



Environmental Appraisal Report

Woolfords Wind Farm - Tip Height Increase

Technical Appendix 6-1: Ecology and Ornithology Assessment

Woolfords Wind Energy Ltd

wind2

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Glossary of Terms

Term	Definition
The Applicant	Woolfords Wind Energy Ltd
Environmental and Planning Consultant	Atmos Consulting Limited
The Consented Development	Woolfords Wind Farm (Planning Reference: P/22/0031 & Date of Consent: 30 May 2025)
The Proposed Development	Woolfords Wind Farm - Tip Height Increase
The Site	The site of the Proposed Development outlined in red. This is also the application boundary.
The Planning Act	The Town and Country Planning (Scotland) Act 1997 (as amended)

List of Abbreviations

Abbreviation	Description
BBS	Breeding Bird Survey
CC-BY	Creative Commons Attribution
CC0	Creative Commons "No Rights Reserved"
CEMP	Construction Environment Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CRM	Collision Risk Monitoring
EclA	Ecological Impact Assessment
ECOW	Ecological Clerk of Works
EEA	European Environment Agency
EnvCoW	Environmental Clerk of Works
GBR	General Binding Rules
GPP	Guidance for Pollution Prevention
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HMG	Habitat Management Group
HMP	Habitat Management Plan
NHZ	Natural Heritage Zone
OGL	Open Government Licence
OHMP	Outline Habitat Management Plan
IEFs	Important Ecological Features
PPP	Pollution Prevention Plan
RPM	revolutions per minute
SBL	Scottish Biodiversity List
SEPA	Scottish Environment Protection Agency
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SQE	Suitably Qualified Ecologist
SSPCA	Scottish Society for the Prevention of Cruelty to Animals
SSSI	Site of Special Scientific Interest
SuDS	sustainable drainage systems
VP	vantage point
ZoI	Zone of Influence

6. Ecology and Ornithology Assessments

6.1 Introduction

This Technical Appendix considers the likely significant effects on Ecology and Ornithology associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the Chapter are to:

- describe the ecological and ornithological baseline and identify the Important Ecological Features (IEFs) which may be vulnerable to effects from the Development and for which an Ecological Impact Assessment is therefore carried out.;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

The assessment is an update to the assessment for a previously Consented Development for the site (Planning Reference P/22/0031), but the scheme has been modified to have turbines with tip heights of 200 m rather than 180 m, with minor changes to the infrastructure layout as well. Although this application has screened as non-EIA, in line with recent guidelines on the streamlining of EIA (Scottish Renewables, 2025) the assessment avoids repetition of findings from the Consented Development, where baseline conditions remain similar and where ecological or ornithological features are unlikely to be affected by the tip height increase and minor changes to the infrastructure layout.

This Technical Appendix has been prepared by Atmos Consulting Ltd, with non-avian ecological inputs led by Stephen McNee who is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has 15 years' experience as an ecological consultant. He is experienced in a range of ecological surveys and assessments, with habitat impact assessment being a key speciality.

Ornithological inputs have been led by Dr Benedict Gove, an experienced ornithologist with more than 20 years' experience in ecology and ornithology, including both undertaking and managing ecological surveys in support of predominantly renewable and conventional energy developments. He has also undertaken a number of impact assessments and produced EIA Chapters for wind farms and other developments, carrying out assessment of both ornithology and ecological receptors.

An update to the Outline Habitat Management Plan (hereon referred to as the HMP) is provided as Annex 6-1-2: Habitat Management Plan.

National Vegetation Classification and Protected Species surveys were repeated in 2024 as the age validity of the original 2021 data had expired. As only minor changes were recorded, the results have been written into the baseline directly, with quadrat data included in the Annex 6-1-2: Habitat Management Plan as Appendix A.

Automated bat static surveys were repeated in 2024 but, given the amount of data produced and the approach which compares 2021 to 2024 data, full results are contained in the Annex 6-1-1: Bat Activity Survey.

Figures included within this document are as follows:

- Figure 6-1: Designated Sites within 10km;

- Figure 6-2: National Vegetation Classification;
- Figure 6-3: Bat Static Placement (2021 and 2024) and woodland buffers;
- Figure 6-4: Peatland Restoration;
- Figure 6-5: VP Viewsheds;
- Figure 6-6: Survey Areas;
- Figure 6-7a: Vantage Point Activity – Raptors;
- Figure 6-7b: Vantage Point Activity – Waders;
- Figure 6-7c: Vantage Point Activity – Other Species; and
- Figure 6-8: Breeding Bird Territories.

Annex included within this document are as follows:

- Annex 6-1-1: Bat Activity Survey
- Annex 6-1-2: Habitat Management Plan
HMP Appendices list
 - Appendix A: NVC Quadrats
 - Appendix B: Assessment of the Potential Impacts of Restoration on Peat Landslide Risk
- Annex 6-1-3: TA 6-1 Annex E Ornithology Survey (2021)
- Annex 6-1-4 : Technical Appendix 6-1 Woolfords Ecology & Ornithology Assessment (2021)

Figures and Annexes are referenced within the text as appropriate.

6.2 Consultation

Table 6-1 summarises the responses to the previously Consented Development (P/22/0031).

Table 6-1: Summary of consultations

Consultee and Date	Consultation Response	Applicant Response
LPA 30 May 2025	(8) No development shall commence unless and until the terms of appointment of an independent Environmental Clerk of Works ("ECoW") by the Company have been submitted to and approved in writing by the Planning Authority in consultation. The terms of appointment shall: (a) impose a duty to monitor compliance with the ecological and hydrological commitments and mitigations measures provided in the Planning Statement, Environmental Appraisal and other information lodged in support of the application as well as that required the Construction and Environmental Management Plan, as approved; (b) require the ECoW to report to the nominated construction project manager any incidences of non-compliance with the ECoW works at the earliest practical opportunity; (c) require the ECoW to submit a monthly report to the Planning Authority summarising works undertaken on site; (d) require the ECoW to report to the Planning Authority any incidences of non-compliance with the ECoW works at the earliest practical opportunity; (e) Advising the Company on adequate protection of nature conservation interests on the site; and (f) Directing the micro-siting and placement of the turbines and infrastructure.	We assume that an Environmental Clerk of Works (EnvCoW) is needed rather than an Ecological Clerk of Works (ECoW) The EnvCoW will oversee construction works, implementation of the OHMP and convening a Habitat Management Group (concerned stakeholders) as part of the HMP. Measures (a) to (e) will be conducted the EnvCoW.

Consultee and Date	Consultation Response	Applicant Response
	The ECoW shall be appointed on the approved terms throughout the period from Commencement of Development to completion of post construction restoration works Reason: To secure effective monitoring of and compliance with the environmental mitigation and management measures associated with the development during the construction and restoration phase.	
	(9) No later than eighteen months prior to decommissioning of the Development or the expiry of this planning permission (whichever is the earlier), details of the terms of appointment of an ECoW by the Company throughout the decommissioning, restoration and aftercare phases of the Development shall be submitted for the written approval of the Planning Authority. The ECoW shall be appointed on the approved terms throughout the decommissioning, restoration and aftercare phases of the Development. Reason: To secure effective monitoring of and compliance with the environmental mitigation and management measures associated with the Development during the decommissioning, restoration and aftercare phases.	Agreed. This will be developed at that time according to the condition. It is understood that an EnvCoW is required.
	(23) A Habitat Management Plan (HMP) should be submitted to, and approved by, the Planning Authority, in consultation relevant stakeholders, prior to development commencing. The HMP must detail where, how and when an appropriate amount of peatland restoration/enhancement (in excess of that impacted by the development) will be delivered. The delivery of the approved HMP should subsequently be overseen by a Habitat Management Group (HMG). The approved plan must be implemented in full unless, in light of the results of monitoring, it is amended by the HMG, in which case the amended HMP must be implemented in full. The HMP must operate until the decommissioning and restoration of the site, subject to any changes approved by the Planning Authority in consultation with the HMG. Reason: In the interests of good land management and the protection of habitats.	The OHMP from the original application largely stands. However, given the minor changes in habitat loss, is revised as per Annex 6-1-2. Our document is an Outline HMP. A detailed HMP will be produced post consent Up to 14.6ha of peatland restoration will be delivered by the Proposed Development. This is the main measure in the HMP (Annex 6-1-2) and will be overseen by the HMG.
	(24) A Habitat Management Group (HMG) shall be established to oversee the preparation and delivery of the HMP and to review and assess the results from ongoing monitoring. The HMG shall include a representative of South Lanarkshire Council and shall have powers to propose reasonable changes to the HMP necessary to deliver its agreed aims, and notwithstanding the above, (a) Site clearance activities and where possible, construction, will take place outwith the bird breeding season (March to July inclusive). If site clearance activities commence during this period ECoW supervision is required. (b) The HMP will operate for the full lifespan of the wind farm, including decommissioning (c) The agreed proposals identified in the HMP will be fully implemented (d) Surveillance and monitoring results of species and habitat will be carried out in accordance with the approved plan and be submitted to the HMG in accordance with the timescales set out.	These actions from part of the revised HMP (Annex 6-1-2).

Consultee and Date	Consultation Response	Applicant Response
	Reason: To safeguard environmental impacts, ecology, species and habitats and maintain effective planning control.	
NatureScot 01 February 2022	The proposal lies close to both Cobbinshaw Reservoir Site of Special Scientific Interest (SSSI), a fen, and Cobbinshaw Moss SSSI, an intermediate blanket bog. Although the application refers to the Moss, it talks about it being a fen. It's therefore likely that these two sites were taken as one since they are adjacent to each other. The proposal is also within connectivity distance of Westwater Special Protection Area (SPA) which supports large numbers of wintering Pink footed geese, a qualifying feature of the SPA. We note that the Environmental Appraisal concludes no significant impacts on Cobbinshaw Moss SSSI (or Cobbinshaw Reservoir SSSI) due to lack of hydrological connectivity. We are content that there will be no detrimental effects on the SSSIs. The Appraisal also concludes that no significant impacts are likely on Pink footed goose. Surveys showed that they do not use the area for foraging, instead flying north-south through the wider area on migration routes. This is similar to past results for other wind farms in the area, which show that Pink foots do not tend to use this area. As such, we advise that a simple HRA can conclude no adverse effect on integrity on the SPA.	The two sites were assumed as one in the original application.
NatureScot 01 February 2022	The proposal lies close to both Cobbinshaw Reservoir Site of Special Scientific Interest (SSSI), a fen, and Cobbinshaw Moss SSSI, an intermediate blanket bog. Although the application refers to the Moss, it talks about it being a fen. It's therefore likely that these two sites were taken as one since they are adjacent to each other. The proposal is also within connectivity distance of Westwater Special Protection Area (SPA) which supports large numbers of wintering Pink footed geese, a qualifying feature of the SPA. We note that the Environmental Appraisal concludes no significant impacts on Cobbinshaw Moss SSSI (or Cobbinshaw Reservoir SSSI) due to lack of hydrological connectivity. We are content that there will be no detrimental effects on the SSSIs. The Appraisal also concludes that no significant impacts are likely on Pink footed goose. Surveys showed that they do not use the area for foraging, instead flying north-south through the wider area on migration routes. This is similar to past results for other wind farms in the area, which show that Pink foots do not tend to use this area. As such, we advise that a simple HRA can conclude no adverse effect on integrity on the SPA.	The two sites were assumed as one in the original application.

