corner

- 6.14.5.79 Surveys were undertaken on 14th December 2020, 18th January 2021, 15th February 2021 and 22nd March 2021 in fair, clear conditions.
- 6.14.5.80 This scheme had a total target species abundance of 946 and a total species diversity of 45. This comprised 24 target species and 21 secondary species. A summary of target species abundance and conservation status is given in Table 17: Target species and abundance (A) within the survey area of the Junction 53 Scotch Corner scheme.
- 6.14.5.81 No North Pennine Moors SPA citation species were recorded within the survey area.
- 6.14.5.82 Ten species listed on the Section 41 of the NERC Act 2006 and two species listed on Schedule 1 of the WCA 1981 were recorded.
- 6.14.5.83 Ten Red List and 12 Amber List BoCC were recorded within the survey area.

Table 17: Target species and abundance (A) within the survey area of the Junction 53 Scotch Corner scheme

Species	BoCC	Schedule 1	S41	SPA	A
Black-headed Gull	Amber				5
Bullfinch	Amber		Yes		1
Common gull	Amber				14
Dunnock	Amber				7
Fieldfare	Red	Yes			16
Grey Partridge	Red		Yes		6
Herring Gull	Red		Yes		4
House Sparrow	Red		Yes		57
Kestrel	Amber				2
Linnet	Red		Yes		102
Meadow Pipit	Amber				73
Mistle Thrush	Red				6
Moorhen	Amber				Y

Species	BoCC	Schedule 1	S41	SPA	A
Redwing	Red	Yes			30
Reed Bunting	Amber		Yes		4
Rook	Amber				Y
Skylark	Green				8
Song Thrush	Amber		Yes		7
Starling	Red		Yes		591
Stock Dove	Amber				2
Tree Sparrow	Red		Yes		1
Woodpigeon	Amber				Y
Wren	Green				Y
Yellowhammer	Red		Yes		10

Distribution

- 6.14.5.84 Overall, the abundance and assemblage of wintering birds within the survey area of this scheme is considered broadly typical given the dominance of built-up areas and agricultural habitats.
- 6.14.5.85 Built up areas resulted in high numbers of starling and house sparrow.
- 6.14.5.86 Other notable species associated with farmland include meadow pipit, fieldfare, redwing, and yellowhammer.
- 6.14.5.87 Compared to other schemes, there was a reduction in waders, wildfowl and gulls recorded within the survey area of this scheme.

6.14.6 Future baseline

- 6.14.6.1 The ecological baseline conditions described within this report represent those which exist in the absence of the Project and at the time of survey. As stated in Section 3 of CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland*, potential changes in baseline conditions also need to be identified in order to assess impacts.
- 6.14.6.2 Based on the survey data collected and land use at the time of survey, the future baseline in the absence of the Project is unlikely to change significantly. Subtle changes are expected due to climate change, such as localised movement of certain species and local population changes. There may be a negligible reduction in opportunities to roost in ash trees due to ash dieback disease. However, the overall habitats and species composition in the survey area are expected to be broadly similar to that of the existing baseline. Therefore, the future baseline would remain the same as set out in the existing baseline.

6.14.7 Discussion

- 6.14.7.1 The surveys confirmed that wintering birds are abundant and are using habitats present within the survey area of the Project.

- 6.14.7.2 Golden plover and merlin, two North Pennine Moors SPA citation species, were recorded within the survey area of the Project.
- 6.14.7.3 Two merlin were recorded in excess of 100m of the Project Order Limits, one merlin was recorded 3.2km to the west of the SPA within the Appleby to Brough scheme located 105m north of the scheme, and a second merlin was recorded 2.6km to the east of the SPA within the Bowes Bypass scheme located 110m north of the scheme.
- 6.14.7.4 Flocks of wintering golden plover have been recorded throughout the central schemes of the Project with notable numbers recorded within the Cross Lanes to Rokeby scheme. It is considered wintering golden plover use the abundance of flat grassland adjacent to the scheme before moving upland to suitable nesting habitat within the North Pennine Moors SPA.
- 6.14.7.5 Habitats within and adjacent to the Project provide foraging opportunities for a range of bird species, indicated by the diversity of species recorded during the wintering bird surveys. The abundance of woodland, scrub and hedgerow habitats supported a number of passerine species. Large expanses of grassland and wet short, grazed grassland supported waders, gulls and geese such as golden plover and lapwing.

