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# 9. Ornithology

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## 9.1 Introduction

9.1.1 This chapter presents the assessment of the likely significant effects of the Project with respect to Ornithology, including breeding, migratory and non-breeding birds. The assessment is based on information obtained to date. It should be read in conjunction with the Project description provided in **Chapter 4: Project Description** and with respect to relevant parts of the following chapter:

- **Chapter 8: Biodiversity.**

9.1.2 This chapter presents the Ornithology Impact Assessment (OIA) of the Proposed Development, it describes:

- The legislation, policy and technical guidance that has informed the assessment (**Section 9.2**);
- Consultation and engagement that has been undertaken and how comments from consultees relating to ornithology have been addressed (**Section 0**);
- The methods used for baseline data gathering (**Section 9.4**);
- Overall baseline (**Section 9.5**);
- Embedded measures relevant to ornithology (**Section 9.6**);
- The scope of the assessment for ornithology (**Section 9.7**);
- The methods used for the assessment (**Section 9.8**);
- The assessment of ornithology effects (**Section 9.9** and **9.10**);
- Assessment of cumulative (inter-project) effects (**Section 9.11**);
- The impacts of climate change (**Section 9.12**); and
- A summary of the significance conclusions (**Section 9.13**).

9.1.3 This chapter should be read in conjunction with the following supporting documents:

- **Appendix 9A: Ornithology Baseline**; and
- **Appendix 9B: Collision Risk Modelling.**

## Limitations and Assumptions

9.1.4 The Draft ES has been produced to fulfil the Applicant's statutory consultation duties and enable consultees to develop an informed view of the likely significant effects of the Project.

9.1.5 The vast majority of ornithology surveys have been undertaken in suitable weather conditions at optimum times of year with reference to best practice guidance. All of the surveys have been completed by suitably qualified surveyors and any limitations in the survey work are detailed in full in **Appendix 9A**. Where any limitations in the collation of baseline information are identified, a precautionary approach to the consideration of potentially significant effects and mitigation is adopted.

- 9.1.6 Access to certain parts of the Study Area or surrounding landscape has not been possible in all instances due to health and safety limitations or where access from private landowners cannot be gained. Where possible/necessary, ornithology observations were otherwise made from adjacent public rights of way or accessible land. Any such constraints are highlighted in **Appendix 9A**, and a precautionary approach adopted with regards to the presence/valuation of species.
- 9.1.7 The topography and presence of large stands of coniferous woodland presented a challenge to ensuring total coverage of the Survey Boundary and up to 500m from turbine locations from the selected Vantage Points (VPs). However, it is considered that adding additional VPs to cover these fringe areas, given the associated resource implications, would not be proportionate to the minor survey data gains. The number and locations chosen are considered to provide sufficiently robust coverage to inform this OIA and have been agreed through consultation.
- 9.1.8 The potential turbine layout changed over the course of the surveys; however, the Study Area was broad enough to account for such changes and provides sufficient survey coverage to inform the OIA.
- 9.1.9 The data from the northern part of Survey Boundary for the winter transect surveys in November 2021 and early March 2022 was partially lost due to equipment failure. However, no additional target species were recorded on these surveys in any case.
- 9.1.10 Inclement weather meant that certain surveys had to be aborted and rescheduled during better conditions to ensure the necessary survey effort was completed. In total 23 hours were completed in sub-optimum visibility conditions. In the context of 530 hours of watches, this is not considered to have significantly limited the findings.
- 9.1.11 During the first year of breeding bird surveys, a full survey of passerine species was not completed in line with best practice guidance for wind farm proposals. In year 2, comprehensive breeding bird surveys were completed to increase the robustness of the survey effort and ensure there was sufficient information to consider the passerine assemblage as well.
- 9.1.12 On a small number of occasions, mixed flocks of herring gull and lesser black-backed gull were recorded as a collective. For the purposes of flight data collation and collision risk analysis, these flock numbers have been evenly split between these species. It is not considered that small variance in favour of either species would significantly alter the collision risk modelling (CRM) however.
- 9.1.13 Species are mobile and seasonal, and surveys therefore only provide a snapshot of the conditions present across the Study Area at the time of survey. The absence of evidence of any particular species from within the Survey Boundary should therefore not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, it is considered that the results of the ornithology surveys completed in 2020, 2021 and 2022 are robust and reliable for the identification of the Important Ornithology Features (IOFs) within the Survey Boundary and wider Study Area. Furthermore, where there is uncertainty regarding the status of bird species, a precautionary approach to the OIA has been adopted.
- 9.1.14 For the purposes of the assessment, all IOFs of less than 'Local' geographic value have been scoped out of the OIA, unless they require further consideration owing to their legal status and / or are considered more holistically with respect to biodiversity impacts and the delivery of enhancements.
- 9.1.15 There are therefore no limitations relating to the collation of the ornithology baseline that significantly affect the robustness of the assessment of the potential likely significant effects of the Project.

## 9.2 Relevant Legislation, Planning Policy and Technical Guidance

9.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to Ornithology. Further information on policies relevant to the Project is provided in **Chapter 5: Legislation and Policy Overview**.

### Legislation

9.2.2 A summary of the relevant legislation is given in **Table 9.1**.

**Table 9.1 Legislation relevant to the ornithology assessment**

Legislation	Legislative context
<b>The Conservation of Habitats and Species Regulations 2017 (as amended) (the ‘Habitats Regulations’)<sup>1</sup></b>	Transposes the Habitats Directive <sup>2</sup> and elements of the Birds Directive into national law in England and Wales. The Habitats Regulations provide the legislative enforcement for the protection of European sites and protect species and habitats listed in Annex I and II of the EC Habitats Directive. The Habitats Regulations make it an offence to deliberately capture, injure, kill or disturb any European Protected Species (EPS) listed in Schedule 2, or to damage or destroy a breeding site or resting place of such an animal.
<b>Wild Birds Directive (Council Directive 79/409/ EED on the conservation of wild birds)<sup>3</sup></b>	<p>The Wild Birds Directive provides wide ranging protection for Europe’s wild birds. It identifies 194 species and sub-species of wild birds that are endangered or at risk and therefore requiring additional conservation measures and consideration.</p> <p>The provisions of the Wild Birds Directive are transposed into UK law by means of Part I of the Wildlife and Countryside Act 1981<sup>4</sup> (as amended), and also under the Habitats Regulations.</p>

<sup>1</sup> UK Government (2019). Conservation of Habitats and Species Regulations 2017 (“the Habitats Regulations”) has been amended by (inter alia) the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Online).

<sup>2</sup> European Commission (1992). Council Directive 92/43/EEC on the Conservation of natural habitats and wild flora and fauna. (Online) Available at: <https://www.ecolex.org/details/legislation/council-directive-9243eec-on-the-conservation-of-natural-habitats-and-of-wild-flora-and-fauna-lex-faoc034772/> (Accessed June 2022).

<sup>3</sup> European Commission (1979). Council Directive 79/409/ EED on the conservation of wild birds. (Online) Available at: <https://www.ecolex.org/details/legislation/council-directive-79409eec-on-the-conservation-of-wild-birds-lex-faoc019113/> (Accessed June 2022).

<sup>4</sup> UK Government (1981). Wildlife and Countryside Act 1981. (Online) Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents> (Accessed June 2022).

Legislation	Legislative context
<b>The Environment (Wales) Act 2016<sup>5</sup></b>	The Act makes provisions within Wales for the planning and managing of natural resources at the national and local level. Section 6 of the Act introduces the biodiversity and resilience of ecosystems duty whereby public authorities are required to seek to maintain and enhance biodiversity so far as it is consistent with the proper exercise of those functions. Section 7 of the Act introduces a list of living organisms and types of habitats in Wales, known as priority species or habitats, which in Wales are considered of key significance to sustain and improve biodiversity.
<b>Wildlife and Countryside Act 1981 (as amended) (WCA)<sup>4</sup></b>	This Act consolidates and amends existing national legislation to implement the Bern Convention <sup>6</sup> . This piece of legislation remains the primary UK mechanism for statutory sites.
<b>Countryside &amp; Rights of Way Act 2000<sup>7</sup></b>	This act details further measures for the management and protection of SSSIs and strengthens wildlife enforcement legislation.

## Planning policy

9.2.3 A summary of the relevant national and local planning policy is given in **Table 9.2**.

**Table 9.2 Planning policy relevant to the ornithology assessment**

Policy	Policy context
<b>National planning policy</b>	
<b>Future Wales; National Development Framework 2021<sup>8</sup></b>	The Welsh national development framework sets the direction for development in Wales to 2040. Policy 9 – Resilient Ecological Networks and Green Infrastructure outlines measures to ensure the enhancement of biodiversity, the resilience of ecosystems and the provision of green infrastructure. The enhancement of biodiversity will be considered through embedded environmental measures and mitigation measures.
<b>Planning Policy Wales, Edition 11, Welsh Government (2021)<sup>9</sup></b>	Chapter 6 of Planning Policy Wales (PPW) sets out the Welsh Government's objectives for Distinctive and Natural Places. The theme of planning policy topics covers historic environment, landscape, biodiversity and habitats, coastal characteristics, air quality, soundscape, water services, flooding and other environmental (surface and sub-surface) risks. In particular, the Biodiversity and Resilience of Ecosystems section puts emphasis on planning authorities to have regard for the State of

<sup>5</sup> UK Government (2016). The Environment (Wales) Act 2016. (Online) Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents/enacted> (Accessed June 2022).

<sup>6</sup> Council of Europe (1979). The Convention on the Conservation of European Wildlife and Natural Habitats. (Online) Available at: <https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treaty-num=104> (Accessed June 2022)

<sup>7</sup> UK Government (2000). Countryside & Rights of Way Act 2000. (Online) Available at: <https://www.legislation.gov.uk/ukpga/2000/37> (Accessed June 2022)

<sup>8</sup> Welsh Government (2021). Future Wales. The National Plan 2040. (Online) Available at: <https://gov.wales/future-wales-national-plan-2040> (Accessed June 2022).

<sup>9</sup> Welsh Government (2021). Planning Policy Wales Edition 11. (Online) Available at: <https://gov.wales/planning-policy-wales> Accessed June 2022).

Policy	Policy context
	Natural Resources Report and Area Statements published by Natural Resources Wales.
<b>Technical Advice Note 5 (TAN5) Nature Conservation and Planning (2009)</b> <sup>10</sup>	Welsh Government's (WG) policy on positive planning for nature conservation and developments affecting designated sites and habitats, along with protected priority habitats and species.
<b>Local planning policy</b>	
<b>Blaenau Gwent County Borough Council Local Development Plan up to 2021 (Adopted November 2012)</b> <sup>11</sup>	The plan identifies where allocations for new developments such as housing, employment, community facilities, and roads have been made. It provides a framework for local decision making and brings together both development and conservation interests to ensure that any changes in the use of land are coherent and provides maximum benefits to the community.
<b>Blaenau Gwent Local Agenda 21 Strategy 2001</b> <sup>12</sup>	This document describes the council's commitment to the sustainable care of natural and physical resources. The key components of the document address the current sustainability challenges and issues, the council's responsibilities, targets and current situation, action plans and implementation mechanisms.
<b>The Blaenau Gwent Supplementary Planning Guidance (SPG) on Biodiversity 2009</b> <sup>13</sup>	The SPG supplements the Local Development Plan (LDP) policies and assists those submitting and determining planning applications in Blaenau Gwent in ensuring that biodiversity is protected and conserved when development is proposed.

## Technical guidance

- 9.2.4 A summary of the main technical guidance documents that have informed the ornithology assessment is given in **Table 9.3** with relevant research papers referenced in the text where applicable.

**Table 9.3 Technical guidance relevant to the ornithology assessment**

Technical guidance document	Context
<b>Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial,</b>	Sets out the industry standard approach to Ecological Impact Assessment (EclA) for assessing the potential effects of a project on ecological receptors, including important ornithology features.

<sup>10</sup>Welsh Assembly Government (2009). Technical Advice Note 5 (TAN5) Nature Conservation and Planning. (Online) Available at: <https://gov.wales/technical-advice-note-tan-5-nature-conservation-and-planning> (Accessed June 2022)

<sup>11</sup>Blaenau Gwent County Borough Council (2012). Local Development Plan up to 2021. (Online) Available at: <https://www.blaenau-gwent.gov.uk/en/resident/planning/local-development-plan/adopted-local-development-plan2006-2021/adopted-ldp/> (Accessed ~June 2022).

<sup>12</sup>Blaenau Gwent County Borough Council (2001). Blaenau Gwent Local Agenda 21 Strategy. Blaenau Gwent County Borough Council; Blaenau, UK.

<sup>13</sup>Blaenau Gwent County Borough Council (2009). Blaenau Gwent Supplementary Planning Guidance (SPG) on Biodiversity. Blaenau Gwent County Borough Council; Blaenau, UK.

Technical guidance document	Context
<b>Freshwater, Coastal and Marine<sup>14</sup> (2019)</b>	
<b>Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. (SNH 2017)</b>	Sets out the industry standard for the level and type of bird surveys required to robustly inform onshore wind farm assessments, including standardised methodologies such as size of survey area, frequency of visits and timing of surveys.
<b>Windfarms and Birds: Calculating a theoretical collision risk assuming no avoiding action (SNH 2000)</b>	Describes a two-stage methodology for assessing collision risk, assuming that birds fly as if the wind turbine structures and rotors were not there and take no avoiding action whatsoever.
<b>Use of Avoidance Rates in the NatureScot Wind Farm Collision Risk Model (SNH 2018)</b>	Provides the avoidance rates for different target bird species to use when undertaking collision risk modelling.
<b>Avoidance rates of herring gull, great black-backed gull and common gull for use in the assessment of terrestrial wind farms in Scotland (Furness 2019)<sup>15</sup></b>	Updates avoidance rates for collision risk modelling for herring gull and lesser black-backed gull, based on updated evidence.
<b>Assessing Significance of Impacts from Onshore Windfarms on Birds out with Designated Areas (SNH 2006)</b>	<p>The purpose of this guidance is to assist with the assessments of terrestrial wind farm proposals where potential impacts do not affect notified interests or qualifying features of protected sites (SSSI, SPA or Ramsar sites).</p> <p>This guidance provides a framework for assessing impacts on bird populations within an environmental assessment or an environmental statement.</p>
<b>Assessing the cumulative impacts of windfarms (SNH 2018)</b>	Sets out methods to assess the cumulative impacts of onshore wind farms on birds.
<b>Assessing Connectivity with Special Protection Areas (SPAs). Version 3 (SNH 2016).</b>	This document assists with identifying whether development sites are connected to SPAs including setting out the core and maximum foraging range during the breeding and winter season for different species.
<b>Monitoring the impact of onshore wind farms on birds (SNH 2009)</b>	Details the purpose, benefit and scope of appropriate post consent monitoring.

<sup>14</sup>CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1*. [online]. Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1Update.pdf> [Accessed June 2022].

<sup>15</sup>Furness, R.W. (2019) Avoidance rates of herring gull, great black-backed gull and common gull for use in the assessment of terrestrial wind farms in Scotland. Scottish Natural Heritage Research Report No. 1019.



Technical guidance document	Context
<b>Bird Monitoring Methods (1998)</b> <sup>16</sup>	This guidance sets out the standard methodologies for bird monitoring, including breeding bird surveys and species-specific surveys, such as nightjar surveys. These methods form the basis of the approach to the ornithology assessment with any deviations discussed within the baseline report.
<b>Raptors: a field guide to survey and monitoring (3<sup>rd</sup> Edition) (2013)</b> <sup>17</sup>	This guidance outlines the survey techniques that should be employed to successfully survey each of the raptor species regularly occurring in Britain. These methods form the basis of the approach to the breeding raptor assessment and wider ornithology assessment, with any deviations discussed within the baseline report
<b>Barn Owl conservation handbook</b> <sup>18</sup>	This guidance sets out reasoning and methods for safely monitoring barn owl year-round in the UK. The guidance helps to clarify breeding status and gives confidence to the approach of assessment. As barn owl is a Schedule 1 listed species, consideration must be given to the species where breeding attempts are recorded.
<b>Bird census and survey techniques (2000)</b> <sup>19</sup>	Details the most widely used bird survey and counting techniques.

- 9.2.5 In addition, the assessment will take account of other relevant planning policy, legislation, and other guidance, where applicable, such as those provided under the **Chapter 8: Biodiversity**.

## 9.3 Consultation and Engagement

### Overview

- 9.3.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Section 4.4 of Chapter 4: Approach to preparing the Environmental Statement**.

### Scoping Opinion

- 9.3.2 A Scoping Direction was issued by Planning and Environment Decisions Wales (PEDW formally Planning Inspectorate Wales), on behalf of the Welsh Ministers, on 6 August 2021. A summary of the relevant responses received in the Scoping Opinion in relation to Ornithology, and confirmation of how these have been addressed within the assessment to date, is presented in **Table 9.4**.

<sup>16</sup>Gilbert, G, Gibbons, D.W. & Evans, J. (1998). Bird Monitoring Methods: A manual of techniques for key UK species. RSPB, Bedfordshire.

<sup>17</sup>Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

<sup>18</sup>Barn Owl Trust (2012). Barn Owl Conservation Handbook, Pelagic Publishing, Exeter.

<sup>19</sup>Bibby, C., Burgess, N., Hill, D. & Mustoe, S. (2000) Bird Census Techniques. Second Edition. Academic Press.