A screening opinion on the Proposed Development was received from South Lanarkshire Council on 11/3/2026. This opinion noted:

- It is considered that the impact of the proposal does not have the potential for significant environmental impacts. It is therefore considered that the development does not constitute an EIA development.
- The reasons for adopting this opinion are as follows:
 - The development is not of a scale that has the potential to have a significant environmental impact on the local area.
 - The proposed development option is within an area not designated for its environmental sensitivity.
 - The proposals are not of a scale to have a wider significant environmental impact within the landscape.

6.3 Assessment Methodology and Significance Criteria

In the interests of accessibility where conclusions from before have not changed from the original application, or methodologies remain the same, they are not repeated. The assessment focuses on new or updated information, which is an approach aligning with recent guidance on EIA onshore wind farm applications (Scottish Renewables, 2025) to encourage more proportionate EIA for onshore wind proposals. Whilst this application is non-EIA, the principle is considered relevant to this application too.

The approach to the Ecological Impact Assessment (EcIA) follows the Chartered Institute of Ecology and Environmental Management guidelines (CIEEM, 2024), which prescribe an industry-standard method to define, predict and assess potential ecological effects to a given Proposed Development. Starting with establishing the baseline through a mix of desk study and field survey, important ecological features (the IEFs) are identified and those requiring assessment established through a reasoned process of valuation and consideration of factors, such as statutory requirements, policy objectives for biodiversity, conservation status of the IEF (habitat or species), habitat connectivity and spatial separation from the Proposed Development. From this stage, these features are assessed for impacts with the assumption of this being in the presence of construction industry-standard mitigations to ameliorate impacts as far as practicably possible. Additional mitigation strategies can then be determined to minimise any residual impacts that would otherwise be experienced by the IEF and any opportunities for biodiversity gains identified.

In summary, the impact assessment process (CIEEM, 2018) involves:

- Identifying and characterising impacts and their effects;
- Incorporating measures to avoid and mitigate negative effects;
- Assessing the significance of any residual effects after mitigation;
- Identifying the appropriate compensation methods to offset significant residual effects; and
- Identifying opportunities for ecological enhancement / biodiversity net gain.

6.3.1 Study Area

Whilst the impact zone for habitats extends to a maximum 250 m from the Proposed Development, in order to provide options for layout change, National Vegetation Classification survey took place in 2024 within the red line boundary which is greater than Proposed Development and up to 250 m area. The impact zone remains the Proposed Development and up to 250 m, however.

Whilst any protected species signs found across the wider site boundary are potentially relevant to this assessment, detailed survey occurred for the following species/species groups and buffer extents from the construction zone:

- Otter *Lutra lutra* (up to 200 m in suitable habitat);
- Water vole *Arvicola amphibius* (50 m up/downstream from works and 10 m from suitable habitat perpendicular to watercourse);
- Badger *Meles meles* (30 m);
- Red squirrel *Sciurus vulgaris* (up to 50 m); and
- Bat Roost Potential features (up to 30 m).

The Study Area for bat flight activity is up to 100 km as per the spatial extent of the Ecobat dataset using the 'Scotland East' region. This was used to compare bat activity recorded at turbine locations from automated static devices in 2021 and 2024 with other data from schemes within that radius.

The Study Area for the ornithology vantage point surveys was covered by a single vantage point (VP) and is shown in Figure 6-5.

The Study Area for breeding birds was the site plus a 500 m buffer, where access was available. Where full access was not available, public access was used where possible and watches were carried out from the nearest accessible land. The breeding bird survey area is shown in Figure 6-6.

The breeding raptor study area covered the whole site plus a 2 km buffer. Where full access was not available, public access was used to gain some access, with mini-VPs used looking over areas with no access to attempt to detect breeding raptors. The survey area for breeding raptors is shown in Figure 6-6.

6.3.2 Desk Study

The desk study used the same extents as used in the 2021 application, namely:

- Statutory nature conservation designations up to 5 km and out to 20 km for goose interests;
- Non-statutory nature conservation designations up to 3 km; and
- Records for European protected species or other species of conservation interest within 3 km of the centre of the Site and up to 10 km for bat species from the last ten years.

6.3.3 Surveys

NVC/GWDTE

NVC surveys were conducted as per Rodwell (2006) with consideration of guidance issued by Scottish Environment Protection Agency (SEPA) (2024), namely: *Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems (GWDTE)*. Surveys were conducted between 9-11th September 2024 in dry, overcast conditions.

Protected Species

Surveys were carried out on the same dates as the NVC and followed Purseglove (1995) for otter, water vole, badger and red squirrel; Chanin, (2003); Bang & Dahlstrøm, (2006); Muir & Morris, (2013); Strachan, (2011); Harris *et al.*, (1989) and Scottish Badgers, (2018).

Bats (Automatic Static Detector Surveys)

Full spectrum bat detectors (Wildlife Acoustics Song Meter Mini Bats) were used in 2021 and 2024. The detectors were set up to record activity from 30 minutes before sunset to 30 minutes after sunrise for a period of at least 10 nights (Collins, 2023).

In 2021 three surveys seasons were undertaken as per guidance.

In 2024 two seasons were undertaken (summer (June to mid-August) and autumn (mid-August to October)). This was less effort than required within NatureScot (2021) guidance which states the spring period (April to May) should be included (see Limitations section, below).

Avian Surveys

A programme of ornithology surveys was undertaken to determine the baseline conditions for the Proposed Development Site. The surveys determined the level of bird activity within the Proposed Development Site and the value of the Proposed Development Site to birds, in order to assess the potential effects of the wind farm development upon IEFs above a certain value and considered vulnerable to impacts at the Proposed Development Site. The ornithological surveys undertaken were:

- VP surveys September 2020 to August 2021;
- Breeding bird surveys: April to August 2021; and
- Breeding raptor surveys: April to August 2021.

All surveys were undertaken following NatureScot guidance (SNH¹, 2017). A summary of each of the baseline ornithology survey methods and details of each survey, along with dates of survey visits and analysis methods are provided in Technical Appendix 6-1, Annex E Woolfords Wind Farm Ornithology Surveys, submitted for the Consented Development. Full survey details including survey timings and weather conditions can be provided on request.

Standard VP methodology was used as per NatureScot (2013, revised 2017) based on one VP location as shown in Figure 6-5. This guidance has subsequently been re-issued, but it was the 2014 version which was extant at the time surveys commenced. The surveys were undertaken between September 2020 and August 2021, inclusive.

Breeding bird surveys were carried out using a modified Brown and Shepherd methodology, following the modifications suggested in Scottish Natural Heritage (SNH) (2017).

In 2021, five surveys were carried out at approximately monthly intervals between April – August, with all areas of the site approached to a distance of approximately 100m. All areas of the site were covered and land within a 500 m buffer where access was available (Figure 6-6). Where full access was not available, public access was used where possible and watches were carried out from the nearest accessible land. All birds seen or heard were recorded using British Trust for Ornithology (BTO) codes on dedicated survey maps.

Breeding raptor surveys were carried during four surveys between April – August 2021. These used a walkover methodology for areas with access, where all parts of the site were approached to a distance of approximately 250 m. Where areas in the 2 km buffer did not have access permission, public access was used to gain some access, with mini-VPs used looking over areas with no access to attempt to detect breeding raptors.

¹ Scottish Natural Heritage (SNH) changed its name to NatureScot in August 2020.

6.4 Analysis

The following methodologies were used to assess activity and risk thresholds for bats and bird IEFs.

6.4.1 Ecobat

The Ecobat tool (NatureScot, 2021) was used to assess relative bat activity to that found during surveys with activity in the wider area. As surveys were repeated in 2024, and as Ecobat provides a relative measure of activity, it is consistent to compare both years of the data in this assessment. Surveys in 2024 were carried out in two of the three recommended seasons recommended by guidance (NatureScot, 2021). This was because access was not available in Spring 2024 and the intention at that time was to submit a planning application in 2025. Given the existing dataset however, consent status, minimal changes to the design, and zero flights in the 2021 spring period, it was considered robust to proceed on that basis.

6.4.2 Collision Risk Modelling

NatureScot has published guidance on the modelling of collision risk (NatureScot, 2024; as updated in April 2025). We have applied the latest guidance in the modelling of collision risk undertaken for this assessment.

The Proposed Development consists of up to 3 turbines with a maximum blade tip height of 200 m. The turbine parameters used for the model are presented in Tables 6-2 & 6-3. Modelling was carried out with a precautionary approach, where if decisions were being made about parameters, the approach was to take a precautionary but accurate approach.

Table 6-2: Turbine parameters

Parameter	Dimensions
Number of turbines	3
Blades per turbine	3
Hub height	112.5 metres
Rotor radius	87.5 metres
Maximum chord	1.000 metres
Pitch	6 degrees
Mean operational rotor speed	8.40 revolutions per minute (RPM)
Proportion operational	85 %
Turbine type	Enercon E-175 EP5
Risk height range	25 – 200 metres

Table 6-3: Blade profile

f/R	c/C
0	0.575
0.05	0.575
0.1	0.702
0.15	0.860
0.2	1.000
0.25	0.947
0.3	0.899
0.35	0.851
0.4	0.804
0.45	0.756

f/R	c/C
0.5	0.708
0.55	0.660
0.6	0.613
0.65	0.565
0.7	0.517
0.75	0.470
0.8	0.422
0.85	0.374
0.9	0.327
0.95	0.279
1	0.000

A collision risk model was run following the guidance provided by NatureScot (2024; as updated in April 2025), for three species – namely Golden plover *Pluvialis apricaria*, Curlew *Numenius arquata* and Pink-footed goose *Anser brachyrhynchus*. The model adopted for all species was a random collision risk model because the flight activity for none of these species fulfilled the criteria for which a linear movements model is specified. The new modelling approach involves the clipping of bird activity data with a ‘collision risk area’ defined as an area within 500 m plus the turbine rotor length of all turbine locations. The total number of seconds for which species were within the ‘at risk’ height was multiplied by the number of birds within each flight. An occupancy rate was calculated for the vantage point, defined as the observed ‘at risk’ activity levels divided by the observation time and area observed to give the occupancy per unit of time and area for the vantage point, within the ‘collision risk area’. This occupancy rate was applied to the wind farm based on the site area, risk volume and turbine rotor volumes and an estimate of flight activity time based on an algorithm for calculating day length. The model was run with relevant turbine and ornithological parameters to estimate the probability of transits resulting in a collision assuming no avoidance action. The number of transits for each species was multiplied by the collision rate, including avoidance factors and operational parameters for the proposed wind farm.

