6 ORNITHOLOGY

6.1 This assessment was prepared by Colin Hicks BSc (Hons), a Member of the Chartered Institute of Ecology and Environmental Management, with 22 years' experience as a professional ecologist.

6.2 This chapter of the Environmental Statement assesses the likely significant effects on the environment from the construction, operation and decommissioning of Rush Wall Solar Park as described in Chapter 2 on the following environmental receptors and/or resources:

- Nature conservation sites designated for ornithological interest features
- Wintering and passage birds
- Nesting birds

SYNOPSIS

6.3 Following mitigation for breeding and wintering Lapwing, the construction phase of solar park would have no significant adverse effects ornithological interest features of National and International nature conservation sites within the zone of influence of this development.

6.4 It is accepted that there may be temporary disturbance of individual ground nesting birds during the construction phase. The provision of Lapwing breeding mitigation and nesting bird checks prior to the start of works would minimize adverse effects to an acceptable level.

6.5 By creating an undeveloped buffer zone to the hedgerows and reens, adverse effects on hedgerow and marshland/water nesting birds during construction will be avoided.

6.6 Following mitigation for wintering Lapwing, the operational phase of solar park would have no significant adverse effects ornithological interest features of National and International nature conservation sites within the zone of influence of this development.

6.7 Providing optimal habitat away from agricultural operations in the breeding Lapwing mitigation area will give local ground nesting birds the opportunity to nest and successfully raise chicks.

6.8 Enhancement detailed within the Landscape and Ecology Management Plan (Appendix 2.3) includes bird nesting boxes and management of buffer zone grassland for biodiversity which will benefit local bird species.

6.9 Cumulative impacts were considered for a diverse range of planning applications provided by Newport City Council and Monmouthshire County Council. It is concluded that cumulative impacts are unlikely.

METHODOLOGY

Scoping and consultation

6.10 An EIA Scoping direction was sought from Planning Inspectorate Wales on the information to be included in the Environmental Statement (ES). The assessment methodology is set out at Appendix 3.1 Scoping Report. The Planning Inspectorate responded through the publication of a Scoping Direction which can be found at Appendix 3.2. The EIA Scoping Report set out the intended scope of the EIA for consultation with PINS Wales as follows:

- Topics to be covered in the ES;
- Identified constraints;
- Comments on the methodology proposed (including bodies to consult); and
- Cumulative developments identified.

6.11 The process of scoping assists in defining the key topic areas and information to be included in the ES and can identify where matters could be scoped out of further assessment if there are no likely significant environmental effects.

6.12 Before adopting a scoping direction, PINS Wales consulted the following consultees in relation to Ecology:

- Newport City Council;
- Natural Resources Wales.

6.13 In addition, the following bodies were consulted:

- RSPB;
- Gwent Wildlife Trust;
- Gwent Ornithological Society:
- Newport Council Natural Environment Team;
- Natural Resources Wales

Table 6-1 Consultation Summary

Consultee, date and format of consultation (written, meeting/s, discussions, site visit)	Details (e.g. request to include more views, include a new receptor)	Action taken in this assessment and signposting.
Newport City Council (NCC) Scoping Opinion 18 January 2019	Other issues arise from impacts on birds associated with the Severn Estuary SPA / SAC / SSSI and the Newport Wetlands SSSI. These will need to be considered as well as any birds that might habitually use the site at the current time	This has been taken into account in this assessment
	Impacts during development, de-commissioning and the operational phase should be addressed	These have been addressed within this ES
	Surveys should be undertaken in accordance with best practice effort, by a suitably qualified ecologist and details of survey effort should be agreed with relevant authorities.	Surveys have been completed in line with best practice. Unfortunately, NRW have not been able to provide consultation on this project, other than at the scoping stage, although the RSPB has been actively involved
	Cumulative impact of the proposal will be considered as part of the Environmental Statement. Whilst this is positive, the Council considers that the cumulative assessment should not be limited to only solar development and that scope should include other developments in the locality	NCC and Monmouthshire County Council have provided a detailed list of schemes to be taken into account during the cumulative impact assessment and they are included within this ES
	Bird surveys-wintering and breeding-again this needs to consider the potential impacts from the solar farm	These have been included in the ES
	The LPA understands that there is evidence of cranes in the locality. It is understood that these are particularly rare to the area and may comprise a single pair with habitat in the vicinity. Further investigation will be required in this respect and information regarding potential impact on habitat	Crane were not encountered during any of the surveys at this site and are therefore not considered here.

Table 6-1 Consultation Summary (Continued)

Consultee, date and format of consultation (written, meeting/s, discussions, site visit)	Details (e.g. request to include more views, include a new receptor)	Action taken in this assessment and signposting.
Natural Resources Wales (NRW) Scoping opinion 18 January 2019	The ES should consider whether a site management plan is required for construction, operation and de-commission stages, which includes details on who would be responsible for undertaking maintenance of the ditches during the life time of the development	A Landscape and Ecology Management Plan (Appendix 2.3) is provided.
	Specific surveys should be prepared and undertaken by suitably qualified, experienced and where necessary, licensed surveyors in accordance with published guidance, where this exists, and best practice.	Surveys have been completed in line with best practice.
	Where certain species are notified features of nearby protected sites (SSSI, SAC or SPA) we advise they are considered in the context of being both a notified feature of a site and a legally protected species in their own right.	This process has been adopted within the ES
	The ES should identify the likely impacts of the proposals on such species and detail mitigation that will be put in place to address each of those impacts, including consideration of the short-term and long-term management of any compensatory habitat and any monitoring that may be required.	This process has been adopted within the ES and detailed within the LEMP (Appendix 2.3) where necessary
	We recommend the applicant consults local authorities Ecologists on the scope of the work to ensure that regional and local biodiversity issues are adequately considered, particularly those habitats and species listed in the relevant Local Biodiversity Action Plan and are that are considered important for the conservation of biological diversity in Wales.	Newport City Council (MonLife) ecologists have been consulted and attended a site meeting

Table 6-1 Consultation Summary (Continued)

Consultee, date and format of consultation (written, meeting/s, discussions, site visit)	Details (e.g. request to include more views, include a new receptor)	Action taken in this assessment and signposting.
	The Applicant should contact other relevant people/organisations for biological information/records relevant to the site and its surrounds. These include the relevant Local Records Centre (SEWBREC) and any local ecological interest groups (for example bat groups, mammal groups)	Requests for biological records have been made to Gwent Wildlife Trust, South East Wales Biodiversity Records Centre and Gwent Ornithological Society
	The Scoping Report confirms the project site is approximately 1.3km from the Severn Estuary which is designated a Special Area of Conservation (SAC), Special Area of Protection (SPA) and Ramsar site. We agree with the report that there are potential significant adverse effects on breeding and wintering birds and these should be scoped in. The scope of the surveys for birds appear reasonable but there may be need for the ES to consider foraging cranes, depending on the results of the first round of surveying.	Crane were not encountered during any of the surveys at this site (Appendix 6.1 Winter and passage bird surveys & Appendix 6.2 Breeding bird surveys) and are therefore not considered here.
	A HRA should be undertaken for the potential impacts on the Severn Estuary European site in line with The Conservation of Habitats and Species Regulations 2017. Therefore, the ES should include the following to inform the assessment: an assessment of potential impacts on the flight lines and resting areas of birds of the Severn Estuary and loss of grassland habitat;	This is included within the ES
	Cumulative effects: the assessment includes the associated Gwent Farmer's Community Solar Scheme's land for lapwing mitigation.	This process has been adopted within the ES

