

Appendix 9-1: Baseline Ornithology Report

Calderdale Energy Park

PEIR Volume 3

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CALDERDALE ENERGY PARK

Appendix 9.1: Baseline Ornithology Report

Calderdale Energy Park

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Biocensus.

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1 Introduction

1.1 Purpose of the report

- 1.1.1 The following report presents the methodology and findings of an assessment of the ornithological baseline in relation to the proposed Calderdale Energy Park (hereafter referred to as the 'Proposed Development'). This report forms a technical appendix to Chapter 8: Ornithology of the Preliminary Environmental Information Report (PEIR) associated with the Proposed Development. This appendix is submitted alongside the PEIR as part of the Development Consents Order (DCO) process for the application of a proposed Nationally Significant Infrastructure Project (NSIP). This study was undertaken by RSK Biocensus on behalf of Calderdale Wind Farm Ltd (hereafter referred to as the 'Applicant').
- 1.1.2 The ornithological baseline study presented in this report includes desk and field studies completed between 2022 and 2025 to inform the impact assessment of the Proposed Development, specifically:
- A desk-based review of relevant designated sites of ornithological interest and records of priority species;
 - Vantage Point (VP) surveys recording bird flight activity within the Turbine Area during the breeding and non-breeding seasons between 2022 and 2025;
 - Transect surveys during the breeding (2022 – 2025) and non-breeding (2022 – 2024) seasons;
 - Nocturnal woodland surveys during the breeding season of 2023 and nocturnal transect surveys during the breeding seasons of 2024 and 2025;
 - Detailed surveys focusing on breeding raptors (between 2023 and 2025); and
 - Acoustic monitoring during the breeding season in 2024.
- 1.1.3 This report should be read in conjunction with Appendix 9.2: Ornithology Data Document, which includes full survey details and bird survey data associated with the assessments described above.
- 1.1.4 It is intended this information will collectively be used to characterise the 'ornithological baseline' (i.e. the breeding and non-breeding diversity and bird populations of relevance to the Proposed Development) and subsequently provide the basis for detailed impact assessment in the PEIR and subsequent Environmental Statement (ES).

1.2 Proposed Development

- 1.2.1 The Applicant is seeking a DCO for the Proposed Development that comprises:
- The Turbine Area, which includes comprises up to 34 wind turbines, an onsite substation, internal site access tracks, and other ancillary on-site infrastructure (such as onsite cabling infrastructure). The Turbine Area covers approximately 2,352 hectares (ha) of land at Walshaw Moor, situated to the north of Hebden Bridge in West Yorkshire;
 - Access routes, including the Eastern Access Route and Western Access Route, that will provide access from the road network to the Turbine Area; and
 - Bradford West Cable Corridor, where the underground cabling will connect the Turbine Area to the Point of Connection at the Bradford West Substation.

- 1.2.2 Further details of the Proposed Development are set out in Chapter 4: The Proposed Development of the PEIR.
- 1.2.3 For the purpose of this assessment, reference is made throughout to ‘collision risk height’, which comprises bird flight activity that has been observed at heights that fall between the lowest and highest points of the proposed turbine rotors. This is taken to be between 10m and 200m above ground level, to accord to the bird flight activity survey methods described in Section 3.4.12.

1.3 Site overview

- 1.3.1 Chapter 3: Description of the Site and Surrounding Area of the PEIR, provides details on the key environmental features, designations and land use. Details relevant to the ornithology assessment are presented in the following paragraphs.
- 1.3.2 The Turbine Area is located within the Walshaw Moor Estate, on either side of the three Walshaw Dean Reservoirs, in West Yorkshire (Figure 1). The Turbine Area lies within the South Pennines Moors Site of Special Scientific Interest (SSSI), the South Pennine Moors Special Area of Conservation (SAC) and the South Pennine Moors Phase 2 Special Protection Area (SPA). The Widdop Reservoir lies along the southwestern side of the Turbine Area, whilst the Hebden Water River is located approximately 0.5km south, from the southern boundary.
- 1.3.3 Land within the Turbine Area comprises undulating upland moorland, pasture and gritstone settlements and includes a network of drains and ditches as well as sporadic blocks of woodland on the lower ground. The majority of land is actively managed as a driven grouse moor, with some areas of rough grazing (predominantly for sheep). Management is primarily undertaken to support red grouse (*Lagopus lagopus scotica*) populations and includes a combination of rotational heather burning/cutting, drainage maintenance, targeted predator control and controlled livestock grazing.
- 1.3.4 Upland areas reach heights of 463 m Above Ordnance Datum (AOD) at Heather Hill summit in the northwest of the Turbine Area and 452 m AOD at Withins Heights in the north.
- 1.3.5 The Bradford West Cable Corridor adjoins the Turbine Area to the east, initially following Hebden Bridge Road and Hill House Edge Lane. This western section lies directly adjacent to the South Pennine Moor Phase 2 SPA and South Pennine Moors SSSI and is characterised by open upland moorland dominated by blanket bog or heathland. Beyond this, the corridor continues eastwards, forming the majority of its length, towards the Bradford West Substation, passing north of Denholme through a landscape dominated by lowland farmland comprising arable fields, improved pasture and scattered farmsteads.
- 1.3.6 The Eastern Access Route follows existing public roads, including Hebden Bridge Road and Cold Edge Road. The Western Access Route extends north-west of the Turbine Area across moorland within the SPA/SSSI to Watersheddles Reservoirs. From here it follows Two Laws Road and School Lane westward before heading north across upland grassland to connect with Keighley Road, passing through upland grazing land and moorland edge habitats.

1.4 Structure of this report

1.4.1 This report is structured as follows:

- *Section 2* presents legislation and guidance relevant to the baseline ornithology assessment;
- *Section 3* describes the methods adopted for data collection and interpretation;
- *Section 4* presents the results of the designated sites review;
- *Section 5* presents the results and interpretations of the breeding bird surveys and assessments;
- *Section 6* presents the results and interpretations of the non-breeding bird surveys and assessments;
- *Section 7* summarises the findings of the VP surveys, including bird flight activity over the Turbine Area;
- *Section 8* presents the overall conclusions and summary of the baseline findings; and
- *Figures and Annex A* include the supporting figures and desk study records that supplement the baseline ornithology assessment.

2 Legislation and guidance

2.1.1 Relevant legislation and guidance relating to breeding and non-breeding birds is summarised below. This legislation and guidance have been used to inform the conservation statuses assigned to the species recorded during the desk study and field surveys.

2.2 Legislation

European Commission Bird Directive (2009/147/EC)

2.2.1 Certain UK bird species are protected at an international level under the European Commission (EC) Directive on the Conservation of Wild Birds 2009 (2009/147/EC). These species are afforded enhanced legal protection and European Union member states have a responsibility to maintain populations of these species. This Directive is transposed into English law through the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'). As the legislation is enshrined in English Law the requirements of the EC Birds Directive (2009/147/EC) apply despite the UK no longer being a member state of the European Union.

2.2.2 Species listed on Annex 1 of the Directive are those for which the UK Government is required to take special conservation measures (including the designation of land as Special Protection Areas) to conserve populations of these species throughout their distributions. These sites form part of the UK's national site network of core sites that are protected for rare and threatened species.

2.2.3 Bird species listed on Annex 1 of the Directive are those which are deemed to be:

- in danger of extinction;
- vulnerable to specific changes to their habitats;
- considered rare due to their small population sizes and/or restricted local distributions; and
- in need of particular attention due to the specific nature of their habitat requirements.

Wildlife and Countryside Act 1981 (as amended)

2.2.4 Wild birds are protected in the UK under Section 1 of the Wildlife and Countryside Act (WCA) 1981 (as amended). This protection was extended by the Countryside Rights of Way (CRoW) Act 2000. Under this legislation it is an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; and
- take or destroy an egg of any wild bird.

2.2.5 In addition, certain breeding bird species are listed on Schedule 1 of the WCA and receive special protection under Sections 1(4) and 1(5), which confer penalties where the above-mentioned offences are committed, in addition to making it an offence to intentionally or recklessly:

- disturb any such bird whilst building its nest or whilst it is in or near a nest containing eggs or dependent young; and

- disturb the dependent young of such a bird.

Natural Environment and Rural Communities Act 2006

- 2.2.6 The Natural Environment and Rural Communities (NERC) Act 2006 requires local and governmental authorities and departments to have regard to the conservation of biodiversity and measures associated with public rights of way and other rural affairs.
- 2.2.7 Forty-nine bird species are listed as being Species of Principal Importance for conservation in England under Section 41 (S41) of the NERC Act 2006, and as such they are a material consideration during the planning process. These Species of Principal Importance are those identified as requiring action under the UK Biodiversity Action Plan (UKBAP), which continue to be regarded as species of conservation priority under the UK Post-2010 Biodiversity Framework (which succeeded the UKBAP in June 2012).

2.3 Guidance

Birds of Conservation Concern

- 2.3.1 The Birds of Conservation Concern (BoCC) Red, Amber and Green lists categorise the UK's regularly occurring bird species according to their level of conservation concern¹. Although these listings confer no legal protection, they are useful in guiding conservation action for individual species when birds may be affected by plans or projects.

Red list species

- 2.3.2 These are species of high conservation concern, including:
- Species that are globally threatened according to the International Union for the Conservation of Nature (IUCN) criteria;
 - Species with a historical breeding decline that have not shown a substantial recent recovery;
 - species that have shown a severe breeding decline over the last 25 years or longer term;
 - Species that have shown a severe breeding range decline over the last 25 years or longer term; and
 - Species whose non-breeding populations have declined over the last 25 years or longer term.

Amber list species

- 2.3.3 These are species of medium conservation concern, including:
- Species of European Conservation Concern;
 - Species whose populations have declined historically but which have made a substantial recent recovery;
 - Species whose breeding populations have declined moderately over the last 25 years or longer term;

¹ Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. & Win, I. (2021) 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. *British Birds*, **114**, 747.

- Species that have shown a moderate breeding range decline over the last 25 years or longer term;
- Species whose non-breeding populations have declined moderately over the last 25 years or longer term; and
- Rare breeders or non-breeding rarity species with internationally important or localised populations.

Green list species

- 2.3.4 Green list species fulfil none of the criteria detailed above. As such, they have stable or increasing populations and are not currently of conservation concern.
- 2.3.5 Non-native species such as Canada goose (*Branta canadensis*) are not afforded Red, Amber or Green list status.

Survey and assessment guidance

- 2.3.6 The ornithological baseline study has been prepared in reference to current key industry standard guidance including:
- Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine Version 1.3 (Chartered Institute of Ecology and Environmental Management [CIEEM], 2018²);
 - Wild birds: surveys and monitoring for onshore wind farms (Natural England, 2015³);
 - Recommended bird survey methods to inform impact assessment of onshore wind farms (NatureScot, 2025⁴)⁵;
 - Bird monitoring methods: a manual of techniques for key UK species (Gilbert *et al.*, 1998⁶); and
 - Bird Survey Guidelines for Assessing Ecological Impacts (Bird Survey and Assessment Steering Group, 2025⁷).

² CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine Version 1.3*. Chartered Institute of Ecology and Environmental Management, Winchester.

³ Natural England (2015) *Wild birds: surveys and monitoring for onshore wind farms*. Available at: [Wild birds: surveys and monitoring for onshore wind farms - GOV.UK](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/474247/wild_birds_surveys_and_monitoring_for_onshore_wind_farms.pdf)

⁴ NatureScot (2025) *Recommended bird survey methods to inform impact assessment of onshore wind farms*. NatureScot, Perth. Available at: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>

⁵ NatureScot guidance is widely recognised as representing the most authoritative and best practice guidance for the assessment of wind effects on birds and is widely applied across the UK.

⁶ Gilbert, G., Gibbons, D.W. & Evans J. (1998) *Bird monitoring methods. A manual of techniques for key UK species*. RSPB, Sandy, Bedfordshire.

⁷ Bird Survey and Assessment Steering Group (2025) *Bird Survey Guidelines for Assessing Ecological Impacts*, v.0.1.1. Available at: <https://birdsurveyguidelines.org/>

3 Methodology

3.1 Priority species

3.1.1 For the purposes of this report, priority species are based on those included within the Bird Survey Guidelines for Assessing Ecological Impacts (2025)⁷ and species which could form qualifying species of relevant designated sites. These included:

- Qualifying features of relevant designated sites (i.e. South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI);
- Wildlife and Countryside Act (WCA) 1981 (as amended) Schedule 1 species;
- EC Birds Directive (2009/147/EC) Annex 1 species;
- Species listed under Section 41 of the NERC Act (2006) as species of Principal Importance; and
- Birds of Conservation Concern (BoCC) Red and Amber list species^{1,8}.

3.2 Study areas

3.2.1 Study areas for this assessment were defined to reflect standard best practice guidance as described within Natural England's (2015)³ standing advice for assessing the impacts of wind farms on wild birds, and NatureScot (2025)⁴ guidance on recommended bird survey methods to inform impact assessment of onshore wind farms, as well as other necessary species-specific guidance. Study areas are summarised below and in Table 1 and Figure 2.

3.2.2 The majority of the Turbine Area and parts of the Bradford West Cable Corridor and Western Access Route falls within the South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI, which are designated for breeding merlin (*Falco columbarius*) and golden plover (*Pluvialis apricaria*) and additionally for their breeding bird assemblage including but not limited to short-eared owl (*Asio flammeus*), dunlin (*Calidris alpina*), curlew (*Numenius arquata*), redshank (*Tringa totanus*), twite (*Linaria flavirostris*) and lapwing (*Vanellus vanellus*). The study area and thus the baseline assessment have taken this into consideration, with surveys targeting these qualifying species where necessary to inform the impact assessment of the Proposed Development.

Desk study areas

3.2.3 The desk study area for the Turbine Area (Figure 2) was defined to capture ornithological features at appropriate spatial scales, which are proportionate to their level of importance and that are relevant to potential effects associated with the Proposed Development, as follows:

- Up to 20km for internationally designated sites of ornithological interest;
- Up to 10km for nationally designated sites of ornithological interest; and
- Up to 2km for priority species records and non-statutory designated sites of ornithological interest.

⁸ Stanbury, A.J., Burns, F., Aebischer, N.J., Baker, H., Balmer, D., Brown, A.F., Dunn, T., Lindley, P., Murphy, M., Noble, D.G., Owens, R. & Quinn, L. (2024) The status of the UK's breeding seabirds. *British Birds*, **117**, 471–487.

3.2.4 For the Bradford West Cable Corridor/Eastern Access Route and Western Access Route, the desk study area (Figure 2) was defined more proportionately to reflect the temporary or less extensive nature of potential effects associated with underground cabling or access works. The following buffers were therefore applied:

- Up to 2km for both internationally and nationally designated sites; and
- Up to 2km for records of priority species and non-statutory designated sites of ornithological interest.

Field survey study area

3.2.5 The study areas for field surveys evolved throughout the 2022 – 2025 survey period, reflecting changes in project design. A summary of survey coverage is provided below (and in Figure 2):

- Vantage Point (VP) surveys (2022 – 2025): Turbine Area plus a 500m buffer.
- Breeding bird transect surveys (2022 and 2023): confined to the Turbine Area.
- Breeding bird transect surveys (2024 and 2025): included the Turbine Area and a 500m buffer. The 2025 surveys also included parts of the Eastern⁹ and Western Access Routes, each with a 500m buffer, that would be subject to development (i.e. in-situ roads were not surveyed).
- Non-breeding bird transect surveys: undertaken within the Turbine Area for 2022/23 season and extended to include a 500m buffer for the 2023/24 season.
- Raptor surveys (2023 – 2025): covered land from the Turbine Area boundary up to 2km, consistent with recommended guidance for wide-ranging breeding raptors.
- Nocturnal woodland surveys (2023): targeted all woodland within the Turbine Area and up to 1km from its boundary.
- Nocturnal surveys (2024 and 2025): confined to within the Turbine Area.
- Acoustic monitoring (2024): also confined to the Turbine Area.

Table 1. Study areas for the baseline ornithology assessment.

Survey / data source	Study area extent	Spatial coverage / notes
Desk study – Turbine Area	Up to 20km (internationally designated sites)	SPA and Ramsar sites
	Up to 10km (nationally designated sites)	SSSI and other nationally designated ornithological sites
	Up to 2km (priority species records and non-statutory designated sites of ornithological interest)	Records of priority species and non-statutory designated sites of ornithological interest, including Local Wildlife Sites
Desk study – Bradford West Cable Corridor/Eastern Access Route and Western Access Route	Up to 2km (international and national sites)	Reduced extent reflecting localised and temporary nature of effects
	Up to 2km (priority species records and non-statutory designated sites of ornithological interest)	As above

⁹ The parts of the ‘Eastern Access Route’ that were surveyed during the transect surveys in 2025 were based on provisional ‘option’ designs that extended across the moorland towards Warley Moor Reservoir. The Eastern Access Route has since been updated to follow the in-situ Hebden Bridge Cold Edge roads. Therefore, the area surveyed now falls outside the PEIR boundary and thus the location of any breeding birds in this area has been referred to as breeding within the ‘wider study area’ and not within the Eastern Access Route itself.

Survey / data source	Study area extent	Spatial coverage / notes
VP surveys (2022 – 2025)	Turbine Area + 500m buffer	Coverage consistent with best-practice guidance where viewsheds were aiming to provide coverage of the entire Turbine Area plus a 500m buffer, where safely accessible.
Breeding bird transects (2022 and 2023)	Turbine Area only	Standard breeding bird transect coverage aiming to approach with 100m of each part of the Turbine Area where safely accessible.
Breeding bird transects (2024 and 2025)	Turbine Area + 500m buffer	As above but also extended to include buffer and, in 2025, the Eastern and Western Access Routes plus 500m buffer
Non-breeding bird transects (2022/2023)	Turbine Area only	Winter and passage period coverage
Non-breeding bird transects (2023/2024)	Turbine Area + 500m buffer	Expanded to include buffer
Breeding raptor surveys (2023 – 2025)	From Turbine Area boundary to up to 2km	Coverage consistent with best-practice guidance for wide-ranging raptors
Nocturnal woodland surveys (2023)	Turbine Area + up to 1km buffer	Targeted all woodlands within and adjacent to the Turbine Area
Nocturnal transect surveys (2024 and 2025)	Turbine Area only	Focused on nocturnal species within Turbine Area
Acoustic monitoring (2024)	Turbine Area only	Passive acoustic monitoring detectors deployed within Turbine Area

3.3 Desk study

3.3.1 In accordance with best practice guidance^{2,3,4}, a desk study was undertaken to identify relevant designated sites and specially protected and otherwise notable bird species to the Proposed Development. The desk study aimed to provide a broad overview of potential ornithological constraints to be established and guide the identification of target bird species for subsequent field surveys during the scoping process. Table 2 shows the data sources accessed during the desk study.

Table 2. Data sources for the desk study

Information obtained	Available from
Protected and noteworthy species records	West Yorkshire Ecology Service Lancashire Environmental Record Network North & East Yorkshire Ecological Data Centre
Designated site location and citations	Natural England Website
	Joint Nature Conservation Committee (JNCC) Website
	West Yorkshire Ecology Service Lancashire Environmental Record Network North & East Yorkshire Ecological Data Centre
Designations and legal protection of noteworthy species	Joint Nature Conservation Committee (JNCC) Website

- 3.3.2 A search was made for any statutory designated sites of international ornithological interest (i.e. SPAs and Ramsar sites) within 20km and any statutory designated site of national ornithological interest (e.g., SSSIs) within 10km of the Turbine Area. This search area was selected based on knowledge of core foraging ranges for sensitive bird species, which are typically between <5km and 20km^{10,4}.
- 3.3.3 For the Bradford West Cable Corridor and access routes, the search area was defined more proportionately to reflect the temporary and less extensive nature of potential effects associated with these works. Searches for internationally and nationally designated sites were completed up to 2km from the cable corridor and access routes.
- 3.3.4 To provide information on the presence of priority species and non-statutory designated sites in the study area, records were obtained from the West Yorkshire Ecology Service and the Lancashire Environmental Record Network in June 2025 for the Turbine Area and in November 2025 for the Bradford West Cable Corridor/Eastern Access Route and Western Access Route.
- 3.3.5 Information was also obtained from the British Trust for Ornithology (BTO) Nest Recording Scheme of the Walshaw Moor Estate (which the Turbine Area falls within) between 2012 and 2023. Undertaken by Craig Bell, a BTO bird ringer of 40 years and a Natural England Schedule 1 Rare Breeding Bird nest disturbance license holder of 38 years, the monitoring focuses on the distribution and breeding success of birds of prey, particularly merlin and short-eared owl. This information was used to supplement the breeding assessment for the study area, particularly for qualifying species of the South Pennine Moors Phase 2 SPA.

3.4 Field surveys

- 3.4.1 Detailed ornithological field surveys of the study area were undertaken by Keystone Environmental between 2022 and 2023, BiOME Consulting between 2023 and 2024 and RSK Biocensus in 2024 and 2025. Surveys were undertaken to identify bird populations present, and to gather supporting data to enable detailed impact assessment. The scope of field surveys has been refined over time, especially to take into account advice from relevant stakeholders during the EIA Scoping process.
- 3.4.2 The survey approach adopted was based on best practice guidance and professional judgement, in reference to known bird-habitat associations and survey methods for 'target species' (see below). The geographical scope of the field surveys was determined in reference to Natural England³, CIEEM² and NatureScot guidance⁴.
- 3.4.3 Full survey details and bird survey data are provided in Appendix 9.2: Ornithology Data Document.

Vantage Point surveys

- 3.4.4 VP surveys were undertaken in accordance with best practice guidance^{3,4} to record bird activity throughout the study area during the breeding and non-breeding seasons, including flight activity by target species (see below). As recommended by Natural England³, VP surveys were undertaken over multiple years to establish a robust

¹⁰ Scottish Natural Heritage (2016) *Assessing Connectivity with Special Protection Areas (SPAs) Guidance*. Version 3 – June 2016. SNH. Perth.

ornithological baseline for the study area and to account for any inter-annual variation in bird activity.

3.4.5 To enable detailed coverage of the study area, 12 locations were selected for the VP surveys. VP locations and viewsheds (i.e. the area over which birds could be observed by the ornithologist from a given VP) are shown in Figure 3 and were selected to maximise coverage of the airspace over the Turbine Area; particularly the airspace over the proposed turbine locations and to aid observation of any likely flight lines and habitat assessed as being most likely to be used by target species. Although it is not normal practice (under the NatureScot 2025 guidelines⁴), viewsheds were intended to overlap to ensure good coverage for small raptors such as merlin (see Section 3.6).

3.4.6 VP locations were reviewed to ensure they:

- Provided good coverage of the Turbine Area, such that no airspace surveyed within the Turbine Area was further than 2km from a VP;
- Minimised blind spots;
- Did not exceed a maximum arc of 180 degrees of visibility; and
- Were an appropriate distance from areas in which birds were likely to be susceptible to disturbance (e.g. key feeding areas, roosts and nesting areas).

Target species

3.4.7 Whilst counts of all bird species encountered during field surveys were recorded, based on the desk study, best practice guidance^{3,4} and professional judgement, certain bird species were identified as 'target species' for particular consideration during VP surveys.

3.4.8 Target species for the bird surveys are defined as priority species detailed above in Section 3.1 that are considered within literature and guidance to be of sensitivity to collision-related wind farm impacts. This includes priority species of waterfowl, raptor, owl, grouse, wader and gull.

Vantage Point survey effort

3.4.9 VP surveys were undertaken between July 2022 and July 2025, covering both breeding and non-breeding seasons. The survey programme aimed to achieve a total of 72 hours of watch time per VP during the breeding season and 36 hours per VP during the non-breeding season.

3.4.10 A summary of the total survey effort undertaken between 2022 and 2025 is presented in Table 3. Where health and safety restrictions or other logistical constraints affected survey delivery, any resulting shortfalls in coverage is discussed in Section 3.6 and will be taken into account in the impact assessment, ensuring that the overall evaluation of ornithological effects remains comprehensive and robust.

Table 3. VP survey effort summary

VP	Hours of VP survey effort							
	Breeding 2022	Non-Breeding 2022/23	Breeding 2023	Non-breeding 2023/24	Breeding 2024	Non-breeding 2024/25	Breeding 2025	Total
1	-	18	9	33	33	37	72	202
2	-	18	9	28	38	42	72	207
3	3	18	12	33	44	38	72	220
4	3	21	9	27	39	38	72	209
5	-	18	9	27	30	45	72	201
6	3	18	12	29	30	36	72	200
7	3	18	12	33	42	33	72	213
8	-	18	9	37	39	30	72	205
9	-	18	15	32	33	30	72	200
10	3	21	15	29	27	36	72	203
11	-	18	18	36	47	30	72	221
12	-	18	18	27	44	32	72	211

Vantage Point survey methods

3.4.11 The VP surveys followed a standard approach specified within best practice guidance^{3,4}, with surveyors scanning the pre-determined viewsheds from the VP locations for a continual watch time during any given survey. VP surveys covered a range of times, aiding the recording of species that are active at different times of day. All flight activity and aggregations of target species were recorded onto standardised recording forms and maps, with flight parameters recorded as described below. Counts were also recorded for non-target species observed during the surveys. Bird identification and counting was aided by using high-powered optical equipment (e.g. binoculars, telescopes) where necessary. Observations of breeding behaviour of target species (especially those listed as qualifying species of the South Pennine Moors Phase 2 SPA / South Pennine Moors SSSI) were additionally noted and mapped to supplement and support the breeding bird assessment, enabling more detailed coverage of the study area.