**Table 9.4 Summary of EIA Scoping Direction responses for ornithology**

Consultee	Consideration	How this is addressed in this Draft ES
<b>Natural Resources Wales (NRW)</b>	NRW returned a preliminary opinion in March 2021 (the Discretionary Advice Service was not available at the time of the request, limited to European Protected Species (EPS), and advised for liaison to be undertaken with the relevant Ecology Officers.	A consultation request was made to the Ecology Officers at Torfaen County Borough Council (TCBC) and Blaenau Gwent County Borough Council (BGCBC) in April 2021. Feedback from TCBC and BGCBC was not received, other than through the formal scoping process.
<b>NRW</b>	Buzzard, sparrowhawk and raven should remain within the scope until the survey work is completed (ID.16). Depending on the results it may then be acceptable to scope them out of further assessment.	Scoped out of full assessment on basis of survey results with justification given.
<b>NRW</b>	Severn Estuary SPA/Ramsar/SSSIs (including Flat Holm SSSI) to be scoped into the assessment as Important Ornithology Features (ID.22). Defer to Natural England to advise on Steep Holm SSSI.	Scoped into the assessment.
<b>NRW</b>	Recommendation that additional surveys for spring and autumn passage waders and waterfowl are carried out (ID.23). Also advise that the waterbody within the Study Area is considered.	Autumn 2021 and Spring 2022 vantage point survey effort increased accordingly, and waterbody point counts of the lagoon included in winter 2021/2022, as detailed in <b>Appendix 9A</b> .
<b>NRW</b>	Seek clarification on the Applicant's views on Llandegfedd Reservoir SSSI (ID.22).	The further survey results have supported scoping out this SSSI and further justification is provided in this chapter accordingly.
<b>Planning Inspectorate</b>	No details regarding the collision risk modelling provided and correction factors may need to be provided and the cumulative impacts may be significant. Recommends that NRW and relevant LPAs are engaged with once the baseline surveys are completed and models prepared (ID.24).	Baseline surveys were completed by spring 2022 and a model has been prepared subsequently as part of this assessment, presented in <b>Appendix 9B</b> . Due consideration is given to potential cumulative effects ( <b>Section 9.14</b> ) in the context of the assessment outcome.
<b>Torfaen County Borough Ecologist</b>	Agreed with scope of ornithology assessment proposed but queried uncertainty around the potential ecological impact of the access point and grid connection corridor.	The ornithology desk study and field survey Study Areas are considered sufficient to provide a high level assessment of the grid connection and access route.
<b>Blaenau Gwent Ecologist</b>	Agree with the scope of the ornithology assessment.	n/a

## 9.4 Data Gathering Methodology

### Study Area

- 9.4.1 The OIA was informed by a desk study and field surveys covering the Study Area, designed to cover the potential Zone of Influence (Zoi) of the Survey Boundary while providing contextual information to assist with determining and evaluating the baseline. For the purposes of this assessment, hereafter ‘the Survey Boundary’ is taken to include the planning application boundary, designed to allow flexibility in the final proposal, and a core survey Study Area. The Survey Boundary is illustrated within **Appendix 9A**.
- 9.4.2 The Study Area for the desk-based assessment varied according to the importance of the feature, ranging from 30km from the Survey Boundary for international designations down to 2km for notable bird species records.
- 9.4.3 The Study Area for the ornithology surveys was informed by best practice guidance and ranged from targeted species surveys within the Survey Boundary up to a 2km buffer, subject to the mobility, habitat suitability and sensitivity of the species/species group being surveyed. The survey areas are illustrated on **Plan EDP 9.1** and included:
- Moorland Breeding Bird Surveys – Survey Boundary plus 800m buffer where suitable moorland habitat is present;
  - Raptor Surveys – Survey Boundary plus 2km buffer;
  - Winter Bird Surveys – Survey Boundary;
  - Hen Harrier Roost Survey – Survey Boundary plus 800m buffer where suitable moorland habitat is present.;
  - Nightjar Surveys – Suitable habitat within the Survey Boundary and surrounding 500m; and
  - Vantage Point Surveys – Survey Boundary plus 500m buffer from potential turbine locations.
- 9.4.4 The Survey Boundary was broadened in 2021 (the second year of surveys) to encompass additional land parcels necessary to accommodate the adjusted turbine locations (see **Plan EDP 9.1** for comparative Survey Boundary areas subject to survey). Owing to the broad survey areas previously covered during the bird surveys undertaken during 2020, it is considered that sufficient survey coverage has still been provided in respect of the revisions to the turbine locations. Nevertheless, minor updates to the survey areas and associated transects were made in 2021 to account for such changes.

### Grid Connection and Access Route

- 9.4.5 The ornithology desk study and field survey Study Areas are considered sufficient to provide adequate contextual information to inform a high level assessment of both the grid connection and access route of the Proposed Development.

### Desk Study

- 9.4.6 An ornithology desk study was undertaken in April 2020 and updated in April 2022. A summary of the organisations that have supplied data, together with the nature of that data, is outlined in **Table 9.5**.

**Table 9.5 Data sources used to inform the ornithology assessment**

Organisation	Data source/request	Data provided
<b>South East Wales Biological Records Centre (SEWBRc)</b>	International statutory ornithology designations – 30km radius National statutory ornithology designations – 15km Non-statutory local ornithology sites – 5km Protected/notable bird species – 2km	Plans, citations, and records.
<b>Aderyn (the Biodiversity Information and Reporting Database of Local Environmental Records Centres Wales)</b>	As above	As above.
<b>RSPB</b>	Protected/notable bird species – 2km	No response.
<b>British Trust for Ornithology</b>	Protected/notable bird species – 2km	Confirmed that data passed to record centres.
<b>Gwent Ornithological Society</b>	Protected/notable bird species – 2km	No response.
<b>Multi-Agency Geographic Information for the Countryside (MAGIC)<sup>20</sup></b>	Designated ornithology sites	Spatial context and links to citations.
<b>Joint nature Conservation Committee (JNCC)<sup>21</sup></b>	Designated ornithology sites	Designated site citations and condition assessments.

9.4.7 The desk study also included a review of extant planning applications within the vicinity of the Proposed Development, including quarry workings and other wind farm proposals where the ornithology information is publicly available from the planning portal. Of note, this included the adjacent Mynydd Carn y Cefn Wind Farm Draft ES and supporting appendices from May 2022.

## Survey Work

### Target Species

9.4.8 With reference to best practice guidance (SNH 2017), the surveys and subsequent assessment have focused on species drawn from the following four lists:

- EU Birds Directive (79/409/EEC);
- Wildlife and Countryside Act (1981);
- Red-listed and amber-listed birds of Conservation Concern in Wales<sup>22</sup>; and

<sup>20</sup> [www.magic.gov.uk](http://www.magic.gov.uk) – last accessed June 2022.

<sup>21</sup> Joint Nature Conservation Committee. Available at: <https://jncc.gov.uk/> (Accessed June 2022).

<sup>22</sup> Johnstone, I. and Bladwell, S. 2016. Birds of Conservation Concern in Wales 3: the population status of birds in Wales. Birds in Wales 13(1): 3-31.

- Priority species under Section 7 of the Environment Wales Act (2016).

- 9.4.9 Species contained within these lists that by virtue of their breeding, roosting, feeding or migrating behaviour which may be sensitive to the Proposed Development have been identified as target species for survey and assessment purposes. Consideration has also been given to species identified locally as of conservation concern within the Gwent Bird Report 2019<sup>23</sup>.
- 9.4.10 With reference to best practice guidance, conservation concern passerine species (e.g. skylark and meadow pipit) have been scoped out as target species to be assessed within the OIA, except where significant habitat loss/disturbance impacts could potentially arise during vegetation clearance, construction and decommissioning. This is because such species are generally not considered to be at risk of impacts from the operational turbines.

### Initial Scoping Exercise

- 9.4.11 With reference to best practice (SNH 2017), initial bird scoping exercises were completed in March 2020 to identify the suitability of the Survey Boundary and Study Area for potential target bird species and to ground-truth vantage point locations following initial desk-based data collation and viewshed analysis. These site visits, alongside the desk study, were used to identify the potential target species and the appropriate scope of survey work.
- 9.4.12 An Extended Phase 1 survey of the proposed access route and grid connection corridor was also undertaken during July 2022 and August 2022 respectively to further understand the suitability of those habitats supported for birds, including those species recorded across the main Site.

### Field Surveys

- 9.4.13 The ornithology surveys commenced in April 2020 and, with reference to best practice (SNH 2017), continued for two years to collate a robust data set to inform the Proposed Development, with surveys completed by July 2022. Refinement of the survey work took place throughout this survey period, reflecting the ongoing survey findings and minor revisions to the Survey Boundary and Study Areas.
- 9.4.14 The scope of ornithology surveys was confirmed with NRW through the scoping process and is summarised in **Table 9.6**. Full survey details and corresponding plans are provided in **Appendix 9A**.

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<sup>23</sup> Gwent Ornithological Society. 2019. Gwent Bird Report 2019, Vol. 55.

**Table 9.6 Summary of field survey methodologies and timings.**

Survey Type	Survey Methodology	Timing
<b>Vantage Point Surveys</b>	<p>A total of 72 hours of survey from three different vantage points (VPs) undertaken between April 2020 and March 2021 with reference to SNH Guidance 2017<sup>24</sup>. This included 36 hours from each VP over the course of the breeding season (April to August) and the other 36 hours spread across the migratory and winter periods. In year 2, to address NRW’s scoping response, the survey effort was increased in the migratory periods so that 69 hours of data was recorded from each VP over the non-breeding season (September 2021 to April 2022) in addition to the 36 hours during the breeding season (April 2021 to August 2021). Total of 177 hours of survey was completed from each VP.</p> <p>With reference to guidance, watches were no longer than 3 hours at one time, with appropriate breaks taken between watches and timings spread over the course of the day. The VP and viewsheds (including parameters used to calculate these) are provided in <b>Appendix 9A</b>. All target species observed flying through the viewsheds were recorded using a digital tablet, with flight heights recorded at 15 second intervals, based on the following core height bands used:</p> <ul style="list-style-type: none"> <li>● 0-30m;</li> <li>● 30-200m (Collision Risk Zone (CRZ)); and</li> <li>● &gt;200m</li> </ul> <p>These height bands were selected in March 2020 to give a broad range, before the final turbine dimensions were known.</p> <p>In March 2021, these height bands were adjusted to allow a finer granularity to closer fit any potential final dimensions, which had yet to be finalised at this point. These new height bands were:</p>	April 2020 to April 2022
	<ul style="list-style-type: none"> <li>● 0-15m;</li> <li>● 15-30m;</li> <li>● 30-45m;</li> <li>● 45-60m;</li> <li>● 60-75m; and</li> <li>● 75-170m.</li> <li>● 170-185m;</li> <li>● 185-200m;</li> <li>● 200-215m;</li> <li>● 215-230m;</li> <li>● 230-245m; and</li> <li>● &gt; 245m.</li> </ul>	
	<p>In addition, the number and activity of ‘secondary’ species was summarised every five minutes.</p>	

<sup>24</sup> Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. (SNH 2017)

Survey Type	Survey Methodology	Timing
<b>Moorland and Breeding Bird Surveys</b>	<p>Four visits to within 100-200m of all suitable moorland habitat within an 800m radius of the Survey Boundary, where access allowed (see <b>Appendix 9A</b> for the indicative transect route). Surveys were completed using an adapted Brown &amp; Shepherd (1993)<sup>25</sup> methodology to map the breeding territories of upland waders, such as snipe, curlew and lapwing. Passerine species were also recorded.</p> <p>With reference to best practice guidance, the surveys were timed approximately between 08.30 and 18:00 and undertaken during suitable weather conditions (i.e. days/periods with strong winds and heavy or persistent rain were generally avoided). Owing to an absence of moorland bird interests in 2020, survey times in 2021 were moved closer to dawn to be more in accordance with common breeding bird census methodologies.</p> <p>The 2021 surveys were also expanded to include some additional non-moorland, improved grassland habitats, to increase more general breeding bird survey coverage.</p>	Mid-April to early July 2020 and 2021
<b>Breeding Raptor Surveys</b>	<p>With reference to SNH Guidance (2017)<sup>24</sup> and standard methodology<sup>17</sup>, evidence for breeding goshawk within 1km and all other raptor species within 2km of the Survey Boundary was targeted using pre-determined transect routes to incorporate all identified areas of potentially suitable breeding habitat. The transect routes were walked and driven on three occasions between the start of April and July in 2020 and four occasions between March and July 2021.</p> <p>A series of pre-determined vantage points were located along the route, as illustrated in <b>Appendix 9A</b>. Vantage point locations were selected to observe large areas of potentially key breeding habitats. At each vantage point location along the transect route surveyors stopped for approximately 1/1.5 hours to record any observed raptor behaviour, with a particular focus on birds displaying or exhibiting other behaviour indicative of breeding.</p>	<p>May – July 2020</p> <p>March – July 2021</p>
<b>Nightjar and Owl Surveys</b>	<p>With reference to SNH guidance and standard methodology<sup>16 17</sup>, the Survey Boundary and suitable habitat within c.500m was visited on four occasions during June and July, with surveyors walking along pre-determined transect routes designed to identify the presence or likely absence of breeding nightjar and owls. Due to the large size of the Survey Boundary and distances between suitable habitat, two individual transect routes were created to adequately cover the north-western and south-eastern portion of the Survey Boundary in a reasonable amount of time, as illustrated at <b>Appendix 9A</b>.</p> <p>The surveys either began approximately 15 minutes after sunset or 3 hours before sunrise and continued for 3 hours. In 2021, one of the visits was completed in early March to capture territorial owl behaviour. All positions of target species were marked on digitally displayed OS maps using GPS-enabled devices. In addition, the surveyors carried portable speakers on certain</p>	<p>June – July 2020</p> <p>March and June – July 2021</p> <p>June – July 2022 (targeting newly created suitable clear fell)</p>

<sup>25</sup> Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding wader. *Bird Study*, 40, 189–195.

Survey Type	Survey Methodology	Timing
	<p>surveys and periodically played territorial calls of nightjars and owls to elicit a response from any birds present.</p> <p>Owing to coniferous woodland felling in the south of the Survey Boundary, which created new areas of suitable habitat for nightjar, three further surveys were completed in June and July 2022 targeting this area, following the completion of two years of survey effort prior.</p>	
<b>Winter Transect Surveys</b>	<p>Moorland habitat across the Study Area has potential to support over-wintering or passage short-eared owl and hen harrier. Six winter transect surveys were therefore completed at monthly intervals during the winter months, as indicatively illustrated in <b>Appendix 9A</b>.</p>	<p>October 2020 to March 2021</p> <p>October 2021 to March 2022</p>
<b>Waterbody Point Counts</b>	<p>Initially scoped out in winter 2020/21. However, following NRW's scoping response, monthly winter water body point counts were completed of the Blue Lagoon within the Survey Boundary between October 2021 and March 2022. The surveys entailed approximately 30 minute watches at the waterbody, with sufficient time taken to determine all species present. The waterbody was also incidentally checked during other survey work such as the breeding bird transects.</p>	<p>October 2021 to March 2022</p>
<b>Hen Harrier Roost Surveys</b>	<p>Owing to the occasional recording of an overwintering hen harrier around the Study Area in winter 2020/21, four targeted surveys were undertaken from two hen harrier VPs shown in <b>Appendix 9A</b>, supplemented with transects to and from the VPs timed at dusk or dawn. The surveys were undertaken with reference to best practice guidance<sup>17</sup>, commencing 1.5 hours before sunset and finishing half an hour after sunset, or alternatively, commencing prior to first light and continuing for 1.5 hours after sunrise.</p> <p>A second year of survey was not considered necessary owing to an absence of findings and/or hen harrier records during the second winter from other surveys.</p>	<p>January to March 2021</p>
<b>Barn Owl Surveys</b>	<p>All buildings within c.280m radius of the proposed turbine locations and trees within 130m were assessed for the presence of barn owl during their bat roost assessments, where access allowed (See <b>Appendix 8A</b> for further details). This included subsequent dusk emergence surveys of suitable buildings and aerial tree climbing inspections of trees with suitable cavities.</p> <p>In addition, local farmers were approached wherever possible for any information they might have on the known presence of barn owl across their land. VP survey timings were also mixed up during the survey season with some three-hour sessions timed to include crepuscular periods to record foraging onsite. Incidental sightings of this species would also have been recorded whilst completing nightjar/owl and bat surveys, including emergence/re-entry surveys of seven buildings with bat roosting potential in July and August 2021.</p>	<p>March, April, July and September 2021</p> <p>April and May 2022</p>



Survey Type	Survey Methodology	Timing
	If barn owl activity had been noted during other surveys that is indicative of breeding and/or greater access become available, then further investigation of potential barn owl nest and roost sites would have been completed.	

- 9.4.15 In addition, certain surveys were scoped out in light of the desk study and ongoing survey findings, the quality of those habitats present, and nature of the Survey Boundary. This included black grouse surveys, woodland point count surveys and common breeding bird surveys. Further justification for scoping out these surveys is provided in **Appendix 9A**.

## 9.5 Overall Baseline

### Current Baseline

- 9.5.1 The full survey findings and corresponding plans are set out in **Appendix 9A Ornithology Baseline** and summarised in turn below.

#### Statutory Designations for Ornithology

- 9.5.2 No part of the Survey Boundary or Study Area is covered by any statutory designations. However, there are several such designations within the Survey Boundary's potential Zol that include bird species in their citations, as summarised in **Table 9.7** and further detailed within **Appendix 9A**.

**Table 9.7 Statutory Designations Within the Site's Potential Zone of Influence**

Designation	Distance from the Survey Boundary	Brief Description
<b>Llandegfedd Reservoir SSSI</b>	6km east	Llandegfedd Reservoir is the largest inland open water habitat in the County and a regionally important area for overwintering wildfowl in Wales. The site is particularly important for the overall numbers and variety of wintering wildfowl, with large numbers of wigeon, pochard and mallard.
<b>Blorenghe SSSI</b>	6km north-west	A large upland site supporting sub-montane heath with large areas of <i>Calluna – Empetrum - Vaccinium vitis-idaea</i> , a community which is of local distribution in south Wales. Supports a locally important population of red grouse.
<b>River Usk (Lower Usk) SSSI</b>	10km east	The River Usk (Lower Usk) is particularly important as a rare example of a large mesotrophic lowland river which has not been subject to significant manmade modification. The site is also important for its invertebrate assemblage, otter population, diverse flora, breeding bird assemblage and diverse and high-quality riparian habitats. Part of the River Usk SAC.
<b>Nelson Bog SSSI</b>	11km south-west	Nelson Bog is of interest for its range and diversity of mire communities. The SSSI is also an important ornithological site with over 90 species recorded.