Table 6-1 Consultation Summary (Continued)

Consultee, date and format of consultation (written, meeting/s, discussions, site visit)	Details (e.g. request to include more views, include a new receptor)	Action taken in this assessment and signposting.
Newport City Council (MonLife) Site visit 14th February 2020	Site visit completed. Comments: The one thing I would like to emphasise is the importance of achieving net benefit through securing restoration and management of retained habitats.	Biodiversity Metric 2.0[1] applied to proposed mitigation and enhancement SPIES tool for Solar Park Management[2] applied to proposed mitigation and enhancement Outcomes are reported in LEMP (Appendix 2.3).
NRW - ornithology lead	Request for site visit	NRW unable to provide consultation
RSPB Site visits on 26/02/2019 & 31/07/2019 and emails	Site walkover and discussion of bird survey results along with general site ecology and potential management	It was agreed that two seasons of winter bird surveys would be completed along with one season of breeding bird surveys. The latter to include Lowland Breeding Bird survey as per O'Brien (1992). The number of field visits during the breeding bird surveys was increased from 4 to 5 or more visits in line with RSPB request
Gwent Wildlife Trust Site visit 10th April 2019	GWT requested 2 years of Lapwing wintering bird surveys. GWT stated several designations (SINCs) had been missed from the EIA Scoping Report and requested these were included as receptors in the EIA.	The survey effort for wintering birds was increased to 2 years These have been included within this assessment.
Gwent Wildlife Trust -	Request for records of birds and information on water vole re-introductions/monitoring made 06/02/2020	No response from GWT
South East Wales Biodiversity records Centre	Request for records	Records provided and included in relevant reports
Gwent Ornithological Society	Request for records	Records are held by South East Wales Biodiversity records Centre

Assessment Site and Zone of Influence

6.14 The Assessment Site includes all areas within the planning application boundary and any adjacent areas that may be affected by the proposed development.

6.15 The Zone of Influence is the area encompassing all predicted negative ornithological effects from the proposed development, both those which would occur as a result of land-take and habitat loss, and those which would occur through disturbance, such as noise.

6.16 The study area for the biological records search provided by South East Wales Biodiversity Records Centre (SEWBReC) in Cardiff is 2 km radius centred on the site. The data will identify and locate records of birds recorded in the search area over the last 50 years and will identify sensitive ecological receptors.

6.17 The Zone of Influence for ornithological receptors during the construction, operation and decommissioning phases is detailed in Table 6.2.

Table 6-2. Solar farm zone of influence on ornithological receptors (construction, operation and decommissioning).

Ecological feature	Zone of influence - Construction	Zone of influence - Operation	Zone of influence – Decommissioning
Breeding birds	Site area plus 100 metres buffer	Site area	Site area plus 100 metres buffer
Winter and passage birds	Site area plus 200 metre buffer	Site area	Site area plus 200 metre buffer
Internationally designated sites	5km	5km	5km
Nationally designated sites	5km	5km	5km
Local Sites of importance for nature conservation	1km	1km	1km

Site surveys

Preliminary Ecological Appraisal

6.18 A Preliminary Ecological Appraisal was completed by an experienced ecologist and a Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

6.19 Habitats were classified using the Phase 1 Habitat Survey methodology developed by the Joint Nature Conservation Committee (JNCC, 2010[3]) and modified by the Institute of Environmental

[1] Ian Crosher A, Susannah Gold B, Max Heaver D, Matt Heydon A, Lauren Moore D, Stephen Panks A, Sarah Scott C, Dave Stone A & Nick White A. 2019. The Biodiversity Metric 2.0: auditing and accounting for biodiversity value. User guide (Beta Version, July 2019). Natural England

[2] See: https://www.lancaster.ac.uk/spies/

[3] Joint Nature Conservation Committee, 2010. *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit*. Reprinted by JNCC, Peterborough

Assessment (IEA, 1995[4]). The main plant species were recorded, and broad habitat types mapped. Habitats encountered are described within the Results section, with a map included within the report. Plant species were identified according to Stace (1997[5]).

6.20 During this survey, any obvious evidence of protected species was noted, and site habitats were assessed for their potential to support notable or protected species.

Desktop survey

6.21 The desktop survey collated existing biological records for the site and adjacent areas and identified any nature conservation sites that may be affected by the proposals. This comprises an important part of the assessment process, providing information on ecological issues that may not be apparent during the site survey. Consultees for the data search included:

- South East Wales Biodiversity Records Centre - records of birds and non-statutory nature conservation sites within 2km of the centre of the site and non-statutory nature conservation sites within 4km of the centre of the site.
- Natural Resources Wales datasets – location of statutory nature conservation sites within 5km of the centre of the site.

6.22 Species data was examined for protected and notable species records. An assessment was then made, based on known habitat preferences, as to whether these species might be present within the site and how they might be affected by the proposal.

6.23 The location of nature conservation sites was examined to determine their ecological and landscape relationships with the proposed site. An assessment was then made of how the sites may be affected by the proposal, taking into account these relationships, and the species and/or habitat types for which the nature conservation site was chosen.

6.24 In compliance with the terms and conditions relating to its commercial use, the full desk study data is not provided.

[4] Institute of Environmental Assessment (IEA), 1995. *Guidelines for Baseline Ecological Assessment,* Institute of Environmental Assessment. E&FN Spon, aJn Imprint of Chapman and Hall. London.

[5] Stace, C., 1997. *New Flora of the British Isles.* 2nd edition. Cambridge University Press, Cambridge.

Breeding bird surveys

6.25 Lowland breeding wader surveys were completed in line with O'Brien and Smith (1992[6]).

6.26 The number of field visits was increased in consultation with RSPB to include late March 2019, mid- and late April 2019, mid- May 2019, mid- June 2019 and early July 2019. During each period, 2 or 3 survey visits were required to cover the whole site and buffers.

6.27 Other Breeding Birds were recorded using a methodology based upon a combination of methodologies, devised by the British Trust for Ornithology (BTO), and the national Breeding Bird Survey (BBS) techniques, jointly devised by the BTO, Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

Wintering and passage bird surveys

6.28 Passage and winter birds survey began in October 2019 and continued until March 2020 as follows:

- 4 daytime passage bird survey visits in October and March comprising a walked transect across the site, taking into account of the tidal state of the estuary.
- 2 daytime survey visits in each of the months of November, December, January and February, with each visit comprising a walked transect across the site taking into account of the tidal state of the estuary.
- Each month from October 2018 to January 2019: 2hr watches on the estuary shore for birds moving inland during the rising tide to gather data on bird behaviour, as the rising tide limits their foraging and roosting areas, and pushes them inland towards the proposed development site.
- Each month from October 2018 to January 2019: a nighttime survey completed to determine the use of the proposed development site by birds at night.