Flight parameters

3.4.12 During each VP survey, the following flight parameters were recorded for any flights by target species observed:

- Start time of flight observation;
- Duration of flight observation;
- Species and number of individuals;
- Approximate flight height in metres when first observed, and at 15 seconds intervals thereafter in flight height categories: A (<10m), B (10-120m), C (120-170m), D (170-200m) and E (>200m); and
- The flight route and observed or likely purpose of the flight (e.g. foraging, displaying, commuting etc.).

Transect surveys

- 3.4.13 In accordance with best practice guidance^{3,4}, VP surveys were accompanied by walked transect surveys to record supplementary information on bird assemblages present within the study area. As for VP surveys, transect surveys were undertaken over multiple years during the breeding and non-breeding seasons.

Survey methods

- 3.4.14 All transect surveys broadly followed the Common Bird Census (CBC) methodology whereby surveyors walked pre-determined transect routes (Figure 4) and recorded priority species onto standardised maps using recommended BTO species codes and behaviour notation¹¹. Counts for non-priority species were also recorded. Transect routes were interspersed with stops, during which the ornithologist scanned for birds using optical equipment.
- 3.4.15 Transect routes were selected to pass within approximately 100 m of all parts of the study area, following the Brown and Shepherd (1993)¹² survey methodology for censusing upland waders. This methodology was chosen based on the known bird-habitat associations within the study area (i.e. the upland habitat and the known presence of the qualifying species of the South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI).
- 3.4.16 Transect surveys were undertaken in predominantly suitable weather conditions, avoiding extreme temperatures, heavy rain, snow or fog during which bird activity may be atypical and/or surveying may be impractical or unsafe.

Breeding season

- 3.4.17 Breeding bird transect surveys were undertaken during the months outlined below:
- March 2022 – July 2022;
 - March 2023 – April 2023;
 - March 2024 – July 2024; and
 - March 2025 – July 2025.
- 3.4.18 Within the study area, five survey visits were completed during the 2022, 2024 and 2025 breeding seasons, with two visits completed in 2023 due to access limitations experienced at the time. In 2025, an additional three visits were conducted across the Eastern and Western Access Routes.
- 3.4.19 Any shortfalls in survey effort resulting from access restrictions or other logistical limitations are discussed in Section 3.6 and will be taken into account within the impact assessment to ensure that conclusions remain robust and representative.

Non-breeding season

- 3.4.20 Transect surveys were undertaken during the non-breeding season to supplement the results of the VP surveys with regards wintering and passage bird activity. Surveys were undertaken during the months outlined below:

¹¹ Marchant, J.H. (1983) *BTO Common Birds Census instructions*. British Trust for Ornithology. Tring.

¹² Brown, A. F. & Shepherd, K. B. (1993) A method for censusing upland breeding waders. *Bird Study*, **40**, 189-195.

- Three visits between January 2022 and March 2022:
- Six visits between October 2022 and March 2023: and
- Five visits between December 2023 and March 2024.

3.4.21 Non-breeding bird transect surveys remained ongoing at the time of writing, with four visits being undertaken between November 2025 and February 2026. The results of these surveys will therefore be presented separately as part of the subsequent ES.

Breeding Raptor Surveys

3.4.22 The selection of priority species identified nesting raptors as being of potential relevance in the context of the Proposed Development, with moorland and woodland providing suitable nesting habitat within, and in close proximity, to the Turbine Area. As such, a detailed search was undertaken for any evidence of nesting by these species, in reference to species-specific information and methodologies^{6,13}. Transect surveys described above focused on recording all breeding species within the Turbine Area (including raptors), and so the aim of these targeted surveys was to extend the search for breeding raptors up to 2km from the Turbine Area boundaries.

3.4.23 Twenty-four VP locations were selected (Figure 5) providing visibility to woodland parcels and other suitable habitat within 2km of the Turbine Area that was identified as being of potential value to breeding raptors (e.g. merlin, peregrine [*Falco peregrinus*], hen harrier [*Circus cyaneus*] and owl species such as barn owl [*Tyto alba*], long-eared owl [*Asio otus*] and short-eared owl).

3.4.24 Visits were completed over a period of several days with one survey day covering at least four of the VP locations, with observations timed to at least one hour from each location per survey. All raptors and any evidence of breeding related activity (including any confirmed, probable or possible nest sites) were recorded onto standardised maps using recommended BTO species codes and behaviour notation¹¹. Survey effort is provided below:

- April 2023: one visit to VPs 21 - 24;
- April 2024 and July 2024: three visits to each VP apart from VP4 and VP5 (two visits) across the two months; and
- May 2025 – July 2025: one visit to each VP location in each month.

3.4.25 During the 2023 survey season, only VPs 21 – 24 were surveyed, each visited once in April, due to restricted access to other VPs. Consequently, a full dataset was not obtained for 2023. In addition, access constraints in May and June 2024 prevented completion of scheduled visits during those months. Full survey effort is provided below. Any shortfalls in coverage arising from these access limitations are discussed in Section 3.6 and will be taken into account within the impact assessment, ensuring that conclusions remain robust and representative across the study area.

Nocturnal woodland surveys

¹³ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) *Raptors: A Field Guide to Survey and Monitoring*, 3rd Edition. TSO, Edinburgh.

- 3.4.26 Crepuscular transect surveys of all woodlands within 1km from the Turbine Area were undertaken in April 2023. Surveys were undertaken to locate potential breeding owl nest sites within proximity of the Proposed Development, particularly those of long-eared owls.
- 3.4.27 Seventeen woodland parcels potentially were located within 1km of the Turbine Area and included a mixture of mature conifer, ancient woodland, and areas of scrub ranging from 0.2 to 35 hectares (ha) in extent (Figure 6).
- 3.4.28 The survey visits were conducted between dusk and two hours after dusk. Surveyors walked through or around woodland, noting down any visible sightings, field signs, calling males or young, and/or nest sites onto standardised maps using recommended BTO species codes and behaviour notation¹¹.

Nocturnal transect surveys

- 3.4.29 As the study area is known to support populations of breeding golden plover and other species known to exhibit crepuscular activity, nocturnal surveys were undertaken during the survey period. The objective of these surveys was to facilitate an assessment of nocturnal movements associated with these species in the context of the areas of the Proposed Development, particularly given their potential to utilise distinct foraging areas at night compared to those during the day.
- 3.4.30 In accordance with NatureScot (2025)⁴, alternative survey methods employed a transect approach conducted at night, focusing on wader activity across pasture and moorland. Transects (Figure 7) followed the roads and tracks throughout the Turbine Area, incorporating designated stopping points. Adhering to these transects along roads and tracks with stopping points minimised disturbance to sensitive breeding bird species and represented the only practical and safe method for surveying the upland area at night.
- 3.4.31 Surveyors made use of thermal imaging cameras and scopes to record activity onto standardised maps using recommended BTO species codes and behaviour notation¹¹. A single nocturnal survey, completed over consecutive nights was conducted per month as per the below:
- February 2024 – April 2024;
 - June 2024; and
 - June 2025 – July 2025.
- 3.4.32 It should be noted that a visit in May 2024 could not be completed due to access restrictions. As such, any shortfalls in survey effort due to such limitations are discussed in Section 3.6 and taken into consideration during the impact assessment.

Acoustic monitoring

- 3.4.33 Acoustic monitoring was undertaken to supplement the field surveys outlined above; providing more coverage of the study area to further understand bird presence and activity (especially during nocturnal periods). Surveys followed best practice guidance for 'Acoustic Monitoring' from the Bird Survey & Assessment Steering Group (2025)⁷. Survey effort targeted suitable habitat for nocturnal species with a focus on habitat evidenced and/or likely of significant usage by waders (e.g. moorland and pasture farmland). Selection was also based on targeting areas of importance for golden plover due to its designation as a qualifying species of the South Pennine Moors Phase 2 SPA.

- 3.4.34 Passive recording devices with omnidirectional microphones were positioned at ten locations (Figure 8) and sufficiently spaced apart to avoid the duplication of recordings. These positions included eight of the VP locations situated in suitable breeding wader habitat and two locations in suitable foraging habitat (i.e. open farmland and pasture). The recording devices were set out during February, March and June 2024 to target breeding wader species known to be present within the study area. Detectors recorded during hours of darkness at one-minute intervals and were left *in situ* for a minimum of ten days, or until battery failure. Audio files were analysed using the Wilder Sensing Acoustic Monitoring software, which applies artificial intelligence (AI) algorithms to identify species vocalisations. Although acoustic monitoring was intended to target nocturnal breeding wader species specifically, observations of other target species were also analysed.
- 3.4.35 Due to access restrictions associated with land management activities, acoustic detectors could not be deployed during April and May 2024. Owing to the large volume of audio data generated, it was not practicable to upload and analyse the full dataset within the Wilder Sensing platform within the project programme. Instead, a representative sample of the dataset was analysed, comprising five consecutive nights from selected deployment periods, specifically: 29 February – 4 March 2024; 18 – 22 March 2024; 27 June – 1 July 2024; and 16 – 20 July 2024. These periods were selected to capture a range of seasonal conditions and stages of the breeding period.
- 3.4.36 As part of the analysis process, two key parameters were set: confidence level and location probability. Confidence level reflects how certain the AI is that a vocalisation has been correctly identified and ranges from 0.7 to 1 (70 – 100%). As AI classification can never be fully certain, a value of 1 cannot be applied. Given the presence of scarcer species within the Calderdale study area, the confidence threshold was set at 0.7 to minimise the risk of false negatives and ensure that potentially important records were not excluded.
- 3.4.37 Location probability reflects the likelihood that a given species would be recorded in the local area at that time of year and can be set between 0.01 and 1 (1 – 100%). This parameter is informed by existing biological records, which may be biased against rare, nocturnal or difficult to detect species. To account for these limitations and the nocturnal deployment of detectors, the location probability was set at 0.1 (10%), again adopting a precautionary approach to avoid omission of relevant species.
- 3.4.38 The use of relatively low confidence and location probability thresholds increases the likelihood of false positive identifications. This limitation has been fully considered during interpretation of the acoustic data and is a key reason why results are treated as supplementary only. Acoustic monitoring data can confirm potential presence (where identifications are correct) but cannot infer behaviour, breeding status or abundance. Repeated detections may reflect prolonged calling by a single individual rather than multiple birds, and some records may represent birds flying over the detector rather than using the habitat.
- 3.4.39 In addition, acoustic monitoring is inherently biased towards highly vocal species (e.g. curlew) and against vocally cryptic species such as merlin, which may be under-recorded or missed entirely. For these reasons, acoustic data are used solely to provide additional contextual information and to support or corroborate findings from field surveys where

appropriate. They are not used as a primary dataset for determining breeding status, regular presence or population size of any species.

3.5 Interpretation of survey results

Assessment of breeding status

- 3.5.1 Results from the assessments described above including from the desk study (particularly data from the BTO Bird Ringing Scheme and Nest Recording Scheme), transects, raptor surveys, nocturnal woodland surveys and nocturnal transect surveys have been used to assess the breeding statuses of the bird species recorded, in accordance with the criteria presented in Gilbert *et al.* (1998)⁶ and taking into consideration understanding of the breeding ecology of the species in question. In addition, observations of breeding behaviour of target species during VP surveys have been used to supplement and support this assessment, enabling a more detailed coverage of the study area.
- 3.5.2 The criteria presented in Gilbert *et al.* (1998)⁶ are based on the principle that many species are territorial during the breeding season and, as such, observation of certain behaviours (e.g., singing, displaying, aggressive interactions) can be used to infer breeding or likely breeding by a given species.
- 3.5.3 Breeding by a particular species within the site can be assessed as being 'Confirmed' if:
- a nest or used nest was found;
 - a nest with young was seen or heard;
 - recently-fledged young were seen or heard;
 - adults were seen entering or leaving a nest site, or an adult was seen incubating; or
 - a territory was positively identified due to the number and type of observations recorded (i.e., a combination of observations of a male singing from the same area of suitable nesting habitat on multiple occasions, adults seen visiting a probable nest site at that location and/or observation of a pair at that location).
- 3.5.4 Breeding by a particular species within the site can be assessed as being 'Probable' if:
- nest-building was observed;
 - a bird was seen visiting a probable nest site on a single occasion;
 - agitated behaviour or alarm calls were observed in or near suitable nesting habitat;
 - a pair was seen in suitable nesting habitat during the breeding season;
 - courtship and/or display were seen; or
 - a male was heard singing in the same location on two or more occasions;
- 3.5.5 Breeding by a particular species within the site can be assessed as being 'Possible' if:
- birds were seen in or near suitable nesting habitat during the breeding season; or
 - a male was heard singing on one occasion during the breeding season.
- 3.5.6 Species not observed exhibiting the behaviours above are assessed as 'Non-breeding'.

Defining Sensitive Nesting Areas

- 3.5.7 For the purposes of this assessment, Sensitive Nesting Area have been defined as spatial zones within which breeding bird species were considered to be nesting or holding breeding territories. These areas have been identified through a combination of field

evidence, habitat assessment, and spatial interpretation of survey data, and are illustrated within the breeding bird figures presented at the end of this report.

- 3.5.8 Sensitive Nesting Areas were delineated where there was direct or indirect evidence of breeding, including (but not limited to) observations of nesting activity, confirmed or probable breeding behaviour (e.g. territorial song, courtship, nest-building, food carrying, alarm calling, or distraction displays), and repeated use of the same locations across survey visits. In addition, habitat features known to support the breeding requirements of the relevant species were taken into account, alongside topographical factors that influence nesting suitability, such as slope, aspect, shelter, and proximity to foraging areas.
- 3.5.9 The boundaries of Sensitive Nesting Areas therefore represent an informed ecological interpretation rather than fixed nest locations, reflecting the spatial extent of habitats and landscape features likely to be functionally important to breeding birds. This approach recognises the limitations of detecting exact nest sites while providing a precautionary and ecologically robust basis for impact assessment. The resulting areas are shown in the breeding figures included at the end of this report and form the basis for subsequent assessment of potential effects.

Assessment of non-breeding bird assemblage

- 3.5.10 The assessment of the non-breeding assemblage within the site has utilised the full suite of desk study and field study data available to inform the population and site usage of non-breeding species identified within the Turbine Area. Field study data use all available VP and transect data to assess the status of each species identified during the survey period as 'on passage' and/or 'wintering' within the study area. The assessment details notable observations, important habitats and overall site usage for priority species considered to be part of the non-breeding bird assemblage.

Previously published data

- 3.5.11 A proportion of the ornithological dataset, most notably data collected during the 2022/23 survey season, was previously analysed and presented in support of an earlier application submitted under the Town and Country Planning Act. As part of the current baseline assessment, these data have been re-examined and re-analysed in their raw form to ensure consistency with the survey methods, analytical approach and reporting framework applied to data collected in subsequent years. This approach provides a coherent and comparable baseline across all survey periods; however, it may result in minor differences between previously reported results and those presented in this report, reflecting methodological alignment rather than substantive changes in the underlying field data.

3.6 Limitations and assumptions

- 3.6.1 Considering the extent, complexity, and ecological value of the habitats present within the study area, particularly given its location within the South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI, the combined survey effort undertaken between 2022 and 2025 is regarded as comprehensive and proportionate to accurately characterise the ornithological baseline. The four-year survey programme incorporated a wide range of complementary methods, ensuring coverage of all key habitat types and

functional bird groups. The diversity of habitats within the study area, encompassing extensive blanket bog, heather moorland, acid grassland, wet flushes, woodlands, and reservoir margins supports a correspondingly diverse assemblage of upland bird species. The temporal scope of the surveys also captures inter-annual variation in species' occurrence and habitat use, while the spatial coverage extends across the full range of relevant habitats, including access routes and peripheral foraging areas. When combined with historic datasets such as the BTO Nest Record Scheme and other desk study information, the collective data provide a robust and representative baseline from which to assess potential effects of the Proposed Development on the bird assemblage associated with this upland landscape.

- 3.6.2 Field surveys were conducted at appropriate times of day and generally under suitable weather conditions. While a small number of visits were undertaken during suboptimal conditions (e.g. periods of high wind, rainfall, or extreme temperatures), these instances were infrequent and did not materially affect data quality. In fact, conducting surveys under a range of weather conditions, particularly during VP surveys, is important to ensure that bird activity and flight behaviour are assessed under a representative spectrum of environmental conditions. Considering the four-year dataset and the suite of survey types completed across varied weather conditions, these occasional periods of unfavourable weather are not considered to represent a limitation to the robustness or completeness of the ornithological baseline for the study area.
- 3.6.3 Access constraints during the 2023 breeding season meant that transect surveys could only be undertaken in March and April, with no access possible between May and July due to health and safety concerns associated with ongoing gamekeeping activities as well as concerns regarding disturbance to specially protected species. As a result, a full suite of breeding bird surveys could not be completed during that year, and therefore comprehensive breeding assessments for 2023 were not possible. While this represents a limitation in temporal coverage, more comprehensive breeding bird survey programmes were completed in 2022, 2024 and 2025, providing robust multi-year data across comparable habitats and survey effort. When combined with supporting datasets including the desk study, BTO Nest Record Scheme data, VP surveys, raptor and nocturnal woodland surveys, nocturnal surveys, and acoustic monitoring, the overall dataset is considered sufficient to accurately characterise the breeding bird assemblage within the study Area. Furthermore, the inclusion of three full survey years (2022, 2024 and 2025) provides an adequate temporal range to account for inter-annual variation in breeding populations and habitat use, ensuring that the assessment remains representative of the ornithological baseline conditions within the study area.
- 3.6.4 During the second visit of the 2025 breeding bird transect surveys, coverage of the full study area was not achieved, with the eastern section of the survey area omitted. While this reduced spatial coverage for that specific visit, comprehensive transect coverage was achieved during all other survey visits in 2025, and across multiple preceding years. As with the 2023 breeding season, this gap in survey coverage is not considered to represent a significant limitation.
- 3.6.5 As above, access restrictions during the breeding seasons of 2022 to 2024 limited the extent of VP survey coverage, particularly during April, May and June, due to conflicting gamekeeping activities within the Turbine Area as well as the risk of disturbance being caused to specially protected species. While some surveys were undertaken during these periods, the cumulative watch effort did not meet the minimum recommended coverage

for the breeding season (≥ 36 hours per VP) as set out in Natural England’s guidance³⁴. As a result, there was a greater reliance on the 2025 survey season to provide comprehensive breeding season coverage. In 2025, VP surveys were completed without constraint, achieving a total of 72 hours of watch time per VP across the breeding season, exceeding the standard recommended minimum requirement and aligning with the level of survey effort specifically recommended by Natural England during the EIA Scoping consultation. Across the full survey period (2022–2025), a total of 1,472 hours of VP watch time were completed across all locations during the breeding season, equating to an average of 122 hours per VP. This represents a robust and comprehensive dataset, sufficient to enable a reliable assessment of effects and to capture inter-annual variation in bird activity patterns within the Turbine Area. Accordingly, while access constraints in earlier years reduced survey flexibility, these are not considered to materially limit the confidence or reliability of the overall ornithological assessment.

- 3.6.6 During the VP surveys, viewshed coverage from individual VP locations overlapped, particularly within the standard 2km viewshed arcs. This overlap created the potential for duplication of flight line observations in areas where surveyors shared similar visual coverage, and consequently, for certain sections of the Turbine Area to have been monitored in greater detail. To address this, survey data were carefully reviewed to ensure that duplicate flight lines were omitted, and survey scheduling was adjusted, where possible, to minimise simultaneous observations from overlapping viewpoints. A precautionary approach was deliberately adopted in identifying the VP locations, whereby 2km viewsheds overlapped slightly to ensure that smaller or more cryptic species, such as merlin and golden plover, could be detected effectively across the Turbine Area. Given these quality-control measures and the overall design intent to maximise detectability of key species, the overlap in VP coverage is not considered to significantly affect the validity or robustness of the survey findings.
- 3.6.7 Access restrictions during the 2023 and 2024 breeding seasons limited the extent of raptor survey coverage within parts of the study area. In 2023, only raptor VPs 21 – 24 were surveyed, each visited once in April, due to restricted access to the remainder of the raptor VPs in the wider study area. As a result, a complete dataset was not obtained for that season. In 2024, access constraints again prevented completion of planned surveys during May and June, the period typically associated with peak breeding activity for several raptor species. The absence of surveys during these months may have reduced opportunities to detect breeding behaviour such as courtship, nesting or provisioning activity. However, these limitations were fully addressed in the 2025 survey season, during which comprehensive raptor VP coverage was achieved across all locations for the duration of the breeding season. When considered alongside data from the desk study, BTO Nest Record Scheme, and standard VP surveys conducted between 2022 and 2025, the dataset provides an accurate and representative understanding of the breeding raptor assemblage. Accordingly, these seasonal access constraints are not considered to materially affect the confidence or reliability of the raptor assessment.
- 3.6.8 Access restrictions prevented nocturnal surveys from being undertaken in May 2024, resulting in reduced temporal coverage during the breeding season. In addition, nocturnal surveys in 2025 were confined to June and July. As a result, the surveys may not have fully captured the period during which golden plover are known to forage more widely away from their nest sites prior to chick hatching (generally up to the third week of June), which represents a potential temporal constraint in relation to this species. However, this

limitation has been partly mitigated through the deployment of nocturnal acoustic monitoring across the study area, which provided continuous coverage during the early breeding season and allowed nocturnal activity patterns to be recorded during this key period. The acoustic monitoring data, alongside two consecutive years of nocturnal survey data provides a good evidence base for interpreting nocturnal bird activity within the study area. Collectively, these datasets provide good coverage of nocturnal movements and foraging activity within the study area and are considered sufficient to characterise nocturnal use of the site by golden plover and other species associated with the Proposed Development. Further survey work along the Bradford West Cable Corridor and Western Access Route will additionally help to determine if these areas are also used by nocturnally active species.

- 3.6.9 Whilst desk study data are useful in providing supplementary ecological information for a site, it should be acknowledged that these data are dependent on the submission of records to the relevant organisation. As such, a lack of records for a particular species does not necessarily mean that the species is absent from the site and/or wider search area. Similarly, records of a particular species do not necessarily mean that the species is still present within the site and/or wider search area.
- 3.6.10 For the purpose of informing this assessment and the scheduling of surveys, seasons were defined as either 'breeding' or 'non-breeding'. Following advice from Natural England during pre-EIA Scoping consultation, the breeding season was defined as comprising 10 February - 10 August, inclusive. It is acknowledged that the timing of breeding and non-breeding bird activity varies between species, with some species exhibiting breeding behaviour earlier in the year than others. This is taken into account within the assessment where relevant.
- 3.6.11 At the time of writing, the majority of the Bradford West Cable Corridor has not yet been subject to detailed ornithological field survey, with the exception of the westernmost section adjoining the Turbine Area. These areas will be covered in due course, with targeted field surveys planned to include habitat suitability assessments and direct bird survey effort where appropriate. The impact assessment presented within the PEIR therefore relies on precautionary assumptions for these sections, with full baseline information to be captured and reported within the ES following completion of the remaining surveys. Similarly, the northern section of the Western Access Route, between School Lane and Keighley Road, has not been surveyed.
- 3.6.12 Acoustic monitoring was undertaken as a supplementary tool to support and contextualise the field survey programme. As set out in Section 3.4, acoustic data can only confirm potential presence (where identifications are correct) and cannot be used to infer breeding status, behaviour or abundance. The method is inherently biased towards highly vocal species and against vocally cryptic or infrequently calling species, and results are sensitive to analysis parameters such as confidence thresholds and location probabilities. In addition, the use of precautionary (low) thresholds increases the likelihood of false positive identifications, requiring cautious interpretation of results. A small number of technical issues were encountered with individual detectors and outputs. Detector 1 (Output 3) and Detector 9 (Output 3) recorded for only two nights, and Detector 4 (Output 3) did not record any data. These issues may have arisen for several reasons, including water ingress, battery failure, or SD card malfunction, all of which are recognised limitations of passive acoustic monitoring. These data gaps do not represent a constraint to the ornithological assessment. Acoustic monitoring was designed to

provide supplementary contextual information only, and its outputs were not relied upon to determine species presence, absence, breeding status or population size. The core assessment is based on an extensive programme of vantage point surveys, breeding bird surveys, winter transects and roost counts, which provide robust, field-verified coverage of the study area. As such, the partial loss of acoustic data from individual outputs does not affect the reliability or conclusions of the overall assessment.

4 Designated sites

4.1.1 Outlined below are the internationally and nationally designated sites of ornithological interest located within 20km and 10km of the Turbine Area, respectively, and 2km of the Eastern and Western Access Routes and the Bradford West Cable Corridor. Details of the sites and their qualifying species are provided along with a general description of the integral habitats that support these species.