6.4.3 Limitations

Bat surveys: The reason for the omission of spring period during the 2024 bat static surveys was because access was not available and the intention at that time was to submit a planning application in 2025. Given the existing dataset however, consent status, minimal changes to the design, and zero flights in the 2021 spring period, it was considered robust to proceed on that basis.

NVC survey: Whilst the NVC was carried out towards the end of the growing season there was no impediment to identifying species and classifying habitats and grasses still had their seed heads and vegetation had not begun to pass over. There are not considered to be any missed early flowering species crucial to identifying habitats to NVC type - the absence of which could comprise a mis-identification.

Water vole survey: Current guidance for water vole assessment states that planning and construction-related surveys are generally expected to involve at least two separate survey visits (between mid-April and the end of June and between July and September). Whilst only one visit was conducted (in September), this is not considered to be a significant limitation as there is no potentially suitable habitat for water voles within the construction zone. Updated baseline mapping has identified a minor drainage feature in the vicinity of Turbine 3 infrastructure that was not shown on the original application drawings, but the walkover surveys undertaken in summer 2021 did not identify a defined or permanent watercourse at this location, and the feature is therefore considered

likely to represent a temporary drainage feature, artificial land drain, or a baseline mapping discrepancy.

Raptor survey: Access was not available to all areas of the raptor survey area buffer, where access was limited to public access land only. This does mean that less obvious species within the buffer area may have gone undetected.

All surveys: The weather was suitable throughout the survey period, however, visibility was limited for the fourth raptor visit (August 2021) owing to a nearby wildfire.

6.5 Baseline Conditions

Where possible data from 2021 is summarised rather than repeated in its entirety. This is due to the context of this revised application updating an existing consent with new information. Notwithstanding, some receptors (e.g. nature conservation designations) are repeated given their importance in the context of impact assessment.

6.5.1 Desk Study

No new designated sites since those included in the consented application are relevant to the Proposed Development. They are replicated in Tables 6-4 and 6-5 from the 2021 application for clarity, as shown in Figure 6-2. Distances are from the closest part of the Proposed Development to the designated site and have not changed since the Consented Development.

Table 6-4: Nature conservation designations

Site name	Designated features	Distance from Proposed Development
Cobbinshaw Reservoir SSSI	Open water transition fen	0.7 km east
Cobbinshaw Moss SSSI	Intermediate blanket bog	1.6 km east
Skolie Burn SSSI	Lowland neutral grassland	4 km north
Hermand Birchwood SSSI	Upland birch woodland	4 km northeast
Braehead Moss SAC/SSSI	Primary – Annex 1 habitat (Active Raised bog)	4.7 km southwest
Westwater SPA/Ramsar/SSSI	Migratory Pink-footed goose	11.6 km east

Table 6-5: Non-statutory nature conservation designations

Site name	Designated features	Distance from Proposed Development
Harwood Water pLBS	No information provided in the desk top records information provided by The Wildlife Information Centre used to inform the Consented Development	0.12 km north
Cobbinshaw Reservoir LBS	Open water transition fen	0.7 km east

The following summary was included within the application for species data from 2021 (in italics) as part of the Consented Development.

It is noted that bullfinch, starling, and reed bunting were present throughout the Proposed Development area. The rest of the records for both bats and birds do not necessarily indicate that these species are using the site given the distance of these records from the Proposed development.

Whilst records for redwing and fieldfare are listed as 'breeding' in the raw data the same records list them as 'passage migrant, winter visitor'. As such It is likely both species were observed migrating during the breeding season (either early or late) rather than actual breeding records having been observed. In addition, the distance from the Proposed Development, plus the lack of suitable nesting habitat, removes the possibility of effects on breeding redwing and fieldfare.

The proximity of water vole is noted in the desk top records (South Cobbinshaw, 0.7 km from Proposed Development, 2015).

Bat species included both Pipistrelle Pipistrellus sp and Soprano Pipistrelle Pipistrellus pygmaeus and Myotis spp were recorded (within 5-9 km of the Proposed Development).

An updated species search was carried for Protected or otherwise notable species out using the NBN Atlas Scotland on 25/02/2026. The search parameters were from August 2021 to present up to 10 km from the Proposed Development in order to catch new detail since the original application, as per Table 6-6.

The search only included records suitable for commercial use (OGL, CC0 or CC-BY).

Table 6-6: Records of protected or otherwise notable species identified on NBN Atlas Scotland on 25/02/2026 for the area within 10 km of the Proposed Development

Species	Summary of records
Natterer's bat	A single record, 4 km north-east near Harburn, 2019.
Daubenton's bat	Fourteen records, 8 km north -east near West Calder, 2016.
Oystercatcher	Nine records, 3 km south near Auchengray, 2021-2024.
House martin	Two records, 2 km east near Cabbinsshaw reservoir, 2024.
Lesser redpoll	One record, 1 km north-east near Cabbinsshaw reservoir, 2022.
Stonechat	One record, 2 km west, 2023.
Tawny owl	One record, 2 km west, 2023.

6.5.2 Surveys

NVC/GWDTE

The Survey Area was dominated by areas of blanket bog (M17a) which were found on the flatter higher ground to the north and west. Large areas are covered by an extensive network of parallel drains which may have been an historic attempt to improve the suitability for livestock (or avoid livestock being lost within deep peat) and given the extent of drainage the blanket bog is in poor condition. This blanket bog was surrounded by M25a *Molinia* mire communities with the sloping ground to the south dominated by grasslands (U5a, MG6a, MG10a) and other mire (M23a, M23b and M25a) communities. Some of the deeper M25a can be considered blanket bog. When compared to the 2021 survey, the 2024 survey recorded a greater extent of M25a *Molinia* grassland for some M17a in the south of T3 (Figure 6-2). These changes are likely due to degradation (drying out) of bog over time (blanket bog tending to the heathy form of M25 that is M25a) but also differences in surveyor interpretation within a large area where boundaries were sometimes difficult to discern.

In other respects there is limited change in results between the two years. As in 2021, the 2024 data demonstrates a strong relationship between topographical position and gradient with M25 on flat and gentle slopes and M17 on the largest and flattest areas, including depressions. Both M25 and M17 are fused with M6 flushes and M23 acid flushes/rush-pasture.

Grazing pressure was noted by the presence of nibbled purple moor-grass (*Molinia caerulea*) which is typically an unpalatable species. The presence of U5 *Nardus stricta* grasslands on knolls, as opposed to more palatable U4 *Agrostis capillaris*/*Festuca ovina* type, was noted.

Quadrats were undertaken in several locations (see Appendix A).

The classification of habitats is as per the 2021 application. It is replicated here save for minor changes (reference to Scottish Biodiversity List habitat) (NatureScot (2026)).

Protected Species

No protected species signs (potential or confirmed) were found in 2024. The Buzzard *Buteo buteo* nest within one of the copses in 2021 was not present in 2024. No bat roost potential features were recorded on trees. Many were /semi-mature and comprised species where fissures/cracking are typically lacking (e.g. beech *Fagus sylvatica*, Scots pine *Pinus sylvestris*).

Bats (Automatic Static Detector Surveys)

Over the two different years of surveys, 702 bat passes were recorded across six different detectors (three in 2021 and three in 2024). From the calls the following species were recorded: common pipistrelle, Daubenton's bat, *Myotis* spp, Natterer's bat, Pipistrelle bat, and Soprano pipistrelle.

As stated in Limitations section, no calls were recorded in the Spring 2021 survey. The lack of a spring visit is therefore not considered to significantly skew the interpretation of results on what is a low activity location across all species/species groups.

Table 6-7 shows the number of passes recorded in 2021 and Table 6-8 shows the number of passes in 2024. Table 6-9 shows the comparison of bat passes recorded between 2021 and 2024.

Common pipistrelle was the most commonly recorded bat species over the two survey years, with 307 passes recorded accounting for 43.7% of all passes recorded. Soprano pipistrelle was the second most commonly recorded species with 298 passes recorded, accounting for 42.5% of all passes recorded. There were smaller numbers of *Nyctalus* sp. and *Myotis* sp. with 74 and 23 passes, respectively, accounting for 10.5% and 3.3% of all passes recorded.

2021 was the busiest of the two years with 510 bat passes being recorded compared to 192 bat passes in 2024. Activity was similar for *Myotis* sp. and *Nyctalus* sp. between the two years. *Myotis* sp. recorded 10 bat passes in 2021 compared to 13 passes in 2024. *Nyctalus* sp. recorded 33 bat passes in 2021 compared to 41 bat passes in 2024. For both pipistrelle species 2021 showed a much higher level of activity than in 2024. For Common pipistrelle, there were 210 bat passes recorded compared to 97 bat passes in 2024. For Soprano pipistrelle, there were 257 bat passes in 2021 compared to 41 bat passes in 2024.

Table 6-7: Summary of bat passes per season across 2021

Species	No. of passes			Totals	Percentage of Totals
	Spring	Summer	Autumn		
Myotis sp.	0	6	4	10	2
Nyctalus sp.	0	32	1	33	6.5
Common pipistrelle	0	194	16	210	41.2
Soprano pipistrelle	0	227	30	257	50.4
Total	0	459	51	510	
Percentage of total	0	90	10		100

Table 6-8: Summary of bat passes per season across 2024

Species	No. of passes		Totals	Percentage of Totals
	Summer	Autumn		
Myotis sp.	12	1	13	6.8
Nyctalus sp.	35	6	41	21.4
Common pipistrelle	70	27	97	50.5
Soprano pipistrelle	23	18	41	21.4
Total	140	52	192	
Percentage of total	72.9	27.1		100

Table 6-9: Comparison of bat passes across 2021 and 2024

Species	Bat Passes 2021	Percentage 2021 (%)	Bat Passes 2024	Percentage 2024 (%)	Bat Passes Total	Percentage (%) across 2021 & 2024
Myotis sp.	10	2	13	6.8	23	3.3
Nyctalus sp.	33	6.5	41	21.4	74	10.5
Common pipistrelle	210	41.2	97	50.5	307	43.7
Soprano pipistrelle	257	50.4	41	21.4	298	42.5
Total	510	100	192	100	702	100

In 2021 the summer visit recorded the most bats with 459 bat passes recorded compared to 0 bat passes in the spring and 51 bat passes in the autumn. All species recorded the most bat passes in the summer.

In 2024 the summer visit recorded the most bats with 140 bat passes compared to 52 bat passes in the autumn visit.

Avian Surveys

The highest flight activity was associated with non-breeding flocks of gregarious birds, namely Golden plover and Pink-footed geese. Golden plover is a priority species on the Scottish Biodiversity List (Scottish Government, 2025). Pink-footed geese are on the amber list of birds of conservation concern (Stanbury *et al.*, 2021). Table 6-10 shows flight activity for all target species observed during the VP surveys. Figure 6-7a shows the Vantage Point activity for raptors, Figure 6-7b shows the Vantage Point activity for waders, Figure 6-7c shows the Vantage Point for all other species.