6.29 These surveys were completed by an experienced ornithologist, recording birds that were active within the development footprint and adjacent areas. Although all bird species were recorded, the prime targets were passage and overwintering birds that are interest features of statutory nature conservation sites associated with the Severn Estuary. This methodology was agreed in consultation with the RSPB.

Limitations

[6] M. O'Brien & K. W. Smith (1992) Changes in the status of waders breeding on wet lowland grasslands in England and Wales between 1982 and 1989, Bird Study, 39:3, 165-176, DOI: 10.1080/00063659209477115

6.30 All areas of the development site were readily accessible due to the open, flat nature of this landscape. The majority of adjacent areas within the 250m buffer were included within the survey by observation from public rights of way.

6.31 Nocturnal surveys relied on flushing birds as night vison equipment was not suitable. This proved successful in providing presence or absence data, but it was not easy to formalise an accurate picture of numbers, as it is not likely that all birds in a flock will utter alarm calls. In addition, species that will not easily flush would be under-recorded. As the main target for these nocturnal surveys were Lapwing, which are relatively easy to flush, this is not considered a significant constraint.

6.32 These surveys, although comprehensive, will only ever provide a snapshot of the bird communities here. However, a significant survey effort has been made and we are confident that this these surveys provide sufficient data to support any decisions to be made in relation to this application.

IMPACT ASSESSMENT METHOD

6.33 The assessment of impacts has been carried out in accordance with the principles described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018[7]).

6.34 The ornithological feature or resource that is affected by an impact is referred to as the receptor. Impacts are considered in terms of the value of the receptor in the context of nature conservation, and the character of the impact. From these, the significance of the impact is determined.

6.35 As part of the impact assessment, the available means to avoid, minimise or mitigate for adverse impacts are incorporated into the design, so that the final impact assessment identifies the residual (net) impacts that are predicted. The consequences for development control, policy guidance and legislative compliance can then be identified.

Method for valuation of receptors

6.36 The nature conservation value, or potential value, of an ecological receptor is determined within the following geographic context:

- International importance (e.g. internationally designated sites such as Special Protection Areas, Ramsar sites);
- National importance (e.g. nationally designated sites such as Sites of Special Scientific Interest or species populations of importance in the UK context);

7 CIEEM, 2018. GUIDELINES FOR ECOLOGICAL IMPACT ASSESSMENT IN THE UK AND IRELAND Terrestrial, Freshwater, Coastal and Marine. Ver 1.1 Downloaded 06/02/2020 from https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/

- County importance (e.g. SNCI, habitats and species populations of importance in the context of Newport);
- Local importance (e.g. important ecological features such as old hedges, woodlands, ponds);
- Site importance (e.g. habitat mosaic of grassland and scrub which may support a diversity of common wildlife species);
- Negligible importance. Usually applied to areas such as built development or areas of intensive agricultural land.

6.37 The examples are not exclusive and are subject to further professional ecological judgment.

Impact Assessment Criteria

6.38 The assessment of potential impacts arising due to the development considers on-site impacts (i.e. within the footprint of the works) and those that may occur to adjacent and more distant ornithological features.

6.39 Potential effects on valued receptors, adverse or positive, are identified for both the construction and operational phases. The effects are then assessed and characterised according to the following criteria:

- Direction (positive, adverse, or neutral)
- Magnitude of impact
- Spatial extent over which the impact would occur
- The temporal duration of the impact
- Permanence
- Frequency and timing
- Potential for cumulative effects.

6.40 The assessment identifies any information gaps and any uncertainties that may be material in the confidence of predicting effects. Confidence levels are assigned following the CIEEM (2016) scale. Confidence in predictions is given as:

- Certain/near-Certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely Unlikely: probability estimated at less than 5%.

6.41 The precautionary principle is applied whenever there is substantial doubt. The impact timescale is given as:

- Acute, immediate, and discrete;
- Short-term: 0-3 years;
- Medium term 3-10 years; and

- Long term: 10 years +.

6.42 Effects include, but are not restricted to:

- loss or change of habitat;
- disturbance during construction, operation, and decommissioning;
- chemical effects from airborne pollutants
- contravention of legal status or protection (including where the receptor would not meet or exceed the value threshold).

6.43 The assessment identifies those positive and negative impacts which would be 'significant', based on the integrity and the conservation status of the ornithological feature. Impacts are unlikely to be significant where features of local value or sensitivity are subject to small scale or short-term impacts. However, where there are several small-scale impacts that are not significant alone, it may be that, cumulatively, these may result in an overall significant impact.

6.44 For the purposes of this assessment, the significance of the effect is determined using the matrix in Table 6.3 where the scale of the effect is measured against the value of the receptor.

6.45 Ecologically significant impact is defined as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area. For the purposes of this assessment the effects that are identified in shaded cells are significant.

Table 6-3. Matrix for assessment of significance of effect

Scale of effect	**Evaluation of nature conservation receptor**				
	Very high/ International	High/ national	Medium/ regional	Low/ local	Negligible/site only
Major positive effect	Large positive	Large positive	Large positive	Large positive	Large positive
Intermediate positive effect	Moderate positive	Moderate positive	Moderate positive	Moderate positive	Moderate positive
Minor positive effect	Slight positive	Slight positive	Slight positive	Slight positive	Slight positive
Neutral	None	None	None	None	None
Minor negative effect	Slight adverse	Slight adverse	Slight adverse	Slight adverse	None
Intermediate negative effect	Large adverse	Large adverse	Moderate adverse	Slight adverse	None
Major negative effect	Very large adverse	Very large adverse	Large or moderate adverse	Slight adverse	None

European Protected Sites– definition of significance of effect

6.46 For a European Protected Site, such as SPA, the integrity of a site is:

'the coherence of the ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.'

Disturbance should not have a significant effect on the integrity of a European Protected Site.

Mitigation

6.47 Where there is potential that the proposed development will have a significant effect on a valued ecological feature of nature conservation interest, recommendations for mitigation are made based on the mitigation hierarchy detailed in Paragraph: 018 Reference ID: 8-018-20140306 of National Planning Practice Guidance;

- Avoidance –significant harm to wildlife species and habitats should be avoided through design.
- Mitigation – where significant harm cannot be wholly or partially avoided, it should be minimised by design, or by the use of effective mitigation measures that can be secured by, for example, conditions or planning obligations.
- Compensation – where, despite whatever mitigation would be effective, there would still be significant residual harm, as a last resort, this should be properly compensated for by measures to provide for an equivalent value of biodiversity.

Enhancement

6.48 Enhancements are additional to any mitigation measures that are necessary to deal with potential impacts on site. They are an opportunity to provide new benefits for biodiversity as a consequence of the development being implemented.

BASELINE

Desktop survey

6.49 The biological record search 2313 bird records from South East Wales Biodiversity Records Centre within 2km. These are detailed in Table 6-4.

Table 6-4. Bird records within 2km

Common name	Conservation listings	Count
Barn Owl	WCA1.1, WCA9, Bern, CITES, LBAP (ANG, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRA, VOG, WRE), WBAm(RSPB), LI(VC43), UKBAm(RSPB)	19
Bar-tailed Godwit	BDir1, BDir22, S7, Bonn, WBR(RSPB), LBAP (BBNP, CON, GWY, VOG), UKBAm(RSPB)	3
Bewick's Swan	BDir1, WCA1.1, S7, UKBAP, Bonn, Bern, LBAP (CON, GWY, POW, VOG), WBAm(RSPB), UKBAm(RSPB)	4
Black Redstart	WCA1.1, Bern, LBAP (GWY, VOG), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	2
Black-headed Gull	BDir22, S7, Bonn, WBR(RSPB), LBAP (GWY, VOG), UKBAm(RSPB)	12
Black-tailed Godwit	BDir22, WCA1.1, UKBAP, Bonn, RD1 (UK), LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB)	1
Brambling	WCA1.1, LBAP (CON)	2
Bullfinch	S7, UKBAP, WBR(RSPB), LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, TRF, VOG), UKBR(RSPB)	25
Cetti's Warbler	WCA1.1, LBAP (ANG, PEM, VOG)	133
Coal Tit	Bern, LBAP (CON, POW), WBAm(RSPB)	15
Common Crossbill	WCA1.1, Bern, LBAP (CON, POW), LI(VC43)	1
Common Gull	BDir22, Bonn, WBR(RSPB), UKBAm(RSPB)	12
Common Sandpiper	Bonn, Bern, WBAm(RSPB)	6
Common Scoter	BDir22, WCA1.1, S7, UKBAP, Bonn, LBAP (ANG, BBNP, CER, CON, CRM, DEN, FLI, GWY, PEM, VOG), WBAm(RSPB), UKBR(RSPB)	4
Cormorant	Bonn, LBAP (CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)	10
Cuckoo	S7, UKBAP, WBR(RSPB), LBAP (CON, DEN, FLI, GWY, VOG), UKBR(RSPB), UKBAm(RSPB)	26
Curlew	BDir22, S7, UKBAP, Bonn, RD1 (UK), WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, VOG), LI(VC43), UKBAm(RSPB)	12
Dipper	Bern, LBAP (BRG, CLY, CON, MTR, POW, RCT, TRA), WBAm(RSPB), UKBAm(RSPB)	1
Dunlin	Bonn, Bern, WBR(RSPB), LBAP (CON, GWY, POW), LI(VC43), UKBAm(RSPB)	9
Dunnock	S7, UKBAP, Bern, LBAP (CON, POW, VOG), UKBAm(RSPB)	46
Eider	BDir22, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	1
Fieldfare	BDir22, WCA1.1, LBAP (CON, POW), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	50
Firecrest	WCA1.1, Bern, LBAP (BRG, CON, GWY, POW), WBAm(RSPB), LI(VC43), UKBAm(RSPB)	1
Gadwall	BDir21, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	43
Garden Warbler	LBAP (BRG, CON, POW), WBAm(RSPB)	11
Garganey	BDir21, WCA1.1, Bonn, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	9

Table 6-4 Bird Records within 2km (Continued)

Common name	Conservation listings	Count
Goldcrest	Bern, LBAP (CON, POW), WBAm(RSPB), UKBAm(RSPB)	28
Golden Plover	BDir1, BDir22, S7, Bonn, WBR(RSPB), LBAP (BBNP, CON, CRM, FLI, GWY, POW, SNP, VOG), LI(VC43)	2
Goldeneye	BDir22, WCA1.2, Bonn, LBAP (CON, POW), UKBAm(RSPB)	1
Goshawk	WCA1.1, WCA9, Bonn, CITES, LBAP (CLY, CON, POW, VOG)	1
Grasshopper Warbler	S7, UKBAP, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), UKBR(RSPB)	26
Great Black-backed Gull	BDir22, Bonn, Bern, WBR(RSPB), UKBAm(RSPB)	7
Green Sandpiper	WCA1.1, Bonn, Bern, LBAP (CON, VOG), UKBAm(RSPB)	5
Green Woodpecker	Bern, LBAP (CLY, CON, DEN, FLI, GWY, PEM, POW, SNP), WBAm(RSPB), UKBAm(RSPB)	19
Greenshank	BDir22, WCA1.1, Bonn, LBAP (CON, POW), UKBAm(RSPB)	7
Grey Partridge	BDir21, S7, UKBAP, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, DEN, FLI, GWY, POW, TRF, VOG), LI(VC43), UKBR(RSPB)	4
Grey Plover	BDir22, Bonn, WBR(RSPB), LBAP (CON, GWY), UKBAm(RSPB)	7
Guillemot	Bonn, LBAP (CON, PEM), WBAm(RSPB), UKBAm(RSPB)	1
Hawfinch	S7, UKBAP, Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	1
Hen Harrier	BDir1, S7, Bonn, CITES, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, SNP, VOG), LI(VC43), UKBR(RSPB)	3
Hobby	WCA1.1, Bonn, Bern, CITES, LBAP (CON, GWY, POW, VOG), WBAm(RSPB), LI(VC43)	6
House Martin	Bern, LBAP (BRG, CON, POW, RCT, VOG), WBAm(RSPB), UKBAm(RSPB)	50
House Sparrow	S7, UKBAP, Bern, LBAP (CLY, CON, FLI, GWY, VOG), WBAm(RSPB), UKBR(RSPB)	51
Jack Snipe	BDir21, Bonn, LBAP (CON, POW), WBAm(RSPB)	3
Kestrel	S7, Bonn, Bern, CITES, WBR(RSPB), LBAP (ANG, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), LI(VC43), UKBAm(RSPB)	60
Kingfisher	BDir1, WCA1.1, Bern, LBAP (CLY, CON, DEN, FLI, GWY, POW, TRA), WBAm(RSPB), UKBAm(RSPB)	69
Knot	BDir22, Bonn, LBAP (BBNP, CON, GWY), WBAm(RSPB), UKBAm(RSPB)	2
Lapwing	BDir22, S7, UKBAP, Bonn, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, MON, PEM, POW, SNP, TRF, VOG), LI(VC43), UKBAm(RSPB)	39
Lesser Black-backed Gull	BDir22, Bonn, Bern, LBAP (CON, GWY, PEM, POW, SNP), WBAm(RSPB), UKBAm(RSPB)	16
Lesser Redpoll	S7, UKBAP, WBR(RSPB), LBAP (CON), LBAP (DEN, POW, VOG), UKBAm(RSPB)	10
Lesser Spotted Woodpecker	S7, UKBAP, Bern, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), LI(VC43), UKBR(RSPB)	1
Linnet	S7, Bern, WBR(RSPB), LBAP (ANG, BBNP, CER, CLY, DEN, FLI, PEM, VOG), LBAP (CON, GWY), UKBR(RSPB)	21
Long-tailed Tit	WBAm(RSPB)	64
Mallard	BDir21, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	209
Marsh Harrier	BDir1, WCA1.1, Bonn, CITES, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)	3
Marsh Tit	S7, UKBAP, Bern, WBR(RSPB), LBAP (BBNP, CON, DEN, FLI, GWY, POW, VOG), UKBR(RSPB)	5
Marsh Warbler	WCA1.1, UKBAP, UKBR(RSPB)	4
Meadow Pipit	Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)	24
Merlin	BDir1, WCA1.1, Bonn, Bern, CITES, LBAP (CON, DEN, FLI, GWY, POW), WBAm(RSPB), LI(VC43), UKBAm(RSPB)	9

Table 6-4 Bird Records within 2km (Continued)

Common name	Conservation listings	Count
Mute Swan	BDir22, Bonn, LBAP (CON, POW), WBAm(RSPB), UKBAm(RSPB)	205
Osprey	BDir1, WCA1.1, Bonn, CITES, LBAP (GWY), WBAm(RSPB), UKBAm(RSPB)	1
Oystercatcher	BDir22, Bonn, LBAP (CON, GWY), WBAm(RSPB), LI(VC43), UKBAm(RSPB)	12
Peregrine	BDir1, WCA1.1, Bonn, Bern, CITES, LBAP (ANG, CLY, CON, GWY, PEM, POW, TRF, VOG), LI(VC43), UKBAm(RSPB)	4
Pintail	BDir21, WCA1.2, Bonn, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	4
Pochard	BDir21, Bonn, WBR(RSPB), LBAP (CON, POW), UKBR(RSPB), UKBAm(RSPB)	1
Purple Sandpiper	WCA1.1, Bonn, Bern, LBAP (CON, VOG), UKBAm(RSPB)	1
Red Kite	BDir1, WCA1.1, WCA9, Bonn, CITES, RD1 (UK), LBAP (CON, CRM, GWY, POW), WBAm(RSPB), UKBAm(RSPB)	4
Redshank	BDir22, Bonn, LBAP (ANG, CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)	17
Redstart	Bern, LBAP (CON, GWY, POW, SNP), WBAm(RSPB), UKBAm(RSPB)	2
Redwing	BDir22, WCA1.1, LBAP (CON, POW), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	48
Reed Bunting	S7, UKBAP, Bern, LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), WBAm(RSPB), UKBR(RSPB)	73
Ringed Plover	S7, Bonn, Bern, LBAP (BBNP, CON, CRM, GWY, VOG), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	5
Ruff	BDir1, BDir22, WCA1.1, Bonn, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)	2
Sand Martin	Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB), UKBAm(RSPB)	6
Sanderling	Bonn, Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)	5
Sandwich Tern	BDir1, Bonn, Bern, LBAP (ANG, CON, GWY), WBAm(RSPB), UKBAm(RSPB)	1
Shelduck	Bonn, Bern, LBAP (CON, GWY, VOG), WBAm(RSPB), UKBAm(RSPB)	18
Short-eared Owl	BDir1, Bern, CITES, WBR(RSPB), LBAP (CON, DEN, GWY, PEM, POW), LI(VC43), UKBAm(RSPB)	10
Shoveler	BDir21, Bonn, CITES, LBAP (ANG, CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)	34
Skylark	BDir22, S7, LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, TRF, VOG), WBAm(RSPB), UKBR(RSPB)	13
Snipe	BDir21, Bonn, LBAP (ANG, CON, DEN, FLI, GWY, POW), WBAm(RSPB), LI(VC43), UKBAm(RSPB)	45
Song Thrush	BDir22, S7, UKBAP, Bern, LBAP (ANG, BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, SNP, TRF, VOG, WRE), WBAm(RSPB), UKBR(RSPB)	61
Spoonbill	BDir1, WCA1.1, Bonn, Bern, CITES, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)	5
Spotted Flycatcher	S7, UKBAP, Bonn, Bern, WBR(RSPB), LBAP (BBNP, CER, CLY, CON, DEN, FLI, GWY, PEM, POW, VOG), UKBR(RSPB)	7
Spotted Redshank	BDir22, Bonn, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)	6
Starling	BDir22, S7, UKBAP, Bern, WBR(RSPB), LBAP (BBNP, CON, FLI, GWY, VOG), UKBR(RSPB)	85
Stone-curlew	BDir1, WCA1.1, UKBAP, Bonn, Bern, UKBR(RSPB)	1
Swallow	Bern, LBAP (ANG, CON, GWY, POW, VOG), WBAm(RSPB), UKBAm(RSPB)	121
Swift	LBAP (BRG, RCT, VOG), WBAm(RSPB), UKBAm(RSPB)	35
Teal	BDir21, Bonn, CITES, LBAP (ANG, CON, DEN, FLI, GWY), WBAm(RSPB), LI(VC43), UKBAm(RSPB)	116
Tree Sparrow	S7, UKBAP, WBR(RSPB), LBAP (ANG, BBNP, CER, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, VOG), LI(VC43), UKBR(RSPB)	7
Tufted Duck	BDir21, Bonn, LBAP (CON, POW, VOG), WBAm(RSPB)	3
Turnstone	Bonn, Bern, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	5

Table 6-4 Bird Records within 2km (Continued)

Common name	Conservation listings	Count
Turtle Dove	BDir22, S7, UKBAP, CITES, WBR(RSPB), LBAP (BBNP, CON, GWY, MON, POW), UKBR(RSPB)	5
Wheatear	Bern, LBAP (BRG, CON, POW), WBAm(RSPB)	15
Whimbrel	BDir22, WCA1.1, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	11
White-fronted Goose	BDir22, S7, UKBAP, Bonn, Bern, WBR(RSPB), LBAP (BBNP), UKBR(RSPB), UKBAm(RSPB)	1
Whitethroat	LBAP (CON, POW), WBAm(RSPB)	26
Wigeon	BDir21, Bonn, CITES, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)	12
Willow Tit	S7, UKBAP, Bern, WBR(RSPB), LBAP (BBNP, DEN, FLI, POW, VOG), LBAP (CON, GWY), LI(VC43), UKBR(RSPB)	1
Willow Warbler	WBR(RSPB), LBAP (CON), UKBAm(RSPB)	45
Woodcock	BDir21, Bonn, LBAP (CON, DEN, FLI, GWY, POW), WBAm(RSPB), LI(VC43), UKBR(RSPB), UKBAm(RSPB)	2
Yellow Wagtail	S7, UKBAP, Bern, WBR(RSPB), LBAP (CON, DEN, FLI, POW, TRA, VOG), LI(VC43), UKBAm(RSPB)	14
Yellowhammer	S7, UKBAP, Bern, WBR(RSPB), LBAP (ANG, BBNP, CLY, CON, CRM, DEN, FLI, GWY, PEM, POW, SNP, VOG), UKBR(RSPB)	2

Key to Conservation status

UKBAP = UK Biodiversity Action Plan Priority Species
UKBAP (R) = UK Biodiversity Action Plan Priority Species (Research only species)
BDir1 = EC Birds Directive Annex 1 Species
BDir21 = EC Birds Directive Annex 2.1 Species
BDir22 = EC Birds Directive Annex 2.2 Species
Bern = The Bern Convention on the Conservation of European Wildlife and Natural Habitats
Bonn = The Bonn Convention on the Conservation of Migratory Species of Wild Animals Species
CITES = Convention on International Trade in Endangered Species
EPS = European Protected Species
HDir = EU Habitats Directive Species
NRW = Natural Resources Wales Priority Species
RD1 (Wales) = Welsh Red Data Book listing based on IUCN guidelines
RD1 (UK) = UK Red Data Book listing based on IUCN guidelines
RD2 (UK) = UK Red Data Book listing not based on IUCN guidelines (Nationally Rare and Scarce)
WBR (RSPB) = RSPB Welsh Red listed birds (not based on IUCN criteria)
WBAm (RSPB) = RSPB Welsh Amber listed birds (not based on IUCN criteria)
UKBR (RSPB) = RSPB UK Red listed birds (not based on IUCN criteria)
UKBAm (RSPB) = RSPB UK Amber listed birds (not based on IUCN criteria)
S42 = Natural Environment and Rural Communities Act 2006 (Section 42)
WCA1.1 = Wildlife and Countryside Act Schedule 1 Part 1 Species
WCA5 = Wildlife and Countryside Act Schedule 5 Species
WCA8 = Wildlife and Countryside Act Schedule 8 Species
WCA9 = Wildlife and Countryside Act Schedule 9 Species
WSG.P = Guidelines for the Selection of Wildlife Sites in South Wales - Primary species
WSG.C = Guidelines for the Selection of Wildlife Sites in South Wales - Contributory species
LBAP (xxx) = Local Biodiversity Action Plan Species (see key below)
LI (SEWBReC) = Locally Important Species (as identified by local specialists) in SEWBReC area.
LI (BIS) = Locally Important Species (as identified by local specialists) in BIS* area.
LI (BRYO-MON) = Locally or nationally scarce or rare bryophyte in Monmouthshire.
LI (VC##) = Locally Important Species (as identified by local specialists) in Vice County ##
LI (VC##, LS) = Locally Scarce in Vice County ##
LI (VC##, LR) = Locally Rare in Vice County ##
LI (VC##, EX) = Extinct in Vice County ##

LI (VC##, UR) = Under Recorded in Vice County ##
* BIS = Biodiversity Information Service for Powys and Brecon Beacons National Park

Statutory nature conservation sites

Magor Marsh SSSI

6.50 Magor Marsh SSSI is located 430 meters to the north east of the assessment site and was selected for the following ornithological features:

- "breeding ground for water and marsh birds including Cetti's Warbler, Reed Warbler, Coot, Moorhen, Water Rail and Little Egret."

6.51 Receptor evaluation: Magor Marsh SSSI is of National (UK) value.

Severn Estuary SSSI

6.52 The Severn Estuary SSSI is 1.3km to the south and was selected for the following ornithological features:

- "The SSSI is of international importance for wintering and passage wading birds, with total winter populations averaging about 44,000 birds. Numbers can be considerably higher during severe winters when, owing to its mild climate, the Severn supports wader populations that move in from the colder coasts of Britain. The SSSI holds most of the estuary's internationally important Curlew Numenius arquata and Redshank Tringa totanus populations, and most of its nationally important Ringed Plover Charadrius hiaticula and Grey Plover Pluvialis squatarola populations. Other waders which occur in significant numbers within the SSSI are Common Snipe Gallinago gallinago, Knot Calidris canutus, Whimbrel Numenius phaeopus and Turnstone Arenaria interpres.

- The SSSI is internationally important for Dunlin Calidris alpina and supports about 7.5% of the British wintering population of this species. The estuary as a whole supports about 10.5% of the British wintering population and is the single most important wintering ground of Dunlin in Britain.

- In late winter and early spring the SSSI supports nationally important numbers of Shelduck Tadorna tadorna, following the partial dispersal from their moulting grounds in Bridgwater Bay. There are also significant numbers of Wigeon Anas penelope."

6.53 Receptor evaluation: Severn Estuary SSSI is of National (UK) value.

Newport Wetlands SSSI

6.54 Newport Wetlands SSSI lies 4.5km to the south west within the Gwent Levels and was selected for the following ornithological features:

- "In winter, Newport Wetlands support nationally (UK) important numbers of shoveler Anas clypeata and black-tailed godwit Limosa limosa. Other over -wintering species that use the site

include gadwall A. strepera, wigeon A. penelope, shelduck Tadorna tadorna, dunlin Calidris alpina, redshank Tringa totanus, whimbrel Numenius phaeopus and curlew N. arquata. During the summer, the wet grasslands, saline lagoons and reedbeds on the site support an exceptional variety of breeding birds, including nationally (UK) important breeding populations of avocet Recurvirostra avosetta, redshank, Lapwing Vanellus vanellus, water rail Rallus aquaticus, Cetti's warbler Cettia cetti and bearded tit Panurus biarmicus. In addition, breeding populations of ringed plover Charadrius hiaticula and little ringed plover C. dubius are also present."

6.55 Receptor evaluation: Newport Wetlands SSSI is of National (UK) value.

Severn Estuary Ramsar

6.56 The Severn Estuary Ramsar lies 1.3km to the south. This site was selected for the following ornithological features:

- "The estuary is also important for migratory birds during spring and autumn migrations. During the five year period 1987/88 to 1991/92, the estuary supported nationally important numbers of Common Ringed Plover Charadrius hiaticula, Dunlin Calidris alpina, Whimbrel Numenius phaeopus, and Common Redshank Tringa totanus. The site also regularly supports more than 20,000 waterfowl. In the five year period 1988/89 to 1992/93 the average peak count was 68,026 waterfowl, comprising 17,502 wildfowl and 50,524 waders. These included internationally important numbers of Greater White-fronted Goose Anser albifrons albifrons (3,002), Shelduck Tadorna tadorna (2,892), Gadwall Anas strepera (330), Dunlin Calidris alpina (41,683) and Common Redshank Tringa totanus (2,013). Several other species occur in nationally important numbers, including Lesser Black-backed Gulls."

6.57 Receptor evaluation: Severn Estuary Ramsar is of International value.

Severn Estuary SPA

6.58 The Severn Estuary SPA lies 1.3km to the south and was selected for the following ornithological features:

6.59 This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

Over winter;

- Bewick's Swan *Cygnus* columbianus *bewickii*, 280 individuals representing at least 4.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

6.60 This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

On passage;

- Ringed Plover *Charadrius hiaticula*, 655 individuals representing at least 1.3% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)

Over winter;

- Curlew *Numenius arquata*, 3,903 individuals representing at least 1.1% of the wintering Europe - breeding population (5 year peak mean 1991/2 - 1995/6)
- Dunlin *Calidris alpina alpina*, 44,624 individuals representing at least 3.2% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)
- Pintail *Anas acuta*, 599 individuals representing at least 1.0% of the wintering North-western Europe population (5 year peak mean 1991/2 - 1995/6)
- Redshank *Tringa totanus*, 2,330 individuals representing at least 1.6% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)
- Shelduck *Tadorna tadorna*, 3,330 individuals representing at least 1.1% of the wintering North-western Europe population (5 year peak mean 1991/2 - 1995/6)

6.61 Assemblage qualification: A wetland of international importance.

6.62 The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.

6.63 Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Gadwall *Anas strepera*, Shelduck *Tadorna tadorna*, Pintail *Anas acuta*, Dunlin *Calidris alpina alpina*, Curlew *Numenius arquata*, Redshank *Tringa totanus*, Bewick's Swan *Cygnus columbianus bewickii*, Wigeon *Anas penelope*, Lapwing *Vanellus vanellus*, Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Shoveler *Anas clypeata*, Pochard *Aythya ferina*, Tufted Duck *Aythya fuligula*, Grey Plover *Pluvialis squatarola*, White-fronted Goose *Anser albifrons albifrons*, Whimbrel *Numenius phaeopus*.

6.64 Receptor evaluation: Severn Estuary SPA is of International (European) value.

Field surveys

Wintering and passage birds (Appendix 6.1)

Shelduck

6.65 Shelduck were present on five occasions with a maximum of 5 birds on 25th February and 14th March 2020. Shelduck are an interest feature of the Severn Estuary SSSI, Severn Estuary SPA and Severn Estuary Ramsar. WeBs data annual peak (5-year average) for these duck in the estuary is 5462 (Frost *et al*, 2020[8]) whilst the SPA was originally designated for a population of 2892 and the Ramsar for 3330. These five birds would comprise less than 0.1% of the estuary population,

[8] Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2020. *Waterbirds in the UK 2018/19: The Wetland Bird Survey*. BTO/RSPB/JNCC. Thetford.

less than 0.2% of the SPA population and 0.15% of the Ramsar population, whilst this species is not regularly active here.

6.66 Shelduck are of Amber conservation concern.

Lesser Black-backed Gull

6.67 Lesser Black-backed Gulls were present on five occasions with a maximum of 77 individuals on 7th March 2020. No details could be found on the number of Lesser Black-backed gulls associated with the Ramsar, although WeBs data annual peak (5-year average) for these gulls in the estuary is 376 (Frost *et al*, 2020). These 77 birds would comprise 20% of the estuary population. However, they were seldom active here with an average of 3.34 birds during two years of survey represents just under 1% of the Ramsar population.

6.68 Lesser Black-backed Gulls are of Amber conservation concern.

Snipe

6.69 Snipe were recorded on 13 of the 32 survey visits with a maximum of 43 birds on 28th February 2020. Snipe are an interest feature of Severn Estuary SSSI. WeBs data annual peak (5-year average) for this wader within the Severn Estuary is 503 (Frost *et al*, 2020). These 43 birds would comprise 8.5% of the estuary population. However, an average of 4.34 birds during two years of survey represents 0.9% of the estuary population.

6.70 Snipe are of Amber conservation concern.

Mallard

6.71 Mallard were recorded on 24 of the 32 site visits with a maximum of 50 birds on 13th October 2019. Mallard are an interest feature of Severn Estuary SPA. WeBs data annual peak (5-year average) for these duck within the Severn Estuary is 2379 (Frost *et al*, 2020). These birds would comprise 2% of the local population. However, usual numbers were between 1-10 with an average of approximately 7 birds per survey, approximately 0.3% of the SPA population.

6.72 Mallard are of Amber conservation concern.

Lapwing

6.73 Lapwing were recorded on 21 of the 32 site visits with a maximum of 164 birds on 27th November 2018. Lapwing are an interest feature of Severn Estuary SPA. WeBs data annual peak (5-year average) for this wader within the Severn Estuary is 11383 (Frost *et al*, 2020). These 164 birds would comprise 1.4%% of the local population. However, the average of 16.34 birds during two years of survey represents 0.14% of the estuary population.

6.74 Lapwing are of Red conservation concern and listed under Section 7 of Environment (Wales) Act 2016.

Other species

6.75 Pochard (Red listed), Bewick's Swan (Amber & Section 7 listed), Teal (Amber listed), Curlew (Red & Section 7 listed) and Wigeon (Amber listed) were recorded here in small numbers on a single visit.

6.76 Receptor evaluation: The assessment site is of County value for wintering birds.

Hedgerow nesting birds (Appendix 6.2)

6.77 Passerines are nesting within the boundary hedgerows with juvenile Song Thrush, Dunnock, Linnet, House Sparrow and Bullfinch recorded, and a single Stonechat observed in suitable habitat. These birds are listed under Section 7 of Environment (Wales) Act 2016 and are of Red or Amber conservation concern.

6.78 Receptor evaluation: The assessment site is of Local value for hedgerow nesting birds.

Marshland and water nesting birds (Appendix 6.2)

6.79 Marshland and other water birds are nesting in association with reens, with juveniles recorded for Mallard and Mute Swan, both species of Amber conservation status. Also present were singing Reed Bunting but with no evidence of successful nesting. These three bird species are listed under Section 7 of Environment (Wales) Act 2016.

6.80 Receptor evaluation: The assessment site is of Local value for marshland and water nesting birds.

Ground nesting birds (Appendix 6.2)

6.81 Small numbers of Lapwing were present during the breeding bird surveys with a maximum of 9 birds present, although of these only 4 were within the development footprint. At least two pairs tried to nest within the development footprint but were unsuccessful due to ongoing agricultural management. Lapwing are of Red conservation concern and are listed under Section 7 of Environment (Wales) Act 2016.

6.82 Singing Skylark were also observed during the breeding surveys, but no evidence of successful breeding was noted.

6.83 Receptor evaluation: The assessment site is of Site value for ground nesting birds.

Future baseline

6.84 It is possible that baseline will change over the lifetime of the development with bird distribution patterns changing due to the effects of climate change. This is a complex issue with a magnitude of effect that cannot be predicted here.

LEGISLATION AND POLICY

Nature Conservation Legislation

Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971

6.85 Known as the Ramsar Convention, or the Convention on Wetlands, its aim is to stem the progressive encroachment on, and loss of wetlands, now and in the future through international treaty. It provides the only international mechanism for protecting sites of global importance and is thus of key conservation significance. The UK ratified the Ramsar Convention and designated its first Ramsar sites in 1976. Wales currently has 10 Ramsar sites designated as 'Wetland of International Importance'.

6.86 Severn Estuary Ramsar is within 1.3km of the Assessment Site.

European Red Data lists (IUCN, 2000)

6.87 International Union for Conservation of Nature (IUCN) and the European Commission have been working together on an initiative to assess around 6,000 European species according to IUCN regional Red Listing Guidelines. Through this process they have produced a European Red List identifying those species which are threatened with extinction at the European level so that appropriate conservation action can be taken to improve their status.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

6.88 This Act is the primary legislation that protects animals, plants and certain habitats in the UK. This includes the designation and protection of some of the best areas of natural environmental as Sites of Special Scientific Interest (SSSI). The following SSSI with ornithological interest are within the zone of influence:

- Magor Marsh SSSI
- Newport Wetlands SSSI
- Severn Estuary SSSI

The Conservation of Habitats and Species Regulations 2017

6.89 The Conservation of Habitats and Species Regulations 2017 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

6.90 The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species. These sites form a network termed Natura 2000 and include Special Protection Areas (SPA).

6.91 Severn Estuary SPA is within 1.3km of the Assessment Site.

The Countryside and Rights of Way (CRoW) Act 2000

6.92 This Act increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

Circular 06/2005 Biodiversity and geological conservation – statutory obligations and their impact within the planning system

6.93 This circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It complements the national planning policy in the National Planning Policy Framework and the Planning Practice Guidance.

Natural Environment and Rural Communities Act 2006

6.94 The Act made amendments to both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way (CRoW) Act 2000. For example, it extended the CRoW biodiversity duty to public bodies and statutory undertakers.

Biodiversity strategies

UK Post-2010 Biodiversity Framework, 2012

6.95 The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach', and is the result of a change in strategic thinking.

The natural choice: securing the value of nature (2011) (Natural Environment White Paper)

6.96 This White Paper outlines the Government's vision for the future of landscape and ecosystem services.

Environment (Wales) Act 2016

6.97 Part 1 of the Environment Act sets out Wales' approach to planning and managing natural resources at a national and local level with a general purpose linked to statutory 'principles of sustainable management of natural resources' defined within the Act.

Section 6 - Biodiversity and resilience of ecosystems duty

6.98 Section 6 of the Act places a duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In so doing, public authorities must also seek to 'promote the resilience of ecosystems'. The duty replaces the section 40 duty in the Natural Environment and Rural Communities Act 2006 (NERC Act 2006), in relation to Wales, and applies to those authorities that fell within the previous duty.

6.99 Public authorities will be required to report on the actions they are taking to improve biodiversity and promote ecosystem resilience.

Section 7 - Biodiversity lists and duty to take steps to maintain and enhance biodiversity

6.100 This section replaces the duty in section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales.

6.101 The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps.

6.102 Linnet, Reed Bunting, Herring Gull, House Sparrow, Dunnock, Bullfinch, Starling, Song Thrush, Bewick's Swan and Lapwing are all included on the biodiversity lists and were recorded within the assessment site.

County Level

6.103 Newport City Council's Local Biodiversity Action Plan (LBAP) has a list of special habitats and species in the area and outlines how, in partnership, they plan to protect and enhance them.

6.104 Coastal and floodplain grazing marsh is included in the LBAP for its value to bird species, including Lapwing.

Birds of Conservation Concern (BoCC)

6.105 Commonly referred to as the UK Red List for birds, this is the fourth review of the status of birds in the UK, Channel Islands and Isle of Man, and updates the last assessment in 2009. Using standardised criteria, 244 species with breeding, passage or wintering populations in the UK were assessed by experts from a range of bird NGOs and assigned to the Red, Amber or Green lists of conservation concern.

6.106 Red list species are those that are Globally Threatened according to IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.

6.107 Amber list species are those with an unfavourable conservation status in Europe.

6.108 Species on the Green List fulfil none of the above criteria and are of least conservation concern.

EVALUATION OF RECEPTORS

6.109 The ornithological receptors to be considered for significant effects are given in Table 6.5. These are of local or higher value; those ecological receptors that have less than local value are not considered further unless they are European Protected Species and there is potential for them to be present (in which case the regulatory context i.e. the Habitats Regulations 2010 is considered), or they are the subject of national legislation (i.e. Wildlife and Countryside Act 1981).

Table 6-5. Table of ornithological receptors to be considered for significant effects

Receptor	Status	Valuation
Severn Estuary Ramsar	Ramsar Convention	International
Severn Estuary SPA	The Conservation of Habitats and Species Regulations 2017	International
Severn Estuary SSSI	Wildlife and Countryside Act 1981	National
Magor Marsh SSSI	Wildlife and Countryside Act 1981	National
Newport Wetlands SSSI	Wildlife and Countryside Act 1981	National
Wintering and passage birds	Wildlife and Countryside Act 1981, Environment (Wales) Act 2016, Section 7	County
Hedgerow nesting birds	Wildlife and Countryside Act 1981, Environment (Wales) Act 2016, Section 7	Local
Marshland and water nesting birds	Wildlife and Countryside Act 1981, Environment (Wales) Act 2016, Section 7	Local
Ground nesting birds	Wildlife and Countryside Act 1981, Environment (Wales) Act 2016, Section 7	Site

The need for an appropriate assessment

6.110 An appropriate assessment is required by Regulation 48 of the Habitats Regulations 1994 implementing Article 6(3) of the Habitats Directive (92/43/EEC) in the event that it is considered a plan or project, not connected with the management of that site, is likely to have a 'significant effect' on any European (Natura) site, i.e. Special Protection Areas (SPAs) and Ramsar sites.

6.111 The purpose of appropriate assessment is to ensure that protection of the integrity of European sites is a part of the planning process at a regional and local level. Permission can only be granted if it can be ascertained that the plan or project will not affect the integrity of the European site.

6.112 It is appropriate to use the information assembled for this EcIA when carrying out the appropriate assessment under the Habitats Regulations.

6.113 There are three Natura sites within the surrounding area. However, the potential for impact on their qualifying Annex 1 habitats and Annex II species have been screened out, with the exception of ornithological interest which is dealt with here.

MITIGATION - THE PROPOSAL RESPONDS TO ITS UNIQUE LOCATION

Primary (embedded) mitigation

6.114 The Gwent Levels is a unique and ancient landscape designated as a Site of Special Scientific Interest (SSSI) for its ecological richness and diversity, much of which is associated with the presence of and maintenance regime associated with the drainage system which constitutes a network of drainage ditches, locally referred to as reens.

6.115 It is recognised that physical changes as a result of a solar park development in this location, such as changes in views or ground disturbance, would result from the proposal. These changes are referred to as impacts. The design and layout of the solar park has responded to the location's value and sensitivities in order to reduce the magnitude of such impacts through primary (embedded) mitigation, as detailed within 'Responding to the Environmental Sensitivity of the Site', in paragraphs 2.41 and 2.42 of Chapter 2.

Secondary Mitigation

6.116 The LEMP (at Appendix 2.3) includes further detail around the following activities associated with all phases of the development in order to avoid or minimