

7 ORNITHOLOGY

7.1 Introduction

- 7.1.1 This chapter of the Environmental Statement (ES) evaluates the effects of the proposed wind farm on birds and complements the assessment of ecological effects presented in Chapter 6: Ecology.
- 7.1.2 This chapter describes the methods used to evaluate the ornithological interest at the proposed wind farm and to determine the nature conservation importance of this interest. It explains the ways in which birds may be affected by the proposed wind farm and assesses the likely effects of the proposed wind farm and their significance. In making an assessment of impacts, the chapter draws on information obtained through desk study, consultation and field survey.
- 7.1.3 The assessment has been undertaken by BSG Ecology.
- 7.1.4 The chapter is supported by:
- Technical Appendix 7.1 - Confidential Baseline Reports¹
 - Technical Appendix 7.2 - Confidential Schedule 1 Breeding Information
 - Technical Appendix 7.3 - Survey Tables
 - Technical Appendix 7.4 - Collision Risk Modelling
- 7.1.5 Figures 7.1-7.5 are referenced in the text where relevant.

7.2 Legislation, Policy and Guidance

Legislation Policy

- 7.2.1 There are several national and local policies and guidance documents that relate to nature conservation and ecology within the planning process that are relevant to the proposed wind farm. Reference to these provides an indication of the likely requirements and expectations of statutory authorities and others in relation to planning applications and nature conservation and ornithology within a given area. There are also legislative requirements of new development. The national and local planning policies and the legislation relevant to the proposed Mynydd Maen Wind Farm are listed below (further detail of the below policies are provided in **Technical Appendix 6.1: Legislation and planning policy summary**).
- Planning Policy Wales (Edition 12, February 2024²).
 - Technical Advice Note (TAN) 5 Nature Conservation and Planning (2009).
 - The Environment (Wales) Act (2016).
 - The Conservation of Habitats and Species Regulations (2017) as amended.
 - The Wildlife and Countryside Act (1981) as amended.
 - Relevant policies (S7 and others) within The Torfaen Local Development Plan (2013).

¹ The baseline reports refer to a larger 'Site' boundary than the current Site. This reflects the proposals as they were at the time of survey. The Site boundary referred to in the baseline reports is shown on the associated figures.

² Available at: < https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12_1.pdf > [Accessed 27/02/2024]

- Relevant policies (including CW4-6) of the Caerphilly County Borough Local Development Plan (2010).
- Supplementary Planning Guidance issued by Torfaen County Borough Council on Biodiversity, Ecosystem Resilience and Development (2023).
- The Greater Gwent Nature Recovery Plan (2022).

Guidance

- 7.2.2 Survey work to inform the assessment has been carried out in accordance with industry standard guidance, namely Scottish Natural Heritage (SNH)³ (2017) guidance “Recommended bird survey methods to inform impact assessment of onshore wind farms”, guidance for survey of raptors produced by Hardey et al. (2013), guidance for breeding wader surveys produced by Brown & Shepherd, (1993) and supplemented by Calladine et al. (2009) and guidance for nightjar *Caprimulgus europaeus* survey produced by Gilbert et al. (1998).
- 7.2.3 This chapter has been based principally on the 2018 Guidelines for Ecological Impact Assessment in the United Kingdom developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, September 2018). The ornithological assessment has also had regard to the widely adopted guidance and advice published by SNH in the following documents:
- Windfarms and Birds - Calculating a theoretical collision risk assuming no avoiding action (SNH, 2000).
 - A review of disturbance distances in selected bird species (Goodship & Furness, 2022).
 - Use of Avoidance Rates in the SNH Wind Farm Collision Risk Model (SNH, 2018a).
 - Developing field and analytical methods to assess avian collision risk at wind farms (Band et al., 2007).
 - Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH, 2018b).

7.3 Consultations

Pre-application Consultation

- 7.3.1 Pre-application consultation with Natural Resources Wales (NRW) was not possible. Meetings were regularly requested from December 2020 onward via the Discretionary Planning Advice Service (DPAS), but ornithological staff and protected species ecologists were not available to attend these. Consultation was therefore primarily through scoping.
- 7.3.2 Meetings were held with ecologists from Torfaen County Borough Council and Caerphilly County Borough Council in April 2021 and April 2023 and May 2021 and June 2023 respectively. The purpose of these meetings was to discuss the findings of survey work, the scope of the assessment and the biodiversity net benefit solution. Records of the meetings (agreed by all parties) are contained in Technical Appendix 6.2: Stakeholder Meeting Records.

OIA scoping

- 7.3.3 A scoping report was issued in November 2021 (Barton Willmore, 2021). Planning and Environment Decisions Wales (PEDW) responded in January 2022 (PEDW, 2022). A tabulated summary of comments was provided with regard to each technical discipline by PEDW.
- 7.3.4 Both Torfaen and Caerphilly County Borough Councils indicated they were content with the scope of survey work completed at that point. Blaenau Gwent and Monmouthshire County

³ Scottish Natural Heritage (SNH) changed its name to NatureScot on 24 August 2020 but this remains an SNH publication until revised.

Borough Councils also responded to the consultation. Blaenau Gwent County Borough did not raise ornithological concerns. Monmouthshire County Borough Council responded regarding the scope of breeding wader survey (see the final comment in Table 7.1).

7.3.5 The comments on ornithology, and how they have been addressed are set out in Table 7.1 (below).

Table 7.1. PEDW / Monmouthshire County Borough Council Scoping comments and responses.

Issue	PEDW / Monmouthshire County Borough Council comment	Response
VP survey	PEDW notes that the survey conducted in 2020 / 2021 does not include migration periods (July to October). No justification is provided in the scoping report to explain this limitation. The exclusion of these months in the survey effort may have resulted in an underestimation of the potential presence of waders and migratory wildfowl. PEDW agrees with the concern expressed by NRW.	In the absence of consultation with NRW, Vantage Point (VP) survey was completed in August - September 2022 in order to confirm predictions regarding target species movements in these months. VP work was conducted during July and October in both years of survey, as part of the (breeding season and winter survey work respectively). In combination these cover the migration period highlighted.
Designated sites	The potential effects of the Proposed Development on wintering wildfowl population at Llandegfedd Reservoir SSSI should be considered as part of the assessment.	Potential effects on the Llandegfedd Reservoir SSSI have been considered in this assessment.
Approach to mitigation	No details of mitigation or enhancement are available at this stage but the Environmental Statement (ES) should include a detailed ecological management plan, including targets an enhancement objectives specific to the habitats and species present on-site. The plan should include monitoring and indicate triggers which would prompt changes in the management of the Site. Any net benefits should be clearly identified.	Mitigation proposals are set out in this document. An ecological enhancement plan will be included that will set out how the project will deliver biodiversity net benefit in accordance with Welsh planning policy. Monitoring requirements will be driven by the conclusions of the ES and the aims of the biodiversity net benefit proposals. They are likely to include monitoring of habitat change to detect whether management is effective, and work is delivering against objectives. Monitoring commitments should not pre-empt the assessment.
Cumulative Assessment	As set out in section 6 of the Scoping Direction, the Applicant is strongly advised to include relevant DNS schemes that have reached the EIA scoping stage in the assessment of cumulative effects for this ES.	The cumulative assessment considers relevant DNS schemes that have reached the EIA scoping stage.
Targeted Wader Survey	A single year of wader surveys may be acceptable given the lack of records during the first year. However, the site is within 5 km of the Usk Catchment and Llangorse Lake Important Curlew Area as stated in Wales Action Plan for the Recovery of the Curlew. Therefore, if wader activity is noted around the site, further targeted survey for these species should be reconsidered.	No evidence of breeding waders (including curlew) was recorded during any of the survey work, including the targeted breeding wader surveys during the first year of survey. Therefore, no further targeted survey for breeding waders was completed.

Pre-application Consultation (PAC) comments

7.3.6 PAC comments on ornithology were received from NRW on 08 April 2024 (letter reference CAS-248286-T3Z5). These comments, and how they have been addressed, are set out in Table 7.2. No other PAC comments were received by PEDW.

Table 7.2 PAC comments and responses

Issue	NRW comment	Response
Further survey information	While NRW agreed with the receptors identified, they recommended that further Figures be produced showing registrations of species recorded to supplement the in-text descriptions.	Two summary figures (Figures 7.4 and 7.5) have been produced (in addition to the existing figures appended to baseline reports). These present the confirmed territory locations across the two-year survey period for raptors (confidential Figure 7.4) and nightjar (Figure 7.5). No evidence of breeding waders was recorded during the two years of survey work, so no corresponding Figure is presented. In addition references to the appropriate figures presenting these data in greater detail have been provided throughout the chapter.
Impacts on Llandegfedd Reservoir SSSI	NRW agreed that the notified bird features of the Llandegfedd Reservoir SSSI are unlikely to be affected by the proposals.	No response required.
Potential impacts on kestrel <i>Falco tinnunculus</i>	NRW noted the potential impacts of the proposals on kestrel (as shown by the results of the collision risk model). NRW recommended further liaison with the local authority regarding the suitability of the proposed mitigation and enhancement measures with regard to kestrel.	Meetings were held with ecologists from Torfaen County Borough Council and Caerphilly County Borough Council in April 2021 and April 2023 and May 2021 and June 2023 respectively. During those meetings, potential impacts on kestrel were discussed. The County Borough Council ecologists did not comment on the proposals at PAC.

7.4 Assessment Methods and Significance Criteria

- 7.4.1 The approach to the OIA has been based on Chartered Institute of Ecology and Environmental Management Guidance (CIEEM, 2018).
- 7.4.2 This is a professional judgement as opposed to a matrix-based method of assessment (a matrix-based assessment will be applied in other ES chapters as outlined in the introductory sections of this document).
- 7.4.3 The methods for ornithological survey of the Site, results and evaluation of receptors are provided in this assessment. The assessment considers potential effects on bird species at each of the construction, operational and decommissioning phases of the proposed wind farm. For species for which regular flight activity over the Site at collision risk height has been recorded, collision risk analysis will be completed using SNH’s Band Model to inform the assessment of likely effects.

7.5 Important Ecological Features

- 7.5.1 A first step in OIA is determination of which ornithological features (relevant designated sites and species) are important. Important features should then be subject to detailed assessment if they are likely to be affected by a proposed wind farm. It is not necessary to carry out

detailed assessment of features that are sufficiently widespread, unthreatened and / or resilient to effects of the proposal, such that there is no risk to their viability.

- 7.5.2 Ornithological features can be important for a variety of reasons and the rationale used to identify these is explained below. Importance may relate, for example, to the quality or extent of designated sites, to species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline.

7.6 Establishing the Zone of Influence

- 7.6.1 The Zone of Influence (Zol) is defined as the area within which there may be ornithological features subject to effects from the proposed wind farm. Such effects could be direct, e.g., habitat loss resulting from land-take, or indirect, e.g., noise or visual disturbance causing a species to move out of the Zol. The Zol was determined through:

- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by consultees.
- Identification of sensitivities of ornithological features, where known.
- The outline design of the proposed wind farm and approach to construction.
- Through liaison with other technical specialists involved in the assessment, including the project hydrologists.

- 7.6.2 A 10 km Zol has been adopted for the species considered in this assessment. This Zol encompasses all sites that could potentially be affected by impact mechanisms that are most wide-ranging. Potential impact mechanisms are:

- Disturbance and displacement as a result of habitat loss, noise / vibration, or visual disturbance;
- Increased mortality.

- 7.6.3 Habitat loss and disturbance is only likely to have an effect on receptors within or close to the site boundary. The nearest Special Protection Area (SPA) is the Severn Estuary SPA (12.5 km from the Proposed Development Site) there will be no habitat loss or disturbance within this or any other European sites.

- 7.6.4 Impacts on European sites which are not designated for their bird interest are assessed in Chapter 6: Ecology.

- 7.6.5 Noise and vibration related disturbance is only likely to have an effect on receptors within a Zol that is defined by the spatial extent over which noise and vibration impacts are predicted to arise.

- 7.6.6 Similarly, the extent of visual impacts would also be limited by the distance over which people and machinery might be seen. This is likely to be constrained by topography and vegetation and, taking a precautionary view, this is unlikely to extend more than 1 km for ornithological receptors.

- 7.6.7 Whilst noise, vibration and visual disturbance effects arising from the proposed wind farm are likely to be limited in their spatial extent, a further consideration is the mobility of birds. For example, qualifying species from European sites may fly across the proposed wind farm Site or utilise habitats within the site, i.e. the site includes land that is functionally linked to a European site. It is therefore possible that qualifying birds that visit the site or commute across it could be affected by the proposed wind farm, thereby affecting the integrity of a European site.

- 7.6.8 A 10 km Zol is considered to be precautionary as the identified impact mechanisms are unlikely to extend this far. If birds are breeding within the designated site it is reasonable to suggest they will typically use areas within 10 km of it for provisioning.

- 7.6.9 A 10 km Zol is also considered to be appropriate based on the bird community recorded over the two years of survey, i.e. birds using the upland habitats at Mynydd Maen are unlikely to be ranging more than this distance from the Site.

7.7 Evaluation: Determining Importance

- 7.7.1 The importance of an ornithological feature should be considered within a defined geographical context. The following frame of reference has been used in this case:
- International: European.
 - National: United Kingdom.
 - Regional: Wales.
 - County: Caerphilly County Borough or Torfaen County Borough.
 - Local: Upland comprising Mynydd Maen, Mynydd Llwyd and Mynydd Twyn-glas Commons.
 - Site: proposed wind farm site
- 7.7.2 Receptors may be valued below the Site level. In these instances they are described as being of negligible importance.
- 7.7.3 The CIEEM guidance indicates that features of less than local importance are generally considered unlikely to trigger a mitigation or policy response in EIA terms.
- 7.7.4 In this assessment, a 1 % population threshold is used as a guide when assessing the importance of the Site for a species in a geographical context. While there is no biological reason for the application of a 1 % threshold, 1 % is routinely applied in defining thresholds of importance. Examples include the selection of protected sites such as SPAs. Stage 1 of the SPA selection guidelines states that “*an area used regularly by 1 % or more of the Great Britain (GB) population of a species listed in Annex 1 of the EC Birds Directive*” should be considered as an area “*likely to qualify for SPA status*”. This is considered to be an appropriate threshold for assessing the importance of the Site for a species within this assessment.

7.8 Significance Criteria

- 7.8.1 The CIEEM (2018) guidelines state that ecological (and therefore ornithological) effects or impacts should be characterised in terms of ecosystem structure and function and reference should be made to: beneficial, adverse or neutral effects; extent; magnitude; duration; reversibility; timing and frequency; and cumulative effects. The guidelines provide a list of “*aspects of ecological structure and function to consider when predicting impacts and effects*” (Box 17). The terms impact and effect are used within this chapter in accordance with the following definitions (as provided by the guidelines):
- Impact: Actions resulting in changes to an ornithological feature. For example, the construction activities of a development removing heather-dominated dry heath.
 - Effect: Outcome to an ornithological feature from an impact. For example, the effects on a red grouse population from loss of heather-dominated dry heath.
- 7.8.2 Following the characterisation of effects, an assessment of their ornithological significance is made. The guidelines promote a transparent approach in which a beneficial or adverse effect is determined to be significant or not, in ornithological terms, in relation to the integrity of the defined site or ecosystem(s) and / or the conservation status of species within a given geographical area, which relates to the level at which it has been valued. The decision about whether an effect is significant or not, is independent of the value of the ornithological feature; the value of any feature that would be significantly affected is then used to determine the implications, in terms of legislation and / or policy (CIEEM, 2018).
- 7.8.3 Significance is a concept related to the weight that should be attached to effects when decisions are made. For the purpose of this assessment, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'. A significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. The EclA guidelines (CIEEM, 2018) state

that "A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant adverse ecological effects can be lawfully permitted following EIA procedures". The assessment of significance is based on professional judgement.

7.9 Mitigation

- 7.9.1 Where significant effects have been identified, the mitigation hierarchy has been taken into account, as suggested in the 2018 EIA Guidelines, which set out a sequential approach of avoiding significant effects where possible, applying mitigation measures to minimise unavoidable significant effects and then compensating for any remaining significant effects. Once avoidance and mitigation measures, and any necessary compensation measures, have been applied, and opportunities for enhancement incorporated, residual significant effects have then been identified. This approach is reflected across UK planning policy at a national level.
- 7.9.2 Where mitigation and compensation has been proposed, this is proportionate with the geographical scale at which an effect is significant. *"For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved"* (CIEEM, 2018, Paragraph 5.28).

7.10 Study Area

- 7.10.1 The ornithological study area initially covered much of the high ground across Mynydd Llwyd, Mynydd Twyn-glas, Twyn Calch and Mynydd Maen.
- 7.10.2 The baseline reports refer to a larger 'Site' boundary than the current site of the proposed wind farm. This reflects the proposals as they were at the time of survey. The Site boundary referred to in the baseline reports is shown in the associated figures.
- 7.10.3 As the wind farm design evolved, and constraints to development were identified, survey work became more focussed on the emerging layout. However, the initial survey work has assisted in understanding the wider context of the Site.
- 7.10.4 **Figure 7.2: Survey Areas** shows the survey area in relation to the final wind farm layout. Survey areas for species groups are discussed in the species survey methods (below) and shown in relation to the final wind farm layout.

7.11 Survey Methods

Desk Based Assessment

- 7.11.1 An ornithological desk study was carried out to compile existing baseline data for the site and local area.
- 7.11.2 The presence of statutory designated sites, such as Special Protection Areas (SPAs), Ramsar wetlands, and Sites of Special Scientific Interest (SSSIs) within 10 km of the site established using the Magic website⁴.
- 7.11.3 Existing records for protected or otherwise notable species were obtained from the South-East Wales Biodiversity Records Centre (SEWBReC) within a 2 km distance of the site. Records from the last 10 years were considered most relevant to the study. The desk study was undertaken in April 2020 and updated in July 2023.