4.2 South Pennine Moors Phase 2 SPA

4.2.1 The South Pennine Moors Phase 2 SPA is located within the Turbine Area, Eastern and Western Access Routes and the Bradford West Cable Corridor. Around 10.72% of the SPA falls within the Order Limits. The designated site (Phase 1 and 2) includes the major moorland blocks of the South Pennines from Ilkley in the north to Leek and Matlock in the south. They lie in the Southern Pennines National Character Area, which forms part of the Pennine ridge of hills lying between the Peak District National Park and Yorkshire Dales National Park. This is a landscape of large-scale sweeping moorland and pastures enclosed by drystone walls, with gritstone-dominated settlements contained within narrow valleys.

4.2.2 The Phase 2 SPA includes two discrete blocks of moorland, one south of Ilkley and another (of which the majority of the Turbine Area falls within) on the watershed between Bradford and Burnley and stretching to Marsden at the northern edge of the Peak District. It covers extensive tracts of semi-natural moorland habitats including upland heath and blanket mire.

4.2.3 The SPA is an upland of international importance, providing habitat for an important assemblage of moorland and moorland fringe bird species. The principal habitats supporting the assemblage of birds are blanket bogs, European dry heaths, acid grassland, Northern Atlantic wet heaths and dense bracken beds.

4.2.4 The site qualifies under Article 4.1 of the EC Birds Directive (79/409) by supporting nationally important breeding populations of two Annex 1 bird species; namely merlin and golden plover. Upon designation in June 1997, the site supported 28 pairs of merlin (4.3% of the British population) and 292 pairs of golden plover (1.2% of the British population). The density of breeding golden plover is high compared to other regional populations in northern England and Scotland. In particular, Rombalds Moor region in the north, Oxenhope Moor, Stairs Swamp and Harry Side in the central block of the SPA, all support good breeding densities of golden plover, whilst the southern block of the SPA supports fewer breeding numbers.

4.2.5 The site additionally qualifies under Article 4.2 of the EC Birds Directive (79/409) by supporting, in summer, a diverse assemblage of breeding migratory birds of moorland and moorland fringe habitats including golden plover, lapwing, dunlin, snipe (*Gallinago gallinago*), curlew, redshank, common sandpiper (*Actitis hypoleucos*), short-eared owl, whinchat (*Saxicola rubetra*), wheatear (*Oenanthe oenanthe*), ring ouzel (*Turdus torquatus*) and twite.

4.2.6 The South Pennine Moors support the southernmost assemblage of breeding merlin, golden plover, dunlin, short-eared owl and twite in the world, therefore the site provides an important role in maintaining the recorded breeding range of these species.

4.3 South Pennine Moors SSSI

- 4.3.1 Largely covering a similar area (around 10.72% of the SSSI) falls within the Order Limits), the South Pennine Moors SSSI in part legally underpins the South Pennine Moors Phase 2 SPA and is located within the Turbine Area, Eastern and Western Access Routes and the Bradford West Cable Corridor. Similarly to the SPA, the citation states that the mosaic of habitats supports a moorland breeding bird assemblage which is of regional and national importance.
- 4.3.2 The moorlands support nationally important numbers of golden plover, curlew, merlin and twite. Important features of the SSSI include:
- The blanket bogs, which are the main breeding grounds for golden plover and dunlin, which need relatively short vegetation to nest in and access to wet areas to feed, a combination provided by the blanket mires;
 - The deeper cover provided by the heather provides nest sites for merlin and red grouse (*Lagopus lagopus scotica*) with golden plover also known to nest on recently burnt or cut heather;
 - Wet acid grassland and semi-improved areas are used by nesting curlew (0.8% of the British breeding population), lapwing and, in the wettest areas, by snipe and redshank;
 - Twite on the South Pennine Moors represent 1% of the British breeding population, where they use all the moorland habitats at different stages of their life cycle including heather for nesting and the grassy areas throughout the moorlands, moorland edges, semi-improved pastures and burnt or cut *Molinia* grassland for feeding;
 - Peregrine nest on suitable crags and disused quarries and short-eared owl nest (three pairs at designation) in moorland;
 - The moors support breeding wheatear, whinchat, ring ouzel and stonechat (*Saxicola torquata*);
 - Large reservoirs within and adjacent to the SSSI provide feeding areas for moorland nesting dunlin as well as nesting habitat for common sandpiper, grey wagtail (*Motacilla cinerea*), little ringed plover (*Charadrius dubius*) and shelduck (*Tadorna tadorna*); and
 - The streams draining the reservoirs and the moors support small numbers of dipper (*Cinclus cinclus*).

4.4 North Pennine Moors SPA

- 4.4.1 The North Pennine Moors SPA is located 18.85km north of the Turbine Area and beyond the study areas for the Bradford West Cable Corridor (16.km at its closest point), Eastern (19km at its closest point) and Western Access Routes (14.8km at its closest point).
- 4.4.2 The SPA includes parts of the Pennine moorland massif between the Tyne Gap (Hexham) and the Ribble-Aire corridor (Skipton). It encompasses extensive tracts of semi-natural moorland habitats including upland heath and blanket bog.
- 4.4.3 The site qualifies under Article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the British populations of the following species listed in Annex 1:
- Hen harrier: 11 breeding pairs (2.3% of the British population);
 - Merlin: 136 breeding pairs (10.5% of the British population);

- Peregrine: 15 breeding pairs (1.3% of the British population); and
- Golden plover: 1,400 breeding pairs (6.2% of the British population).

4.5 Other designated sites

4.5.1 In addition to the above sites, a number of other statutory and non-statutory designated sites with ornithological interest occur within the wider study area. These sites support habitats and bird assemblages of conservation interest and may have ecological connectivity with the study area through shared populations, foraging ranges or movement corridors.

4.5.2 Table 4 identifies these additional designated sites and provides a brief summary of their designation status, ornithological features, distance and direction from the Proposed Development. This information is used to inform the assessment of potential indirect effects, cumulative considerations and the broader ornithological setting within which the Proposed Development is located.

Table 4. Other designated sites within the search areas of the Proposed Development.

Designated site	Description	Distance from Proposed Development
Upper Ball Grove Lodge Local Nature Reserve (LNR)	Ball Grove Park is a public park and LNR on the eastern edge of Colne in Lancashire. It comprises a lake and seven hectares of community woodland. The old mill lodge supports many species of foraging and wintering birds including waterfowl and gulls as well as occasional waders.	1.5km west of the Western Access Route. 6km north-west of the Turbine Area.
Ogden Water LNR and Ogden Reservoir Local Wildlife Site (LWS)	<p>Ogden Water comprises a large reservoir surrounded by mixed coniferous and broadleaf woodlands. Habitats include the reservoir, upland streams, woodland (including coniferous plantation), upland oak woodland and wet woodland, heather moorland, blanket bog and acid grassland.</p> <p>The site supports a good selection of birds with some rarities turning up occasionally. Twite, curlew, oystercatcher (<i>Haematopus ostralegus</i>), short-eared owl and skylark (<i>Alauda arvensis</i>) breed on the moorland with breeding waterbirds such as kingfisher (<i>Alcedo atthis</i>), grey heron (<i>Ardea cinerea</i>), Canada geese (<i>Branta canadensis</i>) also present. Other birds seen throughout the year include tufted ducks (<i>Aythya fuligula</i>), dippers and great crested grebes (<i>Podiceps cristatus</i>). Summer brings swallows (<i>Hirundo rustica</i>), house martins (<i>Delichon urbicum</i>) and swifts (<i>Apus apus</i>), with autumn bringing common crossbills (<i>Loxia curvirostra</i>) and tawny owls (<i>Strix aluco</i>), with large numbers of thrushes in winter.</p>	<p>1km south (Ogden Reservoir LWS) and 1.7km south (Ogden Water LNR) of the Bradford West Cable Corridor.</p> <p>4km east (Ogden Reservoir LWS) and 4.5km (Ogden Water LNR) from the Turbine Area.</p>

5 Breeding birds

5.1 Desk study overview

5.1.1 Data obtained from the West Yorkshire Ecology Service, the Lancashire Environmental Record Network and the North & East Yorkshire Ecological Data Centre in June and November 2025 included records of various bird species which could potentially be present within the study area in the breeding season. Full desk study data are provided in Annex A. Records potentially of relevance in the context of the Proposed Development include:

- Seven EC Birds Directive Annex 1 species including dunlin, hen harrier, marsh harrier, merlin and short-eared owl.
- Nine WCA Schedule 1 species including barn owl, goshawk (*Accipiter gentilis*), little ringed plover, peregrine and red kite.
- 23 NERC S41 Species of Principal Importance including cuckoo (*Cuculus canorus*), grasshopper warbler (*Locustella naevia*), spotted flycatcher (*Muscicapa striata*), ring ouzel and twite.
- 24 BoCC Red list species including grey partridge (*Perdix perdix*), lapwing, turtle dove (*Streptopelia turtur*), whinchat and woodcock (*Scolopax rusticola*).
- 30 BoCC Amber list species including dipper, oystercatcher (*Haematopus ostralegus*), redshank, snipe and wheatear.

5.2 Field surveys overview

5.2.1 A total of 108 bird species were recorded during the field surveys undertaken in the breeding seasons between 2022 and 2025. Breeding statuses, breeding areas and the number of pairs/territories recorded in 2022, 2024 and 2025 for South Pennine Moors Phase 2 SPA/South Pennine Moors SSSI species and other priority species are given in Table 5 and Table 6 respectively. Breeding statuses and breeding areas for non-priority species are given in Table 7. Further descriptions regarding the breeding activity of priority species are given in the succeeding sections (Sections 5.3 – 5.7). Due to access restrictions, a full dataset could not be obtained in 2023 (see Section 3.4), which prevented comprehensive assessment of breeding activity for that year. This data has therefore not been presented in the following tables. Any relevant information to results of surveys conducted in 2023 for specific species has been provided in Sections 5.3 – 5.7.

5.2.2 Areas used for breeding by selected priority species are indicated in the figures at the end of this report, with full breeding bird survey data provided in Appendix 9.2: Ornithology Data Document.

5.2.3 The interpretation of breeding bird activity presented in Table 5 and Sections 5.3 - 5.8 is informed by the results of all field and desk-based assessments undertaken within the study area. This includes data collected through breeding bird transect surveys, VP surveys, raptor surveys, nocturnal woodland surveys and nocturnal transect surveys. Integrating these datasets has enabled a more comprehensive interpretation of species presence, distribution and behaviour across the study area, providing greater spatial and temporal coverage than any single survey method alone. In particular, observations from

VP surveys have been used to supplement and contextualise the transect survey results where additional species, higher numbers of birds, or activity in areas not covered by transects were recorded.

- 5.2.4 The extent of the study area varied slightly between survey years, as the design of the Proposed Development evolved (see Section 3.2), which may have contributed to differences in the number of pairs/territories recorded. The 2024 and 2025 transect surveys included an additional 500m buffer around the Turbine Area, while the 2025 transect surveys also encompassed parts of the Eastern and Western Access Routes. Consequently, apparent increases in the number of breeding pairs or territories in certain species may reflect the broader survey coverage rather than genuine population changes. Inter-annual variation in breeding activity is also expected due to natural population fluctuations influenced by factors such as weather conditions, prey availability, and habitat productivity.
- 5.2.5 In reference to the criteria described in Section 3.5, the breeding statuses of the 108 bird species recorded within the study area were as follows:
- 59 confirmed breeding species;
 - 15 probable breeding species;
 - 12 possible breeding species; and
 - 22 non-breeding species.
- 5.2.6 Of the 108 species recorded during the field surveys for breeding birds, 70 are considered priority species as described in Section 3.1, including:
- 12 species listed under the designation of the South Pennine Moors Phase 2 SPA, either as qualifying species or species forming part of the breeding bird assemblage as described in the citation for the designated site;
 - 18 species listed under the designation of the South Pennines Moors SSSI;
 - Eight EC Birds Directive Annex 1 species;
 - 16 WCA Schedule 1 species;
 - 20 NERC S41 Species of Principal Importance;
 - 28 BoCC Red list species; and
 - 32 BoCC Amber list species.
- 5.2.7 More granular detail on the nesting locations of vulnerable bird species, including those listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), is provided within confidential figures that accompany this assessment.
- 5.2.8 Acoustic monitoring recorded a total of 39,486 individual call registrations, representing 56 bird species across all detector locations. The dataset was strongly dominated by curlew, lapwing and oystercatcher, which together accounted for approximately 89% of all registrations, reflecting the prevalence of these species within the study area during nocturnal periods. Detector 3 recorded substantially higher activity than other locations, accounting for approximately one third of all registrations. This detector was located within lowland pasture around Holme Ends, towards the southern part of the Turbine Area, indicating that this area may provide particularly suitable nocturnal foraging habitat.
- 5.2.9 A small number of species were identified during the acoustic analysis that were not recorded during other field surveys, including barnacle goose (*Branta leucopsis*), black-tailed godwit (*Limosa limosa*), brent goose (*Branta bernicla*), goldeneye (*Bucephala clangula*), greenshank (*Tringa nebularia*), ringed plover (*Charadrius hiaticula*), shelduck,

bullfinch (*Pyrrhula pyrrhula*), moorhen (*Gallinula chloropus*), wigeon (*Mareca penelope*), gadwall (*Mareca strepera*) and white-fronted goose (*Anser albifrons*). Most of these species were recorded in very low numbers, likely representing individuals flying over the study area during migration or transient movements rather than regular site use. Some records (e.g. ringed plover) may reflect misclassification by the AI, given the similarity of calls with species such as little ringed plover, which is known to breed locally.

- 5.2.10 Full details of the acoustic monitoring results are presented in Annex B and within Appendix 9/2: Ornithology Data Document, with additional interpretation provided within the species-specific results in Section 5.3.

Table 5. Results of the breeding bird assessment for qualifying species of South Pennine Moors Phase SPA and South Pennine Moors SSSI.

Species		Conservation / legislative status*	Breeding status	Breeding areas**	Number of pairs/territories recorded			SPA reference population (pairs)
Common name	Scientific name				2022	2024	2025	
SPA individual qualifying species (under Article 4 of Directive 2009/EC and listed in Annex II of Directive 92/43/EEC)								
Golden plover	<i>Pluvialis apricaria</i>	Annex 1, Green	Confirmed	Turbine Area, Eastern and Western Access Routes, wider study area	28	36	40	292
Merlin	<i>Falco columbarius</i>	Schedule 1, Annex 1, Red	Confirmed	Turbine Area, Western Access Route, wider study area	3	5	3	28
SPA assemblage species (included within the citation of the SPA)								
Common sandpiper	<i>Actitis hypoleucos</i>	Amber	Confirmed	Turbine Area, wider study area	5	3	8	-
Curlew	<i>Numenius arquata</i>	S41, Red	Confirmed	Turbine Area, Western Access Route, Bradford West Cable Corridor, wider study area	34	33	44	-
Dunlin	<i>Calidris alpina</i>	Annex 1, Red	Probable	Turbine Area, wider study area	1	1	1	-
Lapwing	<i>Vanellus vanellus</i>	S41, Red	Confirmed	Turbine Area, Bradford West Cable Corridor, wider study area	30	37	40	-
Redshank	<i>Tringa totanus</i>	Amber	Confirmed	Turbine Area, wider study area	6	6	6	-
Ring ouzel	<i>Turdus torquatus</i>	S41, Red	Probable	Wider study area	-	1	1	-
Short-eared owl	<i>Asio flammeus</i>	Annex 1, Amber	Confirmed	Turbine Area, wider study area	3	4	6	3
Snipe	<i>Gallinago gallinago</i>	Amber	Confirmed	Turbine Area, wider study area	17	19	22	-
Twite	<i>Linaria flavirostris</i>	Red	Non-breeding	N/A	-	-	-	-

Species		Conservation / legislative status*	Breeding status	Breeding areas**	Number of pairs/territories recorded			SPA reference population (pairs)
Common name	Scientific name				2022	2024	2025	
Wheatear	<i>Oenanthe oenanthe</i>	Amber	Confirmed	Turbine Area, wider study area	10	5	4	-
Whinchat	<i>Saxicola rubetra</i>	Red	Confirmed	Turbine Area	-	2	1	-
SSSI assemblage species (in addition to those not included above under the SPA citation but included within the citation of the SSSI)								
Dipper	<i>Cinclus cinclus</i>	Amber	Confirmed	Turbine Area, wider study area	-	2	1	-
Grey wagtail	<i>Motacilla cinera</i>	Amber	Confirmed	Turbine Area, wider study area	-	3	5	-
Little ringed plover	<i>Charadrius dubius</i>	Schedule 1, Green	Confirmed	Western Access Route, wider study area	-	-	4	-
Peregrine	<i>Falco peregrinus</i>	Schedule 1, Annex 1, Green	Confirmed	Turbine Area, wider study area	1	1	1	-
Shelduck	<i>Tadorna tadorna</i>	Amber	Non-breeding	N/A	-	-	-	-
Stonechat	<i>Saxicola torquata</i>	Green	Confirmed	Turbine Area, wider study area	6	18	16	-
Red grouse	<i>Lagopus scotica</i>	S41, Green	Confirmed	Turbine Area, wider study area	Ubiquitous throughout Turbine Area and wider study area			-
<p>* 'Red', 'Amber' and 'Green' relates to Birds of Conservation Concern status¹. 'Schedule 1' comprises birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). 'Annex 1' comprises birds listed on Annex 1 of the EC Birds Directive (2009/147/EC). 'S41' comprises Species of Principal Importance as listed under Section 41 of the NERC Act 2006.</p> <p>** 'Wider study area' refers to areas out with the Order Limits but within areas that were subject to breeding bird surveys (i.e. 'survey buffers').</p>								

Table 6. Results of the breeding bird assessment for other priority species.

Species		Conservation / legislative status*	Breeding status	Breeding areas**	Number of pairs/territories recorded		
Common name	Scientific name				2022	2024	2025
Barn owl	<i>Tyto alba</i>	Schedule 1, Green	Confirmed	Turbine area, wider study area	1	2	3
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Amber	Confirmed	Turbine Area	3	-	-
Common gull	<i>Larus canus</i>	Red	Non-breeding	N/A	-	-	-
Common scoter	<i>Melanitta nigra</i>	Schedule 1, S41, Red	Non-breeding	N/A	-	-	-
Common crossbill	<i>Loxia curvirostra</i>	Schedule 1, Green	Probable	Turbine Area	-	-	1
Cuckoo	<i>Cuculus canorus</i>	S41, Red	Confirmed	Turbine Area, wider study area	1	1	2
Dunnock	<i>Prunella modularis</i>	S41, Amber	Confirmed	Turbine Area, wider study area	-	5	4
Fieldfare	<i>Turdus pilaris</i>	Schedule 1, Red	Non-breeding	N/A	-	-	-
Goshawk	<i>Accipiter gentilis</i>	Schedule 1, Green	Possible	Turbine Area, wider study area	-	-	1
Grasshopper warbler	<i>Locustella naevia</i>	S41, Red	Probable	Turbine Area	-	1	7
Great black-backed gull	<i>Larus marinus</i>	Red	Non-breeding	N/A	-	-	-
Greenfinch	<i>Chloris chloris</i>	Red	Probable	Turbine Area, wider study area	-	4	1
Greylag goose	<i>Anser anser</i>	Amber	Confirmed	Turbine Area, wider study area	14	19	16
Grey partridge	<i>Perdix perdix</i>	S41, Red	Possible	Turbine Area, wider study area	-	-	-
Hen harrier	<i>Circus cyaneus</i>	Schedule 1, Annex 1, S41 Red	Confirmed	Turbine Area	1	-	1
Herring gull	<i>Larus argentatus</i>	S41, Red	Non-breeding	N/A	-	-	-

Species		Conservation / legislative status*	Breeding status	Breeding areas**	Number of pairs/territories recorded		
Common name	Scientific name				2022	2024	2025
Hobby	<i>Falco subbuteo</i>	Schedule 1, Green	Possible	Wider study area	-	-	-
House martin	<i>Delichon urbicum</i>	Red	Non-breeding	N/A	-	-	-
House sparrow	<i>Passer domesticus</i>	S41, Red	Probable	Wider study area	-	1 (colony)	-
Kestrel	<i>Falco tinnunculus</i>	Amber	Confirmed	Turbine Area, wider study area	1	3	4
Lesser black-backed gull	<i>Larus fuscus</i>	Amber	Non-breeding	N/A	-	-	-
Linnet	<i>Linaria cannabina</i>	Red	Confirmed	Turbine Area, wider study area	-	2	4
Mallard	<i>Anus platyrhynchos</i>	Amber	Confirmed	Turbine Area, wider study area	5	8	7
Marsh harrier	<i>Circus aeruginosus</i>	Schedule 1, Annex 1, Amber	Probable	Turbine Area, wider study area	-	-	1
Meadow pipit***	<i>Anthus pratensis</i>	Amber	Confirmed	Turbine Area, Western Access Route, wider study area	Ubiquitous throughout Turbine Area and wider study area		
Mistle thrush	<i>Turdus viscivorus</i>	Red	Confirmed	Turbine Area, wider study area	-	15	6
Oystercatcher	<i>Haematopus ostralegus</i>	Amber	Confirmed	Turbine Area, wider study area	18	17	21
Pied flycatcher	<i>Ficedula hypoleuca</i>	Amber	Non-breeding	N/A	-	-	-
Pink-footed goose	<i>Anser brachyrhynchus</i>	Amber	Non-breeding	N/A	-	-	-
Redstart	<i>Phoenicurus phoenicurus</i>	Amber	Confirmed	Wider study area	-	-	1
Reed bunting	<i>Emberiza schoeniclus</i>	S41, Amber	Confirmed	Turbine Area, wider study area	16	18	14

Species		Conservation / legislative status*	Breeding status	Breeding areas**	Number of pairs/territories recorded		
Common name	Scientific name				2022	2024	2025
Red kite	<i>Milvus milvus</i>	Schedule 1, Annex 1, Green	Confirmed	Wider study area	-	-	1
Redwing	<i>Turdus iliacus</i>	Schedule 1, Amber	Non-breeding	N/A	-	-	-
Rook	<i>Corvus frugilegus</i>	Amber	Non-breeding	N/A	-	-	-
Scaup	<i>Aythya marila</i>	Schedule 1, S41, Red	Non-breeding	N/A	-	-	-
Skylark***	<i>Alauda arvensis</i>	S41, Red	Confirmed	Turbine Area, Western Access Route, wider study area	Ubiquitous throughout Turbine Area and wider study area		
Song thrush	<i>Turdus philomelos</i>	S41, Amber	Probable	Turbine Area, wider study area	-	4	1
Sparrowhawk	<i>Accipiter nisus</i>	Amber	Confirmed	Turbine Area, wider study area	-	1	1
Spotted flycatcher	<i>Muscicapa striata</i>	S41, Red	Confirmed	Turbine Area, wider study area	1	-	4
Starling***	<i>Vulgaris vulgaris</i>	S41, Red	Confirmed	Wider study area	-	-	-
Stock dove	<i>Columba oenas</i>	Amber	Probable	Turbine Area, wider study area	-	10	3
Swift	<i>Apus apus</i>	S41, Red	Non-breeding	N/A	-	-	-
Tawny owl	<i>Strix aluco</i>	Amber	Confirmed	Turbine area, wider study area	-	1	1
Teal	<i>Anas crecca</i>	Amber	Possible	Turbine Area	1	-	-
Willow warbler	<i>Phylloscopus trochilus</i>	Amber	Confirmed	Turbine area, wider study area	-	14	11
Whimbrel	<i>Numenius phaeopus</i>	Schedule 1, Red	Non-breeding	N/A	-	-	-
Whitethroat	<i>Curruca communis</i>	Amber	Non-breeding	N/A	-	-	-
Whooper swan	<i>Cygnus cygnus</i>	Schedule 1, Annex 1, Amber	Non-breeding	N/A	-	-	-

Species		Conservation / legislative status*	Breeding status	Breeding areas**	Number of pairs/territories recorded		
Common name	Scientific name				2022	2024	2025
Woodcock	<i>Scolopax rusticola</i>	Red	Confirmed	Turbine Area, wider study area	-	1	1
Woodpigeon***	<i>Columba palumbus</i>	Amber	Confirmed	Turbine Area, wider study area	-	-	-
Wren***	<i>Troglodytes troglodytes</i>	Amber	Confirmed	Turbine Area, wider study area	Ubiquitous through Turbine Area and wider study area		
Yellowhammer	<i>Emberiza citrinella</i>	S41, Red	Non-breeding	N/A	-	-	-

* 'Red', 'Amber' and 'Green' relates to Birds of Conservation Concern status¹. 'Schedule 1' comprises birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). 'Annex 1' comprises birds listed on Annex 1 of the EC Birds Directive (2009/147/EC). 'S41' comprises Species of Principal Importance as listed under Section 41 of the NERC Act 2006.