Table 6-10: Results from vantage point surveys September 2020 – August 2021

Species	Scientific name	Min No. of birds	Max No. of birds	Average No.	Flights	Total Bird seconds	At Risk Bird Seconds
Curlew	<i>Numenius arquata</i>	1	3	1.5	14	373	235
Dunlin	<i>Calidris alpina</i>	1	1	1	1	16	16
Golden plover	<i>Pluvialis apricaria</i>	3	44	17.89	9	24,558	24,065
Goshawk	<i>Astur gentilis</i>	1	1	1	1	61	0
Greylag goose	<i>Anser anser</i>	2	12	5.33	3	480	410
Hen harrier	<i>Circus cyaneus</i>	1	1	1	1	90	5
Herring gull	<i>Larus argentatus</i>	2	2	2	1	142	142
Pink-footed goose	<i>Anser brachyrhynchus</i>	19	70	38	7	24,334	9,666

Table 6-11 shows collision risk summary statistics for Curlew, Golden plover and Pink-footed goose. Collision risk is summarised by a figure for the number of years per single collision for species where collision risk exists - based on confirmed use of the Survey Areas, flight characteristics of species concerned (potential for collisions), and number of flights. As a result, this statistic is provided for Curlew, Golden plover and Pink-footed goose. As the methodology for CRM was updated by NatureScot since the original CRM was run, the model was run again for all three species and a comparison of the updated collision risks is shown below.

Table 6-11: Collision risk estimate summary – comparison between 2021 and 2026

Species	Scientific Name	Annual Collision Risk 2021	No. of years per collision 2021	Annual Collision Risk 2026	No. of years per collision 2026
Curlew	<i>Numenius arquata</i>	0.025	39.9	0.008	127.8
Golden plover	<i>Pluvialis apricaria</i>	1.559	0.6	1.196	0.84
Pink-footed goose	<i>Anser brachyrhynchus</i>	0.074	13.6	0.133	7.52

For Curlew and Golden plover, estimated collision risk decreased between the 2021 and 2026 model runs, whereas there was a small increase for Pink-footed goose relative to the predicted collision risk modelled in 2021. For Curlew, the predicted collision risk decreased from 0.025 birds per year in 2021 to 0.008 birds per year in 2026. For Golden plover, the estimated collision risk decreased from 1.559 birds per year in 2021 to 1.196 birds per year in 2026. For Pink-footed goose, the predicted collision risk increased from 0.074 birds per year in 2021 to 0.133 birds per year in 2026.

The new CRM methodology clips the VP data for the various species within a zone of 500 m plus the turbine blade length, compared to the previous model which included all the VP data over the whole viewshed. Therefore, if a species has activity focused around the turbines it would have a higher collision rate compared to a species which has activity focused elsewhere on site, away from the turbine areas. This would explain how a species could have a lower estimated collision rate when the new methodology is applied, despite a moderate increase in tip height and turbine circumference.

In the case of Pink-footed goose, there was only one flight recorded at risk height, however, the majority of this flight passed within 587.5 m of the turbines (see Figure 6-7c), and as a consequence applying the new modelling methodology resulted in a small increase in estimated collision risk, compared with the previous model. The increase in turbine dimensions will also have had a bearing on this small increase in modelled risk. On the other hand, both Curlew and Golden plover showed less flight activity within 587.5 m of turbines than over the site overall (see Figure 6-7b), and so there

was a small decrease in the estimated risk for the two species when the new modelling approach was applied.

Table 6-12 shows an abridged list of the breeding birds recorded during the BBS surveys. The species shown below are species that appear on the Amber and Red lists of the Birds of Conservation Concern (Stanbury *et al.*, 2021). Figure 6-8 shows the results of the BBS surveys.

Table 6-12: Breeding bird results for species of high conservation concern April 2021 – August 2021

Species	Scientific name	Status ¹	Confirmed	Probable	Possible
Cuckoo	<i>Cuculus canorus</i>	Scottish Biodiversity List, BoCC Red List	0	0	1
Curlew	<i>Numenius arquata</i>	Scottish Biodiversity List, BoCC Red List	0	2	1
Dunnock	<i>Prunella modularis</i>	Scottish Biodiversity List, BoCC Amber List	0	0	1
Kestrel	<i>Falco tinnunculus</i>	Scottish Biodiversity List, BoCC Amber List	1	0	
Lapwing	<i>Vanellus vanellus</i>	Scottish Biodiversity List, BoCC Red List	0	1	0
Linnet	<i>Linaria cannabina</i>	Scottish Biodiversity List, BoCC Red List	0		1
Lesser redpoll	<i>Carduelis flammea cabaret</i>	Scottish Biodiversity List, BoCC Red List	0	0	1
Meadow pipit	<i>Anthus pratensis</i>	BoCC Amber List	This was the most numerous bird on site; consequently territory analysis not performed for this common and widespread species.		
Oystercatcher	<i>Haematopus ostralegus</i>	BoCC Amber List	0	0	2
Reed bunting	<i>Emberiza schoeniclus</i>	Scottish Biodiversity List, BoCC Amber List	0	0	2
Skylark	<i>Alauda arvensis</i>	Scottish Biodiversity List, BoCC Red List	0	28	36
Spotted flycatcher	<i>Muscicapa striata</i>	Scottish Biodiversity List, BoCC Red List	1	0	0
Common snipe	<i>Gallinago gallinago</i>	BoCC Amber List	0	1	1
Song thrush	<i>Turdus philomelos</i>	BoCC Red List	0	0	4
Willow warbler	<i>Phylloscopus trochilus</i>	BoCC Amber List	0	7	9

No breeding Schedule 1 species were recorded. The only species where breeding was confirmed were Kestrel *Falco tinnunculus* and Spotted flycatcher *Muscicapa striata*. Probable breeding applied to Curlew, Lapwing *Vanellus vanellus*, Skylark *Alauda arvensis*, Common snipe *Gallinago gallinago*, and Willow warbler *Phylloscopus trochilus*. Non-breeding records (i.e., birds showing no evidence of breeding and no linkage with birds which are showing signs of breeding on other visits) but for which there is a high likelihood of breeding, included Starling *Sturnus vulgaris* and House martin *Delichon urbicum*, both these species are on the BoCC red list (Stanbury *et al.*, 2021).

In terms of breeding raptors, a concentration of Buzzard activity was observed in a copse in the north of the site, where it is probable there was a nest. Regular activity from this species was observed across the site.

One confirmed territory of Kestrel, an amber list species and considered at risk from wind farm development, was observed, approximately 700 m north of the Proposed Development. Frequent hunting activity from multiple individuals was observed across the site.

A Goshawk *Astur gentilis*, a Schedule 1 species, was observed in the west of the site carrying prey towards a conifer plantation and potential breeding habitat.

6.6 Cumulative Assessment

The Chapter also assesses cumulative effects as arising from the addition of the Proposed Development to other cumulative developments. Environmental Impact Assessment Streamlining guidance (Scottish Renewables, 2025) suggests the following for inclusion:

- Developments which are operational (part of the existing baseline);
- Developments which are under construction;
- Developments which are consented; and
- Developments which are the subject of a live planning application or a live application under the Electricity Act.

For Ecology the Zone of Influence (ZoI) is up to 5 km based on potential (albeit low potential) for watercourse pollution. For clarity, schemes from the Consented Development are included in addition to new scheme since 2021. The planning portals for both South Lanarkshire and West Lothian were accessed. Many small residential / farming planning applications are present, but these were not included because it is not feasible to incorporate all schemes of this type. Atmos possesses an in-house database of cumulative projects, compiled from planning portals, and this was also consulted.

For the ornithology cumulative assessment the search area extended to the entirety of Natural Heritage Zone 17 - West Central Belt.

6.6.1 Future Baseline

On the basis of a gradual degradation of priority peatland quality and extent - as evidenced in comparing NVC survey results between 2021 and 2024 - and in the context of the "do nothing" scenario, i.e. the conditions in the event that the Proposed Development does not go ahead, a slow degradation of this resource would be expected to continue over time. This would be primarily due to 'macro-factors' such as changing weather-patterns and climate change and potential land use change (encroachment of agricultural pasture grassland).

In other ecological and ornithological respects no other significant changes are considered likely.

6.7 Embedded Mitigation

This section describes a number of embedded mitigation measures that have been identified through the iterative EIA process and have been incorporated into the design and construction planning of the Proposed Development. As these mitigation measures have been embedded into the design, are legal requirements or are standard practices that will be implemented, the assessment of likely significant effects assumes that they are in place.

The design has evolved iteratively to minimise the effect on peat habitats and potential GWDTEs taking account of NVC results and hydrological assessments.

The drainage design will comply with General Binding Rules (GBRs) for the track drainage under The Environmental Authorisations (Scotland) Regulations 2018 (as amended) (SEPA, 2025).

Guidance issued by NatureScot (2021) provides a methodology for determining the minimum buffer distance required between a feature of potential value for bats and a wind turbine. A minimum stand-off buffer of 50 m will be maintained between the rotor-swept area and the nearest feature, which is

considered to be treelines on the Site or in the vicinity of infrastructure. The calculation for the recommended minimum 50 m buffer from blade tips is calculated using the formula:

$$\text{Buffer distance from edge/feature} = \sqrt{(50 \text{ m} + bl)^2 - (hh - fh)^2}$$

Where “bl” = blade length, “hh” = the hub height and “fh” = feature height

The probable maximum height of trees within forestry plantation bordering the west of the Proposed Development Site is 20 m. This results in a minimum buffer of 101.7 m. The nearest turbine to the woodland is Turbine 3, which is located 139 m from the woodland; the buffer distance is therefore observed. See Figure 6-3 for more information.

6.7.1 Pre-construction Phase

A Pollution Risk Assessment will be carried out identifying materials, areas and activities of greatest risk and laying out controls on these. From this a Pollution Prevention Plan (PPP) will be prepared. The PPP would be a sub-plan of the Construction Environment Management Plan (CEMP). A PPP would also be in place during operational and decommissioning phases.

The Proposed Development would be constructed in cognisance of the following guidelines:

- ‘Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters’ (IFI, 2016).
- ‘Control of water pollution from construction sites – Guidance for consultants and contractors’ (Masters-Williams et al. 2001); and
- ‘Control of water pollution from linear construction projects’ (Murnane et al. 2006).

A pre-construction protected species survey would be undertaken within four weeks of the start of construction, covering suitable habitat within 200 m of construction areas. This buffer accounts for all potential protected species interests. The survey would be undertaken by a Suitably Qualified Ecologist (SQE).

Should the presence of a protected species be found in an area where disturbance or destruction of breeding structures cannot be avoided, a protected species licence may be required.

The ECoW will carry out pre-construction survey checks during the bird breeding season (March to August, inclusive) in advance of any vegetation stripping or excavation works to check for the presence of any breeding birds.

Any active nests found will be cordoned off to a suitable distance for the species concerned, as per Goodship & Furness (2022), or any subsequent comparable guidance; for species not listed in Goodship & Furness (2022) then a minimum buffer of 5 m will be applied but the ECoW would review this and increase if necessary and construction operations would be delayed within the cordon until the young have fledged and/or the nest becomes inactive naturally; and

Maintaining buffers will be a responsibility of the ECoW. This will remove the possibility of illegal damage, destruction or disturbance to bird nests while in use or being built during the Construction phase.