Designation	Distance from the Survey Boundary	Brief Description
<b>River Usk (Upper Usk) SSSI</b>	12km north	The River Usk (Upper Usk) is considered to be a fine example of an upland river flowing in part over hard sandstones, creating steeply graded sections with rocks, cascades, boulders and cliff-bound banks. The biological diversity of the site is also of partial interest with important populations of fish, breeding, birds, otter, mosses and lichen. Part of the River Usk SAC.
<b>River Usk (Tributaries) SSSI</b>	13km north	The Usk system, comprising the River Usk and including its upper tributaries, represents a large, linear ecosystem that acts as an important wildlife corridor, an essential migration route and key breeding area for many nationally and internationally important species. The Usk tributaries support internationally important populations of otter, Atlantic salmon, bullhead, brook lamprey and river lamprey. Part of the River Usk SAC.
<b>Severn Estuary SPA/Ramsar</b>	18km south-east	The Severn Estuary is important for migratory birds with its tidal flats and associated wetlands regularly supporting over 20,000 wintering waterfowl. Internationally important populations of five species of waterfowl are regularly supported by the estuary. These include European white-fronted goose, shelduck, gadwall, dunlin and redshank. In addition, the islands of Flat Holm and Steep Holm support a nationally important breeding population of lesser black-backed gulls. The Severn Estuary also regularly supports an internationally important population of Bewick's swan, an Annex I species.
<b>Flat Holm and Steep Holm SSSI</b>	35km and 39 km south-east	Notified for its internationally important populations of wintering and wading birds of passage, supporting estuarine habitats of ornithological significance. The estuary as a whole supports about 10.5% of the British wintering population and is the single most important wintering ground of dunlin in Britain. Nationally important lesser black-backed gull populations.  Included in light of consultation with NRW and the presence of gull species commuting/migrating over the Survey Boundary.

- 9.5.3 The majority of these sites support species associated with riverine habitats and large waterbodies (e.g. Llandegfedd Reservoir SSSI). Records for such species were not recorded during the surveys, except for mallard recorded flying over the Survey Boundary on one occasion. Blorenge SSSI, lying 6km north-west of the Survey Boundary, is designated for its habitats which support a locally important population of red grouse. Red grouse were recorded in small numbers during the surveys and are considered to be breeding to the north of the Survey Boundary outside of the potential development areas.
- 9.5.4 Owing to these statutory sites' spatial separation from the Survey Boundary, and in light of the desk and field-based survey findings, it is considered to be very unlikely that the proposals alone, or in combination with other proposals, will result in significant adverse effects on the designated interests of these statutory sites. As such, they can be scoped out of the OIA, with the exception of Severn Estuary SPA/Ramsar, and the constituent Flat Holm and Steep Holm SSSI. These designations are given further consideration due to the regular presence of lesser black-backed and herring gull moving over the Survey

Boundary and in line with consultation responses. These designations have been included as International and Nationally important features respectively.

## Non-statutory Designations for Ornithology

9.5.5 There are five non-statutory designations which are located partly within or adjacent to the Survey Boundary and include ornithology interests in their citations. The most pertinent of these are summarised in **Table 9.8** below and illustrated in **Appendix 9A - Plan EDP 9.14**. A number of these designations overlap.

**Table 9.8 Summary of non-statutory designations located partly within or adjacent to the Survey Boundary with birds included in their citations**

Designation	Distance from the Survey Boundary	Brief Description
<b>Blaen-y-cwm upland pasture Site of Importance for Nature Conservation (SINC)</b>	Covers parts of the centre and eastern moorland habitats within the Survey Boundary (ref T6)	Sheep grazed acid grassland/marshy grassland. Suitable for important bird species including hen harrier, long-eared owl, curlew and lapwing.
<b>Tirpentwys Cut SINC</b>	Escarpment within the south of the Survey Boundary (refs T92 & B39)	The site supports a mosaic of habitats including bog habitats and flushes, standing open water, post-industrial quarry and rock exposures. A significant site for breeding birds with several schedule 1 and notable bird species recorded within the site including peregrine falcon, goshawk, hobby, merlin, long-eared owl, reed bunting, common crossbill, cuckoo, kestrel, linnet, tree pipit, raven, redpoll and redstart.
<b>Cwm Ddu Woods, Blaenserchan SINC</b>	Woodland belt within valley partially in north of the Survey Boundary (ref T27)	The SINC supports ancient woodland, dwarf shrub heath, hedgerows, colliery spoil, a stream, small ponds and disused buildings, with notable bird species recorded including yellowhammer, red grouse, long-eared owl, bullfinch, reed bunting, crossbill, spotting flycatcher, kestrel, linnet, redstart, skylark, starling, stonechat, song thrush, green woodpecker and hen harrier.
<b>Mulfran, Mynydd Coity, Mynydd James &amp; Gwastad SINC</b>	Within north of Survey Boundary (ref B25)	Purple-moor grass and rush pastures, dwarf shrub heath and blanket bog. A mosaic of habitats of acid grassland, dry heathland, wet heath, blanket mire and marshy grassland. Notable species supported include Silurian moth, skylark and otter.
<b>Mynydd Llanhilleth Common SINC</b>	Covers parts of the centre, eastern and southern moorland habitats within the Survey Boundary (ref T55)	Mosaic of upland habitat types including acid grassland, dwarf shrub heath, wet and dry heath and mire communities. Notable species supported include red grouse, wintering short-eared owl, upland breeding birds, olive earhtongue and reptiles.

## Desk Study Species Records

- 9.5.6 Pertinent desk study results for target species (excluding passerines) returned from the desk study, including a review of the adjacent Mynydd Carn y Cefn Wind Farm ornithology findings (May 2022), is provided in **Appendix 9A** and referenced where appropriate in the species accounts and evaluations.

## Breeding Bird Assemblage

- 9.5.7 During the 2020 and 2021 breeding survey seasons, a total of 59 species were recorded, as presented in **Appendix 9A**, including 15 target species. Known and indicative nest locations/areas of activity for target species are detailed within **Appendix 9A**.
- 9.5.8 Of the 15 target/notable species recorded, four were confirmed as breeding within the Survey Boundary and/or within the Study Area (goshawk, red kite, long-eared owl and peregrine), four as probably breeding (red grouse, kestrel, snipe and nightjar), and one possibly breeding (cuckoo). These species were all recorded in low numbers and generally with limited distribution, as detailed further below within the individual species accounts.
- 9.5.9 Three Schedule 1 species (red kite, peregrine and goshawk) bred on or within 2km of the Survey Boundary. Two other Schedule 1 target species (hen harrier and hobby) were also recorded on the Survey Boundary, albeit rarely.
- 9.5.10 A number of Red List passerine species were recorded within the Survey Boundary, including willow warbler, starling, pied flycatcher, linnet, whinchat and bullfinch. With the exception of starling, all of these species are confirmed or probable breeding species. All of these species were uncommon across the Survey Boundary, restricted to areas of suitable habitat.
- 9.5.11 The remaining breeding bird assemblage is made up of fairly widespread and ubiquitous species, considered typical of the Survey Boundary's geographical location and habitats present, including species listed on the Amber List of conservation concern such as skylark and meadow pipit, both of which were abundant across the Survey Boundary.
- 9.5.12 The Survey Boundary supports a breeding bird assemblage that reflects the location and habitats present, including a number of species of local and national conservation concern, including small breeding populations of up to Local importance. Given the size of the Survey Boundary, historic records and SINC citations, it is likely that the area formerly supported a greater diversity and abundance of species. This is indicative of a wider decline in species associated with moorland habitats, as reflected by the target species conservation status, and is likely a result of habitat degradation and relatively high levels of recreational disturbance. Non-target passerine species such as skylark, tree pipit and meadow pipit were recorded in greater abundances.
- 9.5.13 In respect of the proposed access route and grid connection corridor, the scoping exercise completed in July and August 2022 confirmed the lower reaches (northern section) of the access route and south-eastern end of the grid connection corridor to have the potential to support a generalist range of nesting birds, with scrub and woodland habitat offering suitable breeding opportunities during the breeding season. Such habitats are otherwise absent across the middle section and upper reaches (southern section) of the proposed access route and north-western half of the proposed grid connection corridor, with these areas being relatively exposed, offering suitable opportunities for ground nesting birds including skylark and meadow pipit.
- 9.5.14 Owing to the relatively limited diversity and abundance of target species recorded, as set out in more detail under the species accounts, the breeding bird assemblage is considered to be of Local importance.

## Winter Bird Assemblage

- 9.5.15 During the migratory and winter 2020-2021 and 2021-2022 survey seasons, a total of 53 species were recorded, including 14 target species: mallard, red grouse, woodcock, snipe, herring gull, lesser black-backed gull, cormorant, grey heron, goshawk, hen harrier, red kite, kestrel, merlin and peregrine. As set out in the species accounts to follow, all of these species were recorded relatively infrequently and in low numbers. No significant populations beyond a local context were recorded.
- 9.5.16 No target species were recorded using the lagoon during the winter transect and water body point count surveys.
- 9.5.17 Other red list passerine species recorded on the Survey Boundary in the winter included skylark, redwing and fieldfare; however, none of these species were seen regularly in significant numbers, with registrations predominantly limited to small flocks. Schedule 1 listed crossbill were also recorded in small numbers associated with the coniferous woodland. The presence of these species in low numbers is considered to be typical of the habitats and locality and not significant in terms of the value of the wintering bird assemblage.
- 9.5.18 Overall, the winter and migratory bird assemblage supported by the Survey Boundary and surroundings appears to be relatively limited in abundance with only modest species diversity given the extent of area and range of habitats. This may be a reflection of the degraded nature of the moorland habitats present and/or recreational disturbance, which remained high even over the winter. Whilst conservation concern species such as red kite, hen harrier, peregrine, and goshawk were recorded, activity in all species was low and did not indicate the presence of any notable populations. Hen harrier was not confirmed as roosting within the Survey Boundary and a small number of sightings of this species is not unusual for upland sites in south Wales during the migration and winter season.
- 9.5.19 It is considered that no species population present in the winter bird season is valued at above Local value. The combined wintering bird assemblage is therefore considered to be of Local importance.

## Target Species Accounts

- 9.5.20 A summary of the activity recorded across the suite of bird surveys grouped by species is summarised in **Table 9.9**, including the species' conservation status. Full species accounts, including information such as flightline data, is provided in **Appendix 9A**.

**Table 9.9 Summary and valuation of target species recordings.**

Species	Conservation / Protected Status <sup>26</sup>	Local Status	Survey Boundary and Study Area Status	Importance
<b>Mallard</b>	Amber	Resident breeder	Three birds recorded during a winter bird transect survey.	Site

<sup>26</sup>EU Birds Directive (79/409/EEC) Annex 1 Species

Wildlife and Countryside Act (1981) Schedule 1 Species

Red and amber-listed birds contained within Birds of Conservation Concern in Wales 3 - Johnstone, I. and Bladwell, S. 2016. Birds of Conservation Concern in Wales 3: the population status of birds in Wales. Birds in Wales 13(1): 3-31.

Priority species listed under Section 7 of the Environment (Wales) Act 2016

Species	Conservation / Protected Status <sup>26</sup>	Local Status	Survey Boundary and Study Area Status	Importance
<b>Red Grouse</b>	Red Priority	Uncommon breeding resident with apparent decline in recent years	Recorded in small numbers throughout the year immediately to the north of the Survey Boundary within suitable moorland habitat. Probable breeder within Study Area.	Site
<b>Herring Gull</b>	Amber	Fairly common all year, distinct spring passage, mainly breeding in industrial areas	Small flocks and individual birds recorded all year round flying over the Survey Boundary. Higher numbers recorded flying over the Survey Boundary during the breeding season. No breeding or notable foraging or resting recorded within the Survey Boundary.	Local
<b>Lesser Black-backed Gull</b>	Amber Priority	Fairly common, distinct spring passage, modest but growing numbers with most breeding in industrial areas	Small flocks and individual birds recorded all year round flying over the Survey Boundary. Higher numbers recorded flying over the Survey Boundary during the breeding season. No breeding or notable foraging or resting recorded on Survey Boundary.	Local
<b>Cormorant</b>	Amber	Fairly common throughout the year	Individuals recorded flying over the Survey Boundary three times on winter transect surveys and twice on vantage point surveys.	Site
<b>Grey Heron</b>	Amber	Fairly common breeding resident	Individuals recorded flying over the Survey Boundary once during the winter transect surveys and three times on vantage point surveys.	Site
<b>Peregrine</b>	Schedule 1	Resident and winter visitor	One breeding pair occupies the quarry within the south of the Survey Boundary. Occasionally recorded flying or hunting over the Survey Boundary throughout the year.	Local
<b>Goshawk</b>	Schedule 1	Uncommon breeding resident	<p>Infrequently recorded all year round with 8 individual flights during vantage point surveys and recordings also made during other surveys. A nest site was confirmed 850m east of the Survey Boundary, with two juveniles recorded.</p> <p>Confirmed breeder and year-round resident.</p>	Local
<b>Red Kite</b>	Schedule 1 Amber	Scarce visitor and passage migrant, rare breeding resident	Regularly recorded throughout the year with confirmed breeding by 1-2 pairs within 2km of the Survey Boundary.	Local

Species	Conservation / Protected Status <sup>26</sup>	Local Status	Survey Boundary and Study Area Status	Importance
<b>Kestrel</b>	Red Priority	Fairly common (though declining) breeding resident	Infrequently recorded throughout the year with greater numbers recorded during the non-breeding season.	Local
<b>Hobby</b>	Schedule 1	Breeding summer visitor	A single hobby was recorded flying over the Survey Boundary in April 2021. Non breeder.	-
<b>Merlin</b>	Schedule 1 Red	Uncommon winter visitor and scarce breeder	A single bird recorded in November 2020 flying low outside of the collision risk zone.	-
<b>Hen Harrier</b>	Schedule 1 Red Priority	Scarce passage migrant and winter visitor	<p>A single male bird recorded on several occasions over the 2020/2021 non-breeding season hunting across moorland habitats. Believed to be the same bird recorded at the adjacent Mynydd Carn y Cefn Wind Farm at this time. No roosting was observed. A single passage juvenile/female was also recorded in April 2021 and September 2021 (5 recordings).</p> <p>Infrequent passage migrant and winter visitor.</p>	Local
<b>Long-eared Owl</b>	Amber	Scarce breeding resident and winter visitor in Gwent	1-3 pairs confirmed to be breeding within coniferous woodland within and immediately adjacent to the Survey Boundary.	Local
<b>Snipe</b>	Amber	Fairly common winter visitor and an uncommon breeding species	Probable breeder within the Survey Boundary with a pair recorded within suitable breeding habitat in the south-east of the Survey Boundary during a breeding bird survey in 2020 and a courtship display recorded in the 2021 breeding season. Snipe were also regularly recorded during the winter transect surveys, predominantly in the same area, with a peak count of 5 individuals.	Local
<b>Woodcock</b>	Red	Uncommon winter visitor and scarce breeder	Recorded on three occasions during the winter bird surveys, twice in the south of the Survey Boundary and once to the north of the Survey Boundary.	Site

Species	Conservation / Protected Status <sup>26</sup>	Local Status	Survey Boundary and Study Area Status	Importance
<b>Nightjar</b>	Annex 1 Amber Priority	Uncommon breeding summer visitor	Two to three pairs probably breeding within recently felled woodland in the south of the Survey Boundary.	Local
<b>Cuckoo</b>	Red Priority	Fairly common breeding summer visitor	Possible breeder with 1-2 pairs.	Local

9.5.21 In addition to target species, a number of other notable species were recorded that have either not been included as target species owing to their favourable conservation status or because they are not considered to be at risk of adverse effects from a wind farm development. The most abundant and notable of these are provided in **Table 9.10**, with full species lists provided in **Appendix 9A**.