** 'Wider study area' refers to areas out with the Order Limits but within areas that were subject to breeding bird surveys (i.e. 'survey buffers').

*** Number of breeding pairs/territories could not be determined.

Table 7. Results of the breeding bird assessment for non-priority species.

Species		Conservation / legislative status*	Breeding status	Breeding areas**
Common name	Scientific name			
Blackbird	<i>Turdus merula</i>	Green	Confirmed	Turbine Area, wider study Area
Blackcap	<i>Sylvia atricapilla</i>	Green	Probable	Turbine Area, wider study area
Blue tit	<i>Cyanistes caeruleus</i>	Green	Confirmed	Turbine Area, wider study area
Buzzard	<i>Buteo buteo</i>	Green	Probable	Turbine Area, wider study area
Canada goose	<i>Branta canadensis</i>	N/A	Confirmed	Turbine Area, wider study area
Carrion crow	<i>Corvus corone</i>	Green	Possible	Wider study area
Chaffinch	<i>Fringilla coelebs</i>	Green	Confirmed	Turbine Area, wider study area
Chiffchaff	<i>Phylloscopus collybita</i>	Green	Confirmed	Turbine Area, wider study area
Coal tit	<i>Periparus ater</i>	Green	Confirmed	Turbine Area, wider study area
Collared dove	<i>Streptopelia decaocto</i>	Green	Possible	Wider study area
Cormorant	<i>Phalacrocorax carbo</i>	Green	Non-breeding	N/A
Feral pigeon	<i>Columba livia</i>	Green	Possible	Wider study area
Goldcrest	<i>Regulus regulus</i>	Green	Confirmed	Turbine Area, wider study area
Goldfinch	<i>Carduelis carduelis</i>	Green	Confirmed	Turbine Area, wider study area
Goosander	<i>Mergus merganser</i>	Green	Probable	Turbine Area, wider study area
Great spotted woodpecker	<i>Dendrocopos major</i>	Green	Confirmed	Turbine Area, wider study area
Great tit	<i>Parus major</i>	Green	Confirmed	Turbine Area, wider study area
Green woodpecker	<i>Picus viridis</i>	Green	Confirmed	Turbine Area, wider study area
Grey heron	<i>Ardea cinerea</i>	Green	Non-breeding	N/A
Jackdaw	<i>Corvus monedula</i>	Green	Possible	Wider study area
Jack snipe	<i>Lymnocyptes minimus</i>	Green	Non-breeding	N/A
Jay	<i>Garrulus glandarius</i>	Green	Possible	Wider study area
Little grebe	<i>Tachybaptus ruficollis</i>	Green	Possible	Wider study area
Little owl	<i>Athene noctua</i>	N/A	Confirmed	Turbine Area, wider study area
Long-eared owl	<i>Asio otus</i>	Green	Confirmed	Turbine Area, Bradford West Cable Corridor, wider study area
Long-tailed tit	<i>Aegithalos caudatus</i>	Green	Possible	Wider study area
Magpie	<i>Pica pica</i>	Green	Possible	Wider study area
Pheasant	<i>Phasianus colchicus</i>	N/A	Confirmed	Turbine Area, wider study area
Pied wagtail	<i>Motacilla alba</i>	Green	Confirmed	Turbine Area, wider study area

Species		Conservation / legislative status*	Breeding status	Breeding areas**
Common name	Scientific name			
Raven	<i>Corvus corax</i>	Green	Confirmed	Turbine Area, wider study area
Red-legged partridge	<i>Alectoris rufa</i>	N/A	Probable	Turbine Area, wider study area
Robin	<i>Erithacus rubecula</i>	Green	Confirmed	Turbine Area, wider study area
Sand martin	<i>Riparia riparia</i>	Green	Non-breeding	N/A
Short-toed eagle	<i>Circaetus gallicus</i>	N/A	Non-breeding	N/A
Siskin	<i>Spinus spinus</i>	Green	Probable	Turbine Area, wider study area
Swallow	<i>Hirundo rustica</i>	Green	Confirmed	Wider study area
Treecreeper	<i>Certhia familiaris</i>	Green	Confirmed	Turbine Area, wider study area
Tufted duck	<i>Aythya fuligula</i>	Green	Probable	Turbine Area

* 'Red', 'Amber' and 'Green' relates to Birds of Conservation Concern status¹. 'Schedule 1' comprises birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). 'Annex 1' comprises birds listed on Annex 1 of the EC Birds Directive (2009/147/EC). 'S41' comprises Species of Principal Importance as listed under Section 41 of the NERC Act 2006.
 ** 'Wider study area' refers to areas out with the Order Limits but within areas that were subject to breeding bird surveys (i.e. 'survey buffers').

5.3 SPA/SSSI species (listed under respective citations)

Merlin

- 5.3.1 Merlin were recorded breeding within the Turbine Area and the wider study area in all survey years. Breeding was confirmed through the presence of territorial pairs, display flights, prey-carrying behaviour and the location of active nests during transect, VP, raptor, and nocturnal surveys conducted across 2022, 2024 and 2025. Three breeding pairs were recorded in both 2022 and 2025, with up to five pairs in 2024. These figures are consistent with BTO Nest Record Scheme data for the Walshaw Moor Estate (2012–2023), which indicate between three and five breeding pairs annually within the wider study area. The population recorded is therefore in line with long-term data and reflective of a stable local breeding population.
- 5.3.2 Merlin territories were distributed across both the Turbine Area and wider study area, with between two and three pairs nesting within the Turbine Area in each survey year and a further two to three pairs located in surrounding moorland up to 2km beyond. Long-established nest sites in the eastern and western sections of the Turbine Area have been occupied annually since 2012, indicating strong site fidelity (see Confidential Figure 1). Nests were typically located on steep slopes dominated by heather (*Calluna vulgaris*), consistent with the habitat preferences identified by Haworth & Thompson (1990)¹⁴, who found merlin breeding distribution in the South Pennines to be closely associated with such vegetation and steeper terrain. These habitats provide both nest concealment and

¹⁴ Haworth, P.F. & Thompson, D.B.A. (1990) Factors associated with the breeding distribution of upland birds in the South Pennines, England. *Journal of Applied Ecology*, **27**, 562-577.

a high abundance of small passerine prey species, particularly meadow pipit (*Anthus pratensis*).

- 5.3.3 The study area forms part of the South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI, both of which are designated for breeding merlin, with the SPA citation reporting a reference population of 28 pairs. The populations recorded during the surveys therefore represent approximately 11 - 18% of the SPA's total breeding population, underlining the importance of this part of the moor for the species. The SPA conservation objectives¹⁵ seek to restore and maintain a breeding population consistently above 28 pairs and to ensure suitable nesting and foraging habitat is maintained, including mature and degenerate heather, extensive open terrain and a high availability of small birds and day-flying insects within and around nesting territories. The habitats within the study area are consistent with these objectives, supporting merlin through the provision of structurally diverse heather stands and associated prey availability.
- 5.3.4 The observed stability in breeding numbers over the survey period, alongside continuity with the long-term nest record data, indicates that the study area continues to contribute meaningfully to maintaining the integrity of the SPA merlin population. These findings align with wider research on upland breeding birds in the South Pennines, where topography and vegetation structure, particularly the presence of steep slopes with *Calluna*, are key determinants of breeding distribution and territory occupancy¹⁴.

Golden plover

- 5.3.5 Golden plover were recorded breeding throughout the study area during surveys undertaken in 2022, 2024 and 2025. Confirmed and probable breeding was identified through the presence of territorial pairs, display flights, alarm-calling and observations of nesting and young. A total of 28, 36 and 40 breeding pairs were recorded in 2022, 2024 and 2025 respectively, noting that the 2025 surveys incorporated a larger study area during the transect surveys with the addition of the Eastern and Western Access Routes. The species showed a strong association with the higher, open plateaus around the perimeters of the Turbine Area (particularly to the west, north and east), where nesting occurred in mosaics of blanket bog, shorter grassland and recently burned/cut heather.
- 5.3.6 The distribution of breeding territories aligns closely with habitat descriptions within the South Pennine Moors Phase 2 SPA supplementary conservation advice,¹⁵ which note that golden plover favour a mosaic of short and dense moorland vegetation with extensive open areas for nesting and rely on adjacent marginal or low-intensity pastures for summer foraging. These conditions were present across the study area, with the bog plateau and open heather/grass mosaics providing suitable nesting habitat and surrounding enclosed pastoral fields offering foraging resources. Notably high breeding densities were recorded in the vicinity of Harry Side, Heather Hill, Wadsworth Moor, Will's Allotment and White Hill (see Figure 10), corresponding to core breeding areas highlighted within the SPA description.
- 5.3.7 Results from the acoustic monitoring provide additional contextual evidence of nocturnal habitat use by golden plover. Over 35% of all golden plover call registrations were recorded at Detector Location 3, with the majority of detections occurring between 02:00

¹⁵ Natural England (2018) *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features – South Pennine Moors Phase 2 SPA*.
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and 05:00. This detector was located within lowland pasture around Holme Ends, to the south of the Turbine Area, indicating that this area is likely to be used for nocturnal foraging rather than breeding activity. This finding corroborates published studies which demonstrate that breeding golden plover commonly forage in enclosed agricultural fields, often several kilometres from their moorland nesting areas, particularly during the incubation period (e.g. Whittingham et al., 2000¹⁶). The acoustic data therefore support field survey observations by further evidencing functional linkage between upland breeding habitat and adjacent low-intensity pasture.

- 5.3.8 Breeding densities within suitable habitat (i.e. on the plateau) (up to 2.1 pairs per km²) were consistent with those reported by Brown and Shepherd (1991)¹⁷ for the South Pennines, at approximately 2.22 pairs per km² in occupied areas. This density supports the classification of the South Pennine Moors as one of the key strongholds for the species in England, holding approximately 3% of the British breeding population during the 1990 national survey. The current data therefore suggest that the study area continues to support breeding densities typical of high-quality habitat.
- 5.3.9 Patterns of distribution also accord with Haworth and Thompson (1990)¹⁴ and Whittingham *et al.* (2002)¹⁸, who identified topography as a principal determinant of golden plover breeding distribution, with pairs avoiding slopes and concentrated on high plateau above 430 m and areas of low disturbance. Within the study area, nesting golden plover were almost entirely confined to these higher plateaus, particularly within blanket bog and heath habitats, avoiding steeper slopes and more disturbed lower ground. This reflects both the species' preference for open, gently undulating terrain with low vegetation cover and its sensitivity to disturbance.
- 5.3.10 The study area lies within the central block of the South Pennine Moors Phase 2 SPA, where breeding densities are described as 'good', particularly around Oxenhope Moor, Stairs Swamp and Harry Side¹⁹. The recorded numbers (28–40 pairs) contribute a notable proportion to the SPA reference population of 292 pairs, representing approximately 10 - 14% of the SPA's breeding total. The maintenance of these densities and habitat conditions is therefore consistent with the SPA's conservation objective¹⁵ to maintain or restore the population size of golden plover above the reference level through protection of key habitats including blanket bogs, dry heaths, wet heaths and acid grasslands.
- 5.3.11 Overall, the breeding population of golden plover within the study area appears robust, showing stability over time and clear alignment with the habitat associations and distribution patterns identified in regional and national datasets. The results therefore indicate that the population contributes significantly to sustaining the southernmost viable upland breeding population in the world, as identified by Brown & Shepherd (1991)¹⁷.

¹⁶ Whittingham, M.J., Percival, S.M. & Brown, A.F. (2000) Time budgets and foraging of breeding golden plover *Pluvialis apricaria*. *Journal of Applied Ecology*, **37**, 632 – 646.

¹⁷ Brown, A.F. & Shepherd, K.B (1991) *Breeding birds of the South Pennine moors*. Joint Nature Conservation Committee (JNCC), Report Number 7.

¹⁸ Whittingham, M.J., Percival, S.M. & Brown, A.F. (2002) Nest-site selection by golden plover: why do shorebirds avoid nesting on slopes? *Journal of Avian Biology*, **33**, 184 – 190.

¹⁹ Natural England (2025) *South Pennine Moors Phase 2 SPA – Designated Site View*. Available at: <https://designatedsites.naturalengland.org.uk/>

Common sandpiper

- 5.3.12 Breeding bird surveys recorded evidence of common sandpiper presence around the principal reservoir complexes within the Turbine Area and wider study area during all survey years. Five probable pairs were recorded in 2022: four along the margins of the Walshaw Dean reservoirs and one pair along the margins of Widdop Reservoir. In 2024, up to three breeding pairs were confirmed, increasing to up to eight pairs in 2025 when survey coverage extended to include the Eastern and Western access routes. Breeding activity (including pairs, family groups, territorial display, song, and distraction behaviour) was consistently recorded along the stony and gravelly margins of the Walshaw Dean, Widdop and Warley Moor Reservoirs.
- 5.3.13 These results align with the South Pennine Moors Phase 2 SPA citation¹⁹, which describes common sandpiper as predominantly utilising the densely vegetated margins of major reservoir complexes such as these. Breeding densities within suitable habitat were consistent with the mean of 1.54 pairs/km² reported for occupied areas of the South Pennines¹⁷, confirming that the local population remains representative of the wider SPA assemblage. Distribution patterns mirror those described in Brown & Shepherd (1991)¹⁷, with birds largely restricted to open water margins and absent from the more extensive upland blanket bogs and heaths (Figure 11).
- 5.3.14 The species' continued presence and breeding activity in the study area contribute to the maintenance of the southernmost viable English population, as emphasised by Dougall et al. (2005)²⁰, who noted that populations at the periphery of the range (such as the Peak District and South Pennines) are vulnerable to recruitment limitations and environmental pressures. The stability of local breeding activity within the reservoir complexes is therefore important to sustaining the traditional range of this species in Britain.

Curlew

- 5.3.15 Curlew were widespread throughout the study area during all survey years, occupying both upland moorland and lower-lying grassland habitats. Breeding evidence was confirmed across the Turbine Area and wider study area, with 34 pairs recorded in 2022, 33 in 2024, and 44 in 2025. The increase in numbers during 2025 reflects both a likely genuine rise in breeding activity and the expanded survey extent incorporating the 500m buffer and Eastern and Western access routes. Pairs were recorded nesting and foraging across a range of habitats including acid grassland, heather–grass mosaics, blanket bog and in pasture. Notably high densities were observed on Widdop Moor, Wadsworth Moor, and the higher slopes between Under Hill, Roms Hill, Oxenhope Moor and Will's Allotment, while consistent foraging was recorded in lower-lying pastures around Holme Ends in the south (Figure 12).
- 5.3.16 The species' distribution corresponds closely with descriptions in the South Pennine Moors Phase 2 SPA citation¹⁹, which identifies curlew as widespread across the SPA, with particularly high breeding densities on Oxenhope and Heptonstall Moors. Breeding densities within suitable habitat (principally acid grassland and heather–grass mosaics) (up to 1.1 pairs/km²) were broadly similar with those reported for the South Pennines by Brown & Shepherd (1991)¹⁷ at 1.91 pairs/km². Even though the density recorded during

²⁰ Dougall, T.W., Holland, P.K., Mee, A. & Yalden, D.W. (2005) Comparative population dynamics of Common Sandpipers *Actitis hypoleucos*: living at the edge. *Bird Study*, **52**, 80 – 87.

surveys is slightly lower than in 1991, this reflects the ongoing decline of curlew populations since the 1990s and thus still supports the conclusion that the study area continues to sustain a population typical of high-quality breeding habitat within the SPA. The recorded numbers also represent an appreciable proportion of the regional total, reaffirming the study area's importance to the maintenance of the SPA's breeding curlew population.

- 5.3.17 Habitat associations align with Haworth & Thompson (1990)¹⁴, who identified topography and disturbance as key determinants of curlew distribution, with breeding pairs concentrated on high plateau and gentle moorland slopes in areas of low disturbance. Within the study area, such conditions are characteristic of Widdop and Oxenhope Moors, while the species' use of lower lying grasslands reflects its requirement for mixed nesting and foraging habitats. The extent of nearby pasture likely influences breeding habitat choice within the study area²¹. The GWCT (2021) *Conserving the Curlew* guidance²² highlights that curlew depend on a mosaic of wet feeding areas and drier nesting zones with medium-length vegetation and low disturbance, conditions which remain well-represented across the study area.
- 5.3.18 Acoustic monitoring, however, provides further contextual evidence on nocturnal curlew activity within the study area. The highest number of curlew call registrations were recorded at detector locations 8, 9 and 10, all of which are located within or immediately adjacent to Oxenhope Moor. This pattern closely aligns with the South Pennine Moors Phase 2 SPA citation¹⁹, which identifies Oxenhope Moor as a core area for breeding curlew. In contrast, detector location 3, situated within lowland pasture to the south of the Turbine Area, recorded comparatively fewer curlew registrations. This suggests that nocturnal curlew activity within the study area is concentrated on the open moorland and plateau habitats to the east, rather than on adjacent lowland pasture, indicating a stronger reliance on upland habitats during nocturnal periods. The acoustic data therefore corroborate field survey findings and reinforce the importance of Oxenhope Moor as a key functional area for curlew within the SPA.
- 5.3.19 The results therefore indicate that the curlew population within the study area forms part of a wider stronghold for the species within the South Pennines, supporting stable breeding densities and contributing meaningfully to the maintenance of the SPA's qualifying assemblage. Habitat structure, management, and breeding densities recorded are consistent with wider studies across the region, demonstrating the continued value of these uplands for sustaining breeding curlew in northern England.

Dunlin

- 5.3.20 Dunlin were recorded breeding at low densities within the study area, with a single pair confirmed in each of the survey years (2022, 2024 and 2025). All observations were concentrated on the high plateau at the eastern end of the Turbine Area and wider study area, specifically around Mare Greave Slack, Will's Allotment and White Hill (Figure 13). These areas comprise blanket bog and wet heaths with some areas of shallow pools (particularly near Warley Moor Reservoir), conditions favoured by the species for nesting

²¹ Nethersole-Thompson, D. & Nethersole-Thompson, M. (1986) *Waders: Their Breeding, Haunts and Watchers*. Poyser, Calton.

²² GWCT (2017) *Conserving the curlew: A practical guide produced by the Game & Wildlife Conservation Trust*. Game & Wildlife Conservation Trust, Fordingbridge.

and foraging. These areas are likely to support high densities of crane fly (Tipulidae) larvae and other invertebrates that form the principal food source for breeding dunlin²¹.

- 5.3.21 The distribution recorded aligns closely with the South Pennine Moors Phase 2 SPA citation¹⁹, which identifies the central block of the SPA as supporting the core breeding area for dunlin, particularly around Lord's and Will's Allotments and Nab Hill. The single pair recorded annually within the study area corresponds with these known breeding foci and indicates continued, albeit sparse, occupation of suitable habitat within the SPA's core range. Breeding densities are substantially lower than the average of 1.79 pairs/km² reported in occupied areas of the South Pennines by Brown & Shepherd (1991)¹⁷, although this is expected given the species' significant regional decline since that period (59% decrease in the South Pennines between 1980/81 to 2000-2002²³).
- 5.3.22 Habitat associations are consistent with findings from Haworth & Thompson (1990)¹⁴, who identified dunlin as strongly associated with high plateau and low levels of disturbance and extensive *Eriophorum*-dominated vegetation. The blanket bogs at the eastern end of the study area thus remain suitable for this species. The continued presence of breeding dunlin, albeit in very low numbers, highlights the ongoing importance of these remnant mire systems for maintaining the South Pennine breeding population, now at the southern limit of the species' UK range.

Lapwing

- 5.3.23 Surveys between 2022 and 2025 recorded between 30 and 40 pairs of lapwing within the study area, with 30 pairs in 2022, 37 in 2024 and 40 in 2024. Distribution across all years showed a consistent association with the moorland fringe, where rough pasture, *Juncus* flushes and acid grassland provided suitable nesting and foraging conditions. Records were sparse across the main blanket bog and heather-dominated moorlands, reflecting the species' preference for the peripheral areas of hill farmland. Within the Turbine Area, concentrations were noted to the south around Holme Ends, and to the north-east near Mare Greave Slack (see Figure 14), which likely forms part of the population within Oxenhope Moor, which the South Pennine Moors Phase 2 SPA citation identifies as supporting some of the densest lapwing populations within the SPA¹⁹.
- 5.3.24 The spatial distribution of lapwing observed aligns with findings reported by Brown and Shepherd (1991)¹⁷, who identified the moorland fringe and marginal pastures as key breeding habitats for this species across the South Pennines, typically at densities around 1.85 pairs/km² in occupied areas. The habitats used within the study area correspond well with those described in historical surveys, suggesting continuity in habitat preference. Despite broader population declines across the country, the surveys between 2022 and 2025 recorded densities of up to 3.6 pairs/km² in suitable habitat within the study area. Upland lapwing declines are largely linked to agricultural intensification, increased predation pressures, drainage and habitat loss, which have reduced suitable breeding

²³ Sim, I.M.W., Gregory, R.D., Hancock, M.H. & Brown, A.F. (2005) Recent changes in the abundance of British upland breeding birds. *Bird Study*, **52**, 261-275.

pastures and lowered productivity below sustainable levels^{24,25,26}. Taken together, these findings suggest that the study area continues to support locally important breeding habitat for lapwing despite wider regional and national declines.

- 5.3.25 Acoustic monitoring results provide additional contextual evidence of nocturnal habitat use by lapwing within the study area. The highest number of lapwing call registrations were recorded at detector locations 3 and 5, both of which are situated within lowland pasture and grassland habitats to the south of the Turbine Area. In contrast, relatively few lapwing registrations were recorded at detector locations on the open moorland. This pattern indicates that lapwing preferentially use the moorland fringe and adjacent lowland pastures for nocturnal foraging, remaining close to their nesting areas rather than moving onto the blanket bog and heather-dominated uplands at night. The acoustic data therefore corroborate field survey findings, reinforcing the importance of marginal pasture and grassland habitats in supporting lapwing during both diurnal and nocturnal periods.
- 5.3.26 Overall, the recorded breeding density within the study area remains broadly consistent with the densities reported by Brown and Shepherd (1991)¹⁷, indicating that this area continues to function as a stronghold for the species. The persistence of suitable moorland fringe habitats and the presence of active predator control likely contribute to maintaining these populations. Ongoing management of pastoral farmland, retention of wet flushes and unimproved grassland, and avoidance of further drainage or intensification are essential for supporting lapwing within this part of the South Pennines.

Redshank

- 5.3.27 Redshank were sparsely distributed across the study area, with up to six pairs recorded in 2022, 2024 and 2025. Records were largely confined to the moorland fringe and grassland-dominated areas, reflecting the species' preference for damp, open pasture and *Juncus* flushes similar to those used by lapwing. Breeding activity was focused mainly on the southern part of the Turbine Area near Holme Ends, with additional pairs recorded adjacent to the Walshaw Dean Reservoirs in 2024 and two pairs near Warley Moor Reservoir in 2025 (see Figure 15). These latter pairs are likely associated with the population at the nearby Oxenhope Moor, identified within the South Pennine Moors Phase 2 SPA citation¹⁹ as supporting the densest concentrations of breeding redshank in the region.
- 5.3.28 Breeding densities remain low compared with the mean of 1.54 pairs/km² reported by Brown and Shepherd (1991)¹⁷ for suitable habitat in the South Pennines, though this reflects the species' patchy and localised distribution. Redshank populations are known to be uneven across the uplands, concentrated around reservoir margins and flushes where shallow water and soft soils support abundant invertebrate prey. Redshank within the Turbine Area and wider study area used these areas regularly for foraging.

²⁴ Fuller, R.J., Ward, E., Hird, D. & Brown, A.F. (2002) Declines of ground-nesting birds in two areas of upland farmland in the south Pennines of England. *Bird Study*, **49**, 146 – 152.

²⁵ Taylor, I.R. & Grant, M.C. (2004) Long-term trends in the abundance of breeding Lapwing *Vanellus vanellus* in relation to land-use change on upland farmland in southern Scotland. *Bird Study*, **51**, 133 – 142.

²⁶ Eglington, S. (2009) *Understanding the Causes of Decline in Breeding Wetland Bird Numbers in England*. British Trust for Ornithology (BTO) Report Research no. 562.

5.3.29 Historically, redshank were scarce breeders in the South Pennines, with records suggesting only gradual establishment in the uplands during the 20th century¹⁷. However, more recent evidence indicated that the species is now undergoing significant national and regional decline, accompanied by a contraction in breeding range²⁶. The small but consistent population recorded within the study area therefore highlights the continued importance of moorland fringe habitats and reservoir complexes in maintain breeding redshank within the South Pennines.

Short-eared owl

5.3.30 Short-eared owl were recorded breeding across the study area during all survey years, with three pairs in 2022, four pairs in 2024, and up to six pairs in 2025 (Figure 17). In 2022, all three pairs were located within the Turbine Area, while in 2024, two pairs occurred within the Turbine Area and two within the wider study area, one adjacent to Gorple Upper Reservoir and another near Warley Moor Reservoir. In 2025, four pairs were recorded within the Turbine Area, including two directly adjacent to Widdop Reservoir, with two additional pairs in the wider study area, one near Warley Moor Reservoir and one near Watersheddles Reservoir.