6.14.8 References

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6.14 Annex 1

Table A-1: Abundance (A) of target species per scheme

Species	M6 Junction 40 to Kemplay Bank 1/2	Penrith to Temple Sowerby 3	Temple Sowerby to Appleby4/5	Appleby to Brough 6	Bowes Bypass 7	Cross Lanes to Rokeby 8	Stephen Bank to Carkin Moor 9	A1(M) Junction 53 Scotch Corner 11	Abundance
Barn Owl	N	N	N	1	Y	1	N	N	2
Bean Goose	1	N	N	N	N	N	N	N	1
Black-headed Gull	211	N	937	70	77	123	75	5	1498
Brambling	N	3	N	N	N	N	N	N	3
Bullfinch	18	14	18	9	N	1	6	1	67
Common gull	86	200	479	335	219	38	44	14	1415
Common Snipe	N	N	21	1	8	N	1	N	31
Common Tern	1	N	N	N	N	N	N	N	1
Curlew	N	N	N	198	2	N	1	N	201
Dipper	5	2	N	N	N	N	N	N	7
Dunnock	19	28	52	6	5	3	11	7	131
Fieldfare	N	56	642	158	151	96	218	16	1337
Golden Plover	N	N	189	92	15	680	122	N	1098
Grey Partridge	N	N	N	N	N	N	6	6	12
Grey Wagtail	5	3	N	4	N	6	3	N	21
Greylag Goose	4	26	180	497	12	4	13	N	736
Herring Gull	73	5	2	2	6	4	1	4	97
House Sparrow	36	88	368	36	114	57	85	57	841
Kestrel	2	5	4	4	2	3	2	2	24
Kingfisher	N	N	N	1	N	N	N	N	1

Species	M6 Junction 40 to Kemplay Bank 1/2	Penrith to Temple Sowerby 3	Temple Sowerby to Appleby4/5	Appleby to Brough 6	Bowes Bypass 7	Cross Lanes to Rokeby 8	Stephen Bank to Carkin Moor 9	A1(M) Junction 53 Scotch Corner 11	Abundance
Lapwing	N	13	3560	1929	745	1105	4	N	7356
Lesser Black-backed Gull	35	5	7	N	6	5	N	N	58
Lesser Redpoll	N	1	N	N	N	N	N	N	1
Linnet	N	N	28	N	N	3	114	102	247
Mallard	25	27	9	103	40	178	21	N	403
Marsh Harrier	N	N	N	1	N	N	N	N	1
Marsh Tit	N	N	N	N	N	1	N	N	1
Meadow Pipit	N	17	15	97	14	25	21	73	262
Merlin	N	N	N	1	1	N	N	N	2
Mistle Thrush	2	38	16	22	3	13	18	6	118
Moorhen	N	Y	N	Y	N	Y	Y	Y	N/A
Mute Swan	N	N	N	N	N	N	N	N	N/A
Oystercatcher	2	1	26	24	14	4	3	N	74
Pink-footed Goose	23	N	Y	16	N	N	1	N	40
Red Kite	N	N	N	1	N	N	N	N	1
Redshank	N	N	319	N	N	N	N	N	319
Redwing	64	354	226	79	100	25	82	30	960
Reed Bunting	N	2	9	N	N	N	N	4	15
Rook	Y	Y	Y	Y	Y	Y	Y	Y	N/A
Sand martin	N	N	N	3	N	N	N	N	3
Shelduck	N	N	5	1	N	N	2	N	8
Shoveler	N	N	4	N	N	N	N	N	4
Sky lark	N	N	N	N	N	N	N	N	N/A
Skylark	N	112	161	20	N	16	19	8	336

Species	M6 Junction 40 to Kemplay Bank 1/2	Penrith to Temple Sowerby 3	Temple Sowerby to Appleby4/5	Appleby to Brough 6	Bowes Bypass 7	Cross Lanes to Rokeby 8	Stephen Bank to Carkin Moor 9	A1(M) Junction 53 Scotch Corner 11	Abundance
Song Thrush	1	6	26	5	15	2	4	7	66
Sparrowhawk	Y	Y	N	Y	N	N	Y	N	N/A
Starling	26	112	2288	813	1001	153	341	591	5325
Stock Dove	23	16	30	32	4	2	32	2	141
Teal	N	3	139	1	N	N	N	N	143
Tree Sparrow	N	2	30	4	N	1	5	1	43
Whooper Swan	N	N	2	N	N	N	N	N	2
Woodcock	N	1	1	3	N	1	N	N	6
Woodpigeon	Y	Y	Y	Y	Y	Y	Y	Y	N/A
Wren	Y	Y	Y	Y	Y	Y	Y	Y	N/A
Yellowhammer	N	44	104	N	N	N	2	10	160