**Table 9.10 Summary and valuation of notable non-target / secondary species.**

Species	Conservation / Protected Status	Local Status	Survey Boundary Status	Importance
<b>Buzzard</b>		Common breeding resident	Confirmed breeder and regularly recorded throughout the year hunting within the Survey Boundary.	Site
<b>Sparrowhawk</b>		Breeding resident	Recorded on 7 occasions throughout the year.	Site
<b>Raven</b>		Fairly common breeding resident	Most recorded species during vantage point surveys. Present year round and confirmed breeder.	Site
<b>Tawny Owl</b>		Common breeding resident	Confirmed breeder within suitable woodland habitats.	Site
<b>Crossbill</b>	Schedule 1	Uncommon breeder and winter visitor in highly variable numbers	Winter visitor recorded within suitable woodland habitats.	Site
<b>Starling</b>	Red	Common breeding resident, passage migrant and winter visitor	Small flocks of starling were recorded infrequently foraging or commuting within the Survey Boundary during the winter and breeding bird surveys. The peak count was one larger flock of 450 during the November 2021 survey. No murmuration behaviour was noted.	Site



Species	Conservation / Protected Status	Local Status	Survey Boundary Status	Importance
<b>Skylark</b>	Amber Priority	Fairly common to common breeding resident and passage migrant	Confirmed abundant resident breeder (20-40 pairs).	Local
<b>Whinchat</b>	Red	Common passage migrant/breeding summer visitor	Passage migrant and probable breeder (1-2 pairs).	Local
<b>Meadow Pipit</b>	Amber	Common breeding resident, passage migrant and winter visitor	Resident and abundant confirmed breeder (20-40 pairs).	Site to Local
<b>Redwing</b>	Amber Schedule 1	Common winter visitor	Recorded roosting and foraging in moderate numbers within the Survey Boundary over winter.	Site
<b>Fieldfare</b>	Amber Schedule 1	Common winter visitor	Recorded roosting and foraging in moderate numbers within the Survey Boundary over winter.	Site

## Future Baseline (including climate change)

- 9.5.22 It is anticipated that if the Proposed Development did not proceed, land practices would remain the same, with the majority of the grassland and moorland areas continuing to be grazed and the coniferous plantation commercially managed. Current recreational use within the Survey Boundary is likely to also remain the same or potentially increase slightly over time in line with population growth in the local area. Ornithology assemblages and species would therefore likely remain predominantly the same.
- 9.5.23 However, the rotational felling and planting of coniferous woodland areas is likely to influence the distribution and abundance of certain species, including target species such as long-eared owl, nightjar and goshawk. Indeed, this is reflected by nightjar colonising newly cleared areas of forestry in 2022.
- 9.5.24 Given current population trends, it is likely that red kite numbers will increase within the Survey Boundary over time, while other species that are declining nationally and within Gwent, such as hen harrier, may continue to do so.
- 9.5.25 The changes to temperature and precipitation predicted as a result of climate change would likely change the landscape around us over time in a number of ways. However, it is unlikely that such subtle changes would lead to wholesale change to the future ornithology baseline within the lifetime of the Development. Changes could include certain ornithology species becoming more prevalent or declining as their ranges contract or expand, particularly during passage migration and over wintering. However, given that the important bird species are generally widespread, and that the Survey Boundary is not near the edge of any of their ranges, the projected change in temperature and

precipitation is not anticipated to result in any significant changes to Important Ornithology Features.

## 9.6 Embedded Measures

9.6.1 A range of environmental measures have been embedded into the Proposed Development as outlined in **Section 4.9** and informed by the survey work and consultation. **Table 9.11** outlines how these embedded measures will influence the Ornithology assessment.

**Table 9.11 Summary of the embedded environmental measures**

Receptor	Potential changes and effects	Embedded measures	Compliance mechanism
<b>Construction</b>			
<b>All bird species</b>	Production of noise or visual disturbance that has the potential to disturb or displace birds resulting in breeding failure and impacts on the local population.	<p>Construction methods and programme will consider the location of identified nest sites with the timing and duration of works managed to avoid direct conflict.</p> <p>Where works cannot be scheduled to avoid the main breeding season, additional measures such as the employment of protection zones around nest sites and visual screens/noise screens would be considered.</p> <p>The use of lighting around the proposed construction compound will be restricted.</p>	Construction Environmental Management Plan (CEMP) secured by DNS condition
<b>Breeding bird assemblage</b>	Permanent or temporary land-take/changes to habitats to facilitate construction could displace birds from existing habitat and result in direct injury or damage to nest sites.	<p>Proposals have sought to minimise habitat losses and only very small areas of woodland/scrub will be lost to facilitate access track upgrades. Measures to prevent impacts on breeding birds will be set out in the CEMP and include:</p> <p>Vegetation clearance outside of the breeding bird season (i.e. between September and February);</p> <p>Use of dedicated working areas and construction access routes;</p>	CEMP

Receptor	Potential changes and effects	Embedded measures	Compliance mechanism
		<p>Ecological Clerk of Works (ECoW) to carry out pre-works checks and monitoring of construction areas where they cannot be completed outside of the breeding bird season (March to August inclusive); and</p> <p>Any active bird nests in or immediately adjacent to working areas would be identified and provided with appropriate no working protection zones.</p>	
<b>Operation</b>			
<b>Target Species</b>	Mortality of birds due to collision with turbines during breeding and non-breeding season	<p>The number of turbines and their positioning has been informed by ornithological sensitivities to minimise impacts.</p> <p>Strategy developed to monitor the number and frequency of collisions.</p>	A Collision Mitigation and Monitoring Strategy (CMMS) secured via DNS condition
<b>All birds</b>	Displacement of birds from usual foraging and migratory routes due to visual and noise disturbance from operational turbines.	<p>The number of turbines and their positioning has been informed by ornithological sensitivities to minimise impacts. Birds will adapt to the surroundings.</p> <p>Landscape and Ecology Management Plan (LEMP) setting out the long-term management and enhancement of habitats for all wildlife, including birds.</p>	Landscape and Ecology Management Plan (LEMP)
<b>Breeding bird assemblage</b>	Noise or visual disturbance during routine and emergency maintenance that has the potential to disturb or displace birds resulting in breeding failure and impacts on the local population	<p>Maintenance methodology to be adopted via CMMS that ensures major maintenance works avoid the breeding season, where possible, and/or are completed sensitively where nest sites of Schedule 1 species are known.</p> <p>LEMP will include ongoing long-term management measures to enhance wider</p>	CMMS and LEMP

Receptor	Potential changes and effects	Embedded measures	Compliance mechanism
		opportunities for any disturbed or displaced birds.	

## 9.7 Scope of the Assessment

### Overview

- 9.7.1 Best practice guidelines for Ecological Impact Assessment (EclA) (CIEEM 2019) recognise that not every species that is potentially present at a site or affected by a development can be assessed. The guidelines advocate that the EclA process includes an initial 'scoping stage' to identify ecological or ornithological features that are unlikely or likely to be significantly affected by the Proposed Development, thereby allowing the assessment to focus on those ecological or ornithological features that are pertinent to the Proposed Development and planning decision. This process is informed by the site investigations and consultation with key stakeholders, including the formal EIA Scoping response. This section summarises the approach to, and outcomes of, the OIA scoping stage, including those ornithology features that have been scoped into or out of the assessment.

### Proposed Development

- 9.7.2 The Proposed Development is described in full in **Chapter 4**. It comprises a wind farm consisting of up to eight wind turbines, each with a three-bladed rotor with a diameter of up to 150m, a hub height of up to 122m and maximum height to blade tip of 180m.
- 9.7.3 The application also includes associated infrastructure, including: access works - improvements to the existing access together with new and improved internal wind farm tracks off the main internal access road; crane pads at each turbine location; turbine foundations; underground power cables linking the turbines and on-site substation; temporary construction compounds, laydown and storage areas; , and grid connection infrastructure, including the on-site substation, control building and underground cables linking the Site to the distribution network, together with construction enabling works..
- 9.7.4 The wind farm will have an operational life of 30 years. For the purposes of this assessment, it is assumed that the wind farm would be decommissioned at this point, though there is also the option for the developer to apply for an extension or upgrades in technology.

### Spatial Scope

- 9.7.5 The spatial scope of the assessment of Ornithology covers the area of the Survey Boundary which encompasses the Site boundary, together with the Zols that have formed the basis of the study areas described in **Section 9.4**. This has been determined through a review of the baseline ornithology conditions relative to the project in the context of the proposed activities. It has also been informed by liaison with consultees and other specialists involved in assessing the effects in other disciplines of the project, as considered within this ES and other supporting documentation.
- 9.7.6 The scope of the desk study and survey areas reflects the sensitivity and value of potential ornithology receptors, extending to 30km and 2km from the Survey Boundary respectively. The spatial scope of the surveys was subject to small variations between the

year one and year two surveys due to minor changes in the potential turbine and infrastructure locations.

## Temporal Scope

9.7.7 The temporal scope of the assessment of ornithology is consistent with the period over which the Project would be carried out as set out in **Chapter 4**. This includes an anticipated 22 month construction period and 30 year operation. Effects during decommissioning have not been specifically assessed at this stage; however, it is considered that they will be similar or no worse than construction effects.

## Potential Receptors

9.7.8 A number of criteria are available to determine the conservation status of those bird species recorded through the desk and field-based studies. These criteria aid in evaluating the value of the species and combined assemblage present within the Survey Boundary during the winter, migratory and breeding seasons. The most appropriate of these are:

- Schedule 1 of the Wildlife and Countryside Act (WCA) – The WCA affords greater protection to certain breeding species that are considered appropriately at risk nationally and are as such listed as specially protected under Schedule 1;
- The State of Birds in Wales 3 (2018) – Under this approach UK bird populations are assessed, using quantitative criteria, to determine the population status of each species and then placed on one of three lists: Red, Amber or Green;
  - Red list species are of high conservation concern, being either globally threatened, having historical UK population declines between 1800 and 1995 or a rapid population decline or breeding range contraction by 50% or more in the last 25 years;
  - Amber list species are of medium conservation concern due to a number of factors, for example having suffered between 25% and 49% contraction of UK breeding range or a 25-49% reduction in breeding or non-breeding populations over the last 25 years. Species which have a five year mean of 1-300 breeding pairs (bp) in the UK or an unfavourable European conservation status or for which the breeding population in the UK represents 20% or more of the European breeding populations are also listed on the Amber list; and
  - Green list species have a favourable conservation status.
- Priority species listed under Section 7 of the Environment (Wales) Act 2016;
- Species status as defined in the 2019 Gwent Bird Report; and
- Criteria for the selection of Local Wildlife Sites in Torfaen and Blaenau Gwent.

9.7.9 A summary of the approach taken to valuing ornithological receptors at different geographic scales is provided in **Table 9.12**.

**Table 9.12 Approach taken to valuing ornithology features on a geographic scale**

Receptor	Reason for consideration
<b>International</b>	<p>Species for which an internationally protected site (e.g. SPA, Ramsar) has been designated or identified via review as qualifying.</p> <p>Species present in internationally important numbers (&gt;1% of Welsh populations).</p> <p>Species listed on Annex I of the EC Birds Directive if present in qualifying numbers/proportions of national /international population.</p> <p>Species that contribute to the integrity of a SPA or SSSI but which are not cited as species for which the site is designated (SPAs) or notified (SSSIs).</p> <p>Ecologically sensitive species such as rare birds (&lt;300 breeding pairs in the UK).</p> <p>Species present in nationally important numbers (&gt;1% Welsh population).</p> <p>Species listed on Annex I of the EC Birds Directive or breeding species listed on Schedule 1 of the Wildlife and Countryside Act.</p> <p>Regularly occurring relevant migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, breeding, wintering and staging areas in relation to the Development.</p>
<b>National (Wales/UK)</b>	<p>Species that contribute to the integrity of a SPA or SSSI but which are not cited as species for which the site is designated (SPAs) or notified (SSSIs).</p> <p>Ecologically sensitive species such as rare birds (&lt;300 breeding pairs in the UK).</p> <p>Species present in nationally important numbers (&gt;1% Welsh population).</p> <p>Species listed on Annex I of the EC Birds Directive or breeding species listed on Schedule 1 of the Wildlife and Countryside Act.</p> <p>Regularly occurring relevant migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, breeding, wintering and staging areas in relation to the Development.</p>
<b>County (Torfaen and Blaenau Gwent)</b>	<p>Species for which a locally designated site (e.g. LWS) has been designated.</p> <p>Species present in regionally important numbers (&gt;1% regional population).</p> <p>Significant populations of species on the red-list for Birds of Conservation Concern or subject to national priority status.</p> <p>Significant species, populations or assemblage that would meet the criteria set for LWS designation.</p>
<b>Local</b>	Other species of conservation interest where a notable population is present, e.g. red- or amber-listed species of Birds of Conservation Concern breeding.
<b>Site</b>	All other species not included in the above categories, such as populations of green-listed species or even smaller populations of certain conservation concern species that are otherwise common and widespread. Such species are normally scoped out of the assessment process.

9.7.10 The principal ornithology receptors that have been identified as being potentially subject to effects are summarised in **Table 13** with further details provided in **Table 9.14**.

**Table 9.13 Summary of important ornithology features**

Receptor	Geographic Value	Reason for consideration / status in Study Area
<b>Severn Estuary SPA/Ramsar</b>	International	Within ZoI, designated species (gull species) recorded during surveys. Consideration requested in Scoping Response.

Receptor	Geographic Value	Reason for consideration / status in Study Area
<b>Flat Holm and Steep Holm SSSI</b>	National	Part of Severn Estuary SPA/Ramsar with designated species (gulls) recorded during surveys. Consideration requested in Scoping Response.
<b>SINCs partially within or adjacent to the Survey Boundary</b>	County	<p>Blaen-y-cwm Upland Pasture SINC  Tirpentwys Cut SINC  Cwm Ddu Woods, Blaenserchan SINC  Mulfran, Mynydd Coity, Mynydd James &amp; Gwastad SINC  Mynydd Llanhilleth Common SINC</p> <p>Partially cover or lie adjacent to the Survey Boundary and include in their citations bird species also identified through the survey work.</p>
<b>Red Grouse</b>	Local	Resident probable breeder (1-2 pairs) to the north of the Survey Boundary.
<b>Lesser Black-backed and Herring Gull</b>	Local	Regularly recorded flying over the Survey Boundary throughout the year, with peak activity during the spring. No notable foraging, resting or breeding.
<b>Goshawk</b>	Local	Confirmed breeder (1 pair) and resident all year.
<b>Peregrine</b>	Local	Confirmed breeder (1 pair) and resident all year.
<b>Red Kite</b>	Local	Confirmed breeder (1-2 pairs) and resident all year.
<b>Kestrel</b>	Local	Resident probable breeder (0-1 pairs).
<b>Hen Harrier</b>	Local	Infrequent passage migrant and winter visitor to Study Area.
<b>Long-eared owl</b>	Local	Confirmed breeder (1-3 pairs) within woodland habitats and likely resident.
<b>Nightjar</b>	Local	Summer visitor and probable breeder (2-3 pairs).
<b>Cuckoo</b>	Local	Summer visitor and probable breeder (1-2 pairs).
<b>Snipe</b>	Local	Resident probable breeder (1 pair) with larger wintering population.
<b>Breeding Bird Assemblage</b>	Local	Reflects the location and habitats present, including a number of species of local and national conservation concern, including small breeding populations of up to Local importance. Locally valuable populations of non-target passerine species such as skylark and meadow pipit recorded.
<b>Winter Bird Assemblage</b>	Local	Relatively limited in species diversity and abundance given the extent of area and range of habitats. No populations noted of value beyond a Local context, including non-target passerines such as crossbill, redwing and fieldfare.

## Likely Significant Effects

- 9.7.11 The effects on ornithology receptors which have the potential to be significant and have been taken forward for detailed assessment are summarised in **Table 9.1.14**. This has been informed by best practice guidance and professional judgement.
- 9.7.12 The receptors/effects detailed in **Table 5** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant.



**Table 9.14 Ornithology receptors scoped in for further assessment**

Receptor	Potential Changes and Effects	Reason
<b>Construction</b>		
<b>Peregrine</b>	Noise and visual disturbance of nesting birds	The nearest turbine (T4) is c.430m from the known nesting location and therefore unlikely to result in significant disturbance effects, particularly given intervening woodland and quarry aspect. However, the access route, which will need to be widened in places, lies approximately 50m from the nest site at its closest point. Noise and/or visual disturbance therefore has the potential to displace birds and/or lead to failed breeding attempts.
<b>Red Kite</b>	Noise and visual disturbance of nesting birds	Nest site located approximately 300m east of Turbine 6. Noise and/or visual disturbance therefore has the potential to displace birds and/or lead to failed breeding attempts.
<b>Snipe</b>	Noise and visual disturbance of nesting birds	The probable snipe breeding location lies in closest proximity to Turbine 6. Noise and/or visual disturbance therefore has the potential to displace birds and/or lead to failed breeding attempts.
<b>Nightjar</b>	Noise and visual disturbance of nesting birds	<p>While the nearest turbine (T4) is c.250-400m from the closest known nesting locations and therefore unlikely to result in significant disturbance effects, the access route, which will need to be widened in places, runs directly through one of the breeding territories, and is approximately 15m from the adjacent breeding territory. Noise and/or visual disturbance during construction therefore has the potential to displace birds and/or lead to failed breeding attempts.</p> <p>Originally scoped out with Planning Environment and Decisions Wales (PEDW) and NRW through scoping, however, owing to the identification of new probable nest sites and impacts from track widening on suitable habitats, this species has now been scoped in as a precaution.</p>
<b>Breeding Bird Assemblage</b>	Noise and visual disturbance of nesting birds	Noise and/or visual disturbance from the construction of turbines and associated infrastructure including the upgrading of access routes throughout the Survey Boundary has the potential to displace birds, and/or lead to failed breeding attempts, particularly open ground nesting moorland species such as skylark and meadow pipit.

Receptor	Potential Changes and Effects	Reason
	Permanent or temporary habitat loss	Permanent and temporary land take to facilitate the construction of turbines and associated infrastructure has the potential to reduce the availability of nesting, foraging or resting habitats used by the moorland breeding bird assemblage.
<b>Operation</b>		
<b>Severn Estuary SPA/Ramsar</b>  <b>Flat Holm and Steep Holm SSSI</b>	Designated gull population colliding with turbines resulting in mortality	<p>Lesser black-backed gull, for which these sites are partially or potentially designated due to the breeding colonies they support, have been regularly recorded flying over the Survey Boundary, including within the collision risk zone during the breeding season. Whilst likely significant adverse effects on these designations as a result of collisions with turbines are considered to be unlikely, in light of the Scoping Responses and Habitats Regulations considerations, further detail and assessment has been provided.</p> <p>Steep Holm and Flat Holm SSSI have also been designated for the herring gull breeding populations they support, another species recorded relatively frequently flying in the CRZ during the breeding season and therefore subject to further assessment.</p>
<b>Lesser Black-backed Gull</b> <b>Herring Gull</b> <b>Peregrine</b> <b>Goshawk</b> <b>Red Kite</b> <b>Kestrel</b>	Collisions with turbines resulting in mortality	Sufficient recordings within the collision risk zone such that further analysis of the mortality risk is warranted to inform the assessment of potential significant effects.
<b>Peregrine</b> <b>Goshawk</b> <b>Red Kite</b> <b>Kestrel</b> <b>Hen Harrier</b> <b>Snipe</b> <b>Breeding Bird Assemblage</b>	Disturbance and displacement from operating turbines	Turbines would be within disturbance distances of suitable habitat used for foraging, resting and potentially breeding by these species.