5.3.31 Data from the BTO Nest Record Scheme (2012–2023) indicate consistent occupation of the study area, with between one and three pairs nesting annually within the Turbine Area and up to five to seven pairs recorded across the whole Walshaw Moor Estate. Annual variation in breeding numbers is likely influenced by fluctuations in small mammal abundance, which is the primary prey resource during the breeding season.

5.3.32 Breeding distribution was strongly associated with grass- and rush/sedge-dominated habitats around the margins of the main reservoirs, particularly Walshaw Dean, Widdop, Gorple and Warley Moor. These habitat preferences align with Haworth & Thompson (1990)¹⁴, who identified short-eared owl as favouring the grass and sedge-dominated margins of reservoirs, moorland with short vegetation, and areas managed for gamekeeping. The current survey findings support these observations, with pairs consistently utilising these lower, more productive areas within the wider moorland complex.

5.3.33 Nationally, the breeding range of the short-eared owl has almost halved since the 1968–72 Breeding Atlas²⁷, and the species was added to the Rare Breeding Birds Panel (RBBP) list in 2010. Within this context, the study area represents an important complex of moorland, reservoir and grassland habitats, supporting one of the southernmost viable populations of this species in England.

Snipe

5.3.34 Snipe were recorded breeding across the study area in all survey years, with 17 pairs in 2022, 19 pairs in 2024, and 22 pairs in 2025. Snipe are among the most difficult wader species to census accurately due to their cryptic behaviour and reliance on nocturnal

²⁷ Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. (2013) *Bird Atlas 2007-11: The Breeding and Wintering Birds of Britain and Ireland*. Thetford, British Trust for Ornithology (BTO).
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display flights^{28,29}, and so these numbers may well no represent the accurate population assemblage.

- 5.3.35 Breeding activity was concentrated in the lower-lying moorland fringe areas, particularly around Holme Ends within the Turbine Area, where lowland pasture, acid grassland and *Juncus* flushes provide suitable nesting and feeding conditions (see Figure 18). The species was more sparsely distributed across the higher moorland but occurred at greater densities in the eastern end of the Turbine Area, notably around Mare Greave Slack, and within the wider study area near Warley Moor Reservoir. These distribution patterns are consistent with the South Pennine Moors Phase 2 SPA citation¹⁹, which identifies the eastern side of the central block, particularly Pickles Rough and Warley Moor, as key breeding areas for the species.
- 5.3.36 Acoustic monitoring results further support the field survey findings, with the majority of snipe call registrations recorded at detector location 3, where approximately 800 registrations were identified. This detector was situated within the lowland pasture and moorland fringe around Holme Ends, an area identified during daytime surveys as supporting high breeding activity. The high volume of nocturnal registrations strongly suggests that this area is used for night-time display flights and drumming, which are characteristic of breeding snipe. In contrast, relatively few registrations were recorded from detectors located on the higher open moorland, indicating that nocturnal activity is concentrated within wetter grassland and flush-dominated fringe habitats rather than on the blanket bog plateau. This acoustic evidence therefore reinforces the importance of the Holme Ends area as a key breeding and display area for snipe within the study area.
- 5.3.37 The recorded density (up to 2.7 pairs/km²) within suitable habitat is broadly consistent with the 1.43 pairs/km² reported by Brown & Shepherd (1991)¹⁷ for occupied areas of the South Pennines. The density figure recorded during the 2022-2025 surveys likely reflects a more detailed survey effort than completed during the 1991 assessment, which makes identifying pairs of this cryptic species easier. Nevertheless, the survey results indicate that this area of the South Pennines remains a stronghold for this species.

Little ringed plover

- 5.3.38 Four pairs of little ringed plover were recorded within the wider study area during the 2025 breeding season: two at Widdop Reservoir, one at Warley Moor Reservoir, and one at Watersheddes Reservoir. The species was not recorded during the 2022 or 2024 surveys, likely reflecting the smaller survey extent in those years and the greater survey effort in 2025, particularly through VP survey coverage, which supplemented the breeding assessment. Breeding pairs made use of reservoir margins and exposed shingle or sand substrates, habitats well-suited to the species' nesting preferences (see Confidential Figure 2).
- 5.3.39 Little ringed plover have shown a steady increase and northward range expansion, colonising suitable inland and upland sites, particularly around reservoir and river complexes¹⁷. National surveys reflect this trend: Parrinder (1989)³⁰ recorded 608 - 631

²⁸ Green, R.E. (1985) Estimating the abundance of breeding snipe. *Bird Study*, **32**, 141 – 149.

²⁹ Reed, T.M. (1986) Diurnal and seasonal variability in the breeding behavior and detectability of snipe. *Wader Study Group Bulletin*, **46**, 15 – 17.

³⁰ Parrinder, E.D. (1989) Little ringed plovers *Charadrius dubius* in Britain in 1984. *Bird Study*, **36**, 147 – 153.

pairs in 1984, while the 2007 national survey estimated approximately 1,239 pairs across Great Britain³¹. This expansion represents a significant broadening of range, with increased use of inland and upland sites such as those present in the South Pennines.

- 5.3.40 The records from Widdop, Warley Moor, and Watersheddles Reservoirs align closely with this national pattern of spread into upland areas, highlighting the importance of the South Pennine reservoir complexes as suitable breeding habitat. The density of breeding pairs recorded in 2025 is consistent with the low but expanding densities reported in upland regions during the 2007 survey, where little ringed plovers occupied isolated patches of suitable habitat, typically one to two pairs per reservoir complex³¹. The results therefore demonstrate the ongoing utilisation of artificial freshwater and reservoir habitats as substitutes for natural gravel and riverine systems.
- 5.3.41 The continued presence of exposed shorelines, sparsely vegetated drawdown zones, and adjacent open feeding areas are essential for maintaining breeding opportunities for this species within the South Pennines.

Peregrine

- 5.3.42 Peregrine were recorded breeding within the Turbine Area and within the wider study area during all survey years (see Confidential Figure 3). In 2022, an eyrie was recorded to the south of the Turbine Area within the wider study area. In 2024, a pair was again recorded in the same vicinity and across the Turbine Area, though no active eyrie could be located. In 2025, an eyrie was identified within the Turbine Area and again to the south of the Turbine Area. Given the close proximity and consistency of locations, these records likely represent the same pair, demonstrating the species' well-documented nest site fidelity^{13,32}.
- 5.3.43 The selection of these nesting locations is consistent with known habitat preferences of peregrine, which favour rocky crags and ledges overlooking open areas or waterbodies that provide extensive hunting visibility and abundant avian prey^{13,33}.
- 5.3.44 Brown and Shepherd (1991)¹⁷ recorded only 11 breeding pairs across the region, describing peregrine as a slowly recovering but still sparsely distributed breeder, following historical declines associated with persecution, use of certain pesticides and recreational disturbance (i.e. from climbing). Since then, the peregrine population has increased markedly in line with national trends of recovery³⁴, with the most recent Rare Breeding Birds Panel 2022 report³⁵ recording 38-54 breeding pairs in Yorkshire, confirming a continued upward trajectory regionally.
- 5.3.45 The records from the study area therefore align with this broader national recovery pattern, while also highlighting the importance of the South Pennines as a landscape supporting suitable cliff and crag nesting sites with reliable prey availability. The

³¹ Conway, G.J., Austin, G.E., Handschuh, M., Drewitt, A.L. & Burton, N.H.K. (2019) Breeding populations of Little Ringed Plover *Charadrius dubius* and Ringed Plover *Charadrius hiaticula* in the United Kingdom in 2007. *Bird Study*, **66**, 22 – 31.

³² Baker, J.A. (1967) *The Peregrine*. Collins, London.

³³ Ratcliffe, D.A. (1993) *The Peregrine Falcon*. 2nd ed. T & AD Poyser, London.

³⁴ Banks, A.N., Coombes, R.H. & Crick, H.Q.P (2003) *The Peregrine Falcon breeding population of the UK & Isle of Man in 2002*, British Trust for Ornithology (BTO) Research Report No. 330.

³⁵ Eaton, M. *et al.* (2024) Rare breeding birds in the UK in 2022. *British Birds*, **117**, 585 – 660.

consistent occupation within the study area over multiple years indicates a stable breeding presence, reflective of the improving regional status of this species.

Red grouse

- 5.3.46 Red grouse were ubiquitous across the Turbine Area, reflecting the intensive management of the Walshaw Moor Estate as a driven grouse moor. The peak count recorded across the survey period was 847 individuals in 2024. Grouse were most frequently recorded on the well-drained, gently sloping heather dominated areas typical of managed moorland, with extensive predator control and rotational burning/cutting regimes maintain a structurally diverse heather mosaic (Figure 24). This management sustains optimal conditions for nesting and brood-rearing, with a balance of young heather for feeding and older stands for cover³⁶.
- 5.3.47 The South Pennine Moors supports one of the southernmost populations of red grouse in Britain¹⁷, with this stronghold dependent on continued management to maintain heather structure and composition. Research by Wilson *et al.* (2022)³⁷ indicates that rotational burning can influence breeding timing and success, but when conducted appropriately, it contributes to maintain habitat heterogeneity crucial for grouse and other associated upland species. Overall, the results demonstrate that Calderdale's moorland management regime continues to sustain a robust red grouse population and wider assemblage of upland birds reliant on similar habitat conditions.

SPA/SSSI passerine species

- 5.3.48 A range of passerine species listed as assemblage features of the South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI were recorded breeding or likely breeding within the study area including ring ouzel, wheatear, whinchat, dipper, grey wagtail and stonechat. These species are characteristic of the South Pennine uplands, utilising the gritstone cloughs, tors and edge, as well as heather and rocky slopes, that typify the moorland landscape.
- 5.3.49 Ring ouzel, a Red list and NERC S41 Species of Principal Importance, was recorded around the rocky crags surrounding Widdop Reservoir, consistent with its preference for steep, boulder-strewn slopes and upland gullies with scattered vegetation (Figure 16). Wheatear and whinchat, both typical of moorland fringe and open upland habitats with scattered rocks and walls (Figures 19 and 20), were recorded across the Turbine Area and wider study area, with small breeding populations confirmed in each year.
- 5.3.50 Dipper and grey wagtail were associated with the drains, streams and reservoir margins within the Turbine Area and wider study area, with confirmed breeding at several locations, particularly along Graining Water and the Walshaw Dean and Warley Moor Reservoirs (Figures 21 and 22). These species are strongly dependent on clean, fast-flowing upland watercourses with suitable nesting ledges and are well-represented across the South Pennines' river systems.

³⁶ Pearce-Higgins, J.W. & Grant, M.C. (2006) Relationships between bird abundance and the composition and structure of moorland vegetation. *Bird Study*, **53**, 112 – 125.

³⁷ Wilson, M.W., Fletcher, K., Ludwig, S.C. & Leech, D.I. (2022) *Nesting dates of Moorland Birds in the English, Welsh and Scottish Uplands*. British Trust for Ornithology (BTO) Research Report No. 741/

- 5.3.51 Stonechat was the most numerous passerine forming part of the SSSI breeding assemblage recorded, favouring heather stands and small scrub patches around reservoirs, where territories were concentrated along moorland fringe (Figure 23). Numbers were notably higher in 2024 and 2025 compared to 2022, likely attributable to the increased survey coverage during these years.
- 5.3.52 Collectively, these passerine assemblages are indicative of the diverse habitat mosaic within the study area, encompassing cloughs, reservoir margins, moorland fringe and heather scrub mosaics, and align closely with the distribution and breeding ecology described within the SPA and SSSI citations. Their continued presence demonstrates the ecological integrity of these upland habitats and their importance for sustaining the characteristic upland bird community of the South Pennines.

SPA/SSSI species not recorded

- 5.3.53 Twite and shelduck were not recorded during the breeding bird surveys, which aligns with their current known distributions. Twite were not recorded during acoustic monitoring, further supporting their absence from the study area. The South Pennine Moors Phase 2 SPA citation¹⁹ notes that twite are largely confined to the southern block of the SPA, with core breeding areas centred north of the M62 around Soyland and Rishworth Moor, outside of the study area for the Proposed Development. Historically, this species bred more widely across the South Pennines, but steep declines have been documented in recent decades. Between 1990 and 2004/5, twite range and abundance within the South Pennine Moors SPA fell by over 80%³⁸, and the 2013 national survey recorded a 72% decline in the English breeding population since 1999, with almost all remaining birds confined to the SPA³⁹. The contraction is linked to the loss of suitable nearby seed-rich feeding areas and heather, bracken or bilberry nesting habitat.
- 5.3.54 While extensive heather-dominated moorland is present and provides potential nesting cover, bracken stands, often favoured by twite for nesting, are scarce. Similarly, foraging opportunities are constrained, with dandelion and sorrel rich areas confined to small patches in the southern pastures and around reservoir margins, which are limited in extent and spatial continuity. Given the species' declines, the location of the study area within the central block of the SPA and the limited availability of feeding resources, the absence of twite records is consistent with the species' current restricted distribution.
- 5.3.55 Shelduck are listed on the South Pennine Moors SSSI citation but were not recorded during the breeding bird surveys. A small number of shelduck call registrations were identified during acoustic monitoring; however, these were recorded at very low frequency and are considered most likely to represent individuals flying over or commuting through the study area, rather than birds making functional use of the study area. The citation specifically refers to a pair nesting at Blackstone Edge Reservoir¹⁹; believed to be the highest altitude (1,100 ft) breeding site for the species in Britain. This area lies in the southern block of the SPA, outside the study area for the Proposed Development, and likely represents a very localised breeding occurrence. The absence of shelduck breeding

³⁸ Raine, A.F., Brown, A.F. Amano, T. & Sutherland, W.J. (2009) Assessing population changes from disparate data sources: the decline of the Twite *Linaria flavirostris* in England. *Bird Conservation International*, **19**, 401 – 416.

³⁹ Wilkinson, N.I., Eaton, M.A., Colhoun, K. & Drewitt, A.L. (2018) The population status of breeding Twite *Linaria flavirostris* in the UK in 2013. *Bird Study*, **65**, 174 – 188.

evidence within the study area is therefore unsurprising and consistent with their highly restricted upland breeding distribution.

5.4 Breeding raptors

- 5.4.1 In addition to merlin and peregrine, a further nine raptor species were recorded within the study area in the breeding seasons between 2022 and 2025: buzzard (*Buteo buteo*), goshawk, hen harrier, hobby (*Falco subbuteo*), kestrel, marsh harrier, red kite, short-toed eagle (*Circaetus gallicus*) and sparrowhawk (*Accipiter nisus*).
- 5.4.2 The short-toed eagle was recorded as a single flyover in 2022 and represents a rare vagrant to the UK; it is therefore considered a non-breeding species. Goshawk were recorded during 2024 and 2025, with one observation in 2025 of an individual descending into The Plantation woodland in the south of the Turbine Area, suggesting possible nesting activity (see Confidential Figure 6). However, this woodland measures only 7.5 ha, smaller than the typical minimum woodland size of 20 - 50 ha for nesting sites preferred by breeding pairs¹³. It is therefore more likely that the observed birds were associated with the extensive mature mixed woodland at Hardcastle Crag, located immediately south of the Turbine Area, or with larger plantations in the surrounding landscape.
- 5.4.3 A confirmed pair of hen harrier was recorded in 2025 within the Turbine Area, based on multiple observations of courtship display, repeated use of a single area of heather, and defensive behaviour (see Confidential Figure 7). A pair was also noted in 2022 performing courtship displaying in the same area. These findings are consistent with the species' association with extensive heather-dominated uplands and indicate the presence of suitable breeding habitat within the Turbine Area.
- 5.4.4 Hobby were recorded regularly but in low numbers throughout the survey period, with most observations occurring early in the breeding season and likely representing passage individuals. Several hunting records in July 2024, however, suggest possible breeding activity, although no nests were identified. In accordance with RBBP guidance⁴⁰, the species' breeding status within the study area is therefore classed as possible, with nesting most likely within surrounding woodland and extensive foraging use of open moorland and reservoir habitats.
- 5.4.5 Kestrel were frequently recorded throughout the Turbine Area and wider study area, with one breeding pair in 2022, three in 2024 and up to four in 2025. Nest sites within the Turbine Area included rock crags near Widdop Reservoir, farm buildings at Mare Greave Slack, and an abandoned building adjacent to Walshaw Dean Lower Reservoir. Within the wider study area nest sites were noted within woodland south of the Turbine Area and again in farmland buildings near Thursden. The combination of rough grassland, farmland margins and moorland edge provided abundant small mammal foraging opportunities.
- 5.4.6 Marsh harrier were recorded nesting for the first time in the study area in 2025, with a probable nest identified north of the Turbine Area (see Confidential Figure 8). A pair was observed dropping repeatedly into this area and mobbing a short-eared owl, confirming

⁴⁰ RBBP, *Criteria for categorizing Hobby breeding evidence in the UK*. Rare Breeding Birds Panel guidance document. Available at: <https://rbbp.org.uk/survey-methodologies/>
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territory behaviour. This is a notable and unusual breeding record, as marsh harrier are typically associated with lowland reedbed rather than upland moorland. Between 1983-90 and in 1995 86% of nests were in reedbed with smaller numbers in arable crops (13%)¹³. The Turbine Area evidently provides suitable nesting and foraging habitat, likely supported by an abundance of prey, low disturbance levels and ongoing predator control.

- 5.4.7 Red kite were observed only occasionally in 2022 and 2024 but showed a notable increase in 2025, when a family group was observed foraging across the Turbine Area. Although no nests were found, the species is likely breeding within the woodlands of Hardcastle Crag or nearby plantations in the wider study area, using the moorland fringe for foraging. Red kites usually forage within 3km (occasionally up to 6km) from their nest¹³, not only indicating a nest in the vicinity but also that the Turbine Area constitutes a core foraging area for this species' home range, particularly in 2025.
- 5.4.8 Sparrowhawk bred within both the Turbine Area and wider study area, with confirmed nests in the Hardcastle Crag woodlands in 2024 and within New Laithe Moor Plantation in 2025. Similarly, buzzard were recorded breeding in these same woodlands, with two pairs in Hardcastle Crag in 2024 and one nest in The Plantation in 2025. Both species were widespread and regularly recorded hunting over the moorland and farmland habitat, benefiting from high prey availability.
- 5.4.9 Taken together, the assemblage of raptor species recorded, comprising multiple breeding species of falcons, hawks, harriers, and buzzards, demonstrates the exceptional habitat diversity and ecological quality of the study area. The mosaic of heather moorland, grassland, reservoir margins and woodland support a wide range of nesting and foraging opportunities, characteristic of a high-quality upland ecosystem capable of sustaining a rich and diverse raptor community.

5.5 Breeding owls

- 5.5.1 All five breeding owl species found in the UK were recorded breeding within the study area during the 2022–2025 survey period: barn owl, tawny owl, long-eared owl, little owl, and short-eared owl (see Section 5.3.30). This represents a comprehensive assemblage of UK owl species, rarely documented within a single upland site, and indicative of the exceptional habitat diversity across the study area.
- 5.5.2 Barn owls were recorded frequently throughout the breeding seasons, regularly hunting across the Turbine Area and wider study area. Confirmed nests were located in the Turbine Area in 2022 and 2024, one within the wider study area to the south of the Turbine Area in 2024 and 2025, and further nests at elsewhere in the wider study area in 2025 (see Confidential Figure 4). These findings confirm a stable and established breeding population supported by the extensive grassland and moorland fringe providing abundant small-mammal prey.
- 5.5.3 Little owls were absent from breeding records in 2022 but were confirmed breeding in both 2024 and 2025, with two pairs in each year. Most territories were on the southern and western perimeter of the Turbine Area, likely nesting in farm buildings, wall cavities, mature trees or installed nest boxes. A further pair was recorded at the edge of the Hardcastle Crag woodland, within the wider study area in 2024.

- 5.5.4 Long-eared owls were confirmed breeding in 2025, with two active nests located; one within The Plantation inside the Turbine Area and another in a small woodland near Keeper's Lodge along the Bradford West Cable Corridor. Targeted surveys in 2023 had recorded calling birds from The Plantation, indicating a likely nest and consistent territorial occupancy across years.
- 5.5.5 Tawny owls were confirmed breeding in 2024 and 2025, both associated with The Plantation. Targeted nocturnal surveys in 2023 also recorded probable breeding pairs in New Laithe Moor Plantation and three additional probable pairs within the large, mature Hardcastle Craggs woodlands to the south.
- 5.5.6 The presence of all five breeding owl species demonstrates an exceptionally rich and balanced assemblage, with each species exploiting a different component of the available habitat mosaic; from open moorland and fringe pastures used by short-eared owls and barn owls, to dense plantation and mixed woodland supporting long-eared owls and tawny owls, and farm building networks and pasture edges favoured by little owls. Few areas in the UK support the full complement of breeding owl species, underscoring the high ecological quality and structural diversity of habitats within the study area, and the abundance of prey and nesting opportunities across its moorland, woodland and farmland interfaces.

5.6 Breeding waders and waterfowl

- 5.6.1 In addition to the designated wader and waterfowl species, several other breeding species were recorded within the study area, including oystercatcher, Canada goose, greylag goose, little grebe (*Tachybaptus ruficollis*), mallard (*Anas platyrhynchos*), tufted duck (*Aythya fuligula*), and goosander (*Mergus merganser*).
- 5.6.2 Up to 21 pairs of oystercatchers were recorded, predominantly nesting within the lower-lying pasture areas near Holme Ends and around Mare Greave Slack, with pairs regularly observed foraging along the reservoir margins. The combination of acid grassland, moorland, and reservoir complexes provided suitable breeding and feeding habitat for a wider assemblage of wildfowl, including Canada goose, greylag goose (up to 19 pairs), goosander (up to three pairs), little grebe, mallard (up to eight pairs) and tufted duck. Three active black-headed gull nests were additionally recorded in 2022 adjacent to the Walshaw Dean Lower Reservoir. These species made use of the reservoirs, rivers, and dikes interspersed throughout the study area.
- 5.6.3 Woodcock were recorded breeding in 2024 and 2025, with one pair recorded in each year, likely associated with The Plantation. In addition, nocturnal woodland surveys in 2023 recorded roding woodcock within the Gorple Reservoir north-east woodland, indicating a further probable breeding pair in this area.
- 5.6.4 A single observation of an alarm-calling female teal was recorded during the breeding bird surveys, located to the east of the Turbine Area on moorland habitat in 2022. This represented the only teal record across all daytime breeding surveys. Teal were also recorded at low frequency during acoustic monitoring in 2024, indicating occasional nocturnal presence within the study area. While it is therefore possible that teal may have attempted to breed locally and were not detected during daytime surveys, there remains insufficient evidence to conclude that the Turbine Area supports a regular or notable breeding population. This interpretation takes account of the species' cryptic nesting

behaviour and the supplementary nature of acoustic data, which cannot reliably infer breeding status.

- 5.6.5 Overall, these records highlight the diversity of wetland-associated species supported by the mosaic of moorland, grassland, and freshwater habitats within the study area, demonstrating its value not only for upland waders but also for a range of breeding waterfowl typical of high-quality upland catchments.

5.7 Other priority species

- 5.7.1 A range of priority and protected bird species were recorded breeding or probably breeding within the study area between 2022 and 2025, contributing to the wider assemblage of upland and moorland-fringe birds of conservation importance. These include WCA Schedule 1, NERC S41 Species of Principal Importance and BoCC Red and Amber list species.
- 5.7.2 Skylark (*Alauda arvensis*) and meadow pipit were ubiquitous across the Turbine Area and wider study area, occupying open heather moorland, acid grassland, and rough pasture. Their abundance reflects the extent and quality of suitable breeding habitat maintained through ongoing moorland management, including rotational burning/cutting and grazing that sustain the vegetation structure required for ground-nesting passerines.
- 5.7.3 Several scarce or declining passerines typical of the moorland fringe and wet grassland habitats were recorded, including cuckoo, grasshopper warbler, reed bunting (*Emberiza schoeniclus*), and linnet (*Linaria cannabina*). Cuckoo were confirmed breeding in all survey years with an abundance of host species (i.e. meadow pipit), while grasshopper warbler increased to seven probable territories by 2025, largely within wetter Juncus-dominated flushes, rank grassland and small patches of scrub adjacent to reservoirs. Reed bunting were widespread across wet grassland and rush moorland margins, and small numbers of linnet were recorded along the drier moorland fringe and farmland edges.
- 5.7.4 Within the woodland and scrub habitats, dunnoek (*Prunella modularis*), song thrush (*Turdus philomelos*) and mistle thrush (*Turdus viscivorus*) and willow warbler (*Phylloscopus trochilus*) were confirmed or probable breeders, along with redstart (*Phoenicurus phoenicurus*) in 2025. These species were concentrated around The Plantation, Hardcastle Crag, and reservoir fringe woodlands; areas providing understorey and mature trees for nesting and abundant invertebrate prey. In addition to woodlands, clough and man-made built structures provided nesting habitat for the declining spotted flycatcher, house sparrow (*Passer domesticus*) as well as swallow (*Hirundo rustica*).
- 5.7.5 One pair of common crossbill (*Loxia curvirostra*), a WCA Schedule 1 species, was recorded in 2025 within coniferous woodland in the Turbine Area (see Confidential Figure 5). This species is known to breed opportunistically where cone crops are available and is typically associated with mature conifer plantations such as those found within the Turbine Area and wider study area.
- 5.7.6 Collectively, the assemblage of priority species recorded demonstrates that the study area supports a diverse upland bird community, encompassing species associated with moorland, wet grassland, farmland, woodland edge, and conifer plantation habitats. The

persistence and diversity of NERC S41, WCA Schedule 1, and BoCC Red and Amber listed species, combined with low predator densities, indicate that current habitat management practices are maintaining a high-quality, structurally diverse upland ecosystem capable of supporting a wide range of breeding birds of conservation concern.

5.8 Non-priority species

- 5.8.1 Corvids were recorded in low numbers, with occasional observations of carrion crow (*Corvus corone*), jackdaw (*Coloeus monedula*), jay (*Garrulus glandarius*) and raven (*Corvus corax*). This low corvid abundance is indicative of effective predator control measures implemented across the Walshaw Moor Estate, contributing to the consistently high breeding success of ground-nesting birds within the moorland and fringe habitats.
- 5.8.2 Other non-priority breeding birds recorded included abundant passerines, which were concentrated around The Plantation, Hardcastle Crag, reservoir fringe woodlands, cloughs and man-made built structures; areas providing understorey, mature trees and other structures suitable for nesting and abundant invertebrate prey.

6 Non-breeding birds

6.1 Desk study overview

6.1.1 Data obtained from the West Yorkshire Ecology Service, Lancashire Environmental Record Network and the North & East Yorkshire Ecological Data Centre in June 2025 and November 2025 included records of 54 priority species of importance to the non-breeding season. Full priority species records are provided in Annex A. Records potentially of relevance in the context of the Proposed Development to the non-breeding season included:

- Eight species listed under Annex 1 of the Birds Directive including marsh harrier, hen harrier and short-eared owl;
- 17 species listed under Section 41 of the NERC Act including merlin, red grouse and lapwing;
- 23 BoCC Red listed species including lapwing, fieldfare (*Turdus pilaris*) and woodcock; and
- 29 BoCC Amber listed species including whooper swan (*Cygnus cygnus*), snipe and redwing (*Turdus iliacus*).

6.2 Field surveys overview

6.2.1 Field surveys undertaken between 2022 and 2024 recorded a total of 86 bird species within the study area during the non-breeding seasons. A summary of the priority species identified is presented in Table 8. Each species has been assigned a non-breeding status, indicating whether it was recorded as wintering (present throughout the non-breeding season) and/or on passage (recorded during migratory movements through the study area). Further detail on the occurrence, behaviour, and distribution of both priority and non-priority species is provided in the following sections, which describe passage and wintering assemblages respectively (see Sections 6.3 and 6.4).

6.2.2 Full non-breeding bird survey data provided in the accompanying *Ornithology Data Document*.

6.2.3 Of the 86 species recorded during the field surveys for non-breeding birds, 53 are considered priority species as described in Section 3.1, including:

- Nine EC Birds Directive Annex 1 species;
- 15 NERC S41 Species of Principal Importance;
- 21 BoCC Red list species; and
- 28 BoCC Amber list species.

Table 8. Non-breeding bird field survey summary

Common name	Scientific name	Conservation status*	Non-breeding Status	Description
Black-headed gull	<i>Choroicocephalus ridibundus</i>	Amber	Wintering and Passage	Individuals and small flocks infrequently commuting and occasionally foraging on Walshaw Dean Reservoirs.
Black grouse	<i>Lyrurus tetrix</i>	S41, Red	Wintering	Observations of up to two birds in moorland adjacent to plantation woodland in the southern extent of the study area in January 2022. Two birds were also seen flying over moorland within the western extent of the study area two weeks later.
Common gull	<i>Larus canus</i>	Red	Wintering and Passage	Birds were typically observed commuting and foraging over the study area in small groups and flocks of up to 85 individuals.
Curlew	<i>Numenius arquata</i>	S41, Red	Passage	Activity largely restricted to passage migration with frequent observations including flocks of up to 40 individuals flying over and commuting within moorland across the study area.
Dipper	<i>Cinclus cinclus</i>	Amber	Wintering	Between 1-2 birds observed along within the west and centre of the study area in 2022 and 2024.
Dunlin	<i>Calidris alpina</i>	Annex 1, Red	Wintering and Passage	Limited observations of up to four birds on passage migration and wintering within the study area in 2022 and 2024.
Dunnock	<i>Prunella modularis</i>	S41, Amber	Wintering	Infrequent observations of birds in the centre and west of the study area.
Fieldfare	<i>Turdus pilaris</i>	Red	Wintering and Passage	Frequent observations in the western extent of the study area of large flocks of between 100-400 birds with the largest observation of up to 1,500 birds in October 2022.
Golden plover	<i>Pluvialis apricaria</i>	Annex 1, Green	Wintering and Passage	Individuals, small flocks and large groups up to 80 birds were frequently observed across the survey period. Birds observed commuting in higher altitude sections of moorland throughout the study area.
Great black-backed gull	<i>Larus marinus</i>	Red	Passage	Infrequently commuting over moorland in the centre and east of the study area as individuals or small flocks of up to eight individuals.
Greenfinch	<i>Chloris chloris</i>	Red	Wintering	Scarcely recorded with a flock up to 10 birds observed within the study area in February 2022.
Grey partridge	<i>Perdix perdix</i>	S41, Red	Wintering	Two observations of up to five birds within the southern extent of the study area.

Common name	Scientific name	Conservation status*	Non-breeding Status	Description
Grey wagtail	<i>Motacilla cinerea</i>	Amber	Wintering	Up to six birds observed with activity in ditches within moorland, around Walshaw Dean Reservoirs and south of the study area across 2022 and 2024.
Greylag goose	<i>Anser anser</i>	Amber	Wintering and Passage	Frequent observations of groups foraging on pasture grassland or commuting within the study area across the non-breeding season.
Hen harrier	<i>Circus cyaneus</i>	Annex 1, S41, Red	Wintering and Passage	Frequent observations of male, female and juvenile birds across the entire study area throughout the non-breeding season. Approximately four to five individuals present hunting over moorland within the study area during the non-breeding season in 2023/24.
Herring gull	<i>Larus argentatus</i>	S41, Red	Wintering and Passage	Observations of individuals and small flocks commuting through the study area across the entire survey period.
House sparrow	<i>Passer domesticus</i>	S41, Red	Wintering	One observation of six individuals by a barn south of the study area.
Kestrel	<i>Falco tinnunculus</i>	Amber	Wintering	Very frequent observations of birds throughout the entire study area hunting over moorland with up to four birds observed at once.
Lapwing	<i>Vanellus vanellus</i>	S41, Red	Wintering and Passage	Observed in small groups and larger flocks of up to 53 - 55 birds commuting through the study area or foraging on wet and pasture grassland present in the southern extent of the study area.
Lesser black-backed gull	<i>Larus fuscus</i>	Amber	Wintering and Passage	Occasionally observed commuting east and west over the study area in small flocks of up to 15 birds.
Linnet	<i>Linaria cannabina</i>	S41, Red	Wintering	Very infrequently observed with three observations in March 2024 of up to two birds east of the study area.
Mallard	<i>Anas platyrhynchos</i>	Amber	Wintering	Small flocks consistently recorded across the survey period with observations of up to 34 birds commuting over the study area or between Walshaw Dean and Widdop reservoirs.
Marsh harrier	<i>Circus aeruginosus</i>	Annex 1, Amber	Passage	Individual female and juvenile birds observed in October 2022 hunting over moorland either side of Walshaw Dean Reservoirs. Approximately 1-2 birds present in the non-breeding season.
Meadow pipit	<i>Anthus pratensis</i>	Amber	Wintering	Individuals and small flocks of up to 18 birds present throughout the non-breeding season in moorland and pasture grassland within the study area.

Common name	Scientific name	Conservation status*	Non-breeding Status	Description
Merlin	<i>Falco columbarius</i>	Annex 1, Red	Wintering	Individual male, female and juvenile birds frequently recorded hunting across moorland within the study area. Approximately four to five birds observed across the non-breeding season.
Mistle thrush	<i>Turdus viscivorus</i>	Red	Wintering	Up to seven birds observed with individual birds commonly observed foraging on pasture and wet grassland in the southern extent of the study area.
Oystercatcher	<i>Haematopus ostralegus</i>	Amber	Wintering	Small groups were interspersed on pasture grassland in the southern extent with the highest observations of up to 44 individuals in fields surrounding Walshaw Dean Reservoirs.
Peregrine	<i>Falco peregrinus</i>	Annex 1, Green	Wintering	Activity consistent throughout the entire non-breeding period with frequent flight activity across the study area with up to three birds observed.
Pink-footed goose	<i>Anser brachyrhynchus</i>	Amber	Passage	Passage flight activity with large flocks of up to 325 individuals commuting through the study area across the entire non-breeding season.
Red grouse	<i>Lagopus lagopus scotica</i>	S41, Amber	Wintering	Large aggregations of grouse across high plateau moorland across the study area with large flocks observed.
Red kite	<i>Milvus milvus</i>	Annex 1, Green	Wintering	Occasional observations of individual birds hunting and commuting over moorland.
Redpoll	<i>Acanthis flammea</i>	S41, Red	Passage	Flock of up to 25 individuals observed in plantation woodland within the southern extent of the study area in October 2022.
Redshank	<i>Tringa totanus</i>	Amber	Wintering	Observations of up to five birds in grassland and around Walshaw Dean Reservoirs during the non-breeding season.
Redwing	<i>Turdus iliacus</i>	Amber	Wintering and Passage	Occasional observations of large flocks with the largest observation of 800 birds commuting through the western extent of the study area in October 2022.
Reed bunting	<i>Emberiza schoeniclus</i>	S41, Amber	Wintering	Between 1-2 birds occasionally observed in grassland and ditches throughout the study area.
Ring ouzel	<i>Turdus torquatus</i>	S41,	Passage	Up to three birds observed in October 2022 during the passage period with birds predominantly observed flying over Widdop Reservoir.

Common name	Scientific name	Conservation status*	Non-breeding Status	Description
Rook	<i>Corvus frugilegus</i>	Amber	Wintering	Single observation of two birds within the study area in February 2023.
Short-eared owl	<i>Asio flammeus</i>	Annex 1, Amber	Wintering	Up to three birds at once observed hunting over moorland within the study area during the non-breeding season.
Skylark	<i>Alauda arvensis</i>	S41, Red	Wintering and Passage	Ubiquitous and abundant across the study area with lower numbers during the non-breeding season as birds migrated to lower altitude areas.
Snipe	<i>Gallinago gallinago</i>	Amber	Wintering	Individuals and small flocks of up to seven birds were observed commuting or being flushed from wet grassland forming the perimeter of moorland habitat within the study area.
Snow bunting	<i>Plectrophenax nivalis</i>	Amber	Passage	Incidental observation of an individual bird within the study area in September 2022.
Song thrush	<i>Turdus philomelos</i>	S41, Amber	Wintering	Limited observations of individual birds within plantation woodland in the southern extent of the study area. Incidental observation of 200 birds on passage in November 2022.
Sparrowhawk	<i>Accipiter nisus</i>	Amber	Wintering	Occasional observations of individual birds hunting across grassland and moorland within the centre of the study area.
Starling	<i>Sturnus vulgaris</i>	Red	Wintering	Frequent foraging in pasture grassland and commuting across the study area with flocks of up to 40 individuals frequent. Largest observation of 300 birds in October 2022.
Stock dove	<i>Columbus oenas</i>	Amber	Wintering	Up to 22 birds observed throughout grassland within the centre of the study area in the non-breeding season.
Teal	<i>Anas crecca</i>	Amber	Passage	Scarce observations of between 1-2 birds commuting over the study area.
Tree sparrow	<i>Passer montanus</i>	S41, Red	Passage	Incidental observation of an individual bird in vegetation along the western perimeter of Walshaw Dean Reservoirs in November 2022.
Twite	<i>Linaria flavirostris</i>	Red	Passage	Incidental observation of a flock of c. 40 birds on the moorland hillside west of Walshaw Dean Reservoirs in September 2022 during VP surveys.
Wheatear	<i>Oenanthe oenanthe</i>	Amber	Passage	Individual birds observed calling in the centre and east of the study area.

Common name	Scientific name	Conservation status*	Non-breeding Status	Description
Whooper swan	<i>Cygnus cygnus</i>	Annex 1, Amber	Passage	Infrequent flocks of up to 60 birds commuting over moorland within the east of the study area.
Woodcock	<i>Scolopax rusticola</i>	Red	Wintering	Individual birds occasionally observed being flushed from moorland vegetation across the study area
Woodpigeon	<i>Columbus palumbus</i>	Amber	Wintering and Passage	Individual and small flocks of birds occasionally commuting or observed in grassland and plantation woodland within the southern extent of the study area.
Wren	<i>Troglodytes troglodytes</i>	Amber	Wintering	Individual birds frequently observed across the study area in woodland, moorland and aquatic marginal vegetation.
* 'Red', 'Amber' and 'Green' relates to Birds of Conservation Concern status ¹ . 'Annex 1' comprises birds listed on Annex 1 of the EC Birds Directive (2009/147/EC). 'S41' comprises Species of Principal Importance as listed under Section 41 of the NERC Act 2006.				

Table 9. Results of the non-breeding bird assessment for non-priority species.

Species		Conservation / legislative status*	Non-breeding Status
Common name	Scientific name		
Barn owl	<i>Tyto alba</i>	Green	Wintering
Blackbird	<i>Turdus merula</i>	Green	Wintering
Blue tit	<i>Cyanistes caeruleus</i>	Green	Wintering
Buzzard	<i>Buteo buteo</i>	Green	Wintering
Canada goose	<i>Branta canadensis</i>	N/A	Wintering
Carrion crow	<i>Corvus corone</i>	Green	Wintering
Chaffinch	<i>Fringilla coelebs</i>	Green	Wintering
Coal tit	<i>Periparus ater</i>	Green	Wintering
Coot	<i>Fulica atra</i>	Green	Wintering
Common crossbill	<i>Loxia curvirostra</i>	Green	Wintering
Feral pigeon	<i>Columbia livia</i>	Green	Wintering
Goldcrest	<i>Regulus regulus</i>	Green	Wintering
Goldfinch	<i>Carduelis carduelis</i>	Green	Wintering
Goosander	<i>Mergus merganser</i>	Green	Wintering
Goshawk	<i>Accipiter gentilis</i>	Green	Wintering
Great crested grebe	<i>Podiceps cristatus</i>	Green	Wintering
Great spotted woodpecker	<i>Dendrocopos major</i>	Green	Wintering
Great tit	<i>Parus major</i>	Green	Wintering
Grey heron	<i>Ardea cinerea</i>	Green	Wintering
Jack snipe	<i>Lymnocyptes minimus</i>	Green	Wintering and Passage
Jackdaw	<i>Coloeus monedula</i>	Green	Wintering
Jay	<i>Garrulus glandarius</i>	Green	Wintering
Little owl	<i>Athene noctua</i>	N/A	Wintering
Magpie	<i>Picus picus</i>	Green	Wintering
Nuthatch	<i>Sitta europaea</i>	Green	Wintering
Pheasant	<i>Phasianus colchicus</i>	N/A	Wintering
Pied wagtail	<i>Motacilla alba</i>	Green	Wintering
Raven	<i>Corvus corax</i>	Green	Wintering
Red-legged partridge	<i>Alectoris rufa</i>	N/A	Wintering
Robin	<i>Erithacus rubecula</i>	Green	Wintering
Siskin	<i>Spinus spinus</i>	Green	Wintering
Stonechat	<i>Saxicola torquata</i>	Green	Wintering
Treecreeper	<i>Certhia familiaris</i>	Green	Wintering
Tufted duck	<i>Aythya fuligula</i>	Green	Wintering

* 'Green' relates to Birds of Conservation Concern status¹.

6.3 Passage

6.3.1 The study area lies within the South Pennine uplands, forming part of a key north–south migration corridor used by a wide range of waders, waterfowl, raptors, and passerines during spring and autumn passage. The mosaic of heather moorland, acid grassland, blanket bog, woodland and reservoir margins provides valuable foraging, roosting, and stopover opportunities for birds migrating between breeding and wintering grounds. These habitats, combined with the study area’s open topography and relative lack of disturbance, make it an important component of the wider upland migratory landscape.

- 6.3.2 Passage activity was dominated by wader and waterfowl movements, particularly involving pink-footed goose, golden plover, lapwing and curlew. These observations are consistent with established knowledge of the South Pennines as an important upland staging area for these priority species.
- 6.3.3 Pink-footed geese, observed in flocks of up to 325 birds, were recorded commuting through the study area during both autumn and spring passage, consistent with known migratory flyways through Yorkshire that connect coastal roosts in Lincolnshire and Norfolk with inland feeding grounds²⁷. This species tends to avoid foraging in upland environments, instead roosting on the coast and commuting inland to lowland farmland and saltmarsh to feed⁴¹. Observations within the study area therefore likely represent birds in transit rather than using the study area as a foraging destination.
- 6.3.4 Golden plover, lapwing, and curlew were frequently recorded flying over, foraging, or resting on moorland and grassland slopes, with notable flocks including up to 53 lapwing, 115 golden plover, and 57 curlew during passage periods. This suggests the study area functions as a temporary staging area where flocks rest and refuel before continuing migration or dispersing to nearby breeding territories. Comparable inland commuting records within Yorkshire report flocks of 700–1,200 lapwing, 300–700 golden plover, and 30–400 curlew between lowland wetlands and upland breeding sites⁴², indicating that the study area forms part of this broader migratory linkage through the South Pennines.
- 6.3.5 Other passage species included hen harrier and marsh harrier, observed intermittently hunting across moorland and pasture, and a small number of whooper swan, greylag goose, and gull species commuting through the area. Aside from hen harrier, which was recorded extensively throughout the wintering period, limited foraging behaviour of the other species suggests the study area is primarily used for transit and opportunistic feeding rather than as a major wintering location for these species.
- 6.3.6 Among passerines, large flocks of winter thrushes were observed migrating through the moorlands and roosting briefly in adjacent woodland, consistent with the autumn influx of these species into upland Yorkshire. Notable observations included up to 1,500 fieldfare and 600 redwing commuting over the study area, particularly across the western and central moorlands and around the Walshaw Dean Reservoirs. These records demonstrate the study area's importance as a temporary roosting and foraging area during migration. Smaller groups of ring ouzel (3), twite (40), wheatear (1), and skylark were also recorded using the moorland fringe and grassland margins during passage, highlighting the study area's role as a transitional link between upland breeding territories and wintering grounds.
- 6.3.7 Overall, the passage records demonstrate that the study area supports a relatively diverse assemblage of migratory species, functioning primarily as a commuting and short-stay stopover site within the South Pennine migratory network.

⁴¹ Carboneras, C. and G. M. Kirwan (2020). Pink-footed Goose (*Anser brachyrhynchus*), version 1.0. In *Birds of the World*. Cornell Lab of Ornithology, Ithaca, NY, USA.

⁴² Yorkshire Naturalists Union (2011) Yorkshire Bird Report: 2010. *Yorkshire Naturalists Union Birds Section*
 CALDERDALE ENERGY PARK
 Appendix 9.1: Baseline Ornithology Report
 2487562-D02(02)

6.4 Wintering

- 6.4.1 Across the survey period, a total of 73 bird species were recorded wintering within the study area. The assemblage represents a diverse but typical upland bird community, characteristic of the South Pennine environment. The range of habitats present, heather moorland, acid grassland, reservoirs, pasture, and scattered woodland, supports a wide variety of wintering species, demonstrating the study area's ecological heterogeneity and capacity to sustain upland bird populations during the non-breeding season.
- 6.4.2 The moorland plateau and slopes were the most important habitats for wintering species. The mosaic of heather, acid grassland, and *Juncus* flushes provided abundant foraging and roosting opportunities, particularly for red grouse, which remained widespread and numerous throughout the non-breeding season. Large flocks of up to 90 individuals were regularly observed, reflecting continued habitat management for driven grouse shooting. In contrast, black grouse were recorded rarely, with isolated observations of one to two birds foraging on western moorland near plantation woodland in January 2022. Given the species' near-absence from the South Pennines and its confinement to remnant northern populations (e.g. North Pennines as part of the North York Moors reintroduction⁴³), these likely represent outlier observations rather than a resident population.
- 6.4.3 Raptors and owls were well represented, taking advantage of the extensive prey base across moorland, woodland, and grassland. A total of eleven species were recorded, including regular wintering observations of hen harrier, merlin, kestrel, and peregrine, frequently hunting over open moorland for small mammals and passerines such as meadow pipits. Anecdotal observations from gamekeepers indicate that moorland to the south-west of the study area supports a regular winter hen harrier roost of four to six birds with a peak of up to 11 birds⁴⁴, likely encompassing individuals recorded during these surveys.
- 6.4.4 At dawn and dusk, hunting activity was dominated by short-eared owl and barn owl, which foraged low over the plateaus and grassland margins, while little owl were regularly seen roosting in stone walls and small plantations along the southern boundary. Additional raptors such as buzzard, red kite, sparrowhawk, and goshawk were also recorded hunting and circling over woodland and moorland. Despite fragmentation of woodland habitat, the diverse upland prey base and low disturbance make the study area an important winter refuge for raptors and owls.
- 6.4.5 In comparison with regional data⁴², the study area supported notably high densities of several key raptor species, including up to five hen harriers, five merlins, three short-eared owls, and three peregrines, indicating the area's regional significance for overwintering birds of prey.
- 6.4.6 Waterbirds and gulls were mostly associated with Walshaw Dean and Widdop Reservoirs, which provided extensive open water and shoreline feeding habitat. Regular species included greylag goose, mallard, goosander, great crested grebe (*Podiceps cristatus*), tufted duck, and Canada goose, with small flocks observed commuting between reservoirs and surrounding grassland. Up to four gull species were recorded

⁴³ GWCT (2025) Black Grouse Range Expansion Project. Game & Wildlife Conservation Trust, Fordingbridge. Available at: <https://www.gwct.org.uk/bgxp>

⁴⁴ Forthcoming surveys in the 2025/26 non-breeding season are employing a targeted approach to surveying this hen harrier roost within the moorland adjacent to Gorple Reservoirs.

across the non-breeding period, generally commuting as small groups through the area rather than roosting locally.

- 6.4.7 Waders were recorded in lower numbers, occupying wet and pasture grassland rather than upland bog. Small flocks of golden plover and lapwing (typically 15 – 30 individuals) foraged on grassland in the southern extent of the Turbine Area, while oystercatcher and redshank were observed roosting and feeding along reservoir shorelines. Snipe and woodcock were occasionally flushed from vegetation across both low-lying and higher-altitude areas. As temperatures fell and invertebrate availability declined, activity of most wader species reduced markedly, with golden plover, curlew, and lapwing largely migrating to coastal and lowland wintering grounds elsewhere in the UK, consistent with known national patterns.
- 6.4.8 Passerines were widespread across all suitable habitats. Meadow pipit and skylark remained abundant on heather moorland and acid grassland, while winter thrushes, particularly fieldfare and redwing, were frequently recorded commuting and foraging across lower pasture and wet grassland. Riparian habitats supported grey wagtail, reed bunting, and dipper, while plantation woodland held song thrush, greenfinch (*Chloris chloris*) and common crossbill. Farm buildings at the moorland edge occasionally supported house sparrow colonies.
- 6.4.9 Corvid activity was relatively low, with only small numbers of birds reflecting effective predator control within the Walshaw Moor Estate and contributing to the high overwintering success of ground-nesting and small passerine species.

7 Flight activity

- 7.1.1 During the VP surveys undertaken between 2022 and 2025 a total of 33 target species were observed. Greatest activity from species recorded within the study area was generally observed from waders, with notable flight activity at collision risk height from curlew, golden plover and lapwing between 2022 and 2025. Waterfowl and gulls also regularly commuted over the study area with notable flight activity at collision risk height from pink-footed goose, whooper swan, greylag goose, common gull (*Larus canus*) and lesser black-backed gull (*Larus fuscus*). Kestrel and peregrine were frequently observed at collision risk height while other raptors were also frequently recorded but often with fewer observations of individual birds resulting in comparatively lower total flight time at collision risk height. Similar limited flight activity at collision risk height was also recorded by low-flying species including barn owl, red grouse and short-eared owl, for which high levels of activity was recorded below collision risk height. Limited flight activity for all other species was recorded at collision risk height.
- 7.1.2 Further details of flight activity for target species identified in this assessment are provided in Table 10. Flight activity recorded during VP surveys across the entire survey period is shown in Figures 25-57 for common gull, curlew, greylag goose, golden plover, hen harrier, kestrel, lapwing, lesser black-backed gull, mallard (*Anas platyrhynchos*), merlin, marsh harrier, oystercatcher, peregrine, pink-footed goose, red grouse, red kite, short-eared owl, snipe and whooper swan.