⁴ <http://magic.defra.gov.uk/> visited 12 July 2023.

7.11.4 Data held by the National Biodiversity Network (NBN)⁵ was also interrogated for local records of ‘target species’ as defined in the following section.

Field Surveys

7.11.5 Bird surveys were carried out during the following periods:

- April 2020 to July 2020 inclusive,
- October 2020 to March 2021 inclusive,
- April 2021 to August 2021 inclusive,
- October 2021 to March 2022 inclusive,
- August 2022 to September 2022 inclusive.

7.11.6 Surveys were carried out at a variety of times and in different weather conditions to ensure data were collected that accurately reflected bird use of the Site and local landscape (details of dates, time and weather conditions for each survey type are included in the respective Appendices). The methods used for each survey are described in the following sections.

7.11.7 SNH (2017) guidance indicates that wind farm assessments should focus on ‘target species’. SNH defines these target species as:

- Those protected under Schedule 1 of the Wildlife & Countryside Act (1981) as amended.
- Those listed on Annex 1 of the Council Directive 79/409/EEC on the Conservation of Wild Birds.
- Regularly occurring migratory species which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the proposed wind farm.
- Species occurring at the site in nationally or regionally important numbers.

7.11.8 SNH guidance also notes that consideration should be given to species of local conservation concern (e.g. in Local Biodiversity Action Plans), but that target species should be restricted to those likely to be affected by wind farms.

VP Survey

7.11.9 VP surveys were conducted during the 2020 and 2021 breeding seasons (April to July 2020 inclusive, and April to August 2021 inclusive) and 2020/2021 and 2021/2022 winter periods (both October to March inclusive). Further survey was conducted during the 2022 autumn passage period (August-September inclusive).

7.11.10 Key principles of VP survey are set out by SNH (2017). These are:

- VPs should be chosen parsimoniously in order to achieve maximum visibility from the minimum number of survey locations.
- An arc of up to 180 degrees extending up to two kilometres from the observer can be effectively surveyed from each VP.
- VPs are best located outside of the survey area where possible.
- Observers should try to position themselves inconspicuously in order to minimise their effect on bird behaviour / movement.
- VPs that are located within the survey area should not be used simultaneously with other VP locations which overlook them as the presence of an observer either sitting at or moving to / from the VP could affect bird behaviour.

⁵ <https://spatial.nbnatlas.org/>.

- At least 36 hours of survey per VP should be conducted per ‘season’ to enable representative data collection.

7.11.11 Three VP locations were selected for survey of land within the Site. All VPs used were located within the survey area. VP selection at the site is dictated by land form and the characteristics of the vegetation⁶, and the locations chosen provide maximum visual coverage of the survey area. VPs located outside of the survey area would not allow visual coverage of all indicative turbine locations. Surveyors were able to remain inconspicuous during the VP surveys by positioning themselves away from edges / ridges, by wearing appropriately dark / camouflaged clothing and by restricting their movements as far as possible.

7.11.12 The location of the respective VPs and viewsheds are shown on **Figure 7.1: VPs, Viewing Arc and Survey Area**.

7.11.13 Three hours was spent at each VP location per ‘watch’ where weather conditions allowed, during which time the surveyor scanned a 180 degree viewshed extending up to two kilometres from the observer using binoculars. During VP survey the viewing arc was scanned constantly until a ‘target species’ was detected. The bird was then followed until it landed or was lost to view. The following information was recorded for each target species on a standardised form:

- Species.
- Time of observation.
- Duration of observation.
- Count.
- Estimated flight height (every 15 seconds).
- Direction of flight.
- Estimated distance and direction of bird from the observer.
- Flight type and behaviour, where apparent (e.g. flapping / gliding and foraging, displaying, commuting etc.).

7.11.14 Height bands of 0-30 m, 30-150 m and 150+ m were used for recording flight height. The height range 30-150 m was considered to be collision risk height. Features of known height (or for which height could be estimated accurately), such as stands of mature trees, pylons and radio masts were used when assessing flight height. The method of data collection is consistent with that required for collision risk modelling (using SNH’s Band Model).

7.11.15 SNH Guidance (2017) states that, “*In most circumstances ... target species will be limited to those species which are afforded a higher level of legislative protection.*” Target (or ‘focal’) species at the site were defined as all Schedule 1⁷ and Annex 1⁸ raptors / owls, migratory wildfowl and waders.

7.11.16 Gulls and passerines were not treated as target species. However, notes were taken on flight activity of both during each watch, with a view to identifying any regularly used flight lines and to characterise use of the Site respectively. With regards to passerines, SNH (2017) guidance states, “*It is generally considered that passerine species are not significantly impacted by wind farms.*” This is likely to reflect the fact that there are no studies that have found population level effects resulting from wind farm mortality in passerine species.

7.11.17 Information on non-focal species was aggregated and summarised in five minute intervals on the reverse of the VP recording form.

⁶ Some areas outside the Site boundary have semi-natural woodland, commercial plantation or extensive areas of bracken, which combined with topography and declining elevation makes viewing over the Site from outside of it extremely challenging.

⁷ Of the Wildlife & Countryside Act (1981) as amended.

⁸ Of Directive 2009/147/EC, often referred to as The Birds Directive.

7.11.18 A minimum⁹ of 36 hours of survey was completed at each VP location between April 2020 and July 2020 inclusive, between October 2020 and March 2021 inclusive, between April 2021 and August 2021 and between October 2021 and March 2022 inclusive. A further six hours of survey was completed at each VP location per month, during the period August 2022 to September 2022 inclusive.

7.11.19 Weather data were recorded at the start of each watch, with the conditions formally reassessed on at least an hourly basis thereafter (or at such point as it was apparent a change in conditions had occurred).

7.11.20 Dates, times and species recorded during all VP surveys are tabulated in **Table 1 in Technical Appendix 7.3: Survey Tables**.

Breeding Raptor Survey

7.11.21 SNH (2017) guidance recommends that surveys for breeding raptors including red kite *Milvus milvus* and peregrine *Falco peregrinus* are completed within 2 km of proposed wind farms. For goshawk *Accipiter gentilis* and hobby *Falco subbuteo*, which often nest in plantation habitats, 1 km is applicable.

7.11.22 During the Year 1 surveys buildings, masts and pylons on-Site were identified as features with potential to provide a suitable nesting ledge for kestrel and peregrine. Additional areas of habitat within 1-2 km of the Site had the potential to support the following breeding raptors:

- Peregrine (2 km search area). Six quarries / escarpments within 2 km of the Site. The closest are Coed Golynos Quarry and a quarry at Blaen Bran (approximately 615 m and 700 m (respectively) from the nearest proposed infrastructure), the others are > 1 km from the nearest proposed infrastructure.
- Red kite (2 km). Mature mixed and coniferous woodland in the adjacent Cwm y Glyn, Cwmcarn and Gwyddon Valleys, and on the slopes above Cwmbran.
- Hobby (1 km). Plantation woodland in the adjacent Cwm y Glyn, Cwmcarn and Gwyddon Valleys, and in more open habitats with scattered trees and small woods to the west, north-west and east.
- Kestrel (no specified search area in guidance: taken as 1 km). Quarries, masts, pylons, derelict buildings and mature trees.

7.11.23 There is no habitat present on-Site, or in the wider 2 km perimeter area, that is suitable to support ground-nesting raptors (due to human disturbance, topography, localised grazing pressure and land use).

7.11.24 Surveys of potential breeding areas were completed using a combination of walkover raptor survey and mobile VPs¹⁰ on seven visits between April 2020 and July 2020 inclusive, and on eight visits between April 2021 and July 2021 inclusive. During the surveys, habitat features¹¹ were searched for signs of raptors. The surveys also involved walking along plantation edge and undertaking short VP watches of up to one hour duration over woodland / plantation and quarries.

7.11.25 Dates, times and raptor species recorded during raptor surveys are tabulated in **Table 2 in Technical Appendix 7.3: Survey Tables**. Perimeter survey areas are provided in **Figure 7.2: Survey Areas**.

Targeted goshawk VPs

7.11.26 Eight additional VP watches (21 hours of survey) were completed between February 2021 - mid-April 2021 inclusive, to survey for displaying goshawk and to attempt to identify core territory locations within 1 km of the Site.

⁹ During the period April 2021 and August 2021 inclusive, 39 hours of VP survey was completed.

¹⁰ Informal watches from VP locations other than those used for the formalised watches, which usually lasted for two hours or less.

¹¹ Habitat features included fence lines, rock outcrops, prominent mounds / tussocks and isolated trees.

7.11.27 Three¹² VP locations were selected which allowed survey of all suitable habitat (stands of mature conifer plantation) within 1 km of the Site boundary (as it was at the time of the survey). Their locations are shown on **Figure 7.2: Survey Areas**. While during standard VP work viewing arcs are limited to a maximum of 180 degrees (and all target species recorded), during the course of this work the surveyor widened the viewing arc to all visible areas of plantation around the VP and treated goshawk as the only target species (all other birds were secondary species). Watches lasted for a minimum of two hours and were extended by one additional hour if goshawk were recorded.

7.11.28 Dates, times and goshawk activity recorded during targeted goshawk VPs are provided in **Table 3** in **Technical Appendix 7.3: Survey Tables**.

Breeding Wader Survey

7.11.29 Breeding wader survey was completed during the first year of survey (2020) but was scoped out ahead of the second year of survey (2021)¹³.

7.11.30 Walkover breeding wader surveys of the moorland habitats extended to approximately 800 m beyond the Site boundary¹⁴ (where suitable habitat on the plateau was present beyond the boundary). The extent of the Wader Survey Area is shown in **Figure 7.2: Survey Areas**. Most land within 800 m of the boundary to the north and south-west, and in two areas to the east was unsuitable for breeding waders due to topography and habitat, so survey was not completed in these areas.

7.11.31 SNH guidance (2017) recommends that the Brown & Shepherd (1993) method is applied, but that surveys are repeated on four occasions (based on recommendations set out in Calladine *et al.* (2009)) between mid-April and mid-July (with at least seven days between visits).

7.11.32 The work involved walking over moorland areas and applying a constant search effort for upland waders. The surveyor covered between 250 and 300 ha per day, approaching all parts of the survey area to within approximately 100 m. Frequent stops were made at local viewpoints in order to listen for singing and calling birds and to scan areas around the observer.

7.11.33 In addition to records from the breeding wader surveys, any evidence of waders during VP work was systematically recorded.

7.11.34 Dates, times and wader species recorded during wader surveys are contained in **Table 4** in **Technical Appendix 7.3: Survey Tables**.

Nightjar survey

7.11.35 An initial review of aerial imagery was undertaken during 2020, to identify current areas of suitable breeding habitat for nightjar. This was defined as permanently open habitat, clear fell and recently re-stocked plantation in accordance with the findings of Scott *et al.* (1998).

7.11.36 During 2020, two walked transects incorporating the stopping (listening) points were derived based on this habitat appraisal. During 2021, this was amended to three walked transects incorporating the stopping (listening) points.

7.11.37 Surveys to locate churring male nightjars were completed based on the methods identified by Gilbert *et al.* (1998). Survey visits were undertaken in June and repeated in July in both years. Due to the requirement for night working, transects were conducted by two surveyors. Each stop was eight minutes in duration. If, after three minutes, no churring nightjars had been recorded, audio playback was used for a duration of 1 minute to attempt to elicit a response.

¹² The location of goshawk VP 3 was adjusted for the watch on 13 April 2021 to focus on the Cwmcarn Valley for that watch. The two locations of VP 3 are therefore presented as VP 3a and VP 3b.

¹³ This was done as no evidence of breeding waders was recorded during the first year of survey, and the Site was considered unsuitable for species such as curlew and lapwing to breed, due to human disturbance.

¹⁴ As it was at the time of survey.

7.11.38 Dates, times and weather conditions during nightjar surveys are tabulated in **Table 5** in **Technical Appendix 7.3: Survey Tables** and transect stopping points are shown on **Figure 7.2: Survey Areas**.

Collision Risk Analysis

7.11.39 The risk of birds colliding with operating wind turbines has been assessed using the methods described by Band *et al.* (2007).

7.11.40 Prediction of collision risk involves extrapolation of flight-data obtained during VP surveys, to calculate the number of flights likely to occur through the rotor swept area when the proposed wind farm becomes operational. There are two variations of the model: the first assumes that flight activity occurs randomly across the airspace (and is applicable to many raptors); the second assumes that flights are direct and well defined (and is often most applicable to swans and geese).

7.11.41 The analysis follows the following process:

- Bird flights for which data can be used to model collision risk are identified (i.e. those within the flight risk area).
- The length of time that each flight occurred within the collision risk volume¹⁵ is determined.
- The proportion of time that each species might occupy the collision risk volume in a year period is calculated.

7.11.42 Worked collision risk analysis for target bird species is contained in **Technical Appendix 7.4: Collision Risk Modelling**.

7.12 Limitations to Methods

7.12.1 There were no limitations to the survey work.

7.13 Baseline

Statutory Designated Sites

7.13.1 The desk study identified 20 statutory designated sites of nature conservation interest within 10 km of the Site. One of these sites, Llandegfedd Reservoir SSSI is notified for its ornithological interest. There are no SPAs or Ramsar sites within 10 km of the Site. The location of Llandegfedd Reservoir SSSI is presented on **Figure 7.3: Statutory Sites within 10 km of Site Boundary**. The remaining designated sites are considered in Chapter 6: Ecology.

7.13.2 SSSIs are of **National Importance**. This reflects their role in providing the best examples of the UK's flora, fauna, or geological or physiographical features (notified under the Wildlife and Countryside Act (1981) as amended). The River Usk (Lower Usk) / Afon Wysg (Wysg Isaf) and Llandegfedd Reservoir SSSIs are therefore of importance at the **National** level.

7.13.3 Llandegfedd Reservoir SSSI is located 4.7 km from the site and is notified for its winter wildfowl assemblage, with large numbers of wigeon *Mareca penelope*, pochard *Aythya ferina* and mallard *Anas platyrhynchos*. Other notable species include goosander *Mergus merganser*, teal *Anas crecca* and goldeneye *Bucephala clangula*.

7.13.4 No parts of the proposed wind farm fall within the boundaries of any of the SSSIs, so no habitat loss from these sites is anticipated. Indirect impacts on the habitats within the SSSIs are also unlikely due to the separation distance from the nearest part of the proposed wind farm. None of the wintering waterfowl species listed on the citation for Llandegfedd Reservoir SSSI were

¹⁵ The volume of the rotor swept area.

recorded overflying the Site or surrounding land during the survey work (April 2020 - September 2022).

- 7.13.5 The Site is not located directly between Llandegfedd Reservoir and the coast, or between Llandegfedd Reservoir and any significant reservoirs or other freshwater bodies. A flight line passes within 1 km of the site, to the north, along the Cwm y Glyn valley. This is supported by observations during the two hours before sunset (during VP survey work) of herring and lesser black-backed gulls passing east along the valley and a lack of gulls and other waterfowl over the Site.
- 7.13.6 Given that the wintering waterfowl species listed on the citation were not recorded during the survey work, and that the only waterfowl flight corridor recorded locally is off-site (to the north), the proposed wind farm would not result in disturbance, displacement or collision of SSSI birds during the construction or operational phases (as no birds are likely to be present on the land within the site). It is concluded that construction and operational phase effects on Llandegfedd Reservoir SSSI are **negligible**, and they are **scoped out** of further assessment.
- 7.13.7 No effects on the Severn Estuary SPA (which is located outwith the Zol) are likely to occur as a result of the proposed development.
- 7.13.8 The Natura 2000 Data form for the Severn Estuary SPA indicates it is classified for its populations of wintering Bewick's swan *Cygnus columbianus bewickii*, gadwall *Mareca (Anas) strepera*, Russian white-fronted goose *Anser albifrons albifrons*, dunlin *Calidris alpina alpina*, shelduck *Tadorna tadorna* and redshank *Tringa totanus*. The SPA also has an assemblage qualification, but the Data Form does not list out any other species that may form part of this assemblage.
- 7.13.9 Survey to inform the planning application for the development has taken place over several years. None of the Severn Estuary SPA species have been recorded overflying or using the area. The development area does not comprise typical habitat used by these species over winter (which collectively comprise freshwater grazing marshes, freshwater pools, salt marsh, estuaries and coastal fields). The development area is also unlikely to have any other function to these species due to its distance from the Severn Estuary SPA (approximately 12.5 km); e.g. it is unlikely to be used as a high tide roost (when estuarine areas are unavailable due to inundation) as there are likely to be more suitable habitats for roosting local to feeding areas. It is also widely known that some of the SPA species have a localised distribution within the Severn Estuary, with the swans and geese occurring around Slimbridge, Gloucestershire, an area over 45 km from the Site.
- 7.13.10 It is possible to infer the species that may make up the Severn SPA assemblage from information contained within the Severn Estuary Ramsar Site description. This lists a number of additional species that occur within the Estuary in the breeding season, during winter or passage periods in nationally important numbers, and notes that some of these may meet the criteria for inclusion as interest features when any future change to the (Ramsar) site are implemented. These species include passage ringed plover *Charadrius hiaticula*, wintering ducks such as teal *Anas crecca* and pintail *Anas acuta*, passage curlew *Numenius arquata*, breeding herring gull *Larus argentatus* and lesser black-backed gull *Larus fuscus graellsii*, and a range of other waterfowl.
- 7.13.11 With the exception of the two gull species, these birds were not recorded during bird survey work. It was noted that flights of the two gull species over the development area occurred rarely, as the species tended to commute through the local landscape by following the lines of the valleys.
- 7.13.12 It is therefore concluded that there is no functional linkage between the development area and the SPA, and that no likely impacts on SPA species are likely to occur.