**Table 9.15 Summary of important ornithology features and effects scoped out of the ornithology assessment**

Receptors	Potential changes and Effects	Justification
<b>Severn Estuary SPA/Ramsar Flat Holm and Steep Holm SSSI</b>	Adverse effects on the integrity of the conservation status of designated species during construction	It is not considered that construction-related temporary and permanent land take or noise and visual disturbance/displacement would have a significant adverse effect on lesser black-backed or herring gulls. These species have principally been recorded flying over the Survey Boundary and are also not considered to be particularly sensitive to human and machinery disturbance.
<b>SINCs within/adjacent to Survey Boundary</b>	Adverse effects on conservation status of designated species during construction and/or operation	None of the SINCs within or adjacent to the Survey Boundary are specifically designated for birds, with other habitat and species interests being the primary reasons for their designation. Potential adverse effects on these ecology designations will therefore be considered more holistically, where applicable, under the Ecology Impact Assessment ( <b>Chapter 8</b> ). Furthermore, any target species referenced in these citations, if present within the Survey Boundary or Study Area, are considered as standalone IOFs, with assemblages also collectively grouped and evaluated where applicable. In light of this, all non-statutory designations have been scoped out of the OIA.
<b>Red Grouse</b>	Disturbance and displacement during construction and operation	Small resident population recorded within moorland habitat over 500m to the north of Turbine 2. Studies have shown that red grouse abundance and distribution does not appear to be affected by wind farm proposals <sup>27 28</sup> .
	Collisions with turbines during operation resulting in mortality	This species is also not at notable risk of collisions with turbines, predominantly being ground based and flying below CRZ.
<b>Herring and lesser black-backed gull</b>	Disturbance and displacement from operating turbines	Absence of resting and only limited foraging recorded within the Survey Boundary. The loss of this resource would not be significant to the breeding or overwintering populations and these species are adaptable foragers, with similar habitats available in the wider landscape. Furthermore, both species are not considered to be sensitive to human and machinery disturbance.

<sup>27</sup>Pearce-Higgins et al (2012) Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology*, Volume 49, Issue 2 April 2012, Pages 386-394

<sup>28</sup>Douglas, D.J.T., Bellamy, P.E. & Pearce-Higgins, J.W. (2011) Changes in the abundance and distribution of upland breeding birds at an operational wind farm. *Bird Study*, 58, 37–43.

Receptors	Potential changes and Effects	Justification
<b>Goshawk</b>	Noise and visual disturbance of nesting birds during construction	Nest site is located approximately 1,000m to the east of Turbine 5 and over 900m to the south of the grid connection corridor and therefore considered to be sufficiently removed to not be at risk of construction-related disturbance impacts while nesting, particularly given the intervening dense forestry and changes in topography. Furthermore, the largest recommended disturbance protection buffers quoted in research papers are up to 500m <sup>29</sup> and are therefore far exceeded here.
<b>Hen Harrier</b>	Collisions with turbines during operation resulting in mortality	Collision risk impacts have been ruled out owing to only a single short duration (15 second) flight record within the CRZ. This species typically hunts below CRZ height and infrequently uses the Survey Boundary over winter. Disturbance and displacement during construction is scoped out and during operation is scoped in due to the longer term and more continuous nature of such impacts.
<b>Raven and Buzzard</b>	Disturbance and displacement during construction and operation  Collisions with turbines during operation resulting in mortality	While frequently recorded, owing to their common and widespread distribution and favourable conservation status it is considered that adverse effects upon such species would not be significant. Both species are known to inhabit and become habituated to anthropogenic disturbance, and they are therefore not sensitive to disturbance and displacement from noise and visual disturbance.  CRM for these species was completed as a precaution and is presented in <b>Appendix 9B</b> . Collision rates for buzzard were just less than one bird a year and for raven one bird just over every three years. In the context of the species' favourable conservation status, local abundance and background adult mortality rates, such increases in mortality would be very low and not have a significant adverse effect on the local populations.
<b>Long-eared Owl</b>	Disturbance and displacement during construction and operation  Collisions with turbines during operation resulting in mortality	As a nocturnal species roosting in dense woodland habitat during the day, this species is considered to be less at risk of visual and noise disturbance impacts during construction and routine maintenance operation than open habitat species. Some woodland habitat has already been lost due to the commercial felling of the woodland within the southern area of the Survey Boundary over the winter of 2021-22, so the small scale widening of access tracks will have no impact on this species.  Species not known to hunt in the open at collision risk heights and will also be predominantly hunting within and around woodland habitats away from the turbine locations within the open moorlands and fields.

<sup>29</sup> Ruddock M., & Whitfield, D.P (2007) A review of Disturbance Distances in Selected Bird Species. SNH

<b>Receptors</b>	<b>Potential changes and Effects</b>	<b>Justification</b>
<b>Cuckoo</b>	<p>Disturbance and displacement during construction and operation</p> <p>Collisions with turbines during operation resulting in mortality</p>	<p>Adaptable parasitic breeder and therefore not dependent on specific breeding location. Often uses meadow pipit as a host, a passerine species that is abundant across the Survey Boundary and Study Area and not at risk of significant adverse effects from the Proposed Development.</p> <p>Not at notable risk of collisions with turbines, no flights recorded within CRZ.</p>
<b>Starling</b>	<p>Disturbance and displacement during construction and operation</p> <p>Collisions with turbines during operation resulting in mortality</p>	<p>Only limited foraging activity recorded within the Survey Boundary, generally by small flocks. Population small in context of county and national population.</p> <p>No significant roosting behaviour noted within the Survey Boundary that could lead to collision risk during commuting or murmuration.</p>
<b>Winter Bird Assemblage</b>	<p>Disturbance and displacement during construction and operation</p> <p>Collisions with turbines during operation resulting in mortality</p>	<p>Construction activities will be phased over an anticipated 22 month period and therefore associated noise and visual disturbance impacts will be relatively limited in extent and duration. Disturbance during routine operation maintenance will also be temporary in nature. In the context of the wider landscape habitat availability, it is considered that any associated temporary noise and visual disturbance/displacement impacts are of insufficient magnitude or duration to have the potential to give rise to significant adverse effects.</p> <p>Disturbance and displacement of more sensitive species (hen harrier and snipe) from the operating turbines has been taken forward for further assessment.</p> <p>Considered to be sufficient, similar habitats within the surrounding landscape such that changes would not be significant.</p>

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<b>Receptors</b>	<b>Potential changes and Effects</b>	<b>Justification</b>
<b>Other Target Species</b>	Disturbance and displacement during construction and operation  Collisions with turbines during operation resulting in mortality	Insufficient records to demonstrate the Survey Boundary or wider Study Area supports breeding or notable over wintering populations of these species and absence of flights within the CRZ.

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## 9.8 Assessment methodology

### Evaluation Methodology

- 9.8.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 2: Approach to preparing the Environmental Statement**, and specifically in **Sections 2.5 to 2.8**. However, whilst this has informed the approach that has been used in this ornithology assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this ornithology assessment.
- 9.8.2 The evaluation of IOFs will be made with reference to the guidelines published by the CIEEM. The guidelines propose an approach to valuing ecological and ornithological features that involve professional judgement based on available guidance and information, together with advice from experts who know the locality of the project and/or the distribution and status of the species or features that are being considered. In addition, best practice guidance in relation to survey techniques and mitigation measures will also be taken into account.

### Geographical Context

- 9.8.3 The Guidelines recommend that the value or potential value of the important ecological resource or feature be determined within a defined geographical context and recommends that the following frame of reference be used:
- International;
  - National (Wales);
  - County (Torfaen and Blaenau Gwent); and
  - Local (considered as the 2km Study Area around the Survey Boundary).
- 9.8.4 Examples of the approach taken to valuing ornithology features is provided in **Table 9.11**.
- 9.8.5 Where a feature has value at more than one designation level, its overriding value is that of the highest level.

### Valuing Species

- 9.8.6 The guidelines require consideration of all protected species as 'important' features where there is the potential for a breach in legislation. Additionally, both species and habitats should be assessed according to their biodiversity value, measured against published selection criteria where available, such as those protected under the Conservation of Habitats and Species Regulations 2017 (as amended), or those listed as priority species or habitats under Section 7 of the Environment (Wales) Act 2016. In assigning value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records, as well as their legal protection, whilst using any relevant published evaluation criteria available at the time of assessment. Where habitats do not meet the necessary criteria for designation at a specific level, the guidelines recommend that the ecologist may consider the local context if appropriate. Additionally, consideration should also be given to the potential value of those habitats, particularly where habitats are in a degraded or unfavourable condition at the time of the assessment.

## Characterising Potential Impacts

- 9.8.7 The guidelines state that the assessment of impacts should be undertaken in relation to the baseline conditions within the Zol that are expected to occur if the Development were not to take place. Having identified the activities likely to cause significant impacts, it is then necessary to describe the resultant changes and to assess the impact on valued ecological features as well as further consider impacts to the relevant ecosystem as a whole. The process of identifying impacts should make explicit reference to aspects of ecological structure and function on which the feature depends. Impacts must be assessed in the context of the baseline conditions within the Zol during the lifetime of the Development.
- 9.8.8 When describing changes/activities and impacts on ecosystem structure and function, it is necessary to take into account the following parameters:
- Beneficial or adverse;
  - Extent;
  - Magnitude;
  - Duration;
  - Timing;
  - Frequency; and
  - Reversibility.

## Significance Criteria

- 9.8.9 The CIEEM guidance defines an ecologically significant impact as an *'effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general'*. Once a potential significant impact is identified as likely to affect the integrity/ favourable conservation status of a potential IOF, the value of the receptor will be used to help determine the geographical scale at which the impact is significant. If an impact is not found to be significant at the level at which the resource or feature has been valued, it may still be significant at a more local level. An impact that is of significance below a local level, or is deemed not to be significant, will be scoped out of the impact assessment.
- 9.8.10 Although certain species may not constitute IOFs based upon their nature conservation value, they may still warrant consideration during the design and mitigation of the Development on the basis of their legal protection, their implications for policies and plans, or other issues such as animal welfare issues.
- 9.8.11 The guidance advocates the use of professional judgement, informed by relevant best practice guidance, in determining significant effects over the use of matrices.
- 9.8.12 Due to the application of the CIEEM Guidelines, the impact assessment presented in this chapter differs slightly in approach to the remainder of the Draft ES, with each IEF being assessed in terms of whether or not an impact (beneficial or adverse) is significant (assessment of impact), alongside the geographical scale at which this occurs (importance of feature). In each case, for consistency with the remainder of the Draft ES, a conclusion is then presented as to whether or not a significant effect will occur, with such effects being described as either adverse or beneficial. No scale is ascribed to the assessment of effects (i.e. they are either significant or not significant) except in relation to the geographic context.



- 9.8.13 The significance of the potential impacts upon IOFs will be assessed both before and after consideration of the additional mitigation measures. The latter represents the assessment of the residual impacts of the Development. Consideration will also be given to the potential future impacts to IOFs arising as a result of global trends and climate change.
- 9.8.14 Additionally, and in accordance with Conservation of Habitats and Species Regulations 2017 (as amended), screening will also be required to determine if likely significant effects upon pertinent designated sites comprising the National Site Network (i.e. SACs and SPAs) would arise as a result of the Development and, if this is the case, for an appropriate assessment (AA) to be undertaken. Whilst the Habitats Regulations Assessment is the responsibility of the Competent Authority, information to inform this process will be prepared.

## 9.9 Assessment of Ornithology Effects: Construction

### Peregrine, Red Kite, Snipe, Nightjar

#### Disturbance and Displacement

- 9.9.1 Potential for likely significant effects resulting from construction (or decommissioning) related noise and visual disturbance upon peregrine, red kite, snipe and nightjar assemblage have been scoped into the assessment owing to known nest sites within potential disturbance distances of the work. All of these species and the wider assemblage have been valued at a Local level, whilst nightjar is listed on Annex 1 of the EU Birds Directive and peregrine and red kite are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), meaning that they are legally protected from disturbance while nesting. While the potential for disturbance varies across these species, given the similarity in their geographic value and the approach to mitigating such impacts, they have been assessed below collectively.
- 9.9.2 Construction activities that may give rise to noise or visual disturbance, as set out in **Chapter 4**, include:
- Enabling works – required prior to the main construction phase and including:
    - ▶ Geotechnical investigations (e.g. trial pits or boreholes);
    - ▶ Upgrading of existing tracks and construction of new access tracks;
    - ▶ Upgrades to public roads and junctions;
    - ▶ Establishment of site compounds; and
    - ▶ Vegetation clearance.
  - Site infrastructure works – required to support construction and safe, reliable operation of the wind farm, this would include:
    - ▶ Wind turbine foundations;
    - ▶ Crane hard standing (to support turbine construction and maintenance);
    - ▶ Cable trenching and routing;
    - ▶ Switch room and substation compounds; and
    - ▶ Construction and storage compounds (temporary).

- Turbine installation:
  - ▶ Installation of wind turbine towers, nacelles and three blades.

- 9.9.3 It is anticipated that the construction will be phased over a 22 month period and associated noise and visual disturbance impacts will therefore be limited in extent and duration.
- 9.9.4 Peregrine – the known peregrine nest site is located on a south facing quarry cliff approximately 430m south of Turbine 4. The quarry is on a south facing escarpment and surrounded by plantation woodland, albeit there has been some recent tree felling in the vicinity, and therefore relatively screened from both visual, and to a lesser extent, noise disturbance. Based on a literature review, protective buffers from disturbance are generally considered to be between 400-800m, though the study identified active disturbance to typically be below these recommended protective buffers. Peregrine is also known to occupy disturbed nesting sites such as active quarries and urban centres, once habituated. In this nesting location, the quarry is also a lagoon that is subject to regular use by members of the public for open water swimming, particularly during the summer months. This was particularly popular during the Covid pandemic in 2020 and may have been one of the reasons no successful breeding was recorded that year. Closer works to the peregrine nest site include the widening of the access track approximately 50m from this location, which is considered to be sufficiently close to result in disturbance of nesting birds without the delivery of embedded measures.
- 9.9.5 Red Kite – studies suggest that average values for active disturbance distances are 30m and 75m during incubation and chick rearing respectively, with studies typically suggesting tolerance ranges of 10-300m. Red kite is known to nest close to areas of human activity, though red kite in this locality is likely to only be subject to infrequent recreation and farming related disturbances. Given the known nesting location is at the outer limit of potential disturbance distances (300m east of Turbine 6), with intervening dense woodland that provides a level of screening to ground activities, it is considered unlikely for significant adverse effects to arise during construction. Embedded measures, as detailed further below, will further ensure that breeding locations are protected from disturbance.
- 9.9.6 Snipe – there is no risk of direct land take impacts from the Proposed Development given that the turbine locations and associated infrastructure are outside of significant areas of marshy grassland habitat which have otherwise been recorded as being used by small numbers of overwintering and breeding snipe. However, research has identified that snipe is potentially sensitive to disturbance and displacement during construction<sup>30</sup>, with one paper identifying a reduction in density of 47.5% up to 400m from turbines<sup>30</sup>. A single probable breeding pair was recorded within marshy grassland fields approximately 40m to the south of Turbine 6 at the closest point of the potential territory. The full extent of this suitable habitat falls within 500m of Turbine 6 and 7, though some of this habitat lies up to 400-450m from the turbines. The marshy grassland area extends to approximately 9ha and existing densities are low based on the recording of only a single pair. Research suggests that densities don't necessarily recover following construction impacts but also do not decline further during operation. It is considered likely that provided construction works are carried out sensitively (see embedded measures detailed below), snipe will continue to nest in this area and utilise it over winter, albeit individuals may potentially be displaced further into the marshy grassland habitats away from the turbines.
- 9.9.7 Nightjar – breeding nightjar rely on cryptic plumage to escape detection and only flush nests when a potential predator is close. One study recorded a maximum upper

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<sup>30</sup>Pearce-Higgins, J.W., Stephen, L., Langston, R.W., Bainbridge, I.P. and Bullman, R. (2009) The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology*, 46: 1323-1331

disturbance limit of <10m during incubation and 50-100m during chick rearing. A review by Currie and Elliott<sup>31</sup> recommended a safe working distance of 250m at the nest-building stage, reducing to 50m at the nestling stage, while safe working distances of 50-200m were recommended by Forestry Commission Scotland<sup>32</sup> (now Scottish Forestry). Nightjar nest sites expanded in 2022 following woodland felling to the south of Turbine 4, creating areas of suitable habitat. The closest churring males were recorded as holding territories approximately 250m to 400m to the south and south-west of Turbine 4, and are therefore considered to be sufficiently distant, based on academic research, to not be at risk of disturbance. However, these territories also lie across and immediately adjacent to the access road between Turbines 4 and 8 which will be subject to minor upgrade works, including vegetation clearance on the sharper corners to allow for long body machinery/blade vehicle movements. It is also likely that the distribution of nightjar will vary over time according to the availability of clear fell habitats and scrub, and nesting sites may therefore end up closer to potential construction works. Embedded measures, as detailed further below, will ensure that current and future breeding locations are protected from disturbance.