6.7.2 Construction Phase

Full details of construction mitigation measures would be provided in a CEMP to be agreed with South Lanarkshire Council, in consultation with relevant stakeholders, post-consent but prior to development commencing. The PPP would detail proposed surface drainage measures to treat and deal with surface runoff from the Site and would be designed in accordance with sustainable

drainage systems (SuDS) principles. This plan would form part of the CEMP, which would include the following indicative measures:

General Mitigation

- Works would be overseen by an EnvCoW who would also be an SQE and their role and responsibilities would be detailed in the CEMP.
- There would be no direct discharges to any natural watercourses, with all drainage waters being dispersed as overland flows, as directed by the EnvCoW to avoid erosion or siltation of existing watercourses in the process. All discharges from the proposed works areas would be made over vegetation filters at an appropriate distance from natural watercourses;
- Drainage measures, including drainage ditches and silt traps, would be provided to collect and treat increased surface run off;
- Chemical, fuel and oil storage would be undertaken within the site compound (>50 m from watercourse and GWDTE); the store would be locked, sited on an impervious base within a secured bund of 110 % of the storage capacity;
- Refuelling of vehicles and machinery would be carried out on an impermeable surface in the site compound, or where not possible, a lockable mobile refuelling bowser (double skinned) would be used and operated by a designated person;
- Use of wet-cement products within the hydrological buffer would be avoided, insofar as reasonably practicable. Should their use be proposed, this would be in agreement between the EnvCoW and SEPA prior to their use;
- Onsite toilet facilities would be located within the site compound and would be adequately designed and maintained to check all sewage is disposed of appropriately, as per NetRegs (Guidance for Pollution Prevention 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer, 2021) .
- Silt fences, straw bales and biodegradable matting would be used to control surface water runoff for deposition areas; and
- Deposition areas would be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff.

Habitats

The loss of plant communities is an unavoidable consequence of the Proposed Development. The design has sought to minimise effects on GWDTE, with revisions including relocating the track southwards, to cover a larger area of habitat not classed as GWDTE. However, incidental habitat loss would be avoided by minimising the footprint of construction activities. This would be achieved by:

- Operating machinery and storing materials within the footprint of permanent construction features wherever practicable; and
- Ensuring that vehicles and their operators do not inadvertently stray onto adjacent habitat areas.

Other indicative measures within the CEMP would be:

- Reinstatement of habitats – best practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance, such as the temporary construction compound area, as soon as is reasonably practicable;
- Materials and other temporary infrastructure would be removed offsite and all temporary construction areas would be reinstated;

- The surface layer of soil and vegetation would be stripped separately from the lower soil layers, stored separately, and replaced as intact as possible once the construction phase is complete. Turf material would be replaced as far as reasonably practicable in similar locations to where it was removed.
- Soils removed from the excavated area would be stored separately in piles, no greater than 3 m in height, directly adjacent to, or near the tracks on ground appropriate for storage of materials i.e., relatively dry and flat ground, a minimum of 50 m away from watercourses;
- Wherever reasonably practicable, reinstatement of ground disturbed to facilitate construction of the track would be carried out as track construction progresses;
- No refuelling would be permitted at works locations within 50 m of watercourses (where reasonably practicable);
- The time between excavating and backfilling of individual sections of cable trench would be minimised near GWDTEs. As a rule, these should be backfilled within three days to minimise drying and disturbance;
- Impermeable barriers and/or clay plugs would be used to avoid the trenches acting as preferential conduits of groundwater; and
- Areas of identified sensitivity (GWDTE, priority peat) would be marked out / fenced to prevent accidental vehicular access.

Fauna

Whilst no protected species signs were recorded in 2024 the potential exists for protected species to be present, as such:

- As there would be potential for fauna to access the Site, excavations/holes would be covered at the end of each working day, or a wooden plank placed inside to allow faunal species to escape, should they enter the hole. Any temporarily exposed open pipe system would be capped in such a way as to prevent wildlife gaining access;
- In the event that a protected species is discovered onsite, all work in that area would stop immediately and the EnvCoW would be contacted. Increased buffer areas may be required in these locations. Details of the local police Wildlife Crime Officers, NatureScot Area Officer, and Scottish Society for the Prevention of Cruelty to Animals (SSPCA) relevant Officer would be held in the site emergency procedure documents; and
- No new ground would be cleared without prior inspection by the EnvCoW to enable herpetofauna and invertebrates, should they be present, to disperse before clearance. Clearance would occur in a manner to maintain dispersal routes for herpetofauna and invertebrates.

Operational Phase

During the operational phase the following mitigation measures would be implemented.

Habitats

The proposed and upgraded access tracks would be left in place after completion of the construction phase as they would provide access for maintenance, repairs, and the eventual decommissioning phase.

Hardstanding areas at each turbine location would be retained for use in on-going maintenance operations, with the edges as far as reasonably practicable blended to the adjacent contours with natural vegetation being allowed to re-establish.

Annex 6-1-2: Habitat Management Plan has been produced in support of this application, which provides management commitments for ecological mitigation, enhancement and restoration for flora and fauna on the Site.

6.8 Receptors Brought Forward for Assessment

The impact assessment comprises the IEFs brought forward to the detailed impact assessment stage. It is considered that their value is assessed as being important at a Local level or higher and that they are potentially vulnerable to significant effects from the Proposed Development; i.e. those where the standard/design mitigation has not reduced the effect to non-significant.

No impact pathway is expected for pollution to watercourses on the basis of Embedded Mitigation measures outlined above.

6.9 Impact Assessment

6.9.1 Construction

Nature Conservation Designations

As proximity of infrastructure remains the same as under the Consented Development, and as per the assessment connected with the consent, no significant effects and considered likely on either statutory or non-statutory nature conservation designations.

Suitable grazing habitat for Pink footed geese is present on the Proposed Development Site, however, higher quality grazing is present to the east around Cobbinshaw Reservoir. Whilst construction could displace qualifying species coming to the Proposed Development Site to forage, as alternative and better foraging areas are present elsewhere it's likely that there would be no actual effect of the temporary displacement of birds.

In addition, the distance between the Proposed Development, the Westwater SPA/Ramsar/SSSI roost, and any feeding areas with a history of use by geese, would suggest that the Proposed Development is a low risk with a negligible risk of an effect as a result of construction activities.

Habitats (overall)

During construction several habitats would undergo direct loss. The habitat communities which would be directly lost are outlined in Table 6-13 with the area of habitat lost due to the building of the infrastructure plus a 5 m buffer. All habitats are regarded as Local value receptors based on their ubiquity within the locality and within the Proposed Development Site. The table compares losses in the previous application with that within the Proposed Development.

Annex I habitats are natural habitat types identified by the EU Habitats Directive (Council Directive 92/43/EEC) as being of *community interest* and in need of conservation across Europe (which includes the UK) (European Environment Agency (EEA) (2026).

A Scottish Biodiversity List (SBL) habitat is a habitat formally identified by Scottish Ministers as being of "principal importance for biodiversity conservation" in Scotland. This requirement is set out under the Nature Conservation (Scotland) Act 2004, which places a legal Biodiversity Duty on all public bodies to further the conservation of biodiversity (Scottish Government, 2025).

GWDTE scores are based on hydrological risk assessment undertaken for the Consented Development as this comprises a site-specific assessment. Categorisation within this assessment (e.g. Low-Moderate) is based on earlier SEPA guidance (SEPA, 2017) although it should be acknowledged that under current guidance (SEPA, 2024) there is no requirement to assess GWDTE

in this way (i.e. Low-Moderate-High). The 2024 guidance requires confirmation whether GWDTE are present or not.

Table 6-13: Extent and losses of NVC communities within the Survey Area (Proposed Development + 250 m)

NVC code	NVC community / sub-community	Annex 1 habitat	SBL habitat	GWDTE status	Extent within Proposed Development + 250 m (ha.)	Total Loss (infrastructure + 5 m) (ha.)	Total Loss % of extent within Proposed Development + 250 m (ha.)
M6c M6d	Carex echinata – Sphagnum recurvum mire	None	None	Yes (Low)	2.15	0	0
M15d	Scirpus cespitosus – Erica tetralix wet heath	H4010 Northern Atlantic wet heaths with Erica tetralix H7130 Blanket bog, where peat depth is > 0.5 m	Raised and blanket bogs if peat depth >0.5 m	Yes (Low)	4.28	0	0
M17a	Scirpus cespitosus – Eriophorum vaginatum blanket mire	H7130 Blanket bog	Raised and blanket bogs	No	69.45	3.28	5
M23a	Juncus effusus/acutiflorus – Galium palustre rush-pasture – Juncus effusus sub-community	None	None	Yes (Low – Moderate)	5.44	0.31	6
M23b	Juncus effusus/acutiflorus – Galium palustre rush-pasture - Juncus acutifloris sub-community	None	None	Yes (Low – Moderate)	29.4	5.49	19
M25a	Molinia caerulea – Potentilla erecta mire	H7130 Blanket bog, where peat depth is > 0.5 m	Raised and blanket bogs if peat depth >0.5 m	No	37.52	1.13	2
M25a	Molinia caerulea – Potentilla erecta mire	None (where peat depth is < 0.5 m)	None (where peat depth is < 0.5 m)	No	14.08	2.74	12
MG6a	Lolium perenne – Cynosurus cristatus grassland	None	None	No	8.9	0.3	3

Woolfords Wind Farm - Tip Height Increase

NVC code	NVC community / sub-community	Annex 1 habitat	SBL habitat	GWDTE status	Extent within Proposed Development + 250 m (ha.)	Total Loss (infrastructure + 5 m) (ha.)	Total Loss % of extent within Proposed Development + 250 m (ha.)
MG10a	Holcus lanatus – Juncus effusus unimproved neutral grassland	None	None	No	17.4	3.52	20
S9a	Carex rostrata swamp	None	Naturally low-nutrient lochs, ponds and pools	No (not with SEPA 2024)	0.4	0	0
U5a	Nardus stricta–Galium saxatile grassland, species-poor sub-community	None	None	No	1.2	0.43	

Blanket bog

Blanket bog comprises M17 although much of it is in a poor condition as there is extensive evidence of degradation of the habitat and the ongoing potential for this to continue given the presence of the extensive network of rectilinear drains crossing much of it (see Figure 6-4). Blanket bog is also considered to comprise M25a when this overlies peat depth of >0.5 m.