Non-statutory Designated Sites

- 7.13.13 SINC's (Sites of Importance for Nature Conservation) are of **County Importance**. SINC's within and adjacent to the proposed development are mostly designated for their habitat interest, and are primarily considered in Chapter 6: Ecology. Three of these sites are designated in part for their ornithological interest, and concern species of relevance to the proposed development:

- Mynydd Maen, east of Newbridge SINC covers most of the Site (and a large area of the adjacent common land), and the site's citation notes its potential to support breeding waders such as curlew *Numenius arquata* and lapwing *Vanellus vanellus*.
- Tirpentwys Local Nature Reserve (LNR) SINC is located approximately 900 m north of the Site, and is designated in part for a significant species assemblage which includes lapwing.
- Penyrheol Meadows SINC is located approximately 1.5 km east of the Site, and is designated in part for a significant species assemblage which includes foraging barn owl *Tyto alba*.

7.13.14 Substantial survey has been completed in relation to the proposed wind farm development. Curlew, lapwing and barn owl have not been recorded on or within 2 km of the Site during the course of the work. Given this, it is concluded that construction and operational phase effects on the ornithological receptors of these non-statutory designated sites are **negligible**, and they are **scoped out** of further assessment.

7.14 Species

Osprey

Flight Activity

7.14.1 An osprey *Pandion haliaetus* was recorded flying north (apparently migrating) off-site (east of the Site boundary), over Cwm Lickey and Twyn Calch, on 28 March 2022. The bird was within the viewshed for 1 minute and 15 seconds, the first 30 seconds of which was at collision risk height as the bird circled, before rising above collision risk height for the remaining 45 seconds of the flight. The bird remained in view for a further 9 minutes (though outside of the viewshed) continuing to thermal and soar northwards.

Breeding Activity

7.14.2 No breeding activity by osprey was recorded during the survey work.

7.14.3 Full details of this osprey flight are provided within the relevant baseline ornithology report in **Technical Appendix 7.1b: Confidential Year 2 Ornithology Report 2021/22**, and the osprey flight is shown on **Figure 7** of that report.

Desk Study Records

7.14.4 SEWBRc returned one record of osprey within 2 km of the Site, which involved a presumed passage bird which flew west over Pontypool (off-Site, to the north-east) on 06 April 2015. No records of osprey were returned by the NBN Gateway within 2 km of the Site.

Evaluation

7.14.5 Osprey is amber-listed in Wales (Johnstone *et al.*, 2022) and the UK (Stanbury *et al.*, 2021). It is a rare breeding species in Wales, with a small but increasing number of breeding pairs in north and mid Wales (WOS, 2021). In Gwent¹⁶, the species is a scarce but increasingly regular passage migrant (Venables *et al.*, 2008). One flight was recorded during the surveys, which involved a bird flying in a northerly direction to the east of the Site during the spring passage period. There are no habitats suitable for foraging or nesting osprey on or near the Site.

7.14.6 Given the very low levels of activity recorded during the survey work, the lack of any activity over the Site, and absence of any evidence of breeding locally, it is concluded that the Site is not within a regularly used area of any breeding birds and this was an individual on passage. The Site is of **negligible** importance for osprey, and this species is **scoped out** of further assessment.

¹⁶ Gwent is a former county SE Wales, which was replaced in 1996 by the County Boroughs of Blaenau Gwent, Caerphilly, Monmouthshire, Newport and Torfaen. The former county of Gwent continues to be used for bird recording purposes.

Red kite

Flight Activity

- 7.14.7 A total of 129 red kite flights were recorded during the VP surveys. These occurred as follows:
- 22 flights during the 2020 breeding season surveys.
 - 16 flights during the winter 2020/2021 surveys.
 - 57 flights during the 2021 breeding season surveys.
 - 24 flights during the winter 2021/2022 surveys.
 - 10 flights during the August-September 2022 surveys.
- 7.14.8 These flights resulted in a total flight time of 5 hours, 29 minutes and 55 seconds (of which 3 hours, 15 minutes and 15 seconds was spent at collision risk height). Flight time occurred as follows:
- 22 minutes and 30 seconds (of which 10 minutes and 30 seconds were spent at collision risk height) during the 2020 breeding season surveys.
 - 24 minutes and 30 seconds (of which 12 minutes and 30 seconds was spent at collision risk height) during the winter 2020/2021 surveys.
 - 2 hours, 36 minutes and 45 seconds (of which 1 hour and 32 minutes was spent at collision risk height) during the 2021 breeding season surveys.
 - 1 hour, 34 minutes and 35 seconds (of which 57 minutes and 40 seconds was spent at collision risk height) during the winter 2021/2022 surveys.
 - 31 minutes and 35 seconds (of which 22 minutes and 35 seconds was spent at collision risk height) during the August-September 2022 surveys.
- 7.14.9 Most activity involved singletons (six flights involved two birds together and one involved three). A high proportion of activity involved birds moving through the airspace directionally. Directional flights often included some elements of foraging (birds doubling back, or circling close to ground level before continuing), but few birds lingered over the Site, and birds were rarely observed landing on-Site. Activity was widely distributed over the Site, with higher levels of activity recorded at Mynydd Llwyd in the northern part of the Site, and between Blaen Bran and the Gwyddon Valley in the southern part of the Site.

Breeding Activity

- 7.14.10 No breeding activity by red kite was recorded during the survey work.
- 7.14.11 Full details of red kite activity during each season are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b Confidential Baseline Reports**, and all red kite flight lines are shown on the relevant figures within those reports.

Desk Study Records

- 7.14.12 SEWBRc returned 17 records of red kite from within 2 km of the Site, between 2005 and 2021. These involved one to two birds, and did not include any records of confirmed breeding. No records of red kite were returned by the NBN Gateway within 2 km of the Site.

Evaluation

- 7.14.13 The conservation status of red kite was amended from amber-listed in the UK to green-listed in 2015 on account of its rapidly expanding range (Eaton *et al.*, 2015)¹⁷, but the species remains on the amber-list in Wales (Johnstone *et al.*, 2022). The species' population is in ongoing recovery following historic decline (Hereward *et al.*, 2024), the population in the UK has increased by 144 % in the ten years 2011 to 2021, and the population in Wales has increased by 76 % over the same period (Heywood *et al.*, 2023). The species' breeding range now

¹⁷ The species is recolonising its former breeding range, following significant historical decline during the 18th and 19th centuries (WOS, 2021).

includes much of central and south Wales, and the Welsh population is now likely to be well in excess of 2,000 pairs¹⁸ and was estimated at 2500 pairs in 2019 (Welsh Kite Trust, 2020a). In Gwent, the species is a scarce visitor and rare but increasing breeding resident species (Gwent Ornithological Society (GOS), 2019). Eleven breeding attempts were recorded in the county during 2018 (GOS, 2018), including one in Caerphilly County Borough¹⁹, and four at unnamed locations in Torfaen / Blaenau Gwent County Boroughs. Six breeding attempts were recorded in Gwent during 2019, including two near Pontypool (GOS, 2019). During the surveys, red kite were frequently recorded overflying the Site, and a high proportion of activity was at collision risk height. No red kite nests were located on or within 2 km of the Site during either year of survey.

- 7.14.14 Given the rapidly expanding populations throughout both mid and south Wales, and the lack of evidence of breeding within 2 km of the Site, it is unlikely that the importance of the site for red kite will extend beyond the **County** level. Impacts on red kite are **scoped in** to further assessment.

Marsh harrier

Flight Activity

- 7.14.15 One marsh harrier *Circus aeruginosus* flight was recorded during the August 2022 - September 2022 VP surveys; on 14 September 2022. The flight lasted for 3 minutes and 50 seconds, all of which was spent at collision risk height. The flight involved a juvenile bird soaring south-west over the central part of the Site.

Breeding Activity

- 7.14.16 No breeding activity by marsh harrier was recorded during the survey work.

- 7.14.17 Full details of the marsh harrier registration are provided within the relevant baseline ornithology report in **Technical Appendix 7.1b: Confidential Year 2 Ornithology Report 2021/22**, and the marsh harrier flight is shown on **Figure 9** of that report.

Desk Study Records

- 7.14.18 No records of marsh harrier were returned by SEWBRc or the NBN Gateway, within 2 km of the Site.

Evaluation

- 7.14.19 Marsh harrier is amber-listed in the UK (Stanbury *et al.*, 2021) and Wales (Johnstone *et al.*, 2022), where it is a rare breeding species, mainly at coastal sites, though a pair held territory at Sennybridge Ranges (approximately 45 km north-west of the proposed wind farm), in 2016 (Welsh Ornithological Society (WOS), 2021). Marsh harrier has bred in Gwent in each year since 2016, at Newport Wetlands (approximately 15 km south-south-east of the proposed wind farm) (GOS, 2016; GOS, 2017; GOS, 2018; GOS, 2019). The species is rare inland in Gwent, with one record away from the coastal levels during the period 2015-2019 (at Mynydd Llangatwg in 2018 (GOS, 2018)). The species typically breeds in extensive reedbeds and wetlands, or in cereal crops adjacent to those habitats (Gilbert *et al.*, 1998; Hardey *et al.*, 2013). There are no habitats suitable for nesting marsh harrier on or near to the Site.
- 7.14.20 Given the very low levels of activity over the Site by marsh harrier and absence of any evidence of breeding locally, it is concluded that the Site is not within a regularly used area of any breeding birds. The Site is of **negligible** importance for marsh harrier, and this species is **scoped out** of further assessment.

¹⁸ Kelvin Jones (Wales Development Officer at the British Trust for Ornithology; pers. comms.) has suggested that the population is now over 2000 pairs.

¹⁹ In the Sirhowy Valley, more than 5 km south-west of the Site.

Hen harrier

Flight Activity

- 7.14.21 A total of six hen harrier *Circus cyaneus* flights were recorded during the VP surveys. These occurred as follows:
- Five flights during the winter 2020/2021 surveys.
 - One flight during the winter 2021/2022 surveys.
- 7.14.22 These flights resulted in a total flight time of 9 minutes and 45 seconds (none of which was at collision risk height). Flight time occurred as follows:
- 9 minutes and 15 seconds (all of which was below collision risk height).
 - 30 seconds (all of which was above collision risk height).
- 7.14.23 All flights during winter 2020/2021 were made by single birds flying low over heathland in the north and central parts of the Site, over Cwm Lickey, Twyn Calch and Mynydd Maen. Four of these flights concerned adult male birds, the other a ringtail²⁰ bird. The flight during winter 2021/2022 involved an adult male bird in commuting flight, heading east at height over the Cwm y Glyn Valley, north of the Site boundary.
- 7.14.24 An adult male hen harrier was recorded outside of (between) timed watches, at 13:43 on 28 March 2022. The bird flew north past the eastern edge of the Site, over Blaen Blan and Mynydd Twyn-glas. As this flight was outside of timed VP survey (and was not over the Site), it is not included in the collision risk modelling.

Breeding Activity

- 7.14.25 No breeding activity by hen harrier was recorded during the survey work.
- 7.14.26 Full details of hen harrier activity during each season are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b: Confidential Baseline Reports**, and all hen harrier flight lines are shown on the relevant figures within those reports.

Desk Study Records

- 7.14.27 SEWBRc returned five records of hen harrier within 2 km of the Site; three involved singletons on-site in September 2012, September 2018 and December 2019. The others involved singletons over pasture to the north of Cwm y Glyn (approximately 930 m north of the Site). No records of hen harrier were returned by the NBN Gateway within 2 km of the Site.

Evaluation

- 7.14.28 Hen harrier is included in Section 7 of the Environment (Wales) Act (2016) and is red-listed in Wales (Johnstone *et al.*, 2022) and the UK (Stanbury *et al.*, 2021). Hen harrier is a scarce breeding species in mid and north Wales (WOS, 2021), and is a scarce winter visitor and passage migrant in Gwent (Venables *et al.*, 2008). The recommended avoidance rate for hen harrier at wind farms is 99 %, to reflect its low, quartering flight habit (Whitfield and Madders, 2006), and the incidence of collisions with wind turbines in Europe is low (Dürr, 2022²¹). In spite of the high avoidance of turbines, Goodship & Furness (2022) suggest that operational wind farms typically do not appear to displace foraging harriers through disturbance (and note that hen harriers will nest at 200 - 300 m from an operational wind turbine or closer (referencing Madders & Whitfield, 2006)). Madders & Whitfield also indicate that foraging hen harrier have a low sensitivity to disturbance and if displacement of foraging occurs then it would likely be limited to within 100 m of wind turbines if it occurs at all. Robson (2011; 2012) reported no change in the use of suitable habitat by hen harrier following wind farm construction in Argyll, Scotland, with nesting recorded within 200 m of operational turbines. Monitoring at Edinbane wind farm on the Isle of Mull found no effects on breeding numbers or distances of nests to turbines (Haworth Conservation, 2013). The timing of observations

²⁰ Adult female and juvenile birds (of both sexes) are referred to as ‘ringtails’ and are difficult to separate without very good views.

²¹ Available at lfu.brandenburg.de. Most recently updated on 17 June 2022. Visited on June 2023.

suggest that the Site is used occasionally by hen harrier during spring and autumn passage. There is no habitat present on-Site, or in the wider 2 km perimeter area, that is suitable to support breeding hen harrier (due to human disturbance, topography, land use and grazing pressure in some areas).

7.14.29 Given the lack of evidence of local breeding and the low levels of activity (which will not generate a collision risk when modelled), the Site is considered to be of **negligible** value for hen harrier, and this species is **scoped out** of further assessment.

Goshawk

Flight Activity

7.14.30 A total of 35 goshawk flights were recorded during the VP survey work. These occurred as follows:

- Six flights during the 2020 breeding season surveys.
- Ten flights during the winter 2021/2022 surveys.
- 11 flights during the 2021 breeding season surveys.
- Five flights during the winter 2021/2022 surveys.
- Three flights during the August-September 2022 surveys.

7.14.31 These flights resulted in a total flight time of 1 hour, 37 minutes and 45 seconds (1 hour and 15 seconds of which was at collision risk height). Flight time occurred as follows:

- 39 minutes (of which 18 minutes and 45 seconds was at collision risk height) during the 2020 breeding season.
- 23 minutes and 45 seconds (of which 16 minutes was at collision risk height) during the 2020/2021 winter surveys.
- 18 minutes and 45 seconds (of which 12 minutes and 30 seconds was at collision risk height) during the 2021 breeding season.
- 11 minutes and 40 seconds (of which 9 minutes and 10 seconds was at collision risk height) during the 2021/2022 winter surveys.
- 4 minutes and 35 seconds (of which 3 minutes and 50 seconds was at collision risk height) during the August-September 2022 surveys.

7.14.32 All flights involved singletons. A high proportion of activity involved soaring flights over the north-eastern part of the Gwyddon Valley (to the south-east of the Site), and birds were recorded flying into the plantation on several occasions. Flights over the Site were spread more widely and typically involving more direct hunting or commuting flights.

Breeding Activity

7.14.33 Evidence of breeding activity was recorded in mature conifer plantation more than 1 km to the south-west of the Site. It was concluded that a territory was present at this location in 2021.

7.14.34 Full details of goshawk activity during each season are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b: Confidential Baseline Reports**, and all goshawk flight lines are shown on the relevant figures within those reports. A more detailed summary of breeding activity (including a more precise territory location) is provided in **Technical Appendix 7.2: Confidential Schedule 1 Breeding Information** and the location of the goshawk territory is shown on confidential **Figure 7.4**.

Desk Study Records

7.14.35 SEWBRc returned 25 goshawk records from within 2 km of the Site, between 2007 and 2019. These involved one to four birds, and included one record of breeding. The NBN Gateway did not return any goshawk records within 2 km of the Site.

Evaluation

- 7.14.36 Goshawk is amber-listed in Wales, where it is an introduced and increasing breeding resident (WOS, 2021). The latest Welsh population estimate is 310 pairs (in 2018) (Hughes *et al.*, 2020). The species is a resident breeding species in Gwent, where an estimated 50 pairs breed (Venables *et al.*, 2008). Goshawk breed in dense, mature woodland areas, only leaving regularly during periods of territorial display between early-February and mid-April (Hardey *et al.*, 2013); although they will hunt grouse and lagomorphs over open areas throughout the year (Marquiss & Newton, 1982).
- 7.14.37 There is no suitable breeding habitat for goshawk on-Site. The Site is suitable for hunting goshawk, as it supports red grouse *Lagopus lagopus scotica*. However, these are at low density on the Site, when compared with prey quarry (such as wood pigeons *Columba palumbus* and other medium sized passerines and near-passerines) within the adjacent plantation. The findings of the VP survey work showed that goshawk do not use the airspace over the Site on a regular basis (and are therefore unlikely to collide with the proposed wind farm), as evidenced by the low encounter rate of this species during the survey work. The open moorland and pasture habitats typifying the site are unlikely to be of importance to goshawk at any geographic level.
- 7.14.38 The plantation adjacent to the Site in the Gwyddon Valley (to the south-west), the Cwmcarn Valley (to the south) and the Cwm y Glyn Valley (to the north), is suitable for breeding goshawk, and is partially located within 1 km of the Site. The findings of the survey work suggested that a territory was centred on plantation more than 1 km from the Site. This adjacent habitat and its immediate surroundings (which include sections of the north, south-west and west of the Site) are therefore likely to be important at the Local level for this species. Impacts on goshawk are **scoped in** to further assessment.