9.9.8 As set out under embedded measures, a Construction Environment Management Plan (CEMP) will be secured via DNS condition that sets out measures to safeguard nesting bird interests during construction. Such measures are set out in greater detail below:

- Sensitive timing of works within 300m of known/historic Schedule 1 bird nesting locations, unless proven unoccupied, outside of the breeding season (March to August inclusive);
- Sensitive timing of all other works, particularly pre-commencement vegetation clearance, to avoid breeding bird season where possible; and
- Where works are required during the breeding season:
  - ▶ Surveys of suitable habitat within 300m of proposed works prior to construction to identify potential nesting sites, with an emphasis on Schedule 1 IOFs or those potentially more sensitive to disturbance, such as goshawk, peregrine, red kite, kestrel, snipe and nightjar;
  - ▶ Ecological clerk of works where vegetation removal or potential vehicle or personnel encroachment into potential nesting habitats is required; and
  - ▶ Establishing ecological protection zones (EPZs) around identified nest sites. The size of the EPZs will be advised on by an ornithologist with reference to best practice subject to the species, topography, screening and levels of noise and visual disturbance anticipated from the works.

9.9.9 In light of the temporary nature of anticipated construction activities, the delivery of embedded measures via a CEMP to minimise the potential for visual and noise disturbance during the nesting season and the location of known and likely positioning of nest sites, no significant adverse effects on peregrine, red kite, snipe or nightjar are anticipated to arise during construction.

<sup>31</sup>Currie, F. & Elliott, G. (1997). Forests and Birds: A Guide to Managing Forests for Rare Birds. Forestry Authority, Cambridge and Royal Society for the Protection of Birds, Sandy, UK

<sup>32</sup>FCS Guidance Note 32: Forest operations and birds in Scottish forests – the law and good practice. November 2006. Available online at: <https://forestry.gov.scot/images/corporate/pdf/Guidancenote32Birddisturbance.pdf> (accessed August 2022)

## Breeding Bird Assemblage

### Disturbance and Displacement

- 9.9.10 The wider breeding bird assemblage, including non-target passerine species, may also be impacted by disturbance and displacement from visual and noise disturbance during the breeding season. The majority of the assemblage is unlikely to be especially vulnerable to such impacts; indeed one study found densities of skylark to increase on wind farms during construction. Thus, any such impacts will be limited in extent and magnitude. There is also considered to be adequate suitable habitats away from areas of potential disturbance to absorb some level of temporary displacement, should this occur.
- 9.9.11 In light of the temporary nature of anticipated construction activities, the delivery of embedded measures via a CEMP to minimise the potential for visual and noise disturbance during the nesting season, and the relatively low sensitivity of the wider breeding bird assemblage, no such significant adverse effects are anticipated to arise during construction.

### Permanent and Temporary Habitat Loss

- 9.9.12 Permanent and temporary land-take to facilitate the construction of turbines and associated infrastructure has the potential to reduce the availability of nesting, foraging or resting habitats for the moorland breeding bird assemblage. The principal species breeding within these open grassland and moorland habitats include the amber listed meadow pipit and skylark. Skylark is also a priority species listed under Section 7 of the Environment Wales Act (2016). These species are abundant across the Survey Boundary and wider landscape. In addition to skylark, the proposed access route to the north of the Survey Boundary would pass within 25m of the locations of three red list species recorded singing during the breeding bird surveys in 2021: willow warbler, whinchat, and linnet. The proposed access route would also overlap the very southern edge of the indicative red grouse nesting location by 15m. However, at its furthest distance, the northern edge of the indicative red grouse nesting location is approximately 925m away from the access route.
- 9.9.13 Turbines 1, 2, 7 and 8, the substation and temporary construction compound, are all within improved or species-poor semi-improved grazed grassland fields which support limited breeding opportunities for bird species. Turbines 5 and 6, while within areas of acid grassland, are also within relatively close proximity to woodland and trees and are therefore considered to be sub-optimal for open ground nesting birds owing to their typically short sward and cluttered surroundings. Land take, both temporary and permanent, with the potential to directly impact the breeding bird assemblage, is therefore primarily limited to the construction of Turbines 3 and 4 within the open moorland habitat, along with the construction of associated crane pads, temporary compound areas and any new or widened access routes through such habitat.
- 9.9.14 Each turbine foundation and crane hard standing area (to support turbine construction and maintenance) will measure approximately 2,500m<sup>2</sup>, and therefore the permanent land take of higher suitability nesting habitat will be approximately 0.5ha. In terms of access tracks, approximately 9.9km of site access tracks will be required, which includes 5.6km of existing track, 2.2km of which will require upgrades, and 4.3km of new track. Of the new track, approximately 2km is through relatively unsuitable habitat for nesting, traversing through improved grassland in the north of the Survey Boundary required to access Turbines 1 and 2, and in the east of the Survey Boundary between Turbine 6 and 7. Therefore, assuming a worst-case scenario that the remaining 2.3km passes through suitable bird nesting habitat, this would result in the loss of up to approximately 1.6ha of habitat (assuming a road width of 5m plus 2m of unsuitable verge). The total area of

permanent, suitable breeding bird habitat land take would therefore be approximately 2.1ha, though there is also likely to be some minor permanent vegetation losses associated with access track upgrades and hedgerow breaks, alongside further smaller scale temporary losses associated with turbine assembly. Taking skylark as a proxy, breeding densities in optimum habitats can equate to c.1 nesting pair per hectare<sup>33</sup>; as such, the loss of 1.2ha would potentially only result in the displacement of two to three pairs. It is considered likely the magnitude and extent of impact upon meadow pipit and any other ground- or hedge-nesting species impacted would be equally low, particularly in the context of population sizes and wider habitat availability.

- 9.9.15 In addition, embedded measures delivered via a Landscape and Ecology Management Plan (LEMP) secured by condition, will include measures to mitigate for habitat losses by enhancing retained habitats and potentially increasing their potential to support nesting (and wintering) birds.
- 9.9.16 In light of the limited extent and magnitude of such impacts, the abundance of the populations potentially impacted and the embedded measures, permanent and temporary land take will not have a significant adverse effect on the breeding (or indeed wintering) bird assemblage.

## 9.10 Assessment of Ornithology Effects: Operation

### Designated Sites - Severn Estuary SPA/Ramsar and Flat Holm and Steep Holm SSSI

- 9.10.1 The scoping response from NRW and PEDW recommended that further consideration be given to the potential for likely significant effects upon Severn Estuary SPA/Ramsar and constituent Flat Holm and Steep Holm SSSI with respect to lesser black-backed gull and herring gull populations recorded during the field surveys.
- 9.10.2 Not only do impacts on such designations need to be considered under the EIA regulations and in respect of planning policy, but in accordance with Part 6 of the Conservation of Habitats and Species Regulations 2017 (as amended), a Habitats Regulations Assessment (HRA) is required where a plan or project may give rise to significant effects upon any European site designated to conserve natural habitats and species that are rare, endangered, vulnerable or endemic within the European Community. This includes Special Protection Areas (SPAs) classified for rare, vulnerable and regularly occurring migratory bird species. Additionally, Government policy, as set out within the Welsh Technical Advice Note 5 (TAN5) Nature Conservation and Planning (2009), also affords the same level of protection to internationally important wetlands (Ramsar sites), requiring such sites to also be treated as European sites for planning purposes.
- 9.10.3 A HRA comprises several stages of assessment, commencing with a formal screening stage for any likely significant effects (either alone or in combination with other plans or projects) upon the European site or its qualifying features (HRA stage 1). Where likely significant effects cannot be excluded, then such effects require assessment in greater detail through an Appropriate Assessment (AA) to determine whether any adverse effects on the integrity of the European site can be ruled out (HRA stage 2).
- 9.10.4 The Conservation of Habitats and Species Regulations 2017 (as amended) states that:

<sup>33</sup>Browne, S., Vickery, J., and Chamberlain, D. (2000). Densities and population estimates of breeding skylarks *Alauda arvensis* in Britain in 1997. *Bird Study*, 47:1, 52-65. Available at: <http://www.tandfonline.com/doi/pdf/10.1080/00063650009461160>

*“A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications of the plan or project for that site in view of that site’s conservation objectives”.*

- 9.10.5 The Proposed Development is located 18km, 35km and 39km from the Severn Estuary SPA/Ramsar, Flat Holm SSSI and Steep Holm SSSI respectively, at its closest point.
- 9.10.6 None of the species for which the Severn Estuary SPA/Ramsar has been designated were recorded during the bird surveys and therefore the Proposed Development is not considered to be functionally linked to these designations. Whilst the potential for likely significant effects can therefore be screened out, it should be noted that lesser black-backed gull (breeding) has been identified subsequent to designation of the Severn Estuary SPA/Ramsar as a species for possible future consideration under Criterion 6 of the Conservation of Habitats and Species Regulations 2017 (as amended). It is also worth noting that the original SPA citation differs from the Natura 2000 Data Sheet in listing the nationally important breeding population of lesser black-backed gull as a reason for designation. As such, potential impacts upon lesser black-backed gull breeding population, principally collision with wind turbines, have been screened below as a precaution.
- 9.10.7 Bird surveys have not identified significant foraging or resting by lesser black-backed gull within or adjacent to the Survey Boundary. Some low-level foraging was recorded within the improved grassland fields in the north of the Survey Boundary near to Turbines 1 and 2, in association with farm activities such as muck spreading. The vast majority of recordings of this species were of individuals and small flocks flying over the Survey Boundary. As set out in **Table 9.16**, the highest number of flights in the CRZ were observed over the breeding season and it is possible that this could relate to birds foraging inland from breeding colonies associated with the SPA, Ramsar and SSSIs and/or more local populations. Winter numbers were greater, though related to fewer flights by larger flocks predominantly flying at height over the CRZ.

**Table 9.16 Summary of lesser black-backed gull flight activity**

Season	Number of flights	Total number of birds	Height Band 1: 0-30m (seconds)	Height Band 2: 30-180m CRZ (seconds)	Height Band 3: >180m (seconds)	Number of flights (birds) with CRZ
2020 breeding	47	140	165	1080	345	38 (88)
2020-2021 non-breeding	17	51	105	750	120	13 (46)
2021 breeding	48	94	1350	1800	0	31 (60)
2021-2022 non-breeding	18	45	90	810	165	13 (35)

- 9.10.8 An additional 2 flights (65 birds) and 7 flights (87 birds) were recorded by mixed flocks of lesser black-backed gull and herring gull in the 2020-2021 non-breeding season and 2021 breeding season respectively. For the purposes of Collision Risk Modelling (CRM), these mixed flocks have been split evenly between these species. This is not considered to be a significant limitation as variations in the proportion of each species is not material to the assessment outcome in the context of the wider flight data available.
- 9.10.9 Full CRM for lesser black-backed gulls is provided in **Appendix 9B** and summarised under the species account below. Results from the CRM suggest that there would be an average of one collision every 26.8 years during the breeding season, rising to a collision once every 19.7 years with the non-breeding season included.
- 9.10.10 A provisional total from the national Seabirds Count estimated the number of apparently occupied lesser black-backed gull nests in Wales across 2015-19 to be around 13,500, although this is probably an undercount due to difficulty in surveying urban nesting sites which are becoming increasingly utilised<sup>34</sup>. While the breeding population in the Severn Estuary/Ramsar is unknown, Rock (2005) suggests that '*since the mid 1990s ... numbers of Herring and Lesser Black-backed Gulls at traditional colonies in the Bristol Channel have recovered, with c. 2,000 pairs now breeding on Steep Holm (A. Parsons pers. comm.) and c. 3,500 pairs on Flat Holm (Bailey 2001)*'<sup>35</sup>. The same paper goes on to state that '*Flat Holm is dominated by Lesser Black-backed Gulls (Bailey 2001), but on Steep Holm, Herring Gulls are still more common (A. J. Parsons pers. comm.)*'. However, numbers on Flat Holm have since declined from a peak of 4,298 pairs of lesser black-backed gulls in 2009 to 2,055 pairs in 2019, while the number of herring gull pairs crashed from 319 in 2017 to just 7 in 2019<sup>45</sup>. It is likely that significant numbers also breed within the wider Severn Estuary SPA/Ramsar, though no population estimates were identified by the literature review. Furthermore, in recent times, this species has shown incredible adaptability, and taken to nesting in urban areas. Indeed, the Gwent Bird Report 2019 states that there are modest but growing numbers predominantly associated with industrial areas. Surveys in the city of Newport in 2017 counted 285 nesting pairs of lesser black-backed gull and 255 nesting pairs of herring gull, while 2,357 pairs and 866 pairs respectively were counted in Cardiff in the same year<sup>45</sup>. Both of these urban locations are closer to the Proposed Development than Flat Holm and Steep Holm SSSIs.
- 9.10.11 Even if all the birds recorded flying over the Survey Boundary during each breeding season were directly from the Flat Holm colony, assuming a population of 2,055 pairs, this would only constitute 6.8% (140 birds) of the population in the 2020 breeding season and 4.6% (94 birds) during the 2021 breeding season (slightly higher with mixed gull flocks factored in). In reality, the population supported by the Severn Estuary Ramsar/SPA and indeed by Flat Holm and Steep Holm SSSI is far greater, while the small number of birds recorded within the Survey Boundary are likely to often be the same birds returning to the area and will undoubtedly include more locally based birds breeding in industrial and urban areas between the Survey Boundary and the Severn Estuary.
- 9.10.12 In terms of potential displacement of lesser black-backed gull from the local surrounding of the Proposed Development, offshore wind farm studies have shown that lesser black-backed gull avoid the interiors of wind farms<sup>36</sup>. However, the Survey Boundary is not considered to be significant to their foraging and associated breeding success, particularly given the availability of farmland and urban areas available to such mobile species for opportunistic foraging.

<sup>34</sup> JNCC Seabirds Monitoring Programme (online) <https://jncc.gov.uk/our-work/seabird-monitoring/> (Accessed July 2022)

<sup>35</sup> Rock, P (2005) Urban Gulls: problems and solutions *British Birds* 98, July 2005 pg338-355

<sup>36</sup> Vanermen, N., Courtens, W., Daelemans, R. Luc Lens, Wendt Müller, Marc Van de walle, Hilbran Verstraete, Eric W M Stienen Attracted to the outside: a meso-scale response pattern of lesser black-backed gulls at an offshore wind farm revealed by GPS telemetry

- 9.10.13 In light of the low anticipated mortality rates in the context of the designated site and local population sizes and limited potential for displacement impacts, the Proposed Development will not result in any likely significant adverse effects on the integrity of the lesser black-backed gull population supported by the Severn Estuary Ramsar/SPA or Flat Holm and Steep Holm SSSI.
- 9.10.14 With respect to herring gull, for which Steep Holm SSSI supports a notable breeding colony, the same assessment is considered to apply, with CRM presented in **Appendix 9B** and the species subsection below. Again, it is likely that birds not associated with the Steep Holm population are flying through the Survey Boundary, with this species classified in Gwent as fairly common all year, with distinct spring passage and with moderate numbers mainly breeding in industrial areas. As such, the Proposed Development will not result in any likely significant adverse effects on the integrity of the populations at Flat Holm or Steep Holm SSSI.

## Lesser Black-backed Gull and Herring Gull

### Collisions with Turbines Resulting in Mortality

- 9.10.15 The Proposed Development includes the installation and operation of up to eight wind turbines for an operational period of 30 years. There is therefore the potential for lesser black-backed gull and herring gull to collide with turbine blades. CRM based on flight data collected from vantage point surveys undertaken between April 2020 – April 2022 (inclusive) has been carried out to determine the risk of such collisions occurring.
- 9.10.16 Full details of the CRM are provided in **Appendix 9B**, with the predicted number of collisions for lesser black-backed gull and herring gull annually and over the 30-year operation of the wind farm provided in **Table 9.17** and **Table 9.18**. With reference to best practice, avoidance rates of 99.5% have been used for the CRM<sup>15</sup> for both species.

**Table 9.17 Predicted collision rates for lesser black-backed gull**

		Year 1	Year 2	Average
<b>Breeding Season</b>	Predicted collisions per year	0.03	0.05	0.04
	Predicted collision over 30 years	0.79	1.45	1.12
<b>Non-breeding Season</b>	Predicted collisions per year	0.02	0.01	0.01
	Predicted collisions over 30 years	0.50	0.31	0.40
<b>Annual Total</b>	Predicted collisions per year	0.04	0.06	0.05
	Predicted collisions over 30 years	1.29	1.75	1.52



**Table 9.18 Predicted collision rates for herring gull**

		Year 1	Year 2	Average
<b>Breeding Season</b>	Predicted collisions per year	0.04	0.05	0.04
	Predicted collision over 30 years	1.17	1.44	1.30
<b>Non-breeding Season</b>	Predicted collisions per year	0.00	0.01	0.01
	Predicted collisions over 30 years	0.06	0.39	0.23
<b>Annual Total</b>	Predicted collisions per year	0.04	0.06	0.05
	Predicted collisions over 30 years	1.23	1.83	1.53

- 9.10.17 The effect of the loss of an individual bird on a population will depend on factors such as the life expectancy of the species, breeding success rates, population size, population densities and the level of competition for resources. Lesser black backed gull and herring gull are long lived (14 and 12 years respectively), and have a high annual survival rate (typically 91% and 88% respectively)<sup>37</sup>. They also typically only raise one chick. As such their populations are potentially sensitive to raised mortality rates.
- 9.10.18 Population estimates are unknown in Gwent, though the Welsh lesser black-backed gull population is estimated at 13,500 apparently occupied nests<sup>34</sup>, and a breeding colony of 2,055 pairs is known to be present at Flat Holm SSSI within the wider landscape<sup>45</sup>. The Welsh herring gull population was estimated to contain 7,988 apparently occupied nests across 2015-19, although this is probably an undercount due to difficulty in surveying urban nesting sites which are becoming increasingly utilised. Within Gwent, both species are fairly common, with modest but growing numbers, and with breeding mainly occurring within industrial areas.
- 9.10.19 The CRM predicts that 1.52 lesser black-back gull and 1.53 herring gull individuals will collide with turbines over the lifetime of the development. However, it is also worth noting that the CRM assumes that the turbines will be active at all times. In reality, wind speeds and mechanical failures will mean that the turbines do not operate 100% of the time. In light of this and given the small collision numbers, in the context of the species wider population, no significant adverse effect upon the local population of either species is predicted.
- 9.10.20 In addition, embedded measures include provision for a Collision Mitigation and Monitoring Strategy (CMMS), secured via condition, which will determine collision rates and identify the need for mitigation measures if required.