Table 10. Flight activity summary from VP surveys undertaken between 2022 and 2025 (inclusive)

Species		Conservation status*	Total no. of observations	Total flight time (seconds)	Total flight time within collision risk height** (seconds)
Common name	Scientific name				
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Amber	23	3,645	2,995
Barn owl	<i>Tyto alba</i>	Schedule 1, Green	79	32,906	110
Common gull	<i>Larus fuscus</i>	Red	12	22,405	15,751
Common sandpiper	<i>Actitis hypoleucos</i>	Amber	5	115	0
Curlew	<i>Numenius arquata</i>	Red	918	67,156	56,014
Dunlin	<i>Calidris alpina</i>	Red	3	125	95

Species		Conservation status*	Total no. of observations	Total flight time (seconds)	Total flight time within collision risk height** (seconds)
Common name	Scientific name				
Little egret	<i>Egretta garzetta</i>	Annex 1, Green	1	225	225
Great black-backed gull	<i>Larus marinus</i>	Red	17	2,675	1,585
Goshawk	<i>Accipiter gentilis</i>	Schedule 1, Green	9	696	630
Greylag goose	<i>Anser anser</i>	Amber	306	57,647	50,194
Golden plover	<i>Pluvialis apricaria</i>	Annex 1, Green	449	432,553	407,831
Herring gull	<i>Larus argentatus</i>	Red	19	4,015	3,870
Hen harrier	<i>Circus cyaneus</i>	Annex 1, Schedule 1, Red	60	6,159	2,731
Hobby	<i>Falco subbuteo</i>	Schedule 1, Green	6	425	320
Kestrel	<i>Falco tinnunculus</i>	Amber	666	110,997	92,157
Lapwing	<i>Vanellus vanellus</i>	Section 41, Red	264	205,715	168,662
Lesser black-backed gull	<i>Larus fuscus</i>	Amber	187	45,420	41,592
Little ringed plover	<i>Charadrius dubius</i>	Schedule 1, Green	10	512	200
Mallard	<i>Anas platyrhynchos</i>	Amber	58	11,197	6,207
Merlin	<i>Falco columbarius</i>	Annex 1, Schedule 1, Red	118	4,415	1,643
Marsh harrier	<i>Circus aeruginosus</i>	Annex 1, Schedule 1, Amber	40	3,255	1,505

Species		Conservation status*	Total no. of observations	Total flight time (seconds)	Total flight time within collision risk height** (seconds)
Common name	Scientific name				
Oystercatcher	<i>Haemotopus ostralegus</i>	Amber	51	4,183	3,536
Peregrine	<i>Falco peregrinus</i>	Annex 1, Schedule 1, Green	140	14,912	13,535
Pink-footed goose	<i>Anas brachyrhynchus</i>	Amber	59	500,357	499,122
Red grouse	<i>Lagopus lagopus</i>	Section 41, Amber	1,962	82,426	4,974
Red kite	<i>Milvus milvus</i>	Annex 1, Schedule 1, Green	83	10,703	9,100
Redshank	<i>Tringa totanus</i>	Amber	2	25	5
Short-eared owl	<i>Asio flammeus</i>	Annex 1, Amber	94	10,234	2,057
Snipe	<i>Gallinago gallinago</i>	Amber	33	3,127	2,197
Teal	<i>Aythya fuligula</i>	Amber	1	60	0
Woodcock	<i>Scolopax rusticola</i>	Red	13	709	20
Whimbrel	<i>Numenius phaeopus</i>	Schedule 1, Red	3	205	205
Whooper swan	<i>Cygnus cygnus</i>	Annex 1, Schedule 1, Amber	4	11,775	11,775

* 'Red', 'Amber' and 'Green' relates to Birds of Conservation Concern status¹. 'Schedule 1' comprises birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). 'Annex 1' comprises birds listed on Annex 1 of the EC Birds Directive (2009/147/EC).

**Within this assessment the collision risk height is estimated to be between 10–200m above ground level.

8 Conclusions

8.1 Breeding birds

8.1.1 The results of the breeding bird surveys demonstrate that the study area supports a diverse assemblage of upland breeding birds, characteristic of the South Pennine Moors Phase 2 SPA and South Pennine Moors SSSI. A total of 107 bird species were recorded across all survey years (2022 – 2025), including 69 species of conservation or legislative importance such as merlin, curlew, golden plover, short-eared owl and lapwing. The assemblage recorded aligns closely with that described by Brown and Shepherd (1991)¹⁷ and the SPA citation¹⁹, confirming that the study area provides a stronghold for upland waders, raptors and passerines within the South Pennines.

Habitat diversity

8.1.2 The study area encompasses a wide range of upland habitats, each supporting distinct breeding bird communities. The vast blanket bog along with wet and dry heaths of the plateaus support breeding golden plover, dunlin and meadow pipit, while the more well-drained, gently sloping moorland holds curlew, red grouse, and short-eared owl. Peripheral areas of pasture, acid grassland and *Juncus* flushes support dense populations of curlew, snipe and lapwing. The cloughs, tors and gritstone edges, with their associated rock litter and dry-stone walls are characterised by breeding peregrine, kestrel, ring ouzel, whinchat and wheatear. The small areas of woodland provide nesting and foraging habitat for raptors and owls as well as priority passerine species such as common crossbill, mistle thrush and spotted flycatcher. Meanwhile, the rivers, ditches, and reservoir margins provide breeding habitat for little ringed plover, common sandpiper, dipper and grey wagtail. This variety of habitat types underpins the diversity of the recorded breeding assemblage.

Influence of land management

8.1.3 The surveys highlight that the Walshaw Moor Estate's active moorland management regime, comprising rotational heather burning/cutting, low intensity grazing and predator control, is central to maintaining this ecological diversity. These practices sustain a heterogeneous vegetation structure, creating a fine-scale mosaic of heather, grass, bog, and woodland habitats suitable for a wide range of species. Similar positive relationships between managed grouse moorland and high densities of breeding waders and red grouse have been demonstrated in other parts of the Pennines^{45,36}.

8.1.4 Predator control appears to play a particularly important role. The low density of corvids recorded during the survey provides evidence of effective control across the estate.

⁴⁵ Tharme, A.P., Green, R.E., Baines, D., Bainbridge, I.P. & O'Brien, M. (2001) The effect of management for red grouse shooting on the population density of breeding birds on heather-dominated moorland. *Journal of Applied Ecology*, **38**, 439 – 457.

Studies such as Fletcher *et al.* (2010)⁴⁶ and Baines (2025)⁴⁷ show that targeted control of generalist predators such as foxes and crows can lead to substantial increases in breeding success for ground-nesting species including lapwing, curlew and golden plover. The robust breeding numbers recorded across the study area support these findings, highlighting that predator management remains a key driver of upland bird productivity.

Habitat condition and vegetation heterogeneity

- 8.1.5 The rotational burning/cutting and low-density grazing regime have produced a high degree of vegetation heterogeneity, maintaining an interspersed mosaic of heather age classes, bare ground and grassy openings. This structural diversity benefits both waders and raptors: species such as golden plover prefer short open heather mosaics³⁶, while others such as curlew and snipe rely on taller swards and wetter flushes for nesting and chick concealment. The close proximity of contrasting habitat types is particularly important for species such as golden plover, which nest on heather-dominated moorland but forage predominantly within adjacent lowland pasture and grassland during nocturnal periods (as made evident during nocturnal acoustic monitoring). The densities observed during the surveys are consistent with those recorded by Tharme *et al.* (2001)⁴⁵, who found significantly higher breeding densities of golden plover, lapwing and curlew on managed moors compared with unmanaged sites. Nonetheless, Douglas *et al.* (2017)⁴⁸ caution that rotational burning and draining may have negative effects including through the removal of scrub and trees, and the drying of peat.

Disturbance and site use

- 8.1.6 The study area experiences relatively low recreational disturbance, with public access limited to a few well-defined footpaths. This contrasts with other heavily visited upland areas, where excessive visitor pressure has been shown to reduce breeding success and territory occupancy among waders⁴⁹. The relatively low levels of human disturbance within the study area likely contributes to higher breeding densities and successful nesting outcomes, particularly for sensitive ground nesting species.

Summary

- 8.1.7 The combination of diverse habitat types, effective predator control, limited disturbance and well-managed vegetation structure has resulted in a site that supports one of the most complete upland bird assemblages in the South Pennines. Populations of SPA/SSSI

⁴⁶ Fletcher, K., Aebischer, N.J., Baines, D., Foster, R. & Hoodless, A.N (2010) Changes in breeding success and abundance of ground-nesting moorland birds in relation to the experimental deployment of legal predator control. *Journal of Applied Ecology*, **47**, 263 – 272.

⁴⁷ Baines, D. (2025) Ten years on from a predator removal experiment in the English uplands: Changes in numbers of ground-nesting bird and predators. *Journal of Nature Conservation*, **84**, 126788.

⁴⁸ Douglas, D., Beresford, A., Selvidge, J., Garnett, S., Buchanan, G., Gullett, P. & Grant, M. (2017) Changes in upland bird abundances show associations with moorland management. *Bird Study*, **64**, 1-13.

⁴⁹ Pearce-Higgins, J.W., Finney, S.K., Yalden, D.W. & Langston, R.H.W. (2007) Testing the effects of recreational disturbance on two upland breeding waders. *Ibis*, **149**, 45 – 55.

species remain stable, while a wide range of raptors, waders, owl and passerines also breed successfully.

- 8.1.8 These findings reinforce conclusions from Tharme *et al.* (2001)⁴⁵, Fletcher *et al.* (2010)⁴⁶ and Douglas *et al.* (2017)⁴⁸ that well-managed grouse moor systems can play a vital role in sustaining important upland bird populations. The results confirm that the study area represents a high-quality upland ecosystem, supporting extensive, structurally diverse habitats that collectively sustain both specialist moorland species and the broader bird community characteristic of upland England.

8.2 Non-breeding birds

- 8.2.1 The non-breeding bird surveys undertaken between 2022 and 2024 recorded a total of 86 species, including 53 priority species. The assemblage reflects a diverse but characteristic mix of upland and moorland birds associated with the South Pennine landscape, including waders, waterfowl, raptors, and passerines. The findings highlight the study area's continued importance as both a wintering refuge and migration corridor, supporting a variety of species that utilise its extensive open moorland, pasture, and woodland habitats.
- 8.2.2 During autumn and spring passage, the study area formed part of a wider migratory network across the South Pennines, with notable movements of pink-footed goose, golden plover, lapwing, and curlew. Large flocks were observed using the area as a temporary stopover site, resting and feeding before continuing migration or dispersing to breeding grounds within the uplands. Additional records of whooper swan, fieldfare, redwing, and smaller passage migrants such as ring ouzel, twite, and wheatear further demonstrate the functional role of the landscape in supporting birds during seasonal transitions. The site's open moorland, gentle slopes, and network of reservoirs and valleys provide the key habitat features that facilitate passage activity through the Pennine corridor.
- 8.2.3 During the wintering period, the study area supported a stable and abundant assemblage of upland species typical of managed moorland systems. The extensive heather-dominated moorland supported large populations of red grouse and meadow pipit, while reservoir margins, pasture and acid grassland supported greylag goose, mallard, oystercatcher, snipe, and lapwing and redshank. The study area was also notable in supporting a diverse wintering raptor assemblage, with regular activity from hen harrier, merlin, short-eared owl, and peregrine, consistent with known roosting and foraging patterns within the South Pennines. The study area is of particular note for supporting a regular winter roost of hen harrier to the south of the Turbine Area. This represents one of the most significant winter roosts in England and reflects the importance of the managed moorland habitat for this species. The occurrence of multiple hen harriers, merlin, peregrine, short-eared owl and barn owl within the study area and surrounding moors underscores the favourable foraging conditions and low disturbance offered by this landscape.
- 8.2.4 The variety of habitats within the study area contributes directly to this diversity. The blanket bog and heather moorland plateaus support wintering golden plover, dunlin, and meadow pipit; the moorland fringe and *Juncus* flushes provide foraging areas for curlew, snipe, lapwing and oystercatcher; while small areas of woodland support winter thrushes

and other passerines. The reservoirs and ditch/river systems add further habitat heterogeneity, supporting species such as dipper, grey wagtail, redshank and goosander. This habitat mosaic, combined with effective predator control, rotational cutting/burning, and grazing management, creates structurally diverse conditions that sustain a high abundance of birdlife throughout the year.

- 8.2.5 Overall, the non-breeding bird assemblage recorded between 2022 and 2024 demonstrates that the study area forms a high-quality upland habitat complex. It supports key populations of upland waders and raptors during migration and winter and contributes to the broader ecological connectivity of the South Pennines SPA and SSSI.

8.3 Flight activity

- 8.3.1 VP surveys undertaken between 2022 and 2025 recorded 33 target species across the Turbine Area. The recorded assemblage represents a typical upland bird community of the South Pennine Moors, encompassing waders, waterfowl, gulls, raptors, and upland specialists.
- 8.3.2 The airspace within the Turbine Area supported high levels of flight activity at collision risk height from a wide variety of target species, with particularly high flight activity from common gull, curlew, greylag goose, golden plover, kestrel, lapwing, lesser black-backed gull, peregrine, pink-footed goose and whooper swan. High levels of flight activity within the Turbine Area for birds outside of collision risk height was observed for barn owl, red grouse and short-eared owl.
- 8.3.3 The overall pattern of flight activity demonstrates clear spatial and behavioural differentiation among species, with waders and waterfowl primarily commuting between moorland and pasture areas, and raptors exhibiting foraging and territorial flights over moorland plateaus and cloughs.
- 8.3.4 Given the extent of survey effort, spanning four years, multiple seasons, and all-weather conditions, and the strong coverage across all VP locations, the dataset is considered robust and representative of the baseline flight activity within the Turbine Area.

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Figure 1. Site location and development plan.

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Figure 19. Wheatear sensitive nesting areas.

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Figure 21. Dipper sensitive nesting areas.

Figure 22. Grey wagtail sensitive nesting areas.

Figure 23. Stonechat sensitive nesting areas.

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Figure 25. Black-headed gull flight activity results.

Figure 26. Barn owl flight activity results.

Figure 27. Common gull flight activity results.

Figure 28. Common sandpiper flight activity results.

Figure 29. Curlew flight activity results.

Figure 30. Dunlin flight activity results.

Figure 31. Little egret flight activity results.

Figure 32. Great black-backed gull flight activity results.

Figure 33. Goshawk flight activity results.

Figure 34. Greylag goose flight activity results.

Figure 35. Golden plover flight activity results.

Figure 36. Herring gull flight activity results.

Figure 37. Hen harrier flight activity results.

Figure 38. Hobby flight activity results.

Figure 39. Kestrel flight activity results.

Figure 40. Lapwing flight activity results.

Figure 41. Lesser black-backed gull results.

Figure 42. Little ringed plover flight activity results.

Figure 43. Mallard flight activity results.

Figure 44. Merlin flight activity results.

Figure 45. Marsh harrier flight activity results.

Figure 46. Oystercatcher flight activity results.

Figure 47. Peregrine flight activity results.

Figure 48. Pink-footed goose flight activity results.

Figure 49. Red grouse flight activity results.

Figure 50. Red kite flight activity results.

Figure 51. Redshank flight activity results.

Figure 52. Short-eared owl flight activity results.

Figure 53. Snipe flight activity results.

Figure 54. Teal flight activity results.

Figure 55. Woodcock flight activity results.

Figure 56. Whimbrel flight activity results.

Figure 57. Whooper swan flight activity results.

Annex A – Desk study records

Records of priority species from within 2km of the Turbine Area, provided by the West Yorkshire Ecology Service and the Lancashire Environmental Record Network, are provided below.

Scientific name	Common name	Designation	Most Recent	Any records within 100m
Priority species afforded additional protection				
<i>Accipiter gentilis</i>	Goshawk	WCA1.1	1998	
<i>Aythya marila</i>	Scaup	WCA1.1, S41, Red, GB RDB(EN)	1970	X
<i>Charadrius dubius</i>	Little Ringed Plover	WCA1.1	2013	
<i>Charadrius morinellus</i>	Dotterel	WCA1.1, Red, GB RDB(EN)	1992	
<i>Circus aeruginosus</i>	Marsh Harrier	WCA1.1, Amber	2002	X
<i>Circus cyaneus</i>	Hen Harrier	WCA1.1, S41, Red, GB RDB(VU)	2007	
<i>Cygnus columbianus</i>	Tundra Swan	WCA1.1, S41, Red, GB RDB(CR)	1970	
<i>Cygnus cygnus</i>	Whooper Swan	WCA1.1, Amber, GB RDB(EN)	2008	
<i>Falco columbarius</i>	Merlin	WCA1.1, Red, GB RDB(EN)	2005	X
<i>Falco peregrinus</i>	Peregrine	WCA1.1	2009	
<i>Fringilla montifringilla</i>	Brambling	WCA1.1	2015	
<i>Loxia curvirostra</i>	Common Crossbill	WCA1.1	2007	
<i>Melanitta fusca</i>	Velvet Scoter	WCA1.1, Red, GB RDB(VU)	1970	
<i>Melanitta nigra</i>	Common Scoter	WCA1.1, S41, Red, GB RDB(CR)	2008	
<i>Milvus milvus</i>	Red Kite	WCA1.1	2008	
<i>Oriolus oriolus</i>	Golden Oriole	WCA1.1, GB RDB(CR)	1970	
<i>Tringa ochropus</i>	Green Sandpiper	WCA1.1, Amber, GB RDB(EN)	1991	
<i>Turdus iliacus</i>	Redwing	WCA1.1, Amber, GB RDB(CR)	2007	
<i>Turdus pilaris</i>	Fieldfare	WCA1.1, Red, GB RDB(CR)	2007	
<i>Tyto alba</i>	Barn Owl	WCA1.1	2023	
Other priority species				
<i>Acanthis cabaret</i>	Lesser Redpoll	S41, Red		
<i>Acanthis flammea</i>	Common Redpoll	Amber, GB RDB(CR)		
<i>Accipiter nisus</i>	Sparrowhawk	Amber		
<i>Actitis hypoleucos</i>	Common Sandpiper	Amber, GB RDB(VU)		
<i>Alauda arvensis</i>	Skylark	S41, Red		
<i>Anas crecca</i>	Teal	Amber		
<i>Anas platyrhynchos</i>	Mallard	Amber		

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Anser anser</i>	Greylag Goose	Amber	2023	
<i>Anthus pratensis</i>	Meadow Pipit	Amber		
<i>Anthus trivialis</i>	Tree Pipit	S41, Red		
<i>Apus apus</i>	Swift	Red, GB RDB(EN)		
<i>Asio flammeus</i>	Short-eared Owl	Amber, GB RDB(EN)		
<i>Aythya ferina</i>	Pochard	Red, GB RDB(EN)		
<i>Bucephala clangula</i>	Goldeneye	Red, GB RDB(VU)	1991	
<i>Calidris alpina</i>	Dunlin	Red, GB RDB(EN)		
<i>Charadrius hiaticula</i>	Ringed Plover	Red, GB RDB(VU)		
<i>Chloris chloris</i>	Greenfinch	Red, GB RDB(EN)		
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Amber, GB RDB(VU)		
<i>Cinclus cinclus</i>	Dipper	Amber		
<i>Coccothraustes coccothraustes</i>	Hawfinch	S41, Red, GB RDB(EN)		
<i>Columba oenas</i>	Stock Dove	Amber		
<i>Columba palumbus</i>	Woodpigeon	Amber		
<i>Corvus frugilegus</i>	Rook	Amber		
<i>Cuculus canorus</i>	Cuckoo	S41, Red, GB RDB(VU)		
<i>Delichon urbicum</i>	House Martin	Red, GB RDB(VU)		
<i>Emberiza citrinella</i>	Yellowhammer	S41, Red		
<i>Emberiza schoeniclus</i>	Reed Bunting	S41, Amber		
<i>Falco tinnunculus</i>	Kestrel	Amber, GB RDB(VU)		
<i>Ficedula hypoleuca</i>	Pied Flycatcher	Amber, GB RDB(VU)		
<i>Gallinago gallinago</i>	Snipe	Amber		
<i>Gallinula chloropus</i>	Moorhen	Amber, GB RDB(VU)		
<i>Haematopus ostralegus</i>	Oystercatcher	Amber		
<i>Lagopus lagopus subsp. scotica</i>	Red Grouse	S41		
<i>Larus argentatus</i>	Herring Gull	S41, Red, GB RDB(EN)		
<i>Larus canus</i>	Common Gull	Amber		
<i>Larus fuscus</i>	Lesser Black-backed Gull	Amber		
<i>Larus marinus</i>	Great Black-backed Gull	Red, GB RDB(EN)		
<i>Linaria cannabina</i>	Linnet	S41, Red		
<i>Linaria flavirostris</i>	Twite	S41, Red, GB RDB(VU)		
<i>Locustella naevia</i>	Grasshopper Warbler	S41, Red		
<i>Mareca penelope</i>	Wigeon	Amber		

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Mergellus albellus</i>	Smew	Red, GB RDB(CR)		
<i>Motacilla cinerea</i>	Grey Wagtail	Amber		
<i>Motacilla flava flavissima</i>	Yellow Wagtail	S41, Red		
<i>Muscicapa striata</i>	Spotted Flycatcher	S41, Red		
<i>Oenanthe oenanthe</i>	Wheatear	Amber		
<i>Passer domesticus</i>	House Sparrow	S41, Red		
<i>Perdix perdix</i>	Grey Partridge	S41, Red, GB RDB(VU)		
<i>Phoenicurus phoenicurus</i>	Redstart	Amber		
<i>Phylloscopus trochilus</i>	Willow Warbler	Amber		
<i>Prunella modularis</i>	Dunnock	S41, Amber		
<i>Pyrrhula pyrrhula</i>	Bullfinch	S41, Amber		
<i>Rissa tridactyla</i>	Kittiwake	Red, GB RDB(CR), OSPAR		
<i>Saxicola rubetra</i>	Whinchat	Red		
<i>Scolopax rusticola</i>	Woodcock	Red, GB RDB(VU)		
<i>Sterna paradisaea</i>	Arctic Tern	Red, GB RDB(VU)		
<i>Streptopelia turtur</i>	Turtle Dove	S41, Red, GB RDB(CR)		
<i>Strix aluco</i>	Tawny Owl	Amber		
<i>Sturnus vulgaris</i>	Starling	S41, Red, GB RDB(VU)		
<i>Tadorna tadorna</i>	Shelduck	Amber, GB RDB(EN)		
<i>Tringa totanus</i>	Redshank	Amber, GB RDB(VU)		
<i>Troglodytes troglodytes</i>	Wren	Amber		
<i>Turdus philomelos</i>	Song Thrush	S41, Amber		
<i>Turdus torquatus</i>	Ring Ouzel	S41, Red, GB RDB(VU)		
<i>Turdus viscivorus</i>	Mistle Thrush	Red, GB RDB(VU)		
<i>Vanellus vanellus</i>	Lapwing	S41, Red, GB RDB(EN)		
<p>Key: WCA 1.1: Wildlife and Countryside Act 1981 (as amended) Schedule 1 species. S41: NERC Section 41 Species of Principal Importance Red: BoCC Red list species Amber: BoCC Amber list species GB RDB: Great Britain Red Data Book Vulnerable (VU), Endangered (EN), and Critically Endangered (CR) species</p>				

Records of priority species from within 2km of the Western Access Route, provided by the West Yorkshire Ecology Service, the Lancashire Environmental Record Network, and the North and East Yorkshire Ecological Data Centre are provided below.