Kestrel

Flight Activity

- 7.14.39 A total of 420 kestrel flights were recorded during the VP surveys. These occurred as follows:
- 113 flights during the 2020 breeding season surveys.
 - 69 flights during the winter 2021/2022 surveys.
 - 94 flights during the 2021 breeding season surveys.
 - 21 flights during the winter 2021/2022 surveys.
 - 123 flights during the August-September 2022 surveys.
- 7.14.40 These flights resulted in a total flight time of 17 hours, 14 minutes and 10 seconds (9 hours, 56 minutes and 45 seconds of which was at collision risk height). Flight time occurred as follows:
- 4 hours, 43 minutes and 55 seconds (of which 2 hours, 59 minutes and 15 seconds was at collision risk height) during the 2020 breeding season.
 - 2 hours and 38 minutes (of which 1 hour and 15 minutes was at collision risk height) during the 2020/2021 winter surveys.
 - 3 hours and 40 minutes (of which 2 hours and 6 minutes was at collision risk height) during the 2021 breeding season.
 - 1 hour, 7 minutes and 40 seconds (of which 42 minutes was at collision risk height) during the 2021/2022 winter surveys.
 - 5 hours, 4 minutes and 35 seconds (of which 2 hours, 54 minutes and 30 seconds was at collision risk height) during the August-September 2022 surveys.
- 7.14.41 Most activity involved singletons (29 flights involved two birds, seven involved three), and most flights involved hunting (hovering) birds. Flights were distributed widely over moorland habitats within the VP viewsheds, with the highest concentrations of activity over Mynydd Llwyd and Twyn Calch, and over Mynydd Twyn-glas.

7.14.42 In addition to adult male and female birds, at least two juveniles were recorded during late summer 2021, and at least three juveniles were recorded during late summer and autumn 2022.

Breeding Activity

7.14.43 No active kestrel nests were located during either year of survey, however, the regularity of kestrel observations and the presence of juvenile birds during both breeding seasons suggest that relatively local breeding occurred in both years.

7.14.44 Full details of kestrel activity during each season are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b: Confidential Baseline Reports**, and all kestrel flight lines are shown on the relevant figures within those reports.

Desk Study Records

7.14.45 SEWBRc returned 25 kestrel records from within 2 km of the Site, between 1987 and 2020. These involved one to two birds, and included records of breeding in a quarry approximately 950 m to the north of the Site, between 1999 and 2005.

7.14.46 The NBN Gateway²² returned 48 records of kestrel within 2 km of the Site, between 1968 and 2022.

Evaluation

7.14.47 Kestrel is included in Section 7 of the Environment (Wales) Act (2016) and is red-listed in Wales (Johnstone *et al.*, 2022) and amber-listed in the UK (Stanbury *et al.*, 2021). In the ten years between 2011 and 2021, there has been a 19 % decline at the UK level (Heywood *et al.*, 2023), and declines in recent years have been greatest in the west (WOS, 2021). In Gwent, a decline of 21 % was noted between the County Atlases of 1981-1985 and 1998-2003. This decline has mostly occurred in the north-east of the county, and the number of records from the coastal levels and in the hills north-west of Pontypool appear to have remained stable or even increased (Venables *et al.*, 2008). In 2008, Venables *et al.* estimated that the Gwent population was in the range of 90-200 pairs. Given the subsequent declines recorded in the Welsh population of the species, that kestrel was still widely distributed within Gwent (68 % of tetrads were occupied during the second Gwent Atlas (1998-2003)), and that the distribution of kestrel within Gwent does not show a particularly high population density in Caerphilly or Torfaen, it is likely that the population of kestrel within those County Boroughs is substantially less than 100 pairs.

7.14.48 The activity throughout both breeding seasons, suggests that the Site is within the territory of a locally breeding pair of kestrel. Given this, and the high activity levels at the Site recorded during the survey work, the suitability of habitats on-Site and in the local area to support breeding kestrel, it is considered that the Site is of importance for kestrel at the **County** level. Impacts on kestrel are **scoped in** to further assessment.

Hobby

Flight Activity

7.14.49 A total of 18 hobby flights was recorded during the VP surveys. These occurred as follows:

- Four flights during the 2020 breeding season surveys.
- 12 flights during the 2021 breeding season surveys.
- Two flights during the August-September 2022 surveys.

7.14.50 These flights resulted in a total flight time of 31 minutes and 15 seconds (16 minutes and 30 seconds of which was at collision risk height). Flight time occurred as follows:

- 13 minutes (of which 9 minutes and 30 seconds was at collision risk height) during the 2020 breeding season.

²² The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

- 16 minutes and 45 seconds (of which 5 minutes and 30 seconds was at collision risk height) during the 2021 breeding season.
- 1 minute and 30 seconds (all of which was at collision risk height) during the August-September 2022 surveys.

7.14.51 All but one hobby flights involved singletons, on 25 June 2021, three birds were observed concurrently. Activity was widely distributed over the Site and surrounding land, and involved both soaring and low, direct flights hunting invertebrates and passerines over the Site.

7.14.52 No hobby flights were recorded during the winter VP survey work. On occasion, migrants can be recorded up to and including October.

Breeding Activity

7.14.53 No breeding activity by hobby was recorded during the survey work.

7.14.54 Full details of hobby activity during each season are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b: Confidential Baseline Reports**, and all hobby flight lines are shown on the relevant figures within those reports.

Desk Study Records

7.14.55 Five hobby records were returned by SEWBReC, all involving singletons dated between 2007 and 2020. These did not include any records of breeding attempts.

7.14.56 The NBN Gateway²³ returned eight records of hobby within 2 km of the Site, between 2007 and 2016.

Evaluation

7.14.57 Hobby is a scarce migratory breeding species in the UK and Wales. The UK breeding population was estimated at 2,050 pairs in 2016 (Woodward *et al.*, 2020). The UK breeding population has declined by 11 % over the 10-year period from 2011 to 2021 (Heywood *et al.*, 2023). In Wales, most breeding records are from the south-east. Gwent is considered to be the Welsh stronghold for the species with an estimated 20-25 breeding pairs, most of which were located in farmland along the Usk Valley and in the north-east of the county during the period 1998-2003 (Venables *et al.*, 2008). During 2018, breeding was suggested near Pontypool by the regularity of sightings in that area, and during 2019, a nest site “near Pontypool” failed with two chicks (GOS, 2018; GOS 2019). Hobby flights were recorded intermittently at the Site during the breeding seasons in 2020 and 2021 and during the August - September 2022 work. No breeding activity was recorded for this species.

7.14.58 Given the lack of evidence of breeding within 2 km of the Site, and the low levels of flight activity it is unlikely that the importance of the Site for hobby will extend beyond the **Local** level. Impacts on hobby are **scoped in** to further assessment.

Peregrine

Flight Activity

7.14.59 A total of 34 peregrine flights were recorded during the VP surveys. These occurred as follows:

- Eight flights during the 2020 breeding season surveys.
- 14 flights during the winter 2021/2022 surveys.
- Eight flights during the 2021 breeding season surveys.
- Four flights during the winter 2021/2022 surveys.

7.14.60 These flights resulted in a total flight time of 1 hour, 10 minutes and 45 seconds (42 minutes and 5 seconds of which was at collision risk height). Flight time occurred as follows:

- 28 minutes and 5 seconds (of which 24 minutes and 5 seconds was at collision risk height) during the 2020 breeding season.

²³ The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

- 25 minutes (of which 9 minutes was at collision risk height) during the 2020/2021 winter surveys.
- 11 minutes and 45 seconds (of which 8 minutes 15 seconds was at collision risk height) during the 2021 breeding season.
- 5 minutes and 55 seconds (of which 45 seconds was at collision risk height) during the 2021/2022 winter surveys.

7.14.61 Most flights involved singletons (two flights involved two birds together), and concerned commuting and hunting flights. Activity was concentrated at the northern and eastern boundaries (and off-site to the north-east) of the Site near Mynydd Llwyd, and around the masts at the centre of the Site.

Breeding Activity

7.14.62 A peregrine eyrie was located approximately 470 m from the Site boundary during 2020. No evidence of occupancy was recorded at that nest site during 2021.

7.14.63 Activity recorded at a different location more than 1 km from the Site during early 2021 suggested that a failed breeding attempt may have occurred .

7.14.64 Full details of peregrine activity during each season are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b: Confidential Baseline Reports**, and all peregrine flight lines are shown on the relevant figures within those reports. A more detailed summary of breeding activity (including more precise territory locations) is provided in **Technical Appendix 7.2: Confidential Schedule 1 Breeding Information**, and the location of the peregrine nest site recorded during 2020 is shown on confidential **Figure 7.4**.

Desk Study Records

7.14.65 SEWBRc returned 26 peregrine records from within 2 km of the Site between 2000 and 2021. These involved one to two birds. Nine records involved breeding attempts at five different sites between 2000 and 2017.

7.14.66 The NBN Gateway²⁴ returned 60 records of peregrine within 2 km of the Site, between 1988 and 2021.

Evaluation

7.14.67 The UK population of peregrine increased by 22 % over the twelve years between 2002 and 2014 (Wilson *et al.*, 2018), and more than quadrupled over the 43 years 1971 to 2014. Peregrine is an uncommon resident breeding species in Wales (WOS, 2022), with a stable breeding population estimated at 280 pairs in 2014 (Wilson *et al.*, 2018). The species is a scarce or uncommon resident breeding species in Gwent (Venables *et al.*, 2008), where the population is estimated to be at least 15 pairs, and most known nest sites are located in the west and north-west of the county (Venables *et al.*, 2008). Breeding occurred off-Site (approximately 470 m from the Site boundary) during 2020. No breeding attempt was recorded locally during 2021, though the species was recorded occasionally throughout the survey work.

7.14.68 The survey work suggests that locally breeding birds do not routinely forage over the site (eight flights were recorded during the 2020 breeding season). Given that relatively low levels of activity were recorded over the site at collision risk height throughout the survey work, it is considered that the Site is of importance for peregrine at the **Local** level. Impacts on peregrine are **scoped in** to further assessment.

Merlin

Flight Activity

7.14.69 Four merlin *Falco columbarius* flights were recorded during the VP surveys in winter 2021/2022, resulting in an approximate total flight time of 5 minutes and 10 seconds. Of the

²⁴ The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

total flight time, 3 minutes and 45 seconds were spent at collision risk height and the remainder below collision risk height.

- 7.14.70 The flights all involved the same bird and occurred on 12 January 2022, during the period 10:00-10:45. The bird flew north and landed on a pylon, then made several hunting flights (pursuing skylarks) before resettling on a pylon. At 10:45 the bird was flushed by a cyclist and flew north towards Mynydd Lwyd.

Breeding Activity

- 7.14.71 No breeding activity by merlin was recorded during the survey work.
- 7.14.72 Full details of the merlin activity are provided within the relevant baseline ornithology report in **Technical Appendix 7.1b: Confidential Year 2 Ornithology Report 2021/22**, and the merlin flights are shown on **Figure 7** of that report.

Desk Study Records

- 7.14.73 SEWBRc returned three records of merlin within 2 km of the Site, during the period 2008 to 2017. None of the records concerned breeding, two were recorded during the non-breeding season (one in February, the other in October), the other was recorded during mid-April, and is likely to have involved a bird on passage. The NBN gateway returned 12 records of merlin within 2 km of the Site, dated between 1974 and 2017.

Evaluation

- 7.14.74 Merlin is included in Section 7 of the Environment (Wales) Act (2016) and is red-listed in the UK (Stanbury *et al.*, 2021) and in Wales (Johnstone *et al.*, 2022). The Merlin is a scarce breeding resident and uncommon passage and winter migrant in Wales (WOS, 2021) and Gwent (Venables *et al.*, 2008). The Welsh population is estimated at 46 pairs (WOS, 2021), two or three pairs are typically recorded each year in Gwent (Venables *et al.*, 2008), though none are recorded in some years (including 2019 (GOS, 2019)).
- 7.14.75 Given the low levels of activity at the Site by one merlin over the two years of survey, it is concluded that the Site is not within a regularly used area of any breeding or wintering birds. The Site is of **negligible** importance for merlin, and this species is **scoped out** of further assessment.

Kittiwake

Flight Activity

- 7.14.76 A first winter kittiwake *Rissa tridactyla* was recorded in flight during the winter VP survey on 08 February 2021. A total flight time of 30 seconds was recorded, 15 seconds of which was at collision risk height. The bird circled up from Cwm Lickey and then flew directly south-west over the Site.

Breeding Activity

- 7.14.77 Kittiwake breeds on marine cliffs and, occasionally, on coastal structures such as piers and buildings and forages at sea. There is no suitable breeding habitat on or within 2 km of the Site.
- 7.14.78 Full details of the kittiwake flight are provided within the relevant baseline ornithology report in **Technical Appendix 7.1a: Confidential Year 1 Ornithology Report 2020/21**, and the kittiwake flight is shown on **Figure 13** of that report.

Desk Study Records

- 7.14.79 No records of kittiwake were returned by SEWBRc or the NBN Gateway, within 2 km of the Site.

Evaluation

- 7.14.80 Kittiwake is red-listed in the UK (Stanbury *et al.*, 2021) and in Wales (Johnstone *et al.*, 2022) due to significant declines in the species populations in recent years. Kittiwake is a colonial breeding species at numerous sites on the Welsh coast and is pelagic outside of the breeding season. The species does not breed in Gwent, where it is an uncommon visitor, most

frequently recorded at the coast in winter and usually occurs as a result of adverse weather (Venables *et al.*, 2008). Inland records in the county are infrequent, 25 had occurred up to 2008 (10 of which were at Llandegfedd Reservoir) (Venables *et al.*, 2008), and one occurred during the period 2015-2019 inclusive (at Llandegfedd Reservoir, in 2016) (GOS, 2015; GOS, 2016; GOS, 2017; GOS, 2018; GOS, 2019).

- 7.14.81 This record was unexpected and flights of this species are likely to occur exceptionally rarely over the Site. Given this, and that none of the flight recorded over the Site were at collision risk height, the Site is of **negligible** importance for kittiwake, and the species is **scoped out** of further assessment.

Golden plover

Flight Activity

- 7.14.82 One golden plover *Pluvialis apricaria* flight was recorded during the winter VP surveys. On 10 December 2021 a flock of between 30 and 32 birds²⁵ flew over the Site moorland close to the centre of the Site. The flight lasted for 30 seconds and was below collision risk height throughout.

Breeding Activity

- 7.14.83 No breeding activity by golden plover was recorded during the survey work. The Site is located well outside of the known breeding range of golden plover in Wales.
- 7.14.84 Full details of the golden plover flight are provided within the relevant baseline ornithology report in **Technical Appendix 7.1b: Confidential Year 2 Ornithology Report 2021/22**, and the golden plover flight is shown on **Figure 10** of that report.

Desk Study Records

- 7.14.85 SEWBRc returned one record of golden plover within 2 km of the Site. The record involved a singleton at the site in October 2016. The NBN Gateway²⁶ returned two records within 2 km of the Site, one dated October 2014, the other October 2016.

Evaluation

- 7.14.86 Golden Plover is included in Section 7 of the Environment (Wales) Act (2016) and is red-listed in Wales (Johnstone *et al.*, 2022) as a result of severe breeding population and range decline (WOS, 2021). Wintering golden plover are recorded in nationally and internationally important numbers in Wales (WOS, 2021), primarily at coastal sites, though birds also winter at inland (upland) sites in Wales. The species no longer breeds in the Gwent uplands (the last record was likely to have occurred in 1985), but remains a winter visitor and passage migrant in small to moderate numbers at the coast. Inland the species is scarce in Gwent, and there are no frequently used wintering sites away from the coast.
- 7.14.87 Given the very low levels of activity over the Site by golden plover, none of which was at collision risk height, it is concluded that the Site is not within a regularly used area of any breeding or wintering birds. The Site is of **negligible** importance for golden plover, and this species is **scoped out** of further assessment.

Common snipe

Flight Activity

- 7.14.88 Common snipe *Gallinago gallinago* were flushed from the moorland during January 2021 (one bird), April 2021 (two birds), October 2021 (one bird), November 2021 (one bird), January 2022 (one bird) and March 2022 (two birds). On 29 September 2022, three common snipe flew north and landed on-Site close to the northern boundary, during a VP survey.

Breeding Activity

²⁵ The exact number could not be ascertained by the surveyor, during the brief flight.

²⁶ The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

7.14.89 No evidence of breeding common snipe was recorded on-Site or within 800 m of it during the survey work.

7.14.90 Full details of common snipe activity are provided within the relevant baseline ornithology reports in **Technical Appendices 7.1a and 7.1b: Confidential Baseline Reports**, and all common snipe flight lines are shown on the relevant figures within those reports.

Desk Study Records

7.14.91 SEWBReC returned twenty records of common snipe, between 2004 and 2016, involving 1-4 birds. Where accurate dates are provided, all were during the period November to March. No records concerned breeding. The NBN Gateway²⁷ returned 40 records of common snipe within 2 km of the Site, dated between 1968 and 2019.

Evaluation

7.14.92 Common snipe is amber-listed in the UK (Stanbury *et al.*, 2021) and in Wales (Johnstone *et al.*, 2022). The species is more common in the UK during passage periods and in winter, when the UK population is estimated to be more than one million birds (Birdlife International, 2021). Given the low levels of use of the Site during passage periods and winter (when the species is abundant in the UK) and absence of breeding activity, the species is scoped out of further assessment.

Jack snipe

Flight Activity

7.14.93 Single Jack snipe *Lymnocyptes minimus* were recorded on two dates during the spring passage period (in April 2021), at a pond approximately 1.5 km south-west of the nearest proposed infrastructure. On both occasions, birds were (inadvertently) flushed from the pond margin by the surveyor and made low and short (< 15 m) flights before landing.

Breeding Activity

7.14.94 No breeding activity by jack snipe was recorded during the survey work. Jack snipe do not breed in the UK.

7.14.95 Full details of jack snipe activity are provided within the relevant baseline ornithology report in **Technical Appendix 7.1: Confidential Baseline Reports**.