<sup>37</sup>Viola H. Ross-Smith, Mark J. Grantham, Robert A. Robinson and Jacquie A. Clark (2014) Analysis of Lesser Black-backed Gull data to inform meta-population studies British Trust for Ornithology and Natural England. Research Report 654.

## Goshawk

### Collisions with Turbines Resulting in Mortality

- 9.10.21 Full details of the CRM are provided in **Appendix 9B**, with the predicted number of collisions for goshawk annually and over the 30-year operation of the wind farm provided in **Table 9.19**. With reference to best practice, avoidance rates of 98% have been used for the CRM.

**Table 9.19 Predicted collision rates for goshawk**

		Year 1	Year 2	Average
<b>Breeding Season</b>	Predicted collisions per year	0.00	0.00	0.00
	Predicted collision over 30 years	0.13	0.14	0.13
<b>Non-breeding Season</b>	Predicted collisions per year	0.01	0.00	0.00
	Predicted collisions over 30 years	0.15	0.07	0.11
<b>Annual Total</b>	Predicted collisions per year	0.01	0.01	0.01
	Predicted collisions over 30 years	0.28	0.21	0.24

- 9.10.22 Within Wales there were estimated to be 310 (95% confidence range: 260-350) breeding pairs of goshawk in 2018<sup>38</sup>, though as a species which inhabits and hunts within dense woodland, it is likely that they are under recorded, and populations are believed to be increasing in Wales. Within Gwent, 28 nests were monitored in 2018, with 23 chicks fledging<sup>39</sup>. Typically, this species lays 3-4 eggs, has a 7-year life span, with an adult survival rate of 83%<sup>40</sup>. As such, this species are not considered to be highly sensitive to small changes in adult mortality rates.
- 9.10.23 CRM modelling has not identified any significant risk of collision mortality (0.24 bird strikes over the lifetime of the development operation), as a result of very few flights being recorded in the CRZ. This is likely to reflect the species' association with woodland and preference for hunting within such habitats, with only very limited hunting in more open areas. No long-term, reversible, significant adverse effects from collision mortality are therefore predicted.
- 9.10.24 In addition, embedded measures include provision for a Collision Mitigation and Monitoring Strategy (CMMS) secured via condition that will monitor collision rates and identify the need for mitigation measures, if required.

<sup>38</sup>Hughes, J., Spence, I.M., and Gillings, S. (2020) Estimating the size of breeding populations of birds in Wales. *Birds in Wales* 17(1) pp. 56-67

<sup>39</sup>Welsh Bird Report No.32 2018. The Welsh Ornithological Society 2019

<sup>40</sup> <https://app.bto.org/birdfacts> - search by species – accessed 04 July 2022

## Disturbance and Displacement

- 9.10.25 There is limited information available on the potential displacement of goshawk from operational wind farms. However, given their successful occupation of commercial forestry sites, which are subject to change, and the positioning of turbines outside of their preferred woodland habitats, such effects are considered unlikely. Furthermore, the known breeding site is outside of potential disturbance distances, located 1km from the nearest turbines, while only limited hunting activity has been recorded within the Survey Boundary as demonstrated by the infrequent flightline data presented in **Appendix 9A**. In light of this, such low magnitude, long-term, but reversible, adverse effects are not considered to be significant.

## Peregrine

### Collisions with Turbines Resulting in Mortality

- 9.10.26 Full details of the CRM are provided in **Appendix 9B**, with the predicted number of collisions for peregrine annually and over the 30-year operation of the wind farm provided in **Table 9.20**. With reference to best practice, avoidance rates of 98% have been used for the CRM.

**Table 9.20 Predicted collision rates for peregrine**

		Year 1	Year 2	Average
<b>Breeding Season</b>	Predicted collisions per year	0.03	0.03	0.03
	Predicted collision over 30 years	0.76	0.92	0.84
<b>Non-breeding Season</b>	Predicted collisions per year	0.01	0.00	0.00
	Predicted collisions over 30 years	0.29	0.00	0.14
<b>Annual Total</b>	Predicted collisions per year	0.03	0.03	0.03
	Predicted collisions over 30 years	1.04	0.92	0.98

- 9.10.27 Within Wales in 2014, there were estimated to be 280 pairs (95% confidence: 262-301)<sup>41</sup>, and while increasing across the UK, populations in Wales are believed to be declining. Within Gwent, 15 sites were occupied in 2018, with five pairs monitored that fledged a minimum of eight young<sup>39</sup>. Typically, this species lays 3-4 eggs, has a 7-year life span, and an adult survival rate of 81% and juvenile survival rate of 60%<sup>40</sup>. As such, this species is not considered to be highly sensitive to small changes in adult mortality.
- 9.10.28 CRM modelling has not identified any significant risk of collision mortality (1 bird over the lifetime of the operational development), as a result of very few flights being recorded in

<sup>41</sup>Wilson, M. W., Balmer D. E., Jones, K., King, V. A., Raw, D., Rollie, C. J., Rooney, E., Ruddock, M., Smith, G. D., Stevenson, A., Stirling-Aird, P. K., Wernham, C. V., Weston, J. M., and Noble, D. G. (2018) The breeding population of Peregrine Falcon *Falco peregrinus* in the United Kingdom, Isle of Man and Channel Islands in 2014. *Bird Study* (65)1, pp1-19.

the CRZ despite the proximity of a known nest site and with presence confirmed all year within the Survey Boundary. This is potentially a reflection of their hunting behaviour and the availability of hunting habitats throughout the local landscape. The loss of a single bird over the operation of the wind farm would have a negligible effect on the local population in the context on the population size and annual adult and juvenile mortality rates. Such low magnitude and reversible impacts will therefore not have a significant effect on the peregrine population.

## Disturbance and Displacement

- 9.10.29 In a review of the displacement of upland birds from operational wind farms, Madders and Whitfield (2006)<sup>42</sup> found that based on the findings of two papers peregrine were of low sensitivity to displacement and, more generally, disturbance of raptors at operational wind farms was negligible. As set out in **Paragraph 9.94**, the known peregrine nest site is at the potential outer range (430m) from potential operational turbine disturbance. Though it is positioned within a quarry between two turbine locations, by virtue of the quarry and surrounding plantation woodland, the nest site is also screened from such effects. In the context of the wider hunting landscape available and the species ability to adapt and habituate to disturbed environments, combined with the CRM, such long-term but reversible adverse effects would not be significant.
- 9.10.30 In addition, embedded measures include provision for a Collision Mitigation and Monitoring Strategy (CMMS) secured via condition that will determine collision rates and identify the need for mitigation measures, if required.

## Red Kite

### Collisions with Turbines Resulting in Mortality

- 9.10.31 Full details of the CRM are provided in **Appendix 9B**, with the predicted number of collisions for red kite annually and over the 30-year operation of the wind farm provided in **Table 9.21**. Avoidance rates of 99%<sup>43</sup> have been used for the CRM.

**Table 9.21 Predicted collision rates for red kite**

		Year 1	Year 2	Average
<b>Breeding Season</b>	Predicted collisions per year	0.08	0.09	0.08
	Predicted collision over 30 years	2.44	2.58	2.51
<b>Non-breeding Season</b>	Predicted collisions per year	0.14	0.19	0.16
	Predicted collisions over 30 years	4.16	5.71	4.93
<b>Annual Total</b>	Predicted collisions per year	0.22	0.28	0.25
	Predicted collisions over 30 years	6.60	8.29	7.45

<sup>42</sup> Madders, M & Whitfield, D.P. (2006). Upland raptors and the assessment of wind farm impacts. *Ibis*, 148, 43–56. 9-50

<sup>43</sup> Welsh Kite Trust (2019) How Many Kites are there in Wales? [www.welshkitetrust.wales](http://www.welshkitetrust.wales) (accessed June 2022)

- 9.10.32 Red kite is typically relatively short lived (4 years), and has relatively high annual mortality rates amongst juveniles (50%) and adults (61%), with typical clutch sizes of 2. This species is known to have relatively high avoidance rates to turbines, which has been factored into the model (99%). The red kite population has expanded and grown across Wales and the UK over the last 20 years and the Welsh population in 2019 was estimated at 2,500 pairs<sup>44</sup>. Within Gwent, they are classified as a scarce visitor and passage migrant and a rare breeding resident<sup>23</sup>. However, it is likely that the population has grown and expanded since the last Gwent Bird Report in 2019, with red kite regularly recorded in association with other development proposals in the wider landscape.
- 9.10.33 The nearby Mynydd Carn y Cefn Wind Farm proposal Ornithology Chapter of the Draft Environmental Statement (May 2020) states that: '*No up-to-date population estimate for red kite in Blaenau Gwent or the former Gwent area is available, though given the number of records reported in local bird reports (Coleman et al 2018) it is likely to be at least 11 pairs and increasing across the former Gwent County boundary. A breeding population of 11 pairs represents approximately 30- 40 individual red kite (22 breeding adults plus an estimated numbers of non-breeding birds based on juvenile survival rates)*'. Based on this population assumption, and based on annual adult survival rates (39% mortality) for adult red kite, this represents 12-16 birds dying each year. The additional mortality predicted from the CRM, 0.25 annual average mortalities, represents an increase between 1.6-2.1% mortality each year. In light of this relatively small change and the species growing population, with expansion of birds from other territories likely to supplement the population, it is not considered that this long-term but reversible impact would have a significant adverse effect on the local population.
- 9.10.34 In addition, embedded measures include provision for a Collision Mitigation and Monitoring Strategy (CMMS) secured via condition that will determine collision rates and identify the need for mitigation measures, if required.

## Disturbance and Displacement

- 9.10.35 The operational phase of the Proposed Development could also potentially lead to the disturbance and displacement of nesting and foraging red kite and a reduction in reproductive success of the local population. A single red kite nest has been recorded approximately 300m east of Turbine 6, with regular foraging recorded onsite. In a study of disturbance distances, including a review of other papers, Ruddock & Whitfield (2007) found that static disturbance distances were an average of 125m at both phases of the breeding season, while median values for active disturbance distances were 30m and 75m during incubation and chick rearing respectively. Studies typically suggest tolerance ranges of 10-300m. It is also likely that over the operational lifetime of the development red kite would develop a degree of habituation to the operation, as reflected by records of successfully breeding red kite being routinely exposed to human activity without any obvious effect.
- 9.10.36 With regards to foraging, Madders and Whitfield (2006)<sup>42</sup> concluded that displacement of foraging raptors as a result of wind farms appears to be negligible. Hen harrier was the only raptor where any displacement effect is apparent, with birds only likely to be displaced from foraging habitat within 100m of turbines.
- 9.10.37 In light of the current breeding and foraging status of red kite in relation to the Proposed Development, and given their relatively limited sensitivity to the effects of wind farm disturbance and displacement, the extent and magnitude of this long-term impact is low,

<sup>44</sup> Welsh Kite Trust (2019) How Many Kites are there in Wales? [www.welshkitrust.wales](http://www.welshkitrust.wales) (accessed June 2022)

and no significant adverse effect on the red kite population during operation is therefore predicted.

## Kestrel

### Collisions with Turbines Resulting in Mortality

9.10.38 Full details of the CRM are provided in **Appendix 9B**, with the predicted number of collisions for kestrel annually and over the 30 year operation of the wind farm provided in **Table 9.22**. Kestrel is sensitive to colliding with turbines owing to their hunting style and as such, in accordance with best practice avoidance rates of 95% have been used in the CRM.

**Table 9.22 Predicted collision rates for kestrel**

		Year 1	Year 2	Average
<b>Breeding Season</b>	Predicted collisions per year	0.05	0.03	0.04
	Predicted collision over 30 years	1.41	0.93	1.17
<b>Non-breeding Season</b>	Predicted collisions per year	0.10	0.51	0.30
	Predicted collisions over 30 years	2.98	15.18	9.08
<b>Annual Total</b>	Predicted collisions per year	0.15	0.54	0.34
	Predicted collisions over 30 years	4.38	16.10	10.24

9.10.39 Within Wales, there were estimated to be 265-475 pairs of kestrel in 2020<sup>45</sup>. This species typically lays 4-5 eggs and has an adult survival rate of 69% and juvenile survival rate of 32%. Small changes in the mortality rate are therefore unlikely to impact the integrity of the local population. In Gwent, 4-5 nests and three possible pairs were recorded through the BTO bird tracking scheme. This is likely to be an under-representation of the population with the Gwent Bird Report 2019, stating that they are a fairly common (though declining) breeding resident.

9.10.40 CRM modelling predicts that a kestrel will potentially collide with a turbine every 2.9 years, with 10 fatalities over the 30-year lifespan of the wind farm operation. This, in part, reflects the species' vulnerability to turbine collisions with lower avoidance rates (95%) compared to other species. The CRM also does not account for times when turbines are not operational due to low wind speeds or mechanical faults and therefore accounts for the worst-case scenario. The predicted collision risk varies significantly between year 1 and year 2 and is principally associated with the non-breeding season, as reflected by the lack of breeding identified by the raptor surveys within the Study Area. Breeding season collision rates were predicted at one fatality every 25.6 years.

<sup>45</sup>Pritchard, R., Hughes, J., Spence, I.M., Haycock, B., and Brenchley, A. (editors) (2021) The Birds of Wales – Adar Cymru. Liverpool University Press, Liverpool.

- 9.10.41 In Wales, kestrel is known to be partial and passage migrants<sup>23 39</sup>. A large proportion of the CRZ flights were recorded in the year 2 non-breeding season in September, with kestrel recorded on 18 occasions during vantage point surveys over less than a week period. It is considered that this sudden spike in records, and time recorded in the CRZ, relates to a passage migrant or juvenile bird from the previous summers' brood passing through the Survey Boundary or looking to explore new territories. However, it should also be noted that kestrel is considered to be a probable breeder within the wider Study Area following sightings on raptor and breeding bird surveys, despite limited vantage point survey recordings.
- 9.10.42 While the local population only appears to be relatively small, kestrel remains a relatively common species within Gwent, with some movement and influx of birds on migration and potentially over winter. The ongoing loss of one overwintering/migratory bird through collisions with turbines every 3.3 years in the context of the annual adult survival rates of 69%, is therefore considered to only be a low magnitude, long-term, but reversible, adverse effect that would not be significant to the local population.
- 9.10.43 In addition, embedded measures include provision for a Collision Mitigation and Monitoring Strategy (CMMS) secured via condition that will determine collision rates and identify the need for mitigation measures, if required.

## Disturbance and Displacement

- 9.10.44 In a review of the displacement of upland birds from operational wind farms, Madders and Whitfield (2006)<sup>42</sup> found that based on the findings of 5 research papers kestrel is of low sensitivity to displacement. Furthermore, with respect to the survey findings, kestrel was rarely recorded within the Survey Boundary during the breeding season and thus the potential for displacement and disturbance only warrants greater consideration over the winter and migratory periods. During such times, these birds are less territorial and dependent on particular areas for foraging, with similar alternative habitats available for such purposes in the wider landscape. It is also likely that kestrel would become habituated to the operation of the wind farm given this species' willingness to forage and even nest adjacent to high areas of human disturbance such as motorways. Therefore, any such long-term but reversible adverse effects, in the unlikely event that they occur, would not be significant to the overwintering or migratory success of the local kestrel population.

## Hen Harrier

### Disturbance and Displacement

- 9.10.45 Hen harrier was infrequently recorded on passage migration and over wintering within the Survey Boundary and Study Area (7 flights during vantage point surveys, though only 15 seconds in the CRZ, and on three occasions during winter transects). No breeding behaviour or wintertime roosting was recorded. The records typically related to individual birds using the area within the Study Area for a few weeks or months on passage migration or as part of a wider range. The hen harrier population in Wales was estimated to be 35 pairs in 2016<sup>46</sup>, with small numbers breeding on the uplands of north and mid-Wales<sup>39</sup>. Hen harrier is a scarce winter visitor and passage migrant occurring in small numbers in Gwent<sup>23</sup>.

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<sup>46</sup>Wotton, S.R., Bladwell, S., Mattingley, W., Morris, N.G., Raw, D., Ruddock, M., Stevenson, A., and Eaton, M.A. (2018) Status of the Hen Harrier *Circus cyaneus* in the UK and Isle of Man in 2016. *Bird Study* 65(2) pp. 145-160.

- 9.10.46 The low flying nature of this species means they are not considered to be at notable risk of collisions with turbines. However, they are potentially more susceptible to displacement. In a review of the displacement of upland birds from operational wind farms, Madders and Whitfield (2006) found that at several wind farms there have been no indications of hen harrier displacement; however, Johnson *et al.* (2000a)<sup>47</sup> found evidence of both small scale (<100m from turbines) and larger scale avoidance of turbines by harriers in the year following wind farm operation. However, another RSPB research paper (2009)<sup>48</sup> identified a 53% reduction in flight activity within 250m of operational turbines<sup>49</sup>. Moorland hunting opportunities are available within the wider landscape and the potential partial displacement of occasional hen harrier foraging from the three turbines positioned within suitable moorland habitat is considered unlikely to impact their overwintering/migratory success.
- 9.10.47 Given that more sensitive breeding is not occurring within the Study Area, along with the infrequent use of the Survey Boundary in the context of the wider upland landscape, the impact of displacement is considered to be of low magnitude and any such long-term but reversible adverse effects would therefore not be significant to the integrity of the overwintering or migratory hen harrier population.