Scientific name	Common name	Designation	Most Recent	Any records within 100m
Priority species afforded additional protection				
<i>Accipiter gentilis</i>	Goshawk	WCA1.1	1999	
<i>Alcedo atthis</i>	Kingfisher	WCA1.1	1999	
<i>Charadrius dubius</i>	Little Ringed Plover	WCA1.1	2005	
<i>Circus cyaneus</i>	Hen Harrier	WCA1.1, S41, Red, GB RDB(VU)	2007	
<i>Cygnus columbianus</i>	Tundra Swan	WCA1.1, S41, Red, GB RDB(CR)	1993	
<i>Falco columbarius</i>	Merlin	WCA1.1, Red, GB RDB(EN)	2005	
<i>Falco peregrinus</i>	Peregrine	WCA1.1	2009	
<i>Fringilla montifringilla</i>	Brambling	WCA1.1	2015	
<i>Loxia curvirostra</i>	Common Crossbill	WCA1.1	2007	
<i>Milvus milvus</i>	Red Kite	WCA1.1	2020	
<i>Turdus iliacus</i>	Redwing	WCA1.1, Amber, GB RDB(CR)	2023	
<i>Turdus pilaris</i>	Fieldfare	WCA1.1, Red, GB RDB(CR)	2023	
<i>Tyto alba</i>	Barn Owl	WCA1.1	2025	
Other priority species				
<i>Acanthis cabaret</i>	Lesser Redpoll	S41, Red		
<i>Accipiter nisus</i>	Sparrowhawk	Amber		
<i>Actitis hypoleucos</i>	Common Sandpiper	Amber, GB RDB(VU)		
<i>Alauda arvensis</i>	Skylark	S41, Red		
<i>Anas crecca</i>	Teal	Amber		
<i>Anas platyrhynchos</i>	Mallard	Amber		
<i>Anser anser</i>	Greylag Goose	WCA1.2, Amber	2014	
<i>Anser brachyrhynchus</i>	Pink-footed Goose	Amber		
<i>Anthus pratensis</i>	Meadow Pipit	Amber		
<i>Anthus trivialis</i>	Tree Pipit	S41, Red		
<i>Apus apus</i>	Swift	Red, GB RDB(EN)		
<i>Asio flammeus</i>	Short-eared Owl	Amber, GB RDB(EN)		
<i>Calidris alpina</i>	Dunlin	Red, GB RDB(EN)		
<i>Chloris chloris</i>	Greenfinch	Red, GB RDB(EN)		
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Amber, GB RDB(VU)		
<i>Cinclus cinclus</i>	Dipper	Amber		
<i>Cuculus canorus</i>	Cuckoo	S41, Red, GB RDB(VU)		
<i>Curruca communis</i>	Whitethroat	Amber		

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Delichon urbicum</i>	House Martin	Red, GB RDB(VU)		
<i>Emberiza citrinella</i>	Yellowhammer	S41, Red		
<i>Emberiza schoeniclus</i>	Reed Bunting	S41, Amber		
<i>Falco tinnunculus</i>	Kestrel	Amber, GB RDB(VU)		
<i>Ficedula hypoleuca</i>	Pied Flycatcher	Amber, GB RDB(VU)		
<i>Gallinago gallinago</i>	Snipe	Amber		
<i>Gallinula chloropus</i>	Moorhen	Amber, GB RDB(VU)		
<i>Haematopus ostralegus</i>	Oystercatcher	Amber		
<i>Lagopus lagopus subsp. scotica</i>	Red Grouse	S41		
<i>Larus canus</i>	Common Gull	Amber		
<i>Larus fuscus</i>	Lesser Black-backed Gull	Amber		
<i>Linaria cannabina</i>	Linnet	S41, Red		
<i>Linaria flavirostris</i>	Twite	S41, Red, GB RDB(VU)		
<i>Locustella naevia</i>	Grasshopper Warbler	S41, Red		
<i>Motacilla cinerea</i>	Grey Wagtail	Amber		
<i>Motacilla flava</i>	Yellow Wagtail	S41, Red		
<i>Muscicapa striata</i>	Spotted Flycatcher	S41, Red		
<i>Numenius arquata</i>	Curlew	S41, Red, GB RDB(EN)		
<i>Oenanthe oenanthe</i>	Wheatear	Amber		
<i>Passer domesticus</i>	House Sparrow	S41, Red		
<i>Perdix perdix</i>	Grey Partridge	S41, Red, GB RDB(VU)		
<i>Phoenicurus phoenicurus</i>	Redstart	Amber		
<i>Phylloscopus sibilatrix</i>	Wood Warbler	S41, Red, GB RDB(VU)		
<i>Phylloscopus trochilus</i>	Willow Warbler	Amber		
<i>Poecile palustris</i>	Marsh Tit	S41, Red, GB RDB(VU)		
<i>Prunella modularis</i>	Dunnock	S41, Amber		
<i>Pyrrhula pyrrhula</i>	Bullfinch	S41, Amber		
<i>Saxicola rubetra</i>	Whinchat	Red		
<i>Sterna hirundo</i>	Common Tern	Amber		
<i>Streptopelia turtur</i>	Turtle Dove	S41, Red, GB RDB(CR)		
<i>Sturnus vulgaris</i>	Starling	S41, Red, GB RDB(VU)		
<i>Tringa totanus</i>	Redshank	Amber, GB RDB(VU)		
<i>Troglodytes troglodytes</i>	Wren	Amber		
<i>Turdus philomelos</i>	Song Thrush	S41, Amber		
<i>Turdus torquatus</i>	Ring Ouzel	S41, Red, GB RDB(VU)		

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Turdus viscivorus</i>	Mistle Thrush	Red, GB RDB(VU)		
<i>Vanellus vanellus</i>	Lapwing	S41, Red, GB RDB(EN)		
Key: WCA 1.1: Wildlife and Countryside Act 1981 (as amended) Schedule 1 species. S41: NERC Section 41 Species of Principal Importance Red: BoCC Red list species Amber: BoCC Amber list species GB RDB: Great Britain Red Data Book Vulnerable (VU), Endangered (EN), and Critically Endangered (CR) species				

Records of priority species from within 2 km of the Bradford West Cable Corridor/Eastern Access Route, provided by the West Yorkshire Ecology Service are provided below.

Scientific name	Common name	Designation	Most Recent	Any records within 100m
Priority species afforded additional protection				
<i>Accipiter gentilis</i>	Goshawk	WCA1.1	2008	
<i>Alcedo atthis</i>	Kingfisher	WCA1.1	2009	
<i>Aythya marila</i>	Scaup	WCA1.1, S41, Red, GB RDB(EN)	1988	
<i>Calidris pugnax</i>	Ruff	WCA1.1, Red, GB RDB(CR)	1988	
<i>Charadrius dubius</i>	Little Ringed Plover	WCA1.1	2013	
<i>Charadrius morinellus</i>	Dotterel	WCA1.1, Red, GB RDB(EN)	1992	
<i>Chlidonias niger</i>	Black Tern	WCA1.1	1988	
<i>Circus aeruginosus</i>	Marsh Harrier	WCA1.1, Amber	2002	
<i>Coturnix coturnix</i>	Quail	WCA1.1, Amber	1988	
<i>Cygnus columbianus</i>	Tundra Swan	WCA1.1, S41, Red, GB RDB(CR)	1988	
<i>Cygnus cygnus</i>	Whooper Swan	WCA1.1, Amber, GB RDB(EN)	2008	
<i>Falco columbarius</i>	Merlin	WCA1.1, Red, GB RDB(EN)	2014	X
<i>Falco peregrinus</i>	Peregrine	WCA1.1	2013	
<i>Falco subbuteo</i>	Hobby	WCA1.1	2008	
<i>Gavia stellata</i>	Red-throated Diver	WCA1.1	1988	
<i>Hydrocoloeus minutus</i>	Little Gull	WCA1.1	1988	

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Limosa limosa</i>	Black-tailed Godwit	WCA1.1, S41, Red, GB RDB(EN)	2008	
<i>Loxia curvirostra</i>	Crossbill	WCA1.1	2008	
<i>Luscinia svecica</i>	Bluethroat	WCA1.1	2008	
<i>Melanitta nigra</i>	Common Scoter	WCA1.1, S41, Red, GB RDB(CR)	2008	
<i>Milvus milvus</i>	Red Kite	WCA1.1	2008	
<i>Numenius phaeopus</i>	Whimbrel	WCA1.1, Red, GB RDB(CR)	2008	
<i>Pandion haliaetus</i>	Osprey	WCA1.1, Amber	2008	
<i>Plectrophenax nivalis</i>	Snow Bunting	WCA1.1, Amber, GB RDB(EN)	2008	
<i>Podiceps auritus</i>	Slavonian Grebe	WCA1.1, Red, GB RDB(CR)	1988	
<i>Spatula querquedula</i>	Garganey	WCA1.1, Amber, GB RDB(CR)	1988	
<i>Tringa glareola</i>	Wood Sandpiper	WCA1.1, Amber, GB RDB(EN)	1988	
<i>Tringa nebularia</i>	Greenshank	WCA1.1, Amber	2008	
<i>Tringa ochropus</i>	Green Sandpiper	WCA1.1, Amber, GB RDB(EN)	1991	
<i>Turdus iliacus</i>	Redwing	WCA1.1, Amber, GB RDB(CR)	2009	
<i>Turdus pilaris</i>	Fieldfare	WCA1.1, Red, GB RDB(CR)	2009	
Other priority species				
<i>Acanthis cabaret</i>	Lesser Redpoll	S41, Red		
<i>Acanthis flammea</i>	Common Redpoll	Amber, GB RDB(CR)		
<i>Accipiter nisus</i>	Sparrowhawk	Amber		
<i>Acrocephalus schoenobaenus</i>	Sedge Warbler	Amber		
<i>Actitis hypoleucos</i>	Common Sandpiper	Amber, GB RDB(VU)		
<i>Alauda arvensis</i>	Skylark	S41, Red		
<i>Anas crecca</i>	Teal	Amber		
<i>Anas platyrhynchos</i>	Mallard	Amber		
<i>Anser anser</i>	Greylag Goose	Amber	2014	
<i>Anser brachyrhynchus</i>	Pink-footed Goose	Amber		
<i>Anthus pratensis</i>	Meadow Pipit	Amber		
<i>Anthus trivialis</i>	Tree Pipit	S41, Red		
<i>Apus apus</i>	Swift	Red, GB RDB(EN)		
<i>Arenaria interpres</i>	Turnstone	Amber, GB RDB(VU)		
<i>Asio flammeus</i>	Short-eared Owl	Amber, GB RDB(EN)		
<i>Aythya ferina</i>	Pochard	Red, GB RDB(EN)		
<i>Bucephala clangula</i>	Goldeneye	Red, GB RDB(VU)	2009	

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Calidris alba</i>	Sanderling	Amber		
<i>Calidris alpina</i>	Dunlin	Red, GB RDB(EN)		
<i>Calidris ferruginea</i>	Curlew Sandpiper	Amber		
<i>Charadrius hiaticula</i>	Ringed Plover	Red, GB RDB(VU)		
<i>Chloris chloris</i>	Greenfinch	Red, GB RDB(EN)		
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Amber, GB RDB(VU)		
<i>Cinclus cinclus</i>	Dipper	Amber		
<i>Columba oenas</i>	Stock Dove	Amber		
<i>Columba palumbus</i>	Woodpigeon	Amber		
<i>Corvus frugilegus</i>	Rook	Amber		
<i>Cuculus canorus</i>	Cuckoo	S41, Red, GB RDB(VU)		
<i>Curruca communis</i>	Whitethroat	Amber		
<i>Delichon urbicum</i>	House Martin	Red, GB RDB(VU)		
<i>Dryobates minor</i>	Lesser Spotted Woodpecker	S41, Red, GB RDB(EN)		
<i>Emberiza calandra</i>	Corn Bunting	S41, Red		
<i>Emberiza citrinella</i>	Yellowhammer	S41, Red		
<i>Emberiza schoeniclus</i>	Reed Bunting	S41, Amber		
<i>Falco tinnunculus</i>	Kestrel	Amber, GB RDB(VU)		
<i>Gallinago gallinago</i>	Snipe	Amber		
<i>Gallinula chloropus</i>	Moorhen	Amber, GB RDB(VU)		
<i>Haematopus ostralegus</i>	Oystercatcher	Amber		
<i>Lagopus lagopus subsp. scotica</i>	Red Grouse (scotica)	S41		
<i>Larus argentatus</i>	Herring Gull	S41, Red, GB RDB(EN)		
<i>Larus canus</i>	Common Gull	Amber		
<i>Larus fuscus</i>	Lesser Black-backed Gull	Amber		
<i>Larus hyperboreus</i>	Glaucous Gull	Amber, GB RDB(VU)		
<i>Larus marinus</i>	Great Black-backed Gull	Red, GB RDB(EN)		
<i>Larus michahellis</i>	Yellow-legged Gull	Amber, GB RDB(EN)		
<i>Linaria cannabina</i>	Linnet	S41, Red		
<i>Linaria flavirostris</i>	Twite	S41, Red, GB RDB(VU)		
<i>Locustella naevia</i>	Grasshopper Warbler	S41, Red		
<i>Mareca penelope</i>	Wigeon	Amber		
<i>Mareca strepera</i>	Gadwall	Amber		
<i>Motacilla cinerea</i>	Grey Wagtail	Amber		

Scientific name	Common name	Designation	Most Recent	Any records within 100m
<i>Motacilla flava</i>	Yellow Wagtail	S41, Red		
<i>Muscicapa striata</i>	Spotted Flycatcher	S41, Red		
<i>Numenius arquata</i>	Curlew	S41, Red, GB RDB(EN)		
<i>Oenanthe oenanthe</i>	Wheatear	Amber		
<i>Passer domesticus</i>	House Sparrow	S41, Red		
<i>Passer montanus</i>	Tree Sparrow	S41, Red, GB RDB(VU)		
<i>Perdix perdix</i>	Grey Partridge	S41, Red, GB RDB(VU)		
<i>Phoenicurus phoenicurus</i>	Redstart	Amber		
<i>Phylloscopus sibilatrix</i>	Wood Warbler	S41, Red, GB RDB(VU)		
<i>Phylloscopus trochilus</i>	Willow Warbler	Amber		
<i>Pluvialis squatarola</i>	Grey Plover	Amber, GB RDB(VU)		
<i>Podiceps cristatus</i>	Great Crested Grebe	GB RDB(VU)		
<i>Poecile montanus</i>	Willow Tit	S41, Red, GB RDB(EN)		
<i>Poecile palustris</i>	Marsh Tit	S41, Red, GB RDB(VU)		
<i>Prunella modularis</i>	Dunnock	S41, Amber		
<i>Pyrrhula pyrrhula</i>	Bullfinch	S41, Amber		
<i>Rissa tridactyla</i>	Kittiwake	Red, GB RDB(CR), OSPAR		
<i>Saxicola rubetra</i>	Whinchat	Red		
<i>Scolopax rusticola</i>	Woodcock	Red, GB RDB(VU)		
<i>Spatula clypeata</i>	Shoveler	Amber		
<i>Sterna hirundo</i>	Common Tern	Amber		
<i>Sterna paradisaea</i>	Arctic Tern	Red, GB RDB(VU)		
<i>Strix aluco</i>	Tawny Owl	Amber		
<i>Sturnus vulgaris</i>	Starling	S41, Red, GB RDB(VU)		
<i>Tadorna tadorna</i>	Shelduck	Amber, GB RDB(EN)		
<i>Tringa erythropus</i>	Spotted Redshank	Amber, GB RDB(EN)		
<i>Tringa totanus</i>	Redshank	Amber, GB RDB(VU)		
<i>Troglodytes troglodytes</i>	Wren	Amber		
<i>Turdus philomelos</i>	Song Thrush	S41, Amber		
<i>Turdus torquatus</i>	Ring Ouzel	S41, Red, GB RDB(VU)		
<i>Turdus viscivorus</i>	Mistle Thrush	Red, GB RDB(VU)		
<i>Vanellus vanellus</i>	Lapwing	S41, Red, GB RDB(EN)		

Key:
WCA 1.1: Wildlife and Countryside Act 1981 (as amended) Schedule 1 species.
S41: NERC Section 41 Species of Principal Importance
Red: BoCC Red list species
Amber: BoCC Amber list species
GB RDB: Great Britain Red Data Book Vulnerable (VU), Endangered (EN), and Critically Endangered (CR) species

Annex B – Acoustic Data

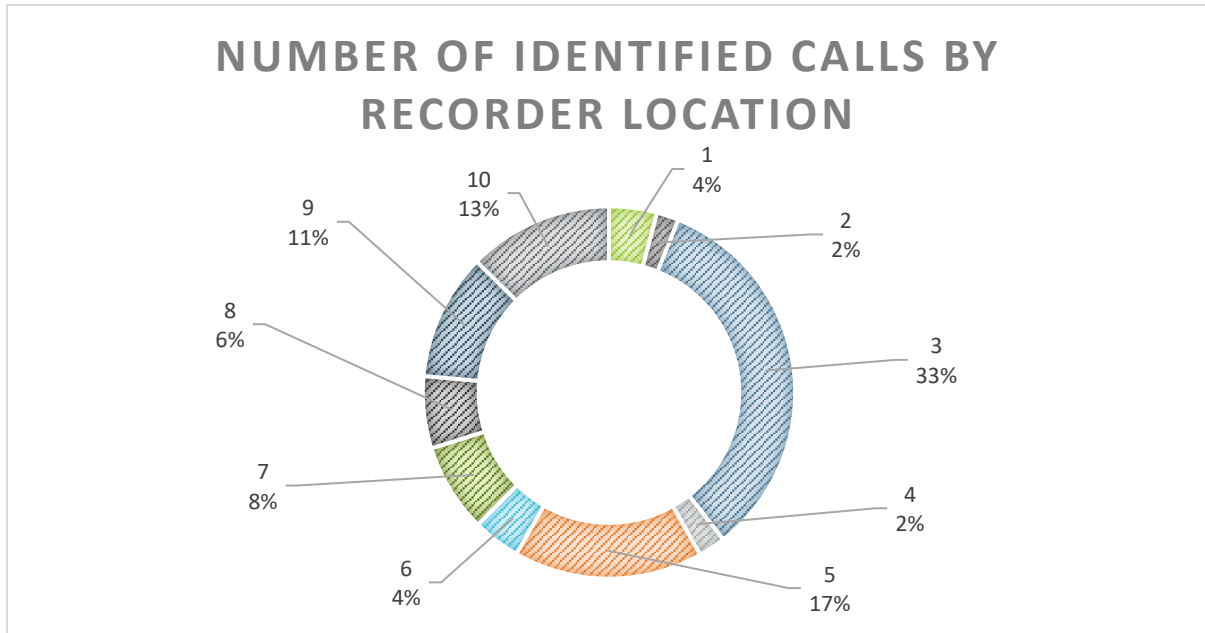
Summary of acoustic monitoring registrations by species and detector location is provided below. Values represent the total number of AI identified call registrations recorded at each detector location using the analysed sampling period. Results are presented for contextual and supplementary purposes only and should be interpreted in conjunction with field survey data and the limitation outlined in Section 3.6.

Species	Detector location									
	1	2	3	4	5	6	7	8	9	10
Barnacle Goose	6	-	1	1	4	1	5	3	1	7
Blackbird	-	-	-	-	1	-	-	-	-	-
Black-headed Gull	1	-	-	-	-	-	1	-	6	3
Black-tailed Godwit	-	-	3	-	3	-	-	-	-	-
Brent Goose	4	3	4	-	1	1	1	1	-	1
Bullfinch	1	-	2	-	2	-	-	-	1	-
Canada Goose	268	1	193	8	27	1	5	-	-	15
Carrion Crow	-	1	-	-	-	-	-	-	-	-
Common Gull	2	-	-	-	-	-	-	-	-	1
Common Sandpiper	-	-	-	-	-	-	-	1	-	-
Coot	9	-	4	1	4	1	8	2	2	1
Cormorant	-	-	4	-	-	-	-	-	-	-
Curlew	1006	370	354	553	676	1431	792	2171	2923	4491
Dunlin	1	-	1	-	3	1	-	-	1	1
Gadwall	3	-	-	-	-	2	2	-	1	-
Golden Plover	16	14	121	16	21	39	21	29	21	46
Goldeneye	-	-	-	-	-	1	-	-	-	-
Goosander	2	-	-	-	-	-	-	-	-	-
Great Black-backed Gull	2	-	-	1	1	1	-	1	2	-

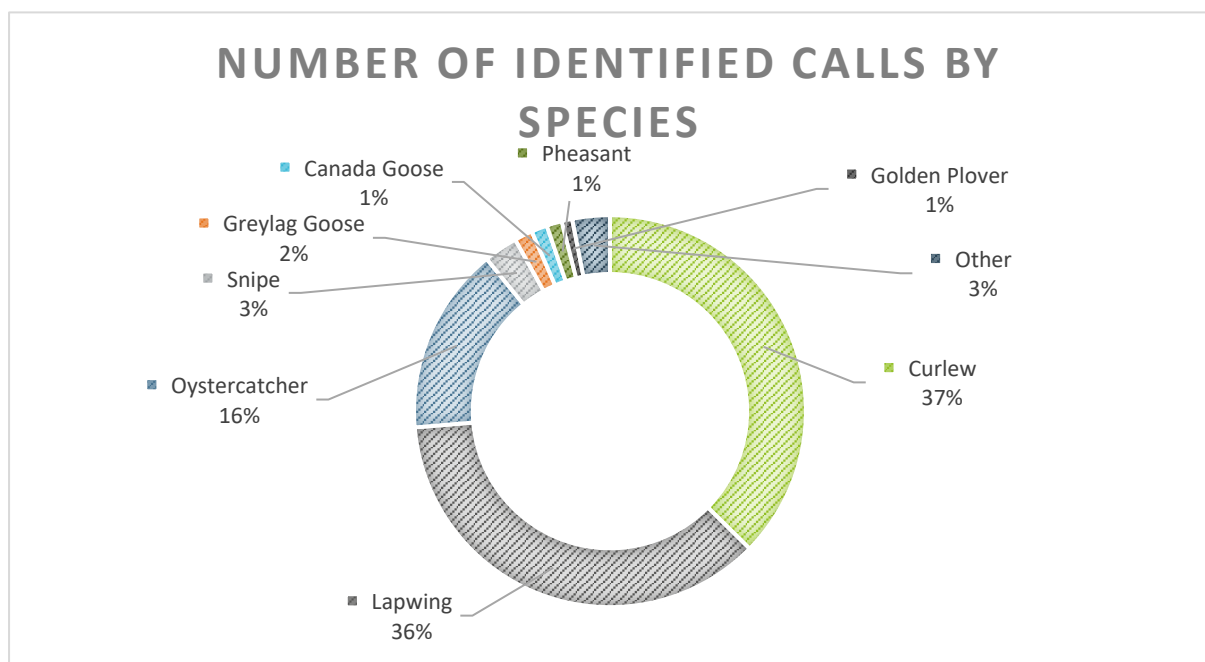
Species	Detector location									
	1	2	3	4	5	6	7	8	9	10
Great Crested Grebe	-	1	6	-	10	-	1	-	1	-
Greenshank	-	-	-	-	1	-	-	1	-	-
Grey Heron	2	4	-	-	1	1	1	-	2	4
Greylag Goose	45	6	178	4	225	-	113	15	1	2
Lapwing	5	21	8576	220	3049	3	1824	16	518	110
Little Egret	-	-	3	-	1	-	-	-	-	-
Little Grebe	-	-	3	-	-	1	1	-	-	-
Long-tailed Tit	1	-	-	-	-	-	-	-	-	-
Magpie	-	4	39	-	27	-	1	-	1	2
Mallard	22	6	59	9	63	12	-	6	30	29
Marsh Harrier	-	-	1	-	-	-	-	-	-	-
Moorhen	44	5	6	13	2	9	12	10	18	11
Mute Swan	-	-	-	-	-	-	2	-	-	-
Nuthatch	-	-	-	-	1	-	-	-	-	-
Oystercatcher	86	22	2769	15	2165	3	185	158	570	148
Peregrine	-	-	-	-	1	-	-	-	-	-
Pheasant	26	282	1	52	15	3	24	28	65	3
Pied Wagtail	-	-	-	-	-	-	-	-	-	1
Pink-footed Goose	-	-	-	-	1	-	1	-	1	-
Raven	-	1	2	-	-	-	-	5	1	-
Redshank	-	-	1	1	5	-	-	-	1	1
Red-throated Diver	2	-	1	-	2	-	-	-	1	1
Redwing	40	5	5	12	7	8	11	10	16	14
Ringed Plover	-	-	3	-	3	2	2	1	4	3
Robin	-	-	1	-	-	-	-	-	-	-
Rook	2	-	2	-	8	-	-	-	1	2
Shelduck	-	1	-	-	-	1	3	1	-	-
Skylark	-	-	2	-	-	-	1	-	-	1

Species	Detector location									
	1	2	3	4	5	6	7	8	9	10
Snipe	-	5	800	6	153	-	8	-	112	23
Song Thrush	-	1	12	1	-	-	1	-	-	4
Stock Dove	-	-	-	-	-	52	-	-	-	-
Stonechat	1	-	-	-	-	-	-	-	-	-
Teal	-	-	12	-	8	-	2	2	12	9
White-fronted Goose	-	-	1	-	-	-	-	-	-	-
Whooper Swan	4	1	6	-	-	-	-	1	-	-
Wigeon	44	1	13	22	3	27	18	12	36	28
Woodpigeon	1	-	-	1	-	33	-	1	-	-
Total	1646	755	13189	936	6494	1634	3046	2475	4349	4962

The figure below illustrates the proportional contribution distribution of AI identified acoustic call registrations across the ten recorder locations analysed. Detector 3 accounted for the highest proportion of registrations (approximately one third of the total), reflecting elevated nocturnal activity in the lowland pasture area around Holme Ends, towards the southern part of the Turbine Area. Other detector locations recorded smaller but broadly comparable proportions of calls, indicating widespread but uneven nocturnal bird activity across the study area.



The figure below illustrates the proportional contribution of different species to the total number of acoustic registrations. The dataset was strongly dominated by curlew, lapwing, and oystercatcher. All other species individually accounted for a small proportion of registrations. This pattern reflects the highly vocal nature of these wader species during nocturnal periods and highlights the inherent bias of acoustic monitoring towards species that vocalise frequently.





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