Desk Study Records

7.14.96 SEWBReC returned two records of jack snipe for the common, both involving singletons, one in 2004 and one in 2014²⁸. The NBN Gateway²⁹ returned three records of jack snipe within 2 km of the Site, dated 12 October 2004, 27 November 2007 and 25 November 2014.

Evaluation

7.14.97 Jack snipe is amber-listed in Wales (Johnstone *et al.*, 2022). The species does not breed in the UK, but occurs on passage and in winter, when the population is estimated to be 100,000 birds (Woodward *et al.*, 2020). Given the low encounter rate during the surveys, and that the species was not recorded on-Site, jack snipe is **scoped out** of further assessment.

Short-eared owl

Flight Activity

7.14.98 Short-eared owl *Asio flammeus* was recorded on-Site during upland wader survey walkover on 07 May 2020 within the northern part of the Site near Mynydd Llwyd. A bird was recorded incidentally by a surveyor walking to a VP location in the same area on 27 May 2020. Both observations involved a roosting bird flushed from heather.

²⁷ The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

²⁸ Accurate dates were not attributed to these records.

²⁹ The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

Breeding Activity

7.14.99 No breeding activity by short-eared owl was recorded during the survey work.

7.14.100 Full details of the short-eared owl activity are provided within the relevant baseline ornithology report in **Technical Appendix 7.1a: Confidential Year 1 Ornithology Report 2020/21**.

Desk Study Records

7.14.101 No records of short-eared owl were returned by SEWBRc within 2 km of the Site. The NBN Gateway³⁰ returned two records of short-eared owl within 2 km of the Site, one from 2008, the other from 2015.

Evaluation

7.14.102 Short-eared owl is amber-listed in the UK (Stanbury *et al.*, 2021) and in Wales (Johnstone *et al.*, 2022), where it is a rare breeding species. The species' breeding and wintering populations and range vary significantly between years. During the period 1990-2019, the minimum number of breeding pairs in Wales ranged between 3 and 20 (WOS, 2021). In Gwent, the species does not breed, and is an uncommon winter visitor and passage migrant. In some years very few are recorded, the number of wintering individuals is typically in the range 4-7 birds, with more than 10 recorded in some exceptional years (Venables *et al.*, 2008). Inland records are infrequent, with most wintering birds recorded at the coast.

7.14.103 Given the very low levels of activity over the Site by short-eared owl, it is concluded that the Site is not within a regularly used area for this species. The Site is of **negligible** importance for short-eared owl, and this species is **scoped out** of further assessment.

Long-eared owl

Flight Activity

7.14.104 No long-eared owl *Asio otus* flights were recorded over the Site during the survey work.

Breeding Activity

7.14.105 A long-eared owl nest with two juveniles was located adjacent to the Site boundary in June 2020. No nest was recorded at that location in 2021.

7.14.106 Full details of the long-eared owl breeding record are provided within the relevant baseline ornithology report in **Technical Appendix 7.1a: Confidential Year 1 Ornithology Report 2020/21**. The location of the long-eared owl nest site recorded during 2020 is shown on confidential **Figure 7.4**.

Desk Study Records

7.14.107 No records of long-eared owl were returned by SEWBRc or the NBN Gateway, within 2 km of the Site.

Evaluation

7.14.108 Long-eared owl is amber-listed in Wales (Johnstone *et al.*, 2022), where it is a scarce resident breeding species, though is likely to be under-recorded (Eaton *et al.*, 2020). The Welsh population is estimated to be approximately 32 pairs, and Gwent is considered to support the largest population of the species of the Welsh recording areas, with 11 pairs recorded during the period 2014-2018 (compared with between zero and eight in all other Welsh counties) (WOS, 2021).

7.14.109 Given the relative scarcity of the species at a county and regional level, the proximity of the nest to the Site, and other areas of suitable breeding habitat to the Site, this adjacent habitat and its immediate surrounds (which include sections of the north, south-west and west of the Site) is therefore likely to be important at the **Regional** level for long-eared owl. Impacts on long-eared owl are **scoped in** to further assessment.

³⁰ The NBN Gateway data are of low resolution and therefore the precise locations of records are not provided.

Nightjar

Breeding and Flight Activity

7.14.110 Maximum counts of 13 and 14 territories during 2020 and 2021 (respectively) were recorded during the nightjar survey work. Churring male birds were noted in all areas of clearfell and regenerating sitka spruce plantation within the survey area. Territories were distributed as follows:

- Five and six territories in 2020 and 2021 (respectively) at Coedcae Watkin Dafydd / Buarth Maen in the Cwm y Glyn Valley, immediately beyond the northern boundary of the Site.
- Two and three in 2020 and 2021 (respectively) territories at Craig y Trwyn in the Gwyddon Valley, to the west of the Site.
- Two and one territories in 2020 and 2021 (respectively) at Craig Hafodowen in the Gwyddon Valley, to the west of the Site.
- Four territories during both 2020 and 2021 at Craig y Glyn in the Cwmcarn Valley, beyond the southern boundary of the Site.

7.14.111 Nightjar were recorded on-Site during the surveys:

- On 19 June 2020, when a male bird was noted sitting on the track in the north-western part of the Site.
- On 15 July 2020, when a bird was flushed from an area of heather within the Site at Mynydd Llwyd.
- On 15 July 2021, when three nightjar foraging flights were recorded, which involved birds flying low³¹ over on-Site moorland, close to the northern boundary.

7.14.112 Full details of the nightjar activity are provided within the relevant baseline ornithology reports in **Technical Appendix 7.1a and 7.1b: Confidential Baseline Reports**, and all nightjar territories recorded during both 2020 and 2021 are shown on **Figure 7.5**.

Desk Study Records

7.14.113 SEWBRc returned 48 nightjar records of 1-7 birds, recorded during the period 1992 to 2023. Five records referred to 1 km-squares which partially overlap the Site. Most other records (36) were located within the Gwyddon Valley, south-west of the Site. No records of nightjar were returned by the NBN Gateway, within 2 km of the Site.

Evaluation

7.14.114 Nightjar is a scarce but widespread migratory breeding species in the UK and Wales, and is listed under Section 7 of the Environment (Wales) Act (2016). The most recent UK census of the species (in 2004) estimated that 280 males were present, an increase of 24 % on the findings of the previous census in 1992 (Conway *et al.*, 2007). A total of 48 males were recorded in Gwent during the National Survey in 2004 (Lewis, 2004). One nightjar territory was recorded at the edge of the Site (during the second year of survey), all others were off-Site. Habitat in adjacent plantation clearfell is more suitable for breeding nightjar, and 13 territories were recorded in this habitat in both years. Evidence of foraging on-Site by locally breeding birds was recorded during both years of survey.

7.14.115 Studies at other wind farm sites in south Wales have demonstrated that nightjar are not significantly displaced by operational phase wind farms. At Brechfa West Wind Farm, areas of plantation cleared for turbines and infrastructure were quickly adopted by territorial males and half of all recorded nests during pre-construction survey work were established in newly cleared areas (Natural Power, 2016). Monitoring work at operational wind farms has also shown that nightjar quickly habituate to turbines, and will regularly nest within the published disturbance distance (up to 200 m) of turbines. During the first year of post-construction monitoring at the Pen y Cymoedd Wind Farm, the nearest nightjar nest to a wind turbine was

³¹ These flights were all below 10 m above ground level throughout.

58 m from the base (two young fledged from the nest; BSG Ecology, 2017). At Brechfa West Wind Farm, an analysis of 124 nest positions over a period of 10 years of monitoring work (2013 to 2022 inclusive) has concluded no displacement by operational turbines, and no correlation between nest productivity and distance from operational turbines, and nests were located as close as 15 m from the base of turbines in the first year of operation (Aderyn Ecology, 2022). At Clocaenog Wind Farm, post-construction monitoring work recorded churring males approximately 80 m from turbine bases, albeit the nearest nest was within 200 m of a turbine (SLR Consulting, 2022).

- 7.14.116 During the two years of survey at the Site, the closest territory to a proposed turbine location was approximately 160 m from the proposed turbine base (at the northern edge of the Site). Collisions of nightjar with operational wind farms are very rare (two records of collision in Europe were included in data collated by Dürr (2022)), likely as a result of the species' low foraging flight habit. Given that nightjar are not significantly displaced by turbines and do not regularly collide with them, the proposed wind farm is likely to have a **negligible** impact on nightjar, and the species is **scoped out** of further assessment.

Non-focal species

- 7.14.117 11 (non-passerine) secondary species were recorded during the survey work; red grouse, buzzard *Buteo buteo*, sparrowhawk *Accipiter nisus*, tawny owl *Strix aluco*, little owl *Athene noctua*, lesser black-backed gull *Larus fuscus*, herring gull *Larus argentatus*, cormorant *Phalacrocorax carbo*, grey heron *Ardea cinerea*, carrion crow *Corvus corone* and raven *Corvus corax*.

- 7.14.118 The Site's red grouse population was surveyed during the breeding wader survey work (based on methods produced by Brown & Shepherd, (1993) and supplemented by Calladine *et al.* (2009))³². At least 4-6 pairs were recorded on-Site (with at least one additional pair off-Site in adjacent areas of the common). Red grouse has an estimated UK population of 265,000 breeding pairs which has shown a 44 % increase in size between 2008 and 2018 (Burns *et al.*, 2020). The species is declining in Wales, where it is red-listed (Johnstone *et al.*, 2022) and is included in Section 7 of the Environment (Wales) Act (2016), and its population was estimated at 835 breeding pairs in 2016 (Hughes *et al.*, 2020). In Gwent, red grouse is an uncommon and declining resident on the uplands in the north-west and north, and the breeding population was estimated at 60 pairs in 2008 (Venables *et al.*, 2008). It follows that the Caerphilly and Torfaen County Borough populations will be less than 60 pairs as the species is also found in Monmouthshire and Blaenau Gwent County Boroughs. Given the small county population of the species, the Site supports > 1 % of the populations of Caerphilly and Torfaen. Given the species' small and vulnerable (red-listed) local and county population and that, without mitigation, the area of the suitable habitat for this species would be reduced, the importance of the Site for the species is assessed as being of **County** importance. Impacts on red grouse are **scoped in** to further assessment.

- 7.14.119 Buzzard were recorded frequently throughout the survey work. Buzzard is a common and widespread breeding resident in the UK, Wales and Gwent. The species is categorised as being of 'least concern' in conservation terms and has increased considerably in number over the past 20 years at both the UK and European levels. The UK population is estimated at 63,000-87,500 pairs with a long-term increasing trend of 1,070 % between 1970 and 2018 (Burns, *et al.*, 2020). Given the size of the population, the Site is unlikely to be of value to buzzard populations at any geographic level. Buzzard is therefore **scoped out** of further assessment.

- 7.14.120 Sparrowhawk were recorded occasionally during the survey work. Sparrowhawk is categorised as being of 'least concern' in conservation terms and has increased considerably in number over the past 20 years at both the UK and European levels. Atlas work has demonstrated an expansion of range in the UK of 29 % between 1968/72 and 2007/11 (Balmer *et al.*, 2013), and the UK population is estimated at 30,500 pairs (Burns *et al.*, 2020). Given the size of the population, and low quality of the habitats on-Site for foraging, the Site is

³² There is no standard method for surveying this species.

unlikely to be of value to sparrowhawk populations at any geographic level. Sparrowhawk is therefore **scoped out** of further assessment.

- 7.14.121 Tawny owl were recorded off-Site, with three territories located in conifer plantation in the northern part of the Gwyddon Valley (during nightjar survey in 2021 and 2022), and a nest found in a cavity in a mature deciduous tree in Cwm Lickey Valley (during bat roost inspections in 2023). There is no habitat on-Site suitable to support breeding or hunting tawny owl. The species is categorised as being of 'least concern' in conservation terms, and is green-listed in Wales (Johnstone *et al.*, 2022). The UK population is estimated at 50,000 breeding pairs (Woodward *et al.*, 2020). Given the size of the regional and national populations and the unsuitable habitat on-Site for the species, the Site is unlikely to be of value to tawny owl populations at any geographic level. Tawny owl is therefore **scoped out** of further assessment.
- 7.14.122 A roosting little owl was located in a tree cavity in the Cwm Lickey Valley, approximately 135 m from the nearest proposed turbine base. Little owl is an introduced species in the UK, where it is in long-term decline. In Wales the species is widespread but scarce, with an estimated population of 250-350 pairs (WOS, 2021). The species typically feeds on invertebrates (such as earthworms and beetles) and rodents (Hounsome *et al.*, 2004), and uses tree cavities between 0.3 - 12.2 m above ground-level (Hardey *et al.*, 2013), so typically remains below collision risk height. Based on the ecology of the little owl, it is unlikely to be affected by wind farm development, so the species is **scoped out** of further assessment.
- 7.14.123 Lesser black-backed gull and herring gull (which is included in Section 7 of the Environment (Wales) Act (2016)) were recorded frequently in low numbers during the survey work, though rarely overflew the Site. Birds were usually recorded flying east along a flight path over Cwm y Glyn, to the north of the Site (towards Llandegfedd Reservoir) (typically during the two hours prior to sunset). The Site does not regularly support foraging gulls, though mixed flocks of these species of up to 100 birds were recorded on-Site on four dates during the survey work, during the same short period in early June 2021. These were the only record of gulls using the Site throughout the two years of survey. Both species are common in Wales as breeding residents, passage migrants and wintering species. Given this, and their infrequent use of the airspace above the Site, gulls are **scoped out** of further assessment.
- 7.14.124 Cormorant and grey heron flights were recorded occasionally during VP surveys. Both species are fairly common residents in the UK, Wales and Gwent. Given the lack of significant open water bodies on the Site and the low levels of activity over the Site by these species, it is unlikely that the Site is of importance for the local population, and these species are **scoped out** of further assessment.
- 7.14.125 Raven is common and widespread throughout Wales and is a fairly common resident in Gwent (Venables *et al.*, 2008). In the UK, the species has shown an expansion in range by around 70 % since the late 1970's (Balmer *et al.*, 2013). The current UK population is estimated at 10,000 pairs (Burns *et al.*, 2020). Raven flights were recorded frequently during the survey work. Activity was distributed widely over the Site and surrounding land and typically involved singletons or small numbers of birds (no large flocks were recorded over the Site). No evidence of breeding was recorded on-Site during the survey work, a pair were recorded with recently fledged young in suitable habitat, approximately 1.68 km south-south-east of the nearest proposed turbine, during June 2020, and a family party were recorded occasionally during VP work in summer 2021. The use of the Site by raven is not considered to be exceptional, and the habitats within it do not appear to provide a rich foraging resource for the species. Raven is therefore **scoped out** of further assessment.
- 7.14.126 Carrion crow were recorded frequently over the Site throughout the survey work. Carrion crow is abundant throughout the UK, including Gwent. Given this, the use of the Site is not considered to be exceptional. The importance of the Site for the local population is likely to be negligible. Carrion crow is therefore **scoped out** of further assessment.
- 7.14.127 The breeding passerine and near-passerine community on-Site comprises abundant skylark *Alauda arvensis* and meadow pipit *Anthus pratensis*, with stonechat *Saxicola rubicola*, reed bunting *Emberiza schoeniclus* present in low numbers. Four of the passerine and near-passerine species recorded on-Site during the breeding season are included in Section 7 of the Environment (Wales) Act (2016); cuckoo, skylark, linnet and reed bunting. Starling *Sturnus vulgaris* and lesser redpoll *Carduelis cabaret* (which are also included in Section 7 of the

Environment (Wales) Act (2016)) did not breed on-Site, but were recorded overflying it and are likely to have bred in suitable habitat locally. Crossbill (listed under Schedule 1 of the Wildlife & Countryside Act (1981) as amended) were recorded overflying the Site occasionally, and bred in adjacent conifer plantation. Collision and displacement of passerines are not generally considered issues for wind farm developments (SNH (2017) guidance does not recommend passerine surveys for wind farm proposals). Any effect on populations arising because of collision with turbines is likely to be very localised owing to the high reproductive rates and low annual survival of passerines. However, some adverse effects may occur because of loss of breeding habitat and disturbance during construction phase works. These may include adverse effects on the Section 7 passerine and near-passerine species breeding on-Site (cuckoo, skylark, linnet and reed bunting). Measures to ensure legislative compliance with regard to nesting passerines and near-passerines (including Section 7 species) through the development process are set out under ‘Primary Mitigation’ (paragraph 7.17.2 of this report). Habitat management measures intended to enhance the habitats on-Site for birds, including Section 7 passerines and near-passerines, are set out under ‘Secondary Mitigation’ (paragraph 7.21.4 of this report).

7.15 Summary of Evaluation of Resources

7.15.1 **Table 7.3** (below) presents the outcome of the evaluation of resources and indicates those receptors that have been scoped out of further assessment.

Table 7.3. Summary of Evaluation of Resources

Receptor		Evaluation	Further consideration required
Statutory Sites (SSSI)	Llandegfedd Reservoir	National	No
	River Usk (Lower Usk) / Afon Wysg (Wysg Isaf)	National	No
Non-statutory Sites (SINC)	Mynydd Maen, east of Newbridge, Tirpentwys LNR and Penyrheol Meadows	County	No
Birds	Osprey	Negligible	No
	Red kite	County	Yes
	Marsh harrier	Negligible	No
	Hen harrier	Negligible	No
	Goshawk	Local	Yes
	Kestrel	County	Yes
	Hobby	Local	Yes
	Peregrine	Local	Yes
	Merlin	Negligible	No
	Kittiwake	Negligible	No
	Golden plover	Negligible	No
	Short-eared owl	Negligible	No
	Long-eared owl	Regional	Yes
	Nightjar	Negligible	No
	Non-focal species - red grouse	County	Yes
Non-focal species - other	Negligible	No	

7.16 Future Baseline

7.16.1 The Site comprises common land on an open, relatively flat ridge. Within the proposed wind farm this is mainly characterised by a mixture of acid grassland and heather moorland, the westerly areas of which are grazed (by sheep and cattle) and the north-easterly and easterly parts are more lightly grazed (the sheep tend to stay further west). Beyond the proposed wind farm area, on sloping ground, the habitats become more structurally diverse, with stands of bracken, areas of heather and grassland occurring in a mosaic and some woodland habitats. To the west of the Site, in areas adjoining the access track, the sward is short and heavily grazed.