Based on the figures in Table 6-13, the combined loss of blanket bog is 4.41 ha, which is split between M17a and M25a when over 50 cm. Both align with Annex 1 and SBL habitat descriptions. There is an increased loss of habitat from the Proposed Development to the Consented Development, because taller turbines require larger hard-standings, and a reconfiguration of the access track layout has also been undertaken. Notwithstanding the increased loss (from 3.35 ha in 2021² to 4.41 ha in 2026), the EIA streamlining guidance (Scottish Renewables, 2025) notes the need to focus on site location and prioritise where significant effects might occur. When considering the increased loss in the context of the available blanket bog within the infrastructure footprint and within 250 m therefore (as shown in Table 6-13), the impact to the local resource is considered to be on a similar scale as was assessed previously, i.e. a minor adverse but permanent effect on a local-level IEF as a result of loss, disturbance and degradation of peat and peat soils and their hydrology during construction.

Notwithstanding this is considered a non-significant effect, measures to compensate for blanket bog loss are required. In light of the comments in the consent conditions for the previous scheme (see Table 6-1) the Outline HMP has been revised to focus on restoration on site and establish a Habitat Management Group (HMG) for the scheme. The Outline HMP (Annex 6-1-2) is a revised document from that included under the Consented Development, notably by incorporating the conditions stipulated by the LPA in relation to it. Primary additions include peatland restoration of the worst affected blanket bog (covering 14.6 ha) covered by drains and installation of the HMG to oversee measures across the lifetime of the Proposed Development.

GWDTE

The design has sought to minimise effects on GWDTE, with revisions including relocating the track southwards, to cover a larger area of habitat not classed as GWDTE, such as MG6a *Lolium perenne*-*Cynosurus cristatus* grassland (Figure 6-2).

Hydrological assessment for the Consented Development categorised M6 and M23 habitat as low to moderate GWDTE, in addition to some M25a (which is generally considered a GWDTE when on peat <50cm in depth). It cannot be ruled out that some of the shallower blanket bog (i.e. on peat deeper than 50cm but less than 1m) will also have a groundwater connection. Given the assessed value of these receptors, a minor adverse effect on a local level receptor will remain, which is not significant in EIA terms.

Notwithstanding, mitigation for effects on ground water dependant terrestrial ecosystems (GWDTEs) is included within the CEMP to ensure no loss in functionality and floristics of the low - moderate-GWDTE within the Proposed Development.

Wet heath

An area of wet heath M15d community was present towards the north of the Proposed Development area. Apart from this it was found as part of a mosaic with other mire communities such as M17a and M25a. It is considered of little or low groundwater dependency and sufficiently far from the

² Note that the 2021 loss of In M25a was not divided between peat > 50 cm and < 50 cm. A total 2.10 ha of M25a was lost in 2021.

Proposed Development infrastructure not to be affected, with no direct or indirect effects from excavations or other construction-related activity.

Grassland

Loss of MG10a, MG6a and U4 grasslands is considered to result in a negligible effect on negligible-low value receptors. As shown in Table 6-13 none of these receptors have a conservation designation (or criterion applied). Notwithstanding, as the predominantly agricultural grasslands (or those modified by the effects of agriculture) have potential for enhancement to benefit waders measures to do this are included within the OHMP (Annex 6-1-2).

Bats

The static bat surveys showed that the Site is predominantly used by Common and Soprano pipistrelles, as well as smaller numbers of *Nyctalus* sp. and *Myotis* sp. as shown in Annex 6-1-1, Table 10.

The median and maximum relative activity scores for all species across all locations and survey period were assessed as low, as shown in Annex 6-1-1, Tables 13, 14, 15 and 16. Across both years of survey, one night of low-moderate activity was recorded for Soprano pipistrelle, as shown in Annex 6-1-1, Table 11. All other activity, across all species and species groups was low.

There was no clustering of activity during the typical emergence times for any bat species/species - group indicating that there is unlikely to be a roost nearby (see Charts 3 and 4 in Annex 6-1-1). There was also no clustering of activity during the bat maternity period, indicating that it is unlikely that there is a bat maternity roost nearby.

The common species which account for most of the activity - Soprano and Common pipistrelle – are unlikely to commute across the Proposed Development in notable numbers, because there are no habitat features along which to move. Burns and treelines are beyond the Proposed Development, bordering it to the north and, to a lesser extent, the east. Individuals of these common species are unlikely to fly over the large area of open habitat which dominates the Proposed Development in numbers that could result in a significant effect if they were impacted by construction activities. In addition, any displacement effects from construction lighting will be mitigated by directional lighting/cowls. Given that the large area of woodland edge and burn network on the Proposed Development Site is located beyond the zone of influence of the Proposed Development, no more than negligible adverse effects on local bat populations are likely as a result of construction.

Birds

Wader species and Pink footed geese are taken forward for assessment, with the latter discussed in the statutory designated site section above due to their designation as part of the Westwater SPA/Ramsar/SSSI populations.

General measures to protect active nests detailed in the CEMP and Outline HMP (Annex 6-1-2) are considered sufficient to mitigate effects on other species including Skylark and Spotted flycatcher (SBL and red list species that were confirmed/probable breeding in the surveys).

Goshawk and Hen harrier are not taken forward as only two and one flights, respectively, were recorded from 12 months across all survey types, and there was no evidence of either species breeding in the Survey Area.

Waders

Whilst no confirmed breeding territories were found, the Survey Area is noted for its wader species including Curlew, Lapwing and Common snipe. It is probable, however, that low numbers of Curlew

are breeding within the Survey Area and based on the three records from the breeding bird survey (BBS) (Table 6-12), one probable breeding territory is present in the zone of influence of the Proposed Development, 600 m from turbine 3 (Figure 6-8). Lapwing and Common snipe territories (probable-possible) are outwith the zone of influence; however, non-breeding Golden plover was seen in flocks throughout the Survey Area.

There will be no direct impacts on breeding success of confirmed nests (for any wild bird) as pre-construction checks will ensure appropriate protection zones will be put in place before construction activities commence. In terms of indirect effects from displacement from breeding territories, this is low risk due to the low numbers of territories involved. A study by Whitfield *et al.* (2010), who examined effects on Curlew and Golden plover populations on five UK wind farm projects, found no evidence of displacement and that breeding birds would need to be very close to infrastructure for displacement to occur. As a result, and on a precautionary basis, a minor adverse effect on breeding Curlew is possible, and a negligible effect on non-breeding Golden plover is likely, from construction. Both are considered local level receptors, and as such potential minor adverse effects on these species are considered non-significant.

Pink-footed goose

As discussed in Section 1.11.2, there is higher quality grazing present to the east around Cobbinshaw Reservoir. Whilst construction activity could potentially displace the species coming to the Proposed Development Site to forage, alternative and better foraging areas are present elsewhere, in the vicinity of the Proposed Development. The Site is considered to be of local importance for this species, and as such it is considered that a potential minor adverse effect on wintering Pink-footed goose is non-significant.

6.9.2 Operation

Statutory Designated Nature Conservation Sites

Westwater SPA/Ramsar/SSSI is designated for its wintering population of Pink-footed goose. At the time of citation, it held a mean of 29,600 individuals. The most recent counts (Frost *et al.* 2020) give a five-year mean of 40,048 individuals. Mitchell (2012) shows no records of feeding geese within 2 km of the Proposed Development.

NatureScot's guidance for small-scale wind developments and their effects on grey geese (SNH 2014) considers developments which are three or fewer turbines with a tip height of up to 150 m. The Proposed Development has a maximum tip height of 200 m and as such is not fully covered by the guidance, but the distance between the Proposed Development, the SPA roost (11.6 km east), and any feeding areas with a history of use by geese, would suggest that the Proposed Development is a low-risk site for the SPA. All collision risk flights were on a north-south axis and considered to be migratory with modelling predicting a single collision in 7.52 years (Table 6-11). The timing of most flights was outwith the dawn/dusk window when geese move between foraging grounds, which adds further weight to the view that flights are migratory and that the Survey Area is infrequently used for foraging. No significant effects are therefore likely from collision risk, barrier effects or feeding displacement as a result of operation.

Birds

No flights of Kestrel and Spotted flycatcher were recorded during the VP surveys. Confirmed breeding territories were recorded for both species at approximately 700 m from the Proposed Development. Whilst there is sufficient evidence from Kestrel flight behaviour (including hovering) to consider them to be vulnerability to collision (Whitfield & Madders, 2006), the confirmed territories for both species are considered adequately distant for no significant effects to occur.

The Survey Area is noted for its presence of wader species including Curlew, Lapwing and Common snipe and a probable breeding territory was recorded 600 m from the proposed location of Turbine 3. However, waders are known to avoid wind turbines when in flight and have a high avoidance rate (98% - NatureScot (2010)). In addition, the three proposed turbines are over 500 m apart and located within a much larger area of suitable habitat. Numerous studies note the lack of displacement effects from operational wind farms (e.g., Douglas *et al.* (2011), Fielding and Haworth (2010)) and the latter study found that Golden plover numbers increased during the operational phase in comparison to the construction period. Collision risk modelling produced a low number of potential individual collisions, with one every 127.8 years for Curlew, every 0.84 years for Golden plover. Whilst the collision risk for non-breeding Golden plover is moderate, it is considered to be over-estimated and heavily influenced by one large flock which used the site briefly during migration. Guidance suggests that in cases where wintering populations are considered highly mobile, such as is the case for wintering waders, then the assessment should be carried out at a broader scale, such as that of the Scottish population (NatureScot, 2025a). The Scottish wintering population of Golden plover is estimated to be in the region of 25,000-35,000 birds (Forrester *et al.*, 2007), and as such the potential loss of 1.196 birds per year will have a negligible effect on the Scottish population and is therefore considered to be non-significant.

As a result, a negligible effect on all wader species is likely from operation. All are considered local level receptors, based on the numbers present, compared with the estimated regional populations.

Pink-footed goose may be displaced during the operational phase of the wind farm, however, as discussed in Sections 1.11.2 and 1.11.22, alternative and better foraging areas are present elsewhere, in the vicinity of the Proposed Development. In particular there is higher quality grazing present to the east around Cobbinshaw Reservoir. The Site is therefore considered to be of local importance for this species, and as such it is considered that a potential minor adverse effect on wintering Pink-footed goose could occur, but this will result in a non-significant on the local population of the species. The potential loss of 0.133 birds per year through collision risk is considered to be negligible at the local level, and therefore non-significant in EIA terms.

6.9.3 Decommissioning

Birds

Pre-construction checks will take place prior to the dismantling of infrastructure. On the basis that protection zones, if required, will be installed around confirmed breeding site prior to works commencing, no significant effects on waders, wildfowl or any other species group are likely from decommissioning. All are considered local level receptors.

6.10 Cumulative Assessment

This section considers the different stages of the cumulative schemes identified below in terms of the stages of those projects. For example, if construction disturbance effects are possible, this will not be relevant to schemes that are already built. Cumulative effects on IEFs identified herein from stages of other projects are considered as follows:

- Habitats (construction – direct loss and indirect disturbance/dewatering; operation – habitat gains);
- Bats (operation – collision risk with turbines); and
- Birds (construction – temporary disturbance/displacement; operation – permanent displacement; collision mortality associated with turbines).

6.10.1 Ecology

As the nature of a cumulative assessment requires consideration of all other projects in-combination with the Proposed Development, information from the Consented Development is repeated in Table 6-14 with updates to project status from 2021 in bold and new developments since 2021 also in bold.

As in 2021, wind farm projects are the focus for the other schemes are not of a scale where an additive impact is likely (i.e. from farming operations or residential projects). For the same reason, single turbine schemes are not included due to the lack of any meaningful additive effect. Single turbine schemes are typically smaller than commercial developments with construction and operational disturbance effects often limited.

The Proposed Development has been designed to appear to form an extension to the cluster of wind farms that lie between Tormywheel to the west and Harburnhead to the east. These developments are listed in sequential order from west to east in Table 6-14 with distances to the nearest point of the Proposed Development Site boundary. As such, the distance is precautionary as infrastructure is likely to be further away.

Table 6-14: Cumulative Developments (projects from previously Consented Development (P/22/0031) and subsequent projects (bold))

Site Name	Hub Height	Tip Height	No of Turbines	Status	Distance from the Proposed Development	Notes
Tormywheel	65	111	15	Operational	2.6 km west	
Tormywheel Extension		149.9	2	Approved	3.5 km west	
Heathland		132	17	Abandoned	Adjacent	Approved in 2021, subsequently Abandoned
Heathland Resubmission		180	14	Approved	Adjacent	Also known as Heathland wind farm or Heathland variation
Longhill Burn	110	180	8	Operational	Adjacent	
Pates Hill	67	107	7	Operational	Adjacent	
Muirhall			6	Operational	1.8 km	
Muirhall Extension			2	Operational	3.9 km	
Muirhall South			3	Operational	4.9 km	
Pearie Law		125	6	Operational	Adjacent	
Pearie Law 2		180	4	Approved	Adjacent	
Harburnhead		126	22	Operational	Adjacent	

No information in relation to potential ecological impacts was found on either the West Lothian planning portal or online for Tormywheel. It is probable that this is due to the age of the wind farm, having obtained consent in 2007.

The latest information available for Tormywheel Extension wind farm is summarised as follows: *This layout is thus predicted to have a lower magnitude of effect on habitats and bats as was predicted in the ES, with effects on both these receptors remaining not significant after mitigation. The mitigation measures described in the ES remain valid and The review of the revised proposals has not raised any new concerns and concludes that the impact of the revised layout would remain “not significant”* (section 42 Supporting Statement, Muirhall Energy, 2020).

Information was available for Heathland Re-submission and Longhill Burn Wind Farms.

At Longhill Burn WF minor-negligible effects remained for bat populations based on suboptimal habitat due to the small number of potential roost features and low-quality foraging habitat. Based on the information available and the low numbers of common species recorded during surveys for the Proposed Development, there is unlikely to be a cumulative effect on bats as result of the Proposed Development.

It is noted that habitat within the Development footprint of Longhill Burn WF was largely dominated by conifer plantation, the latter site located within Woodmuir Plantation with blanket bog comprising 2.6% of the development footprint. As a result, in terms of impacts on blanket bog, comparisons are limited in respect of the Proposed Development.

The Approved Heathland Resubmission scoped blanket bog and flush out of that assessment as IEFS so cumulative effects with the Proposed Development are considered unlikely.

Pates Hill Wind Farm lies immediately to the north of the Proposed Development and it is known that a bog restoration programme has been undertaken as part of that development. As restoration is proposed on the Proposed Development Site near the border with Pates Hill, no significant adverse effects are likely upon habitats (either direct loss or indirect dewatering) as a result of cumulative effects upon habitats there. This is because the Pates Hill bog restoration programme has improved the quality of blanket bog in the area, and the Proposed Development will do the same which is likely to lead to a beneficial effect overall.

Given that an HMP, and Bird Protection Plan (for Hen Harrier and Short-eared owl) is in place for Muirhall, and on the basis of a small amount of modified bog loss at Muirhall South was minimal and comprised a non-significant loss on a local IEF (225 m² and 400 m² loss of modified bog) no adverse cumulative interaction is likely between these projects and the Proposed Development. No information relating to ecological or ornithological IEFS was available on the South Lanarkshire planning portal for Muirhall South.

The application for Pearie Law noted that habitats were of limited conservation interest and that protected species interests (badger, otter and red squirrel) were the main sensitivities, though these were manageable through mitigation. As there were no evidence of these protected species in the recent surveys on the Proposed Development, no cumulative effect is therefore identified. Similarly, for Pearie Law II, the standing water of Cobbinshaw SSSI and bats were identified as having the potential to be affected by the development. As these are not affected by the Proposed Development, no cumulative effect is likely.

No information relevant to this Chapter was found on Harburnhead which may be related to the age of the application (decided in 2011). A *WLC Consultation Reply to Scottish Government* document was found on the West Lothian planning portal (LIVE/0834/EXC/11) but this did not contain anything specific to ecology or ornithology.

Based on the information sourced, and information accessed, no significant ecological cumulative effect is considered to be present as a result of the Proposed Development in-combination with these other projects.

6.10.2 Ornithology

The main potential cumulative impacts on birds associated with wind farms relate to temporary disturbance/displacement during the construction phase, as well as permanent displacement and collision mortality associated with turbines during the operation phase.

Table 6-15 shows the Wind Farm developments found in Natural Heritage Zone (NHZ) 17 Central Belt. Only developments that are operational, approved, in construction or in application were included. During the data search the Environmental Statement for the Black Law Wind Farm Extension Grid Connection was also found, so this was also included as part of the cumulative assessment (LUC, 2012).

Table 6-15: Wind Farm Developments in NHZ 17 West Central Belt

Site Name	County	Status	No. of Turbines
Ardoch and Over Enoch	East Renfrewshire	Operational	5
Ardrossan	North Ayrshire	Operational	12
Ardrossan Extension	North Ayrshire	Operational	3
Assel Valley	South Ayrshire	Operational	11
Back Fell	South Ayrshire Council	Application	14
Black Law	South Lanarkshire	Operational	54
Black Law Extension	North Lanarkshire	Operational	23
Black Law Extension 2	North Lanarkshire	Operational	11
Blantyre Muir	South Lanarkshire	Operational	3
Blantyre Muir Extension	South Lanarkshire	Operational	3
Broken Cross	South Lanarkshire	In Construction	10
Burnhead	Falkirk	Operational	13
Calder Water	South Lanarkshire	Operational	14
Camilty Resubmission	West Lothian	Approved	6
Chapelton Farm	South Ayrshire	Approved	3
Craigengelt	Stirling	Operational	8
Craiginmoddie	South Ayrshire	Approved	14
Dalquhandy	South Lanarkshire	Operational	10
Dalry	North Ayrshire	Operational	6
Douglas West Extension	South Lanarkshire	Approved	13
Drumduff	West Lothian	Operational	3
Drumduff Extension	West Lothian	Approved	3
Drummarnock	Stirling	Application	4
Earlsburn	Stirling	Operational	15
Forrestfield	North Lanarkshire	Approved	4
Gladsmuir Hills	South Lanarkshire	Approved	6
Greengairs	North Lanarkshire	Approved	9
Greengairs East	North Lanarkshire	Operational	8
Hadyard Hill	South Ayrshire	Operational	52
Hagshaw Hill Repowering	South Lanarkshire	In Construction	14
Harburnhead	West Lothian	Operational	22

Site Name	County	Status	No. of Turbines
Hartwood	North Lanarkshire	Approved	7
Heathland	South Lanarkshire	Approved	14
Hunterston Onshore Test Facility	North Ayrshire	Operational	3
Inverclyde	Inverclyde	Operational	8
Kelburn	North Ayrshire	Operational	14
Kingsburn	Stirling	Operational	9
Kirk Hill	South Ayrshire	Operational	8
Knockcronal	South Ayrshire	Approved	9
Ladehead Farm	South Lanarkshire	Operational	3
Lochhead Farm	South Lanarkshire	Operational	3
Longhill Burn	West Lothian	Operational	8
Middleton	East Renfrewshire	Operational	6
Millour Hill	North Ayrshire	Operational	6
Moorshield	East Renfrewshire	Approved	3
Muirhall	South Lanarkshire	Operational	6
Muirhall Extension	South Lanarkshire	Operational	2
Muirhall South	South Lanarkshire	Operational	3
Neilston	East Renfrewshire	Operational	4
Pates Hill	West Lothian	Operational	7
Pearie Law	West Lothian	Operational	6
Pearie Law Extension	West Lothian	Approved	4
Rigmuir Landfill	South Lanarkshire	Operational	3
Shewalton Moss/ Glaxo	North Ayrshire	Operational	4
Sneddon Law	East Ayrshire	Operational	15
Sorbie	North Ayrshire	In Construction	3
The Heights	West Lothian	Approved	3
Tod Hill	Falkirk	Operational	4
Tormywheel	West Lothian	Operational	15
Tormywheel Extension	West Lothian	Approved	2
Torrance Farm	North Lanarkshire	Operational	3
Tralorg	South Ayrshire	Operational	8
Vale of Leven	West Dunbartonshire	Application	10
West Benhar	North Lanarkshire	Operational	7
West Browncastle	South Lanarkshire	Operational	12
Whitelee	East Ayrshire	Operational	140
Whitelee Phase I	East Ayrshire	Operational	36
Whitelee Phase II	East Ayrshire	Operational	39

Table 6-16 shows the cumulative estimated collision rate for Curlew in NHZ 17. The table only includes developments where information on collision risk for Curlew was available.

Table 6-16: Summary of Cumulative Collision Risk in NHZ 17 for Curlew

Site name	Status	Avoidance rate	Estimated annual collision rate
Blacklaw Grid Connection	Operational	98%	4.70
Calder Water	Operational	95%	0.00
Earlsburn	Operational	95%	0.03
Earlsburn North	Operational	98%	0.04

Proposed Development	-	98%	0.08
CIA (excluding Proposed Development)	-	-	4.77
CIA (including Proposed Development)	-	-	4.85

Collision Risk Monitoring (CRM) data for Curlew was found for Blacklaw Grid Connection (LUC, 2012), Calder Water (Community Windpower Ltd., 2009), Earlsburn (RSK, 2023) and Earlsburn North (RDC Scotland Ltd., 2008). NatureScot recommend a default avoidance rate of 98% for the majority of species where there not sufficient evidence to derive a species specific avoidance rate (NatureScot, 2025b). In the early stages of the model development the default rate was 95% and thus some collision risk estimates for older wind farm sites are based on this earlier default rate. However, now such estimates can be considered precautionary as current understanding of avoidance suggests that most species do display at least a degree of avoidance, with a few exceptions.

The population estimate for Curlew in NHZ 17 is 2,303 breeding pairs in 2005 (Wilson *et al.* 2015). This equates to 4,606 individuals in the NHZ, however the population as a whole would also include non-breeding birds. Assuming an annual cumulative loss of 4.85 birds, this amounts to a loss of 0.11% of the NHZ population a year. The estimated collision risk at the Proposed Development is 1.65% of the total estimated annual risk for Curlew across all developments included in the cumulative assessment. Consequently, no significant cumulative effect as a result of negligible collision risk for Curlew can be safely predicted during the Operational phase of the Proposed Development.