Table A-2: Presence of secondary species per scheme

Species	M6 Junction 40 to Kemplay Bank 1/2	Penrith to Temple Sowerby 3	Temple Sowerby to Appleby4/5	Appleby to Brough 6	Bowes Bypass 7	Cross Lanes to Rokeby 8	Stephen Bank to Carkin Moor 9	A1(M) Junction 53 Scotch Corner 11
Blackbird	Y	Y	Y	Y	Y	Y	Y	Y
Blue tit	Y	Y	Y	Y	Y	Y	Y	Y
Brambling	N	Y	Y	N	N	N	N	N
Buzzard <i>Buteo buteo</i>	Y	Y	Y	Y	Y	Y	Y	Y
Canada goose <i>Branta canadensis</i>	Y	N	Y	Y	N	N	N	N
Carrion crow <i>Corvus carrion</i>	Y	Y	Y	Y	Y	Y	Y	Y
Coal tit <i>Periparus ater</i>	Y	Y	Y	Y	Y	Y	Y	Y
Collared dove <i>Streptopelia decaocto</i>	Y	Y	Y	Y	Y	Y	Y	Y
Coot <i>Fulica atra</i>	N	N	N	N	N	N	Y	N
Cormorant	N	N	N	N	N	N	N	N
Feral pigeon <i>Columba livia domestica</i>	Y	Y	Y	Y	Y	Y	Y	N
Goldcrest <i>Regulus regulus</i>	Y	Y	N	Y	Y	Y	Y	Y
Goldfinch <i>Carduelis carduelis</i>	Y	Y	Y	Y	Y	Y	Y	Y
Goosander <i>Mergus merganser</i>	Y	Y	Y	N	N	N	N	N
Great spotted woodpecker <i>Dendrocopos major</i>	Y	Y	Y	Y	N	Y	Y	Y

Species	M6 Junction 40 to Kemplay Bank 1/2	Penrith to Temple Sowerby 3	Temple Sowerby to Appleby 4/5	Appleby to Brough 6	Bowes Bypass 7	Cross Lanes to Rokeby 8	Stephen Bank to Carkin Moor 9	A1(M) Junction 53 Scotch Corner 11
Great tit <i>Parus major</i>	Y	Y	Y	Y	Y	Y	Y	Y
Greenfinch	Y	N	Y	Y	Y	N	Y	Y
Grey heron <i>Ardea cinerea</i>	Y	N	Y	Y	N	N	N	N
Jackdaw <i>Corvus monedula</i>	Y	Y	Y	Y	Y	Y	Y	Y
Jay <i>Garrulus glandarius</i>	N	Y	N	Y	N	Y	N	Y
Long-tailed tit <i>Aegithalos caudatus</i>	Y	Y	Y	Y	Y	Y	Y	Y
Magpie <i>Pica pica</i>	Y	Y	Y	Y	N	N	Y	Y
Nuthatch <i>Sitta europaea</i>	Y	Y	N	N	Y	Y	N	N
Pheasant <i>Phasianus colchicus</i>	N	Y	Y	Y	Y	Y	Y	Y
Pied wagtail <i>Motacilla alba</i>	Y	Y	Y	Y	Y	Y	Y	Y
Raven <i>Corvus corax</i>	Y	Y	Y	Y	N	N	N	N
Red-legged partridge <i>Alectoris rufa</i>	N	Y	N	Y	N	Y	Y	Y
Robin <i>Erithacus rubecula</i>	Y	Y	Y	Y	Y	Y	Y	Y
Siskin <i>Carduelis spinus</i>	N	Y	N	Y	N	Y	N	N
Common snipe	N	N	Y	Y	Y	N	Y	N
Stonechat <i>Saxicola torquata</i>	N	Y	Y	N	N	N	N	N

Species	M6 Junction 40 to Kemplay Bank 1/2	Penrith to Temple Sowerby 3	Temple Sowerby to Appleby4/5	Appleby to Brough 6	Bowes Bypass 7	Cross Lanes to Rokeby 8	Stephen Bank to Carkin Moor 9	A1(M) Junction 53 Scotch Corner 11
Treetreeper <i>Certhia familiaris</i>	Y	Y	Y	Y	Y	Y	Y	Y