7.16.2 The vegetation structure on the common is a product of a combination of grazing and burning. In the absence of the proposed wind farm development it is likely that land management will

remain consistent. A commons innovation plan covering Mynydd Maen was developed in consultation with the commoners and Torfaen County Borough Council in 2019 (TACP, 2019), but there is no indication this is being implemented from site work or stakeholder engagement.

- 7.16.3 Populations of most bird species which the Site supports are broadly stable in moorland habitats, and as such are unlikely to change significantly in the immediate future.
- 7.16.4 The Welsh red kite population is increasing rapidly, with birds infilling the species' historical breeding range, which includes suitable habitat in Gwent. Given the relative abundance of suitable breeding habitat within 10 km of the Site, it is likely that red kite will commence breeding in the Zol in the near future, and will do so with increasing frequency over the operational life of the proposed wind farm.
- 7.16.5 The distribution and population size of species that occupy conifer plantation (such as goshawk and nightjar) will vary in response to the felling cycle. In addition, forestry operations will continue to present localised noise disturbance and habitat change that may result in direct effects on birds within, and adjacent to, the Site. The local distribution of other locally breeding species such as peregrine is likely to vary between years (as demonstrated by the findings of the survey work).
- 7.16.6 The Site's red grouse population is at the southern edge of the species' native range. The species is declining in Wales, and without appropriate habitat management, it is likely that the Site's population would decrease over the operational life of the proposed wind farm (possibly to local extinction).

7.17 Primary Mitigation and Design Evolution

Primary Mitigation

- 7.17.1 The following primary mitigation measures have been built into the design of the proposed wind farm:
- Location of turbines, rotation and micro-siting of crane pad locations and routing of the access tracks to minimise impacts on localised peat deposits (and associated habitats).
 - The wind farm will avoid/minimise hydrological impacts through designed in mitigation that includes upslope drainage and interception ditches and trackside drains, a culvert system to route water through the built wind farm, and downslope, contour-parallel recharge trenches that will allow ground infiltration during normal flow conditions and diffuse overtopping during significant rainfall events. This will reproduce the cross-slope distribution and nature of the hillslope hydrology pre-construction. This is set out in full in Chapter 9 (and associated appendices) of this document. The result will be that outside the footprint of the wind farm hydrological impacts on habitat will be minimal.
- 7.17.2 Measures to ensure legislative compliance, protect and enhance ornithological features through the development process would include:
- A preconstruction ornithological survey programme to provide updated baseline information to feed into the Site CEMP and other operational plan documents. The focus of this work will be Schedule 1³³ raptors, kestrel, nightjar and red grouse.
 - The development of a detailed Site CEMP in consultation with stakeholders (i.e. Natural Resources Wales, Caerphilly and Torfaen County Borough Councils) to build on the principles of the outline CEMP submitted as part of this planning application. The CEMP will include provisions relevant to birds, to prevent an offence from being committed under the Wildlife and Countryside Act (1981) as amended, which prevents intentional or reckless: killing, injury or taking of any wild bird; taking, damaging,

³³ Of the Wildlife & Countryside Act (1981) as amended.

destroying or otherwise interfering with the nest of that bird while it is in use or being built; obstruction of any wild bird from using its nest; and taking or destroying an egg of any wild bird.

- A suitably qualified and experienced Ecological Clerk of Works (ECoW) will be appointed to oversee application of the CEMP.
- Vegetation will be removed during the winter (between September and February inclusive). If there is a need for destruction of habitats outside of the period October to February inclusive, this will be overseen by the ECoW, whose role will be to establish whether breeding birds are present or not.
- The internal access tracks within the proposed wind farm site will be laid down in the winter. If this is not possible, and construction takes place between March and August inclusive, the area to be cleared should be visited by an ECoW, to check whether nesting birds are present, and to advise on any restrictions these pose.
- The ECoW will undertake construction phase surveys of birds within the proposed wind farm site and will record information on breeding progress / success as far as is possible (avoiding disturbance, and following relevant survey guidance provided in SNH, 2017). The data will be used with pre-construction baseline survey data and future data obtained during monitoring work to provide population information across each phase of the development.
- On-site speed limits will be applied for all construction vehicles, to minimise the potential for incidental killing of birds.
- An ecologically-led lighting plan. If lighting is required during the construction phase it will be designed in accordance with industry guidance with input from a consultant ecologist. Particular consideration will be given to owl species (including long-eared owl), with impacts minimised through control of light spill (by restricting the area in which mobile lights can be used, or by the appropriate use of directional lighting).
- A detailed Habitat Management Plan. This will build on the principles outlined in this submission.

7.18 Assessment of Potential Effects

7.18.1 This section of the chapter includes:

- A detailed assessment of potential effects on each ornithological receptor identified in the evaluation of resources section as requiring further assessment.
- Conclusions with regard to the significance of the impacts that could arise in the absence of mitigation.

Construction Phase Effects

7.18.2 Construction of the proposed wind farm is likely to extend over 15 months, depending on weather and ground conditions, as well as other technical and environmental factors. Construction activities would include ground clearance, excavation and construction of the turbine bases and access tracks, the erection of the turbines and the movements of machinery and construction personnel.

7.18.3 Temporary land take would be needed for construction compounds and borrow pits which total approximately 498.61 ha. There would also be temporary disturbance on land surrounding the turbine bases and access tracks that would be subject to restoration once construction is complete. The total footprint of permanent access tracks, turbine bases and substations is 14.69 ha.

7.18.4 The connection to the grid falls under a separate consent process and will be subject to a separate application. As such it has not been considered as part of this assessment.

- 7.18.5 The extent of the effects of construction on birds would depend upon the timing of disturbing activities, the degree of displacement (spatially and temporally) that occurs, the size, suitability and proximity of habitats available to displaced birds, and their capacity to accommodate them.
- 7.18.6 There have been only a small number of wind farm construction phase specific studies published in the peer reviewed literature. This is likely to be because disturbance during construction is short term and can often be mitigated by avoiding sensitive areas and certain times of year. Most studies of bird to wind farm interactions have concentrated on operational phase disturbance and collision.
- 7.18.7 Notwithstanding the above, there is a risk that construction work undertaken in the breeding season (the species recorded during baseline breeding bird survey work will predominantly breed between March and August inclusive) could result in the damage or destruction of active nests, or killing and injury of young birds. Without mitigation this would contravene the provisions of the Wildlife and Countryside Act (1981) as amended. The effect of this has not been assessed as measures would inevitably need to be taken to ensure legislative compliance. There is specific guidance on the NatureScot website with regard to this³⁴. The measures to manage the implementation of appropriate protection measures would be included in the CEMP.
- 7.18.8 Construction phase displacement impacts would be greatest on species that are intolerant of noise and the visible presence of people. Many common species of passerines and some waders breed in or alongside industrial sites, close to major roads and in heavily disturbed areas of farmland if the habitat is otherwise appropriate. However, individuals and populations not exposed to disturbance may not habituate to it in the short term. It follows that a worst-case assessment is that there would be some disturbance of breeding birds resulting from construction, and this could result in declines in productivity in some species during the construction period.
- 7.18.9 The species that could be affected by disturbance associated with construction are those that use the Site with regularity as opposed to commuting across it, or those that were recorded breeding within the survey area. These are considered to be: red kite, goshawk, kestrel, peregrine, long-eared owl and red grouse.

Red kite

- 7.18.10 The Site is of importance for red kite at the **County** level.
- 7.18.11 No red kite nests were located on or within 2 km of the Site during either year of survey. It follows that disturbance and / or displacement of breeding birds by construction phase activity is not anticipated. Red kite were frequently recorded overflying the Site. Flight observations suggested that a high proportion of activity involved birds moving directionally over the Site, as opposed to actively foraging. There is therefore potential for birds commuting over the Site and foraging (to a lesser extent), to be displaced by construction activity.
- 7.18.12 Construction phase impacts (such as noise and presence of people and machinery) are anticipated to be limited temporally and spatially (construction activity is unlikely to occur over a large proportion of the Site at any given time). Given this, and the extent of suitable foraging habitat for the species in the wider area, it is considered that disturbance effects during construction could be adverse, but are likely to be **negligible** in terms of the local and favourable conservation status of red kite.

Goshawk

- 7.18.13 The Site is of importance for goshawk at the **Local** level.
- 7.18.14 An active goshawk territory was located during 2021, centred on a mature conifer plantation coupe more than 1 km from the Site. No mature conifer plantation suitable for breeding goshawk is present on-Site, however suitable habitat for breeding goshawk is present immediately adjacent to the Site boundaries to the north, south-west and west. Goshawk

³⁴<https://www.nature.scot/doc/dealing-construction-and-birds>

hunting and commuting flights were recorded infrequently over the Site throughout the survey work.

7.18.15 Goodship and Furness (2022) suggest an upper disturbance threshold of 300 - 500 m for goshawk, and reference the lowest recommended buffer (dependant on individual tolerance) as being 200 m.

7.18.16 No forestry operations would be required as part of the proposed wind farm. Disturbance effects may occur if a nest site is located within 500 m of the proposed wind farm at the time of construction. Such disturbance effects could be adverse but are likely to be **negligible** in terms of the local and favourable conservation status of goshawk, given the expanding populations of goshawk at all geographical levels. However, in the absence of mitigation measures, disturbance could represent an offence under the Wildlife & Countryside Act (1981) as amended and mitigation needs to be considered. The low levels of hunting activity over the Site means that any temporally or spatially limited displacement effects on hunting birds would be **negligible** in terms of the local and favourable conservation status of goshawk.

Kestrel

7.18.17 The Site is assessed as being of importance for kestrel at the **County** level.

7.18.18 Kestrel foraged frequently over the Site throughout the VP surveys. No active kestrel nests were located within 2 km of the Site during either year of survey. However, activity levels on the Site, and the presence of juveniles on-Site during the late summer in both years suggested that the Site is used as a key foraging resource by a locally breeding pair.

7.18.19 Goodship & Furness (2022) suggest an upper disturbance threshold of 100 - 200 m for kestrel during the breeding season.

7.18.20 Given that there are no nest sites on-Site, and that construction phase impacts on foraging birds would be limited temporally and spatially (construction activity is unlikely to occur over a large proportion of the Site at any given time), it is considered that construction phase impacts on kestrel would be **negligible**.

Peregrine

7.18.21 The Site is assessed as being of importance for peregrine at the **Local** level.

7.18.22 An active peregrine nest was located approximately 470 m from the Site during 2020. No breeding attempt was recorded locally during 2021, though the species was recorded occasionally throughout the survey work. In spite of local breeding, activity over the Site was limited, suggesting that locally breeding birds typically forage elsewhere and that the Site is not a key foraging resource for the species.

7.18.23 Goodship and Furness (2022) suggest an upper disturbance threshold of 500 - 750 m for peregrine.

7.18.24 As no construction activities would be carried out within 615 m of the 2020 nest site, and construction phase impacts between 615 and 750 m of the nest site would be temporary, it is considered that disturbance effects during construction could be adverse, but are likely to be **negligible** in terms of the local and favourable conservation status of peregrine. However, in the absence of mitigation measures, disturbance could represent an offence under the Wildlife & Countryside Act (1981) as amended and mitigation needs to be considered.

Long-eared owl

7.18.25 The adjacent plantation habitat and its immediate surrounds (which include sections of the north, south-west and west of the Site) are important at the **Regional** level for long-eared owl.

7.18.26 An active long-eared owl was located at Craig Hafodowen during 2020 (fledging two young), but was not present during 2021. It is likely that the species breeds regularly within conifer plantations locally.

7.18.27 Goodship and Furness (2022) suggest an upper disturbance threshold of 100 - 300 m for long-eared owl.

7.18.28 No forestry operations would be required as part of the proposed wind farm. Disturbance effects may occur if a nest site is located within 300 m of the proposed wind farm at the time of construction. The proportion of infrastructure located within 300 m of conifer plantations suitable for breeding long-eared owl is very limited in extent, comprising part of the Site compound, two borrow pits and associated short sections of access track (which would be constructed at a rate of at least 200 m per day). No infrastructure is to be located within 300 m of the 2020 nest site (the nest site is approximately 325 m from the nearest section of track and approximately 380 m from the nearest turbine base). However, in the absence of mitigation, disturbance could occur as a result of construction activities in these areas (including uncontrolled light spill after dark), and could represent an offence under the Wildlife & Countryside Act (1981) as amended. It is possible that locally breeding long-eared owls forage along the fringes of the Site adjacent to the conifer plantations. Given the extent of suitable foraging habitat in the wider area, temporally or spatially limited displacement effects on hunting birds would be **negligible** in terms of the local and favourable conservation status of the species.

Red grouse

7.18.29 The Site is assessed as being of importance at the **County** level for red grouse.

7.18.30 During the survey work, observations suggested that at least 4-6 pairs were present on-Site (with at least one additional pair off-Site in adjacent areas of the common). Given this, disturbance impacts may occur. Pearce-Higgins *et al.* (2012) found that red grouse densities declined on wind farms during the construction phase, but that they recovered by the first year post-construction, and noted that the data suggest that populations may become habituated to operational wind farms. A review of Phase 1 habitat survey data and aerial imagery shows that the area of heather dominated dry dwarf shrub heath within the development footprint area comprises less than half of a larger continuous area of that habitat in the local area. Construction activities are anticipated to be limited temporally and spatially within that footprint (construction activity is unlikely to occur over a large proportion of the Site at any given time). Given this, short-term displacement of a small number of red grouse to other areas of suitable habitat within the Site may occur. This may affect productivity in the short-term (as the habitat they are displaced to may be less suitable than that from which they were displaced, or may already be occupied by the species at low density). The population on the Site would likely return to pre-construction levels within one year of construction. Displacement impacts on red grouse during the construction phase are unlikely to extend beyond the **Site** level.

Operational Phase Effects

7.18.31 There are two ways in which birds can be affected by operational wind farms: through displacement due to ongoing disturbance caused by the turbine towers and moving blades (and by periodic servicing of them), and through collision with moving blades or associated infrastructure, e.g. the guy lines of meteorological masts.

7.18.32 A range of studies have concluded that most bird species are not significantly affected by operational wind farms (e.g. Vauk, 1990; Phillips, 1994; Percival, 2005, 2000; Devereux *et al.*, 2008; Winkleman, 1994; Langston & Pullan, 2003; Hötker *et al.*, 2006). This is reflected by SNH Guidance (2017) on birds and wind farms which does not, for example, normally recommend surveys for breeding passerines. SNH Guidance, which is the UK standard, indicates that effort should focus on species / species groups that are thought to be susceptible to the effects of wind farms or highly protected species on which effects remain unclear. In the context of the site, those species that are most susceptible are likely to be those that have a low tolerance to disturbance (such as golden plover (Pearce-Higgins *et al.*, 2009), common snipe (Pearce-Higgins *et al.*, 2012)), that breed on open moorland (such as merlin), and are susceptible to collision (such as red kite and kestrel (inferred from collision data presented by the Brandenburg Institute (Dürr, 2022))).

Displacement

Red kite

7.18.33 The Site is assessed as being of importance for red kite at the **County** level.

7.18.34 Survey work between April 2020 and September 2022 inclusive did not record any evidence of breeding red kite on or within 2 km of the Site. Potential disturbance effects would be limited to foraging birds.

7.18.35 There appear to be few if any studies of red kite displacement as a result of wind farms. In deriving an avoidance rate for red kite, Urquhart & Whitfield (2016) reference an unpublished report which concluded that any background change in potential for flight activity post-construction (as a result of displacement) was unlikely, due to the effect of an expanding population at the study Wind Farm³⁵. In addition, survey work for monitoring or to support schemes such as that at Mynydd y Gwair Wind Farm (Swansea) and Bryn Titli Wind Farm (Powys) indicate that flights regularly occur within 200 m of turbines, which therefore suggests that displacement effects are minimal. Authors such as Bellebaum *et al.* (2013) have concluded that kites are not displaced based on finding corpses close to turbines in Germany. However, this may not be entirely representative of the situation on the site, as in the German study the turbines are in arable land and kites are more likely to forage in the habitat around the turbine bases than elsewhere. Furthermore, northern and central European populations are migratory³⁶ (Keller *et al.*, 2020), and may be more prone to collision with wind turbines whilst migrating, when it is likely that birds will spend more time at collision risk height.

7.18.36 It is concluded that very localised displacement of red kite may occur in the immediate vicinity of turbines, but that this would have a **negligible** impact on the use of the Site by red kite.

Goshawk

7.18.37 The Site is assessed as being of importance for goshawk at the **Local** level.

7.18.38 A goshawk territory was present in conifer plantation within approximately 1.2 km of the Site in 2021. Goshawk hunting and commuting flights were recorded occasionally over the Site throughout the survey work. Goodship and Furness (2022) suggest that disturbance of goshawk typically extends to between 300 - 500 m from a feature.

7.18.39 A proportion of the proposed infrastructure is located within 500 m of suitable breeding habitat. Activity in these areas and the presence of turbines may result in a reduction in the suitability for breeding goshawk of the conifer plantation within 500 m of infrastructure. Given that the known nest site is more than 1 km from the Site, that the area of suitable habitat within 500 m of the proposed infrastructure is small compared to the total area of suitable habitat locally, and that goshawk commuting and foraging activity over the Site was low, operational phase displacement is likely to have a **negligible** impact on breeding goshawk.

Kestrel

7.18.40 The Site is assessed as being of importance for kestrel at the **County** level.

7.18.41 Kestrel were the most frequently recorded species during the survey work. No active kestrel nests were located during either year of survey, however, the regularity of kestrel observations and the presence of juvenile birds during both breeding seasons suggest that relatively local breeding occurred in both years.

7.18.42 Kestrel are known to continue foraging activity close to turbines, showing low levels of turbine avoidance (Pearce-Higgins *et al.*, 2009). It is concluded that very localised displacement of kestrel may occur in the immediate vicinity of turbines, but that this would have a **negligible** impact on the use of the Site by kestrel.

Hobby

7.18.43 The Site is assessed as being of importance for hobby at the **Local** level.

7.18.44 No evidence of breeding hobby was recorded on or within 2 km of the Site. Hobby occasionally overflowed the Site during both breeding seasons surveyed.

7.18.45 Goodship and Furness (2022) suggest that disturbance of hobby extends to 200 - 450 m from a feature.

³⁵ Braes of Doune Wind Farm, Perthshire.

³⁶ Whereas British populations are largely sedentary.

7.18.46 The area of suitable foraging habitat on-Site would therefore be reduced. However, given the extent of suitable foraging habitat for the species in the wider area, and the lack of evidence of breeding within 2 km of the Site, it is considered that operational phase disturbance / displacement impacts on hobby would have a **negligible** impact in terms of the local and favourable conservation status of the species.

Peregrine

7.18.47 The Site is assessed as being of importance for peregrine at the **Local** level.

7.18.48 An active peregrine nest was located at a disused quarry approximately 460 m north of the Site during 2020. The nest successfully fledged at least one juvenile. No breeding attempt was recorded locally during 2021. In spite of local breeding, activity over the Site was limited, suggesting that locally breeding birds typically forage elsewhere and that the Site is not a key foraging resource for the species.

7.18.49 Goodship and Furness (2022) suggest an upper disturbance threshold of 500 - 750 m for peregrine.

7.18.50 Two proposed turbines (and associated infrastructure) and a section of the site track are located within 750 m of the 2020 peregrine nest site (the closest turbine is approximately 615 m from the nest site). It is therefore possible that the proposals would reduce the suitability of this nest site for peregrine, however, birds nesting at this location are likely to be habituated to a baseline level of disturbance within the buffer area as a track used by mountain bikers and walkers³⁷ is located approximately 100 m from the nest site, and the A472 is located approximately 355 m from the nest site. Furthermore, although the nest site is located within 750 m of the proposals, it is located at lower elevation than the Site, being at approximately 295 m asl (compared to the two proposed turbines within 750 m, which are located between approximately 440 m and 450 m asl). No other suitable nesting habitat is located within 750 m of the project layout³⁸. Given this, and that breeding birds did not forage frequently over the Site, it is considered that displacement / disturbance during the operational phase could be adverse, but is likely to be **negligible** in terms of the local and favourable conservation status of peregrine.

Long-eared owl

7.18.51 The adjacent plantation habitat and its immediate surrounds (which include sections of the north, south-west and west of the Site) are important at the **Regional** level for long-eared owl.

7.18.52 An active long-eared owl was located at Craig Hafodowen during 2020 (fledging two young), but was not present during 2021. It is likely that the species breeds regularly within conifer plantations locally.

7.18.53 Goodship and Furness (2022) suggest an upper disturbance threshold of 100 - 300 m for long-eared owl.

7.18.54 Operational phase disturbance / displacement may occur if a nest site is located within 300 m of the proposed wind farm at the time of construction. The proportion of infrastructure located within 300 m of conifer plantations suitable for breeding long-eared owl is limited in extent, comprising part of the Site compound, two borrow pits and the associated short sections of access track. No turbines are to be located within 300 m of the 2020 nest site (the nearest is approximately 380 m from it).

7.18.55 Hunting long-eared owl can range more than 2 km to hunt (Cramp, 1985). The species typically hunts in flight at the edges of heathland and moorland and may employ a flushing technique, beating wings against shrubs to flush prey quarry and can hunt from a perch (such as a post or tree branch) (Scott, 1997). Due to felling works within the Gwyddon and Cwmcarn valleys, most of the edge habitat within 2.5 km of the 2020 nest site is located in those valleys. Most suitable perches (fenceposts and trees are in the edge habitat, not on the open common.

³⁷ Based on surveyor observations during survey work.

³⁸ The pylons located within 750 m of the proposals are considered unsuitable for nesting peregrine, due to high levels of human disturbance on-Site.

Given this, it is apparent that no turbines are to be located within 300 m of the typical foraging habitat for long-eared owl in the vicinity of the 2020 nest site or adjacent suitable nesting habitat.

- 7.18.56 Given the extent of suitable breeding and foraging habitat in the wider area, the limited displacement effects on breeding and hunting birds within the 300 m of the infrastructure would be **negligible** in terms of the local and favourable conservation status of the species.

Red grouse

- 7.18.57 The Site is of importance for red grouse at the **County** level.
- 7.18.58 During the survey work, observations suggested that at least 4-6 pairs were present on-Site (with at least one additional pair off-Site in adjacent areas of the common). Pearce-Higgins *et al.* (2009) found no evidence of turbine avoidance by red grouse, post-construction. Approximately 8.4 ha of suitable habitat for red grouse (heather dominated dry dwarf shrub heath) would be lost, through installation of infrastructure within the Site. Given that this habitat loss is relatively small in the context of the total area of suitable habitat for the species locally (approximately 202 ha across the common), displacement impacts on red grouse are unlikely to extend beyond the **Site** level.

Collision

- 7.18.59 Worked collision risk analysis for target bird species is contained in **Technical Appendix 7.4 Collision Risk Modelling**.
- 7.18.60 The level of collision would depend on the extent to which birds are displaced, and their ability to detect and manoeuvre around rotating turbine blades. Birds that collide with blades are likely to be killed or fatally injured.
- 7.18.61 NatureScot and other nature conservation consultees recommend that collision risk of birds at wind farms is calculated using the model developed by Bill Band of SNH (in de Lucas *et al.*, 2007). The extent to which outcomes of modelling reflect observed mortality rates has always been questionable, and the subject of academic debate (Chamberlain *et al.*, 2005; Chamberlain *et al.*, 2006; Madders & Whitfield, 2006; Drewitt & Langston, 2006; Fernley, Lowther & Whitfield, 2006). The main limitations of the model are that pre-construction use of the airspace above a Site by birds is assumed to be representative of the use of the airspace following wind farm construction, and that the rate of avoidance applied to the output of the model is often arbitrary. Where empirical estimates of avoidance can be applied, the model becomes a far more useful tool.
- 7.18.62 Red kite, goshawk, kestrel, hobby, peregrine and merlin were recorded overflying the Site at collision risk height. The recommended avoidance rate for red kite is 99 % derived by Urquhart & Whitfield (2016) based on a study wind farm (Braes of Doune). The recommended avoidance rate for kestrel is 95 %, given its apparent vulnerability to collision (Whitfield and Madders, 2006). SNH (2018) accepts that a “*default value*” avoidance rate of 98 % can be applied when modelling collision risk for goshawk, hobby, peregrine and merlin.
- 7.18.63 The approach that has therefore been taken has been to look at empirical data for avoidance or typical flight characteristics that may have a bearing on likelihood of collision in each species seen, while also considering modelled collision risk where data have been collected that allow calculations to be made.
- 7.18.64 Various published studies have concluded that collisions are rare events, often occurring in situations where there are large numbers of birds (such as on narrow-front migratory flyways), or where the behaviour of birds leads to high risk situations (such as where wind turbines are located on the shortest route between a breeding colony and a foraging area) (e.g. Langston & Pullan, 2003; Drewitt & Langston, 2006 ; Hötter *et al.*, 2006). Any source of additional mortality may be significant for long-lived species with low productivity and slow maturation rates, especially if these species are relatively rare or in decline. Assessment of collision risk therefore concentrates on these species, as relevant to the Site.
- 7.18.65 Knowledge of the susceptibility of bird species to collision with wind turbines has taken many years to emerge. Before empirical data were available, it was assumed that species with a high wing loading and low manoeuvrability in flight were likely to be most susceptible to

collision with turbine blades. However, as data have emerged it has become clear that this initial assessment was too simplistic.

7.18.66 Table 7.4 below provides a summary of current knowledge of the UK and European population sizes and the known collisions of red kite, goshawk, kestrel, hobby, peregrine and merlin. It is based on mortality data collated by Dürr (2022), with context provided by European bird population estimates from Birdlife International (2021) and UK population estimates by Woodward *et al* (2020).

Table 7.4. Known collisions of the bird species that have been evaluated for further consideration in this assessment with wind turbines in Europe (in the context of populations).

Species	Known collisions in Europe date ³⁹	UK population estimate		European population estimate
		Breeding (pairs)	Winter (indvs.)	Breeding (pairs)
Red kite	798 (5)	4,400	N/D ⁴⁰	19,000-24,000
Goshawk	15	620	N/D	130,000-180,000
Kestrel	673 (2)	31,000	N/D	300,000-440,000
Hobby	33	2,050	N/D	65,000-120,000
Peregrine	41 (1)	1,750	N/D	7,600-11,000

7.18.67 Robust monitoring of bird mortality at wind farms is uncommon, and collisions are under recorded. There will also be biases in the data, as wind farms in some parts of Europe are more frequently and effectively monitored than others, and bird species show differences in abundance across their range which may influence their likelihood of encountering wind farms.

7.18.68 Despite these shortcomings and biases, however, the data collated by Dürr on behalf of the Brandenburg Institute indicate that some species and species groups appear more susceptible to collision than others. Many collisions of raptors, such as kestrel, have occurred around migratory bottlenecks, particularly southern Spain where wind farms are located along the low hills directly north of the Strait of Gibraltar⁴¹, and some individual wind farms account for a disproportionately large proportion of total collisions. In the context of populations, the number of collisions of all species presented here is very small.

Red kite

7.18.69 The Site is of importance for red kite at the **County** level.

7.18.70 Data collated by Dürr (2022) indicate there have been 798 collisions of red kite with wind turbines recorded in Europe to date (latest update 17 June 2022). Of these five have been in Great Britain. Most of the collisions have been in Germany 695, with fewer in other countries; 41 in France, 34 in Spain, 12 in Sweden, five in Belgium, and one in each of Netherlands, Denmark and Austria.

7.18.71 The collision risk model (based on all flights recorded within the VP viewsheds) predicts that between 0.46 (based on 2020/2021 data) and 1.75 (based on 2021/2022 data) collisions per annum would occur at the proposed wind farm. The average based on each model output is 1.11 collisions per annum (or 1 bird every 0.90 years).

³⁹ UK component in brackets where relevant.

⁴⁰ *N/D = Data not available.

⁴¹ Of the total reported kestrel collisions, 273 occurred in Spain of which the highest proportion of collisions occurred within the Cadiz province, including the coastlines near to Tarifa and Gibraltar.

7.18.72 Productivity rates of breeding red kite in the species' core range in mid-Wales are high (averaging between 1.1 and 2.0 young fledged per successful nest during the period 2003-2019 inclusive in east Powys (Welsh Kite Trust, 2020b)). Productivity in Shropshire (which is broadly lower lying) is higher still, with an average of 1.8 young fledged per successful nest (Welsh Kite Trust, 2020b). It can be inferred from these data that productivity in the ZOI will be high, when breeding commences.

7.18.73 Given the small size of Caerphilly and Torfaen County Boroughs (compared to other counties in Wales), the carrying capacity of the 'County' area is unlikely to exceed 100 pairs of red kite, in spite of the relative abundance of suitable habitat within them. The significance of the effect will therefore always be at the County level if the 1 % population threshold approach is applied. Its application for red kite is therefore considered to be disproportionate, and it is not applied here.

7.18.74 Given the rapidly expanding populations of the species at all geographic levels and predicted high productivity in the ZOI in the future, it is reasonable to conclude that the anticipated loss of 1.21 red kites per year would be significant at the **Local** level.

Goshawk

7.18.75 The Site is of importance for goshawk at the **Local** level.

7.18.76 Data collated by Dürr (2022) indicate there have been 15 collisions of goshawk with wind turbines recorded in Europe. Of these, eight were reported from Germany, and four from Spain; none have been reported in the UK.

7.18.77 The collision risk model (based on all flights recorded within the VP viewsheds) predicts that between 0.21 (based on 2021/2022 data) and 0.38 (based on 2020/2021 data) collisions per annum would occur at the proposed wind farm. The average based on each model output is 0.29 collisions per annum (or 1 bird every 3.39 years). Of the 35 goshawk flights recorded, 16 were associated with the northern part of the Gwyddon Valley, away from the Site. These are included within the model as, although they were off-Site, they were within VP viewsheds. The actual collision risk is therefore likely to be lower than that produced by the collision risk modelling.

7.18.78 The number of collisions recorded in Europe (15) is very small in the context of the European population (of 130,000-180,000 breeding pairs), and the 'default' avoidance rate of 98 % is applied to the collision risk model in the absence of any empirical study of collision mortality of goshawk. The County, Regional and National populations of goshawk are reported to be expanding (Venables *et al.*, 2008; WOS, 2021; Balmer, 2013), and productivity rates of goshawk are likely to be high (as evidenced in Cramp (1980) (2.7 to 3.1 fledged per nest)).

7.18.79 Given the low number of recorded collisions throughout Europe, expanding populations at all geographical levels, and likelihood that a high proportion of flights will be associated with areas away from the proposed turbine locations, it is reasonable to conclude that collision impacts on goshawk would be **negligible**.

Kestrel

7.18.80 The Site is of importance for kestrel at the **County** level.

7.18.81 Of a total of 673 officially documented collisions in Europe, two are from the UK. Large proportions of the total collisions across Europe were reported from France (160 collisions), Germany (148 collisions) and Spain (273 collisions) (Dürr, 2022). 36 of the collisions in Spain have been recorded at the Park Pesur, Gibraltar, and 107 at Tarifa Wind Farm. The collisions at these sites are likely to include migrating birds.

7.18.82 The collision risk model (based on all flights recorded within the VP viewsheds) predicts that between 5.15 (based on 2020/2021 data) and 10.96 (based on 2021/2022 data) collisions per annum would occur at the proposed wind farm. The average based on each model output is 8.05 collisions per annum (or 1 bird every 0.12 years).

7.18.83 A review of data by Whitfield and Madders (2006) suggest that kestrel appear to be relatively vulnerable to collision strikes. This observation was based on collision fatality data collected at 13 wind farms in northern Spain by Lekuona & Ursúa (2006). During the two-year study, a

total of 457 observations of kestrel were made, and 12 birds were found dead as a result of collision.

- 7.18.84 Martin (2017) notes that some collision-prone species (including species of crane, bustard, vulture and eagle) have frontal binocular fields that are of restricted vertical extent and include extensive blind areas above and below them. In these birds a relatively small change in the pitch of the head brings this blind area forwards in the direction of travel. The aforementioned species typically spend time looking downwards for habitats in which to forage or roost or for prey / carrion. This is likely to make them susceptible to collision. It is possible, given the manner in which kestrel forage, that this is also a reason why relatively large numbers of collision victims have been recorded in that species in Europe.
- 7.18.85 The number of predicted collisions produced by the collision risk model are likely to be an overestimate, given that a high proportion of flight activity over the Site is likely to have involved a small number of birds (a locally breeding pair) which would be prone to collision. If these birds are removed from the population by the wind farm, and immature birds (from locally breeding pairs in the wider area) do not move into the Site, kestrel activity on-Site would be likely to reduce significantly. It follows that risk of collision would also be lower after that point. If the local population is producing young in excess of that needed to replace their own mortality then those immature birds may disperse into the Site and be at risk of collision. In this instance, no reduction in population would be observed but there would be on-going annual mortality, as predicted by the collision risk model.
- 7.18.86 Taking account of the Gwent population of kestrel (cited as 90-200 pairs during 1998-2003 (Venables *et al.*, 2008)), it is probable that the kestrel population of Caerphilly and Torfaen County Boroughs is less than 100 pairs. However, given the small size of Caerphilly and Torfaen County Boroughs (compared to other counties in Wales), the carrying capacity of the 'County' area is unlikely to exceed 100 pairs of kestrel, in spite of the relative abundance of suitable habitat.
- 7.18.87 Given that the Site appears to support a locally breeding pair by functioning as a key foraging resource, the loss of a breeding pair over the 35-year operational life of the proposed wind farm is likely to reduce the county population by > 1 % and would therefore impact the population. This impact is assessed as being of significance at the **County** level.

Hobby

- 7.18.88 The Site is of importance for hobby at the **Local** level.
- 7.18.89 Data collated by Dürr (2022) indicate there have been 33 collisions of hobby with wind turbines recorded in Europe. Of these, 18 were reported from Germany, seven from Spain, seven from France and one from the Netherlands; none have occurred in the UK.
- 7.18.90 Collision risk modelling of the survey data collected between April and October in all years has resulted in a predicted rate of between 0.06 (based on 2021/2022 data) and 0.12 (based on 2020/2021 data) collisions per annum at the Site. The average based on each model output is 0.09 collisions per annum (or 1 bird every 11.18 years).
- 7.18.91 The loss of four birds over the 35-year operational life of the proposed wind farm is unlikely to impact the population at any geographical level. Taking account of the Gwent population of hobby (cited as 20-28 pairs between 1998-2003 (Venables *et al.*, 2008)), it is reasonable to conclude that the loss of four hobby over the term of the proposed wind farm is likely to have a **negligible** impact on the county population.