## Snipe

### Disturbance and Displacement

- 9.10.48 According to the Welsh Bird Report 2018<sup>39</sup>, within Wales, snipe is a widespread breeding bird, nesting in all counties but in small and declining numbers. There were estimated to be 1,100 (95% confidence: 820-1,400) breeding pairs across Wales in 2016<sup>38</sup>. Substantial numbers are present in winter. This is reflected in Gwent where this species is a fairly common winter visitor and uncommon breeder<sup>23</sup>.
- 9.10.49 The assessment of disturbance of snipe during construction as set out previously above is also considered to be applicable to the operational phase disturbance and displacement assessment. Based on one guidance paper from 2009, it is possible that snipe will be displaced/reduce in density by up to 47.5% within 400m of the turbine positions<sup>48</sup>. This will include the likely displacement of the probable breeding pair located within marshy grassland to the south-east of Turbine 6, and potentially a small number of overwintering snipe from marshy grassland habitats associated with Turbine 3 and Turbine 4. Areas of marshy grassland within the Study Area remain outside of a 400m buffer from turbine locations, however, total displacement within this distance is not considered likely based on available studies.
- 9.10.50 Embedded measures, principally the habitat enhancement measures identified for the Proposed Development as part of a Landscape and Ecology Management Plan (LEMP) and secured by condition, should be designed to benefit breeding species such as snipe. This can be achieved through removal of bracken and scrub, restoration of bogs and wetter areas, and the implementation of a management regime to encourage a more diverse grassland structure. The long-term approach to habitat enhancement would mitigate for any disturbance or reduction in habitat availability caused during operation.
- 9.10.51 The partial disturbance and displacement of overwintering and breeding snipe, while long-term, is of relatively low magnitude and will also be mitigated by the LEMP. As a result, no

<sup>47</sup>Johnson, G.D., Young, D.P., Erickson, W.P., Clayton, E., Derby, C.E.M., Dale Strickland, M.D. & Good, R.E. 2000a. Wildlife Monitoring Studies Seawest Windpower Project, Carbon County, Wyoming 1995 – 99. Final report by WESTInc

<sup>48</sup>Guidance note: Distribution of breeding birds in relation to upland wind farms December 2009. RSPB/ConSci guidance note/Benedict Gove/16-12-09



significant adverse effects on the snipe breeding or overwintering population are anticipated.

## Breeding Bird Assemblage

### Disturbance and Displacement

- 9.10.52 The wider breeding bird assemblage, including non-target passerine species, also has the potential to be impacted by disturbance and displacement during the breeding season over the operational lifetime of the development. With reference to best practice guidance and research papers, passerines are not typically considered to be at risk of adverse effects resulting from wind farm proposals. Indeed, one multi-site and multi-species analysis paper concludes that there is *“little evidence for consistent post-construction population declines in any species, suggesting for the first time that wind farm construction can have greater impacts upon birds than wind farm operation.”*
- 9.10.53 Of the species recorded during breeding bird surveys, those most likely to be nesting in the open grassland and moorland habitat where turbines are located include the amber listed meadow pipit and skylark. Research does not suggest that skylark densities are affected by operational turbines, however, meadow pipit breeding bird densities were found by one study to reduce by 15% within 100m of operational turbines<sup>48</sup>. Such limited and low magnitude reduction in use of habitats around the turbines, in the context of the wider habitat availability and population size, would not be significant to the integrity of the local population. Of the other red list species recorded as confirmed or probable breeders, willow warbler, pied flycatcher, linnets and bullfinch are unlikely to breed within the open moorland and grassland habitats within close enough proximity to the turbines to be at risk of displacement or disturbance effects. The possible exception to this is whinchat, though no evidence has been identified from the literature to suggest this species is sensitive to such disturbance and potential displacement. Furthermore, only one whinchat was recorded on two occasions from the north of the Survey Boundary, and not in close proximity to potential turbine locations.
- 9.10.54 There is also considered to be adequate habitats away from these areas to absorb some level of localised displacement around turbine locations or in association with maintenance works during the breeding season. Embedded measures will ensure that during operation, maintenance works are undertaken sensitively with respect to breeding birds, including avoiding any temporary impacts to surrounding habitats wherever possible and, if they do occur, ensuring that prior checks for nesting birds are completed.
- 9.10.55 Furthermore, embedded measures include habitat enhancement measures identified for the Proposed Development and delivered by the LEMP that are designed to benefit breeding bird species. This can be achieved through removal of bracken, restoration of bogs and wetter areas, and implementation of a management regime to encourage a more diverse grassland structure. The long-term approach to habitat enhancement would mitigate for any disturbance/displacement or reduction in habitat availability caused during operation and permanent loss of habitat due to the Proposed Development’s land-take.
- 9.10.56 In light of the limited sensitivity of passerine species and low magnitude of potential displacement and disturbance impacts during operation, no significant adverse long-term but reversible effects on the wider breeding bird assemblage are anticipated to arise.

## Precautionary Measures for Collision Risk Modelling

- 9.10.57 As an extra precaution, the CRM was run again with an extra buffer both above and below the turbine height. Any flight heights that were potentially mis-identified and should have

been included within the CRZ will therefore be included in this precautionary model. For year 1, this entailed adding height band 1 (<30m) to the model, as the upper limit of height band 2 (30-200m) already included a buffer of 20m, as the final turbine height only reached 180m.

- 9.10.58 For year 2, a greater number of narrower height bands were used. This meant that height bands 2 (15-30m) and 8 (185-200m) were included, so that both years were roughly comparable with each other. The results of these calculations are shown in **Table 9.23**.

**Table 9.23 Precautionary buffer CRM results**

Species	Average predicted collisions over 30 years with standard approach (original year 1 and year 2 data)	Average predicted collisions over 30 years with precautionary approach	Increase in average predicted collisions per 30 years
Lesser Black-backed Gull	1.52	1.89	0.37
Herring Gull	1.53	1.90	0.38
Goshawk	0.24	0.29	0.04
Peregrine	0.98	1.04	0.06
Red Kite	7.45	9.49	2.04
Kestrel	10.24	13.18	2.93

- 9.10.59 The above suggests that should turbine blades be longer or should the recording of flight heights of birds by surveyors be inaccurate, the increase in predicted collisions would be minor. The largest increases apply to kestrel and red kite, with one extra collision per ten years and one extra collision per 15 years respectively. The increase in the predicted collisions with the other species is otherwise negligible over a 30 year timeframe.

## 9.11 Assessment of Cumulative (inter-project) Effects

- 9.11.1 A cumulative effects assessment (CEA) is set out below for the Proposed Development which considers the combined impacts with other developments on the same single ornithology receptor (inter-project effects). The detailed method followed in identifying and assessing potential cumulative effects is set out in **Chapter 2**.
- 9.11.2 Developments, principally wind farms, which are either built, consented or with submitted scoping reports or planning applications have been considered within a distance of 10km of the Proposed Development. Given the age, scale and spatial separation for a number of these developments from the Proposed Development, there is not considered to be a risk of inter-project ornithology effects. Five large wind farms that are subject to applications or imminent applications, have also been identified however, and warrant further consideration with respect to cumulative effects, as set out in **Table 9.24**.

**Table 9.24 Summary of projects within 10km of the Proposed Development with potential to give rise to cumulative ornithology effects.**

Development	Description of development and proximity	Proximity to the Proposed Development	Important Ornithology Features (IOFs)
<b>Abertillery Wind Farm DNS/3278009</b>	Scoping submitted for 7 turbines with a maximum blade height of 180m and associated infrastructure including a permanent anemometer mast.	1.7km	<p>Scoping report identifies the presence of red kite, goshawk, hobby, hen harrier and peregrine.</p> <p>In addition, hobby were recorded fairly regularly, though these are believed to be associated with breeding birds located in the Cwmsychan Valley.</p>
<b>Mynydd Carn y Cefn Wind Farm DNS/3270299</b>	Application submitted in May 2022 for up to eight turbines with a maximum height of 180m and associated infrastructure.	2.5km NW	Important ornithology features scoped into the further assessment include goshawk, red kite, peregrine, barn owl, nightjar, moorland and woodland breeding bird assemblage.
<b>Trecelyn Wind Farm</b>	Scoping submitted in June 2022 for up to 5 turbines with a maximum blade height of 145m and associated infrastructure.	2.5km S	Site itself comprises predominantly of improved pasture with limited notable ornithology potential. However, the surrounding landscape includes commercial forestry, quarries and moorland with locally valuable populations of breeding peregrine, red kite, goshawk, kestrel and nightjar, and frequent lesser black-backed and herring gull flights over the Site. These species have been scoped in for further assessment subject to additional survey outcomes.
<b>Mynydd Maen DNS/3276725</b>	Scoping submitted for up to 15 turbines and associated infrastructure.	3km S	No information available.
<b>Manmoel Wind Farm DNS/3239181</b>	Scoping submitted for up to 5 turbines and associated infrastructure.	6km NW	Scoping report identifies the presence of red kite, goshawk, hen harrier, merlin and peregrine. Due to low numbers of flights impacts on goshawk, hen harrier, merlin and peregrine have sought to be scoped out of

Development	Description of development and proximity	Proximity to the Proposed Development	Important Ornithology Features (IOFs)
			the assessment. Impacts of collision on red kite will be provided as part of the EIA but are not available at this stage. No raptor nests recorded within 1km.
9.11.3	Given the size and relative proximity of these five proposals to the Proposed Development, and their location on similar moorland and upland farmland habitats, there is potential for de minimis adverse effects across the schemes to give rise to significant adverse effects upon IOFs.		
9.11.4	With the exception of Mynydd Carn y Cefn wind farm, the other four proposals have yet to be submitted though scoping reports (where available) provide some indication of ongoing survey findings. These, and the submitted material for Mynydd Carn y Cefn, suggest that these potential development sites support similar bird assemblages, reflective of their upland moorland and farmland locations. While the full results from the other wind farm proposals are unknown, the other proposed wind farms will also seek to mitigate potentially significant adverse effects to insignificant levels, thereby reducing the risk of cumulative effects arising.		
9.11.5	In terms of statutory designations, given these other proposals are predominantly further removed from the Severn Estuary SPA/Ramsar and Flat Holm and Steep Holm SSSI, it is considered to be very unlikely that there is potential for cumulative effects with respect to impacts on the associated breeding populations of lesser black-backed gull and herring gull through collisions with turbines. Exception to this includes Mynydd Maen and Trecelyn Wind Farms, which lie circa 2.5km to the south of the Survey Boundary in closer proximity to these designations and with both species frequently recorded in flight over the Trecelyn site. However, given these species' collision avoidance rates and that the CRM only predicts a collision every 19-20 years for the Proposed Development, no significant cumulative effects are anticipated.		
9.11.6	With respect to species, red kite, peregrine, goshawk and hen harrier have all been recorded in association with the other sites. Based on the Mynydd Carn y Cefn Draft ES and other proposals' scoping reports, activity levels and seasonal use of the other sites is similar to that recorded at the Proposed Development. The Mynydd Carn y Cefn Draft ES concluded that there would be no significant effects on the important ornithology features identified, including those taken forward for further assessment (goshawk, peregrine, barn owl, nightjar and moorland/woodland breeding bird assemblage). However, it does identify that certain species, notably red kite, would be subject to insignificant increases in collision mortality (1-2 deaths per year). Should this be reflected across all of the developments (CRM for the Proposed Development predicts an additional 0.25 deaths per year), then there is potential for the cumulative effect to become significant at a Local level. However, given this species' ongoing recovery in numbers and range expansion across Wales, it is considered unlikely that this would amount to a significant effect without similar or higher levels of collision fatality to Mynydd Carn y Cefn predicted as a result of each of the other proposals. The same consideration, though unlikely to give rise to significant adverse effects, should be given to kestrel given the heightened collision risk for this species and levels of potential mortality identified through CRM (a fatality every 2.9		

years) for the Proposed Development. Kestrel was not recorded by the Mynydd Carn y Cefn surveys and is therefore not a cumulative risk in combination with this proposal.

- 9.11.7 Should all five proposals be consented, alongside already approved turbines, there will be a considerable turbine presence across upland and moorland habitats over the wider landscape in Blaenau Gwent and Torfaen. It is considered therefore that while no significant effects from displacement of IOFs have been identified by the two fully assessed proposals (Proposed Development and Mynydd Carn y Cefn), there is potential for cumulative effects on sensitive species, principally waders. Based on the information available, it appears that the upland moorland habitats in the wind farms and surroundings do not support notable wader assemblages, with only small populations recorded, such as the over wintering and single probable breeding pair of snipe within the Survey Boundary. As such, and subject to the full survey findings from the unsubmitted proposals, no significant cumulative effects are likely to arise. However, it should be noted that it may reduce the suitability of these areas for recolonisation by these species in future should their populations recover. It is likely that certain waders (e.g. curlew, lapwing, golden plover and snipe – all mentioned in local SINC citations), would formerly have overwintered, been passage migrants, and bred, in these areas prior to intensification of farming, increased recreation activities and wider population declines.
- 9.11.8 Hen harrier appears to be a passage migrant and infrequent over-wintering species across all of the wind farm sites where suitable moorland habitat is present. While their low flying nature means they are not considered to be at notable risk of collisions with turbines, they are potentially more susceptible to displacement. Some research studies have identified no displacement of hen harrier from operational wind farms; others have identified low level displacement including a 53% reduction in flight activity within 250m of operational turbines<sup>48</sup>. Due to the small number of hen harrier recordings and relatively limited extent and magnitude of potential displacement from turbines relative to available habitat, it is considered unlikely that all of the proposals combined would give rise to significant long-term cumulative displacement effects on hen harrier.
- 9.11.9 Subject to the outcome of further surveys at the other proposed wind farms and the identification of residual effects (significant or de minimis), it is considered unlikely that significant adverse cumulative effects on IOFs will arise.

## 9.12 Impact of Climate Change

- 9.12.1 Future monitoring of the IOFs within the Survey Boundary will be delivered by embedded measures, namely the CMMS and the LEMP. This will allow an opportunity for management prescriptions to be reviewed and amended to reflect any impacts as a result of climate change. This will further safeguard the habitat and ornithology interests at the Survey Boundary over the long term.

## 9.13 Significance Conclusions

- 9.13.1 A summary of the results of the Ornithology assessment is provided in **Table 9.25**.

**Table 9.25 Summary of significance of effects**

Receptor	Predicted Effect	Importance of receptor <sup>1</sup>	Characterisation of Impact <sup>2</sup>	Significance <sup>3</sup>	Summary rationale
<b>Construction</b>					
<b>Peregrine Red Kite Snipe Nightjar Breeding Bird Assemblage</b>	Noise and visual disturbance	Local	Adverse, temporary, short-term, low magnitude and extent	Not significant	Temporary nature and limited extent of anticipated construction activities. Location of known and potential nesting sites predominantly outside of potential disturbance distances. Delivery of embedded measures via a CEMP to minimise the potential for visual and noise disturbance during the nesting season, including sensitive timing and ecological monitoring and supervision.
<b>Breeding Bird Assemblage</b>	Permanent and/or temporary land take	Local	Adverse, permanent and temporary, low magnitude and extent	Not significant	Limited extent and magnitude of higher quality nesting habitat loss in context of available habitats across the rest of the Survey Boundary and wider landscape. Those open ground nesting species potentially impacted are typically of lower importance and abundant across the Survey Boundary (e.g. meadow pipit and skylark).  Delivery of embedded measures, principally LEMP, will ensure wider habitats are enhanced for nesting bird species to mitigate for habitat losses.

Receptor	Predicted Effect	Importance of receptor <sup>1</sup>	Characterisation of Impact <sup>2</sup>	Significance <sup>3</sup>	Summary rationale
<b>Operation</b>					
<b>Severn Estuary SPA/Ramsar Flat Holm and Steep Holm SSSI</b>	Designated gull population colliding with turbines resulting in mortality	International and national	Adverse, long-term, reversible, negligible magnitude and extent	Not significant	Designated sites not functionally linked to the Survey Boundary area. Designated species recordings limited to lesser black-backed gull and herring gull activity, which is largely restricted to birds flying over the Survey Boundary with only limited foraging and resting. CRM suggests that collision risk to these species is not of sufficient magnitude to have a significant adverse effect on the breeding population of either species. The integrity of the breeding populations would not be impacted and no likely significant effects on these designations is therefore anticipated.
<b>Lesser Black-backed Gull Herring Gull Peregrine Goshawk Red Kite Kestrel</b>	Collisions with turbines resulting in mortality	Local	Adverse, long-term, reversible, low magnitude and extent	Not significant	CRM outputs have confirmed that there is not a risk of fatalities in an order of magnitude to impact the success of the breeding, migrating or overwintering populations, particularly in the context of background survival rates.
<b>Peregrine Goshawk Red Kite Kestrel Hen Harrier Snipe Breeding Bird Assemblage</b>	Disturbance and displacement from operating turbines	Local	Adverse, long-term, reversible, low magnitude and extent	Not significant	Positioning of the majority of turbines in relatively low suitability habitats (improved and species-poor grassland) for foraging and breeding. Little evidence of species

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					<p>sensitivity to notable disturbance and displacement from operational wind farms, particularly in the context of the population sizes, distribution, and availability of suitable habitat within the Survey Boundary and Study Area.</p> <p>Delivery of embedded measures, principally LEMP, will ensure wider habitats are enhanced for nesting bird species to mitigate for any small and localised displacement.</p>

1. The importance of the receptor is defined on a geographic scale with reference to CIEEM Guidelines 2018 as set out in **Table 9.12**.
2. Impacts have been characterised with reference to CIEEM Guidelines (2018) with due consideration to whether they are beneficial or adverse; extent; magnitude; duration; timing; frequency; and reversibility.