Table 6-17 shows the cumulative collision rate for Golden plover in NHZ 17. The table only includes developments where information on collision risk for Golden plover was available.

Table 6-17: Summary of Cumulative Collision Risk in NHZ 17 for Golden plover

Site name	Status	Avoidance rate	Estimated annual collision rate
Heathland	Approved	98%	0.01
Blacklaw Grid Connection	Operational	98%	0.18
West Brown Castle	Operational	95%	0.07
Calder Water	Operational	95%	0.00
Craigengelt	Operational	95%	0.10
Proposed development	-	98%	1.20
CIA (excluding proposed development)	-	-	0.36
CIA (including proposed development)	-	-	1.56

CRM data for Golden plover was found for Heathland (Arcus Consultancy 2021), Blacklaw Grid Connection (LUC, 2012), West Brown Castle (Arcus Consultancy 2010), Calder Water (Community Windpower Ltd, 2009) and Craigengelt (Sinclair Knight Merz, 2006).

The population estimate for Golden plover in NHZ 17 is 508 breeding pairs in 2005 (Wilson *et al.* 2015). This would equate to 1,016 individuals in the NHZ, however, the population as a whole would also include non-breeding birds. Assuming an annual cumulative loss of 1.556 birds a year, this amounts to a loss of 0.15% of the NHZ population per year. The estimated collision risk at the Proposed Development is 76.9% of the total estimated annual risk for Golden plover across all developments included in the cumulative assessment. Whilst this is a high proportion of the cumulative assessment, the low overall loss to the NHZ population means that no significant cumulative effect as a result of negligible collision risk for Golden plover can be safely predicted during the Operational phase of the Proposed Development.

Table 6-18 shows the cumulative collision rate for Pink-footed goose in NHZ 17. The table only includes developments where information on collision risk for Pink-footed goose was available.

Table 6-18: Summary of Cumulative Collision Risk in NHZ 17 for Pink-footed goose

Site name	Status	Avoidance rate	Estimated annual collision rate
Heathland	Approved	99.8%	0.56
Longhill Burn	Operational	99.8%	1.36
Blacklaw Grid Connection	Operational	95%	319.27
Muirhall	Operational	99.8%	0.32
Proposed development	-	99.8%	0.13
CIA (excluding proposed development)	-	-	321.51
CIA (including proposed development)	-	-	321.64

CRM data for Pink-footed geese was found for Heathland (Arcus Consultancy, 2021), Longhill Burn (Natural Power, 2019), Muirhall (Muirhall Energy, 2014) and Blacklaw Grid Connection (LUC, 2012).

The estimated peak abundance for Pink-footed geese in winter between 2009/2010 and 2013/2014 was 16,237 (Wilson *et al.* 2015). Assuming an annual cumulative loss of 321.64 birds a year, this amounts to a loss of 1.98% of the NHZ population a year. The estimated collision risk at the Proposed Development is 0.04% of the total estimated annual risk for Pink-footed geese across all developments included in the cumulative assessment. Consequently, no significant cumulative effect as a result of negligible collision risk for Pink-footed geese can be safely predicted during the Operational phase of the Proposed Development.

The only information found on the West Lothian planning portal in relation to Pates Hill Wind Farm was an Application to amend existing Planning Consent Permission (LIVE/0653/FUL/07) which included a track layout revision to minimise impacts upon hen harrier. As there were limited observations of Hen harrier on the Proposed Development Site, the addition of the Proposed Development within the NHZ is not considered to add significantly the cumulative impact on this species.

6.11 Further Mitigation

No further mitigation is required as there are no significant effects as a result of the construction/operation of the Proposed Development.

6.12 Residual Effects

No significant residual effects are likely to remain as a result of the Proposed Development, which is consistent with those assessed in the original application.

6.13 Summary and Statement of Significance

This assessment considers the potential ecological impacts of the Proposed Development and whether these differ from the Consented Development.

The ecological baseline remains largely unchanged, and design changes have not resulted in any new or increased significant effects on designated sites, habitats, or species.

During construction, some habitat loss will occur, including blanket bog; however, effects are minor adverse at a local level and not significant. Mitigation, including peatland restoration and measures within the CEMP and OHMP, will offset impacts. Compensation for the 4.41 ha loss of blanket bog is achieved through implementation of a bog restoration programme intended to restore 14.6 ha of

degraded bog into good condition bog. This process will be overseen by a Habitat Management Group of concerned stakeholders.

Impacts on habitats such as GWDTE, wet heath, and grassland are limited and, with mitigation, remain negligible to minor adverse and not significant.

Effects on bats and birds during construction and operation, including disturbance, displacement, and collision risk, are predicted to be negligible to minor adverse and not significant, due to low site usage and embedded mitigation.

No significant effects are expected during decommissioning with standard mitigation in place.

No significant cumulative effects have been identified in combination with other developments.

Overall, no significant ecological or residual effects are predicted, consistent with the Consented Development.

6.14 References

- Arcus Consultancy (2010) West Browncastle Wind Farm Environmental Statement. Chapter 7: Ornithology.
- Arcus Consultancy (2021) Heathland Wind Farm EIA Report. Chapter 9: Ornithology. EDF Renewables.
- Bang, P. & Dahlstrøm, P. (2006) Animal Tracks and Signs. Oxford: Oxford University Press.
- Chanin, P. (2003) Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature, Peterborough.
- CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Version 1.3 (Updated September 2024). CIEEM, Winchester.
- Community Windpower Ltd (2009) Calder Water Community Windfarm Environmental Statement. Section 7: Ecology.
- Forrester, R.W, Andrews, I.J, McInerny, C.J, Murray, R.D, McGowan, R.Y, Zonfrillo, B, Betts, M.W, Jardine, D.C & Grundy, D.S (2007) The Birds of Scotland. The Scottish Ornithologists Club, Aberlady.
- Frost, T. M., Calbrade, N. A., Birtles, G., Mellan, H. J., Hall, C., Robinson, A., Balmer, D. E. (2020). Waterbirds in the UK 2019/20: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT. Thetford: BTO.
- Goodship, N.M. & Furness, R.W (2022) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. MacArthur Green, NatureScot Research Report 1283, NatureScot, UK.
- Harris, S., Cresswell, P. & Jefferies, D. (1989) Surveying Badgers. London: Mammal Society.
- Inland Fisheries Ireland (IFI) (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. IFI/2016/1-4298. Co. Dublin.
- LUC (2012) Black Law Wind Farm Extension Grid Connection Environmental Statement. ScottishPower Transmission Ltd.
- Masters-Williams, H., Heap, A., Forsythe, B., Farndon, M. & Moffat, I. (2001) Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors. CIRIA, London.
- Mitchell, C. (2012). Mapping the distribution of feeding Pink-footed and Icelandic Greylag goose in Scotland. Slimbridge: WWT/SNH.
- Muir, G. & Morris, P. (2013) How to Find and Identify Mammals. 2nd ed. Southampton: The Mammal Society.
- Muirhall Energy (2014) Muirhall South Environmental Statement Chapter 5 Ecology and Ornithology. February 2014.
- Muirhall Energy (2020) Tormywheel Extension Wind Farm: Section 42 Application Supporting Statement. March 2020.
- Murnane, E. & Heap, A. (eds) (2006) Control of Water Pollution from Linear Construction Projects. CIRIA C648. London: CIRIA.
- Natural Power (2019) Longhill Burn Wind Farm Environmental Statement. Chapter 8: Ornithology, Technical Appendix 8.1.

- NetRegs (2021) GPP4 – Treatment and Disposal of Wastewater. Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list>
- NatureScot (2014) Assessing impacts to Pink-footed geese and Greylag geese from small-scale wind farms in Scotland. Battleby: NatureScot.
- NS/SNH (2017) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms. Scottish Natural Heritage, Battleby.
- NatureScot (2021) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Inverness: NatureScot.
- NatureScot (2024, updated April 2025) Guidance on Using an Updated Collision Risk Model to Assess Bird Collision Risk at Onshore Wind Farms. Battleby, UK.
- NatureScot (2025a). Guidance note - Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas. NatureScot, Battleby, UK.
- NatureScot (2025b). Wind Farm Impacts on Birds – Use of Avoidance Rates in the NatureScot Wind Farm Collision Risk Model. Updated: September 2025 v4, NatureScot, Battleby, Scotland.
- NatureScot (2026) Scottish Biodiversity List. Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list>
- NBN Atlas Scotland (2026) Home. Available at: <https://scotland.nbnatlas.org> (Accessed: 25 February 2026).
- NetRegs (2021). Guidance for Pollution Prevention 4: Treatment and disposal of sewage where no foul sewer. Available at: <https://www.netregs.org.uk/tools/guidance-for-pollution-prevention-gpp-documents/> (Accessed: 27 March 2026)
- Purseglove, J. (1995) The New Rivers and Wildlife Handbook. Sandy: RSPB, NRA & RSNC.
- Rodwell, J.S. (ed.) (1991) British Plant Communities. Volume 2: Mires and Heaths. Cambridge: Cambridge University Press.
- Rodwell, J.S. (ed.) (1992) British Plant Communities. Volume 3: Grasslands and Montane Communities. Cambridge: Cambridge University Press.
- Rodwell, J.S. (ed.) (1995) British Plant Communities. Volume 4: Aquatic Communities, Swamps and Tall-Herb Fens. Cambridge: Cambridge University Press.
- RDC Scotland Ltd (2008) Earlsburn North Wind Farm. Volume 2: Technical Appendices.
- RSK (2023) Earlsburn Wind Farm Extension EIA Report. Volume 2.
- Scottish Badgers (2018) Scottish Badgers Annual Report 2017/18. Forfar: Scottish Badgers. Available at: <https://www.scottishbadgers.org.uk/wp-content/uploads/2021/02/Scottish-Badgers-Annual-Report-2018-9896604.pdf>
- Scottish Government (2025) Scottish Biodiversity List. December 2025
- Scottish Government & Onshore Wind Sector Deal Task and Finish Group (2025). Guidelines on Streamlining Environmental Impact Assessment for Onshore Wind Farms. September 2025.
- SEPA (2025). Environmental Authorisations (Scotland) Regulations. Available at: <https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/>. [Accessed 27 March 2026].

SEPA (2017) Land Use Planning System Guidance Note 31: Assessing Impacts of Development Proposals on Groundwater Abstractions and GWDTE.

SEPA (2024) Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems.

Sinclair Knight Merz (2006) Craigengelt Wind Farm Environmental Statement. Volume 2 (of 4). Main Text Issue B1.

Stanbury, A. et al. (2021) The Status of Our Bird Populations: Birds of Conservation Concern 5. British Birds, 114, pp. 723–747.

Strachan, R.M. (2011) Water Vole Conservation Handbook. 3rd ed. UK Biodiversity Partnership.

Wilson, M.W., Austin, G.E., Gillings, S. & Wernham, C.V. (2015) Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned Report No. SWBSG_1504.