Peregrine

- 7.18.92 The Site is of importance for peregrine at the **Local** level.
- 7.18.93 Data collated by Dürr (2022) indicate there have been 41 collisions of peregrine with wind turbines recorded in Europe, one of which was from Great Britain. Of these, 28 were reported from Germany, six from Spain, three from Belgium and one in each of Austria, France and the Netherlands.
- 7.18.94 The collision risk model (based on all flights recorded within the VP viewsheds) predicts that between 0.13 (based on 2021/2022 data) and 0.43 (based on 2020/2021 data) collisions per

annum would occur at the Site. The average based on each model output is 0.28 collisions per annum (or 1 bird every 3.56 years).

- 7.18.95 Taking account of the Gwent population of peregrine (cited as 15 pairs between 1998-2003), the loss of, at most, ten birds over the 35-year operational life of the proposed wind farm is unlikely to impact the population at more than the Local level. It is therefore reasonable to conclude that the predicted peregrine collisions over the term of the proposed wind farm will result in a significant adverse effect at the **Local** level.

Long-eared owl

- 7.18.96 The Site is of importance for long-eared owl at the **Regional** level.

- 7.18.97 Collision risk analysis has not been undertaken for long-eared owl as no flights were observed during the survey work. Long-eared owls feed primarily on voles, and hunt for them in open (edge) habitat, so typically fly well below collision risk height. Scott (1997) stated that “*the hunting owl flies to and fro, sweeping its hunting area at a height of about 0.5 - 1.5 m*”. Long-eared owl may also employ a flushing technique, beating wings against shrubs to flush prey quarry, and can hunt from a perch (such as a post or tree branch). Suitable perches, tree-lines or other vegetation suitable for these hunting techniques are limited within 300 m of proposed turbines, though suitable habitat is abundant in the wider area.

- 7.18.98 Given that long-eared owl do not hunt at (or close to) collision risk height, and that the optimal habitat in the vicinity of the 2020 nest site (and surrounding suitable habitat) is more than 300 m from proposed turbines, it is reasonable to conclude that the risk of collision of long-eared owl is **negligible**.

Red grouse

- 7.18.99 The Site is of importance for red grouse at the **County** level.

- 7.18.100 There were no observations of red grouse flying at collision risk height at the Site during the survey work. Collision risk analysis has not been undertaken for red grouse as no flights were recorded at collision risk height (so there are no data to model), and collision with turbine blades is unlikely. Collisions of red grouse with low objects such as fences do occur (Baines & Andrew, 2003). It is possible that red grouse could collide with fences or guy lines at the proposed wind farm, however, given the low density of the population at the Site, this is unlikely to occur. It is reasonable to conclude that collision impacts on red grouse would have a **negligible** impact on the county population.

7.19 Decommissioning Phase Effects

- 7.19.1 The effects of decommissioning have the potential to be similar to those during construction phase but are likely to occur over a shorter time period.
- 7.19.2 Species most likely to be disturbed and displaced from the Site during decommissioning are those that breed, roost or forage within it at that time.
- 7.19.3 It is reasonable to expect that there will be changes in legislation concerning protected species, as well as changes in local populations and distribution over the operational life of the proposed wind farm. These may be driven by climatic change, landscape-scale land management, increased effectiveness / policing of protection, changes in the attitude of land managers to birds, the spread of reintroduced populations, changes on the wintering and staging grounds of migrant species and other factors.
- 7.19.4 Predictions are not therefore possible, with any confidence, over a 35-year period (particularly given the rate of change in number and distribution of many protected species over the past 35 years). It follows that effects on birds would be best addressed through a decommissioning phase Environmental Management Plan.

7.20 Summary of Effects

- 7.20.1 **Tables 7.5, 7.6 and 7.7** (overleaf) presents the outcome of the assessment of effects for all scoped in receptors.

Table 7.5. Summary of construction phase effects

Receptor		Evaluation	Significance of Effect
Birds	Red kite	Negligible	Not significant
	Goshawk	Negligible	Not significant
	Kestrel	Negligible	Not significant
	Peregrine	Negligible	Not significant
	Long-eared owl	Negligible	Not significant
	Red grouse	Site	Not significant

Table 7.6. Summary of operational phase effects (disturbance and displacement).

Receptor		Evaluation	Significance of Effect
Birds	Red kite	Negligible	Not significant
	Goshawk	Negligible	Not significant
	Kestrel	Negligible	Not significant
	Hobby	Negligible	Not significant
	Peregrine	Negligible	Not significant
	Long-eared owl	Negligible	Not significant
	Red grouse	Site	Not significant

Table 7.7. Summary of operational phase effects (collision).

Receptor		Evaluation	Significance of Effect
Birds	Red kite	Local	Significant
	Goshawk	Negligible	Not significant
	Kestrel	County	Significant
	Hobby	Negligible	Not significant
	Peregrine	Local	Significant
	Long-eared owl	Negligible	Not significant
	Red grouse	Negligible	Not significant

7.21 Secondary Mitigation

- 7.21.1 Planning Policy Wales 12 sets out that development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity.
- 7.21.2 A letter from the Welsh Government’s Chief Planner has clarified that, “...a net benefit for biodiversity can be secured through habitat creation and/or long term management arrangements to enhance existing habitats, to improve biodiversity and the resilience of ecosystems.”
- 7.21.3 The assessment concludes that without secondary mitigation or compensatory measures, red kite, kestrel and peregrine would be significantly affected. These effects are predicted as a result of the activity recorded during the VP survey work generating a reasonable risk of collision for both species. Enhancement of land away from proposed turbine locations aims to encourage kestrel to forage in areas away from proposed turbines, whilst resulting in no net

loss of foraging habitat as a result of land take for proposed infrastructure (including turbine pads and access tracks). For red grouse, operational phase displacement would occur at the level of the Site, as 8.4 ha of suitable habitat for the species would be lost, replaced by the proposed wind farm footprint.

7.21.4 It is proposed to develop a detailed habitat management plan. The following outline measures are proposed:

- Reversion of areas of semi-improved and improved grassland, scattered and continuous bracken in three areas adjacent to the northern and eastern Site boundaries. This has the potential to provide high quality foraging habitat away from the proposed turbines. If locally breeding kestrel use these areas for foraging, this should result in less time spent foraging over the Site, and as such reduce the risk of collision for that species.
- Management of the common in accordance with the Commons Innovation Plan. This has the potential to improve the quality of the existing habitats on-Site for birds, including foraging kestrel and red grouse and breeding passerines including Section 7 species such as cuckoo, skylark, linnet and reed bunting. Further detail of this proposed management, and how it would be delivered can be found in Chapter 6: Ecology (paragraphs 6.31.5-6.31.10).
- The installation of two kestrel nest boxes mounted on mature trees or poles (as appropriate) to the east and south of the Site; south of Blaen Bran and on Mynydd Maen Common (between the Cwmcarn and Gwyddon Valleys). Both locations are more than 1 km from the nearest proposed turbines, and are separated from each other by more than 2 km. The former is situated on the edge of semi-improved grassland which is to be reverted to moorland (see above), the latter is situated within existing moorland. These habitats have the potential to provide high quality foraging habitat for the species.
- Management of areas of heather dominated dry heath within the Site for red grouse. Flailing of controlled areas of heather during the winter / early spring would improve the quality and carrying capacity of the existing habitat on-Site for red grouse.

7.21.5 The extent to which secondary mitigation will reduce predicted collision of kestrel will depend on whether nest boxes are occupied and the extent to which nest locations and local habitat management influence foraging behaviour. A precautionary conclusion has therefore been drawn. Red kite and peregrine predominantly commute through / over the Site, and enhancement is unlikely to influence predicted rates of collision for these species. The habitat management proposals will principally benefit ground-nesting species breeding on Site.

7.22 Residual Effects

7.22.1 Following the application of mitigation measures, which include land management, significant residual effects of the proposed wind farm on ornithological interest are as follows:

- Collision related fatality of kestrel resulting in the loss of a locally breeding pair, of significance at the **County** level.
- Collision related fatality of non-breeding red kite, of significance at the **Local** level.

7.23 Assessment of Cumulative Effects

7.23.1 Consideration has been given as to whether any of the ornithological features that have been taken forward for assessment in this chapter are likely to be subject to cumulative effects as a result of the proposed wind farm and by other developments. Cumulative effects are most likely to result with regard to those receptors for which a significant residual effect is predicted, particularly if the core range of these receptors includes other planned, consented or built development. This assessment also includes consideration of effects considered non-significant, as a number of minor effects on ornithological features from multiple projects may result in a significant cumulative effect.

7.23.2 Cumulative effects may therefore be:

- Cumulative ‘zone of influence’ effects whereby two or more developments affect the same specific feature (e.g. two developments within the zone of influence of the same SSSI, and impacting its ornithological interest).
- Cumulative effects on the total resource (or population) of an ornithological feature in a region due to two or more developments (e.g. two developments located within the core range of an active peregrine territory).

7.23.3 Assessment of cumulative effects is complex and is reliant on the availability of suitable information from other schemes in the wider area and the definition of an appropriate and realistic scope. For the proposed Mynydd Maen Wind Farm a 10 km Zol has been considered, as this is considered sufficient to cover the core ranging area for mobile species using the Site.

7.23.4 The main potential for cumulative effects arising from projects in the wider area is with regard to wind farms. There are three proposed, one consented and one operational wind farm within the 10 km Zol. The proposed schemes are Mynydd Llanhilleth Wind Farm, Abertillery and Trecelyn schemes, which are for eight, six and five turbines respectively, and the consented scheme is the eight turbine Mynydd Carn-y-Cefn project. The submitted scheme is Mynydd Carn Y Cefn Wind Farm, which is for eight turbines. The operational wind farm is the two-turbine Oakdale Business Park project.

7.23.5 The Mynydd Llanhilleth Wind Farm proposal is for moorland (common) and adjoining pasture approximately 4.5 km north of the Site. In addition to eight turbines and other on-site infrastructure there will be an access track that will follow an existing minor road that passes around the former British Colliery to meet the wider road network at Talywain. The Abertillery Wind Farm scheme is also for moorland (common) habitats, albeit the Site is considerably more elevated than Mynydd Maen (rising to over 550 m). At its nearest point the Abertillery Wind Farm is approximately 6.3 km to the north of the proposed wind farm. Potential cumulative effects on red kite, kestrel and peregrine are possible as a result of these proposals, through collision of birds with turbines and through displacement from turbines. At Mynydd Llanhilleth Wind Farm, 41 red kite flights, four kestrel flights and ten peregrine flights were recorded during the survey work. At Abertillery Wind Farm, red kite and kestrel were both recorded frequently, peregrine were recorded occasionally. Kestrel are likely to have bred on or close to that site, and peregrine were confirmed breeding at two locations within approximately 2 km of that site. Activity levels at both sites are likely to result in a collision risk for red kite, and at Abertillery Wind Farm, kestrel activity is likely to result in a collision risk. A low risk of collision was predicted for both goshawk and peregrine at the Mynydd Llanhilleth proposals, and for the former species at Abertillery Wind Farm. Activity levels of peregrine at Abertillery Wind Farm are likely to result in a collision risk. Red grouse were also recorded at Abertillery Wind Farm, and may be impacted by the proposed wind farm there, but were not recorded at Mynydd Llanhilleth Wind Farm.

7.23.6 The Trecelyn wind farm proposal is for land to the west of the Site; the eastern red line boundary of the Trecelyn site abuts the Site boundary. The land within the Trecelyn red line boundary takes in enclosed upland fringe farmland that is different in character to the moorland habitats present on site. No turbine layout was included in the Trecelyn scoping report (Wood Group, 2022). The scoping report indicates that the applicant has undertaken VP survey, breeding raptor survey, breeding bird surveys (targeted at moorland species, barn owl and nightjar) and non-breeding season walkover surveys. Red kite were recorded infrequently and kestrel were recorded frequently during raptor surveys (primarily over moorland to the north-east, within the Site). Both species were recorded infrequently during VP survey work at the proposed Trecelyn wind farm site (33 flights of the former and 27 flights of the latter). The report also indicates that goshawk and peregrine were recorded during the survey work, but detailed information about their occurrence was redacted from the report. A review of aerial imagery, accessible information relating to the Trecelyn application and knowledge of the area (which falls within the raptor survey area for this proposal) indicates that the Trecelyn Wind Farm proposals are for land currently managed as sheep and cattle grazed pasture with mature beech tree lines. The likelihood of either goshawk or peregrine foraging over the Trecelyn Wind Farm site is unlikely, given that the habitats present are

- unsuitable for nesting peregrine or goshawk, and are of low suitability for foraging (hunting) birds.
- 7.23.7 The consented Mynydd Carn Y Cefn Wind Farm scheme is for the ridge of land to the west of the town of Abertillery, approximately 6 km from to the north-west of the proposed wind farm. Red kite were regularly recorded at that site, and collision risk modelling of the data recorded there predicted similar levels of collision as the modelling for the proposed Mynydd Maen Wind Farm. Potential cumulative effects on red kite are therefore possible, through collision of birds with turbines and through displacement from turbines. Kestrel were not treated as a target species at Mynydd Carn Y Cefn Wind Farm so no information is available for the species at that site. Red grouse were not recorded at Mynydd Carn Y Cefn Wind Farm. Peregrine were recorded infrequently during the survey work at the site, and a breeding attempt was recorded within 1 km of the site.
- 7.23.8 The Oakdale Wind Farm is set in an industrial estate with significant areas of surrounding woodland habitats; the turbines are between 5.5 km and 6 km from the proposed wind farm. It is unclear whether any ornithological survey has been completed. Aerial imagery suggests that most (if not all) of the woodland in the immediate vicinity of this site is immature, and therefore unsuitable for nesting kite. The farmland surrounding the site has some potential for foraging by red kite. Records suggest that the population density is low in the Zol, compared to the species' core populations in central Wales. Furthermore, farmland and valley woodland are widespread habitats in the Zol and it is unlikely that the farmland in which the site is situated is of additional value to red kite than other farmland in the Zol.
- 7.23.9 The surrounding farmland appears to have mature hedgerow trees at field boundaries and is adjacent to (apparently immature) woodland. Poor semi-improved and marginal farmland habitats are likely to have some suitability for foraging kestrel. Green (2002) noted that the main declines in the Welsh kestrel populations have been in the improved farmland (pasture) areas. Venables *et al.* (2008) stated that numbers of records in the uplands north-west of Pontypool (and at the coastal levels) appear to have remained stable or even increased, whilst substantial declines have been observed in the lower lying, farmland dominated areas of Gwent, likely due to agricultural intensification. It is considered unlikely that this small scale scheme will result in a clear and obvious cumulative effect on kestrel.
- 7.23.10 A non-renewables scheme with some potential to have a cumulative effect with the proposed Mynydd Maen Wind Farm and other developments is the proposed Secondary Aggregates Extraction application for Tirpentwys Cut, approximately 3 km to the north-west. These quarrying proposals relate to land off-site between the Site and the Mynydd Llanhilleth Wind Farm proposal.
- 7.23.11 A scoping response was received from Torfaen County Borough Council to the Tir Pentwys aggregates proposals in February 2023. This indicated that NRW's concerns included hydrological impacts on protected sites, and that breeding and wintering bird surveys would be needed to inform the proposals. The response from the local planning authority ecologist included additional direct reference to the need for detailed breeding and wintering bird survey.
- 7.23.12 None of these schemes involve access through or land take from the Site.
- 7.23.13 Significant cumulative effects on red kite are unlikely given the relatively low population density within the Zol at present (in comparison with the core population in central Wales), and the rapidly expanding populations of the species at all geographic levels. This is borne out by the conclusions of Hereward *et al.* (2024), who found that in the event all wind farms in south-east Wales were constructed the population would still be predicted to grow.
- 7.23.14 Given that kestrel regularly forage and breed, or are likely to occur at a number of other wind farm sites in the Zol, a cumulative effect on kestrel of significance at the **County** level is anticipated.
- 7.23.15 Cumulative effects on peregrine are unlikely to be significant, given the relatively low levels of activity at the sites.

7.24 Summary

- 7.24.1 The Ornithological Impact Assessment for the proposed wind farm has been informed by desk study, consultation and wide-ranging ornithological survey work. This has allowed important ornithological features to be identified, and effects on these to be avoided or minimised through design and standard construction phase control measures. Additional measures to address potentially significant effects and ensure biodiversity net benefit is achieved have been identified, and would be delivered through a habitat management plan.
- 7.24.2 Survey work conducted between April 2020 and September 2022 has comprised; VP survey, breeding raptor survey, breeding wader survey and nightjar survey. All has been completed in accordance with industry standard guidance.
- 7.24.3 Impacts on relevant statutory designated sites of nature conservation importance are unlikely to arise due to their distance from the proposed wind farm. Target species recorded during the survey work, for which no residual effects are anticipated were; osprey, marsh harrier, hen harrier, goshawk, hobby, merlin, kittiwake, golden plover, short-eared owl, long-eared owl and nightjar.
- 7.24.4 Impacts have been assessed based on the approach set out by the Chartered Institute of Ecology and Environmental Management. Some potential effects have been avoided through construction phase controls which would be set out in a detailed Construction Environmental Management Plan that would be overseen on the ground by an ecological clerk of works.
- 7.24.5 Compensatory management to offset the reduction in habitat for kestrel and red grouse would be delivered through a habitat management plan.
- 7.24.6 Following the application of mitigation measures, which include land management, significant residual effects of the proposed wind farm on ornithological interest are as follows:
- Collision related fatality of kestrel resulting in the loss of a locally breeding pair, of significance at the County level.
 - Collision related fatality of peregrine, of significance at the Local level.
 - Collision related fatality of non-breeding red kite, of significance at the Local level.
- 7.24.7 Kestrel regularly forage and breed, or are likely to occur at a number of other wind farm sites in the Zol, a cumulative effect on kestrel of significance at the County level is anticipated.

7.25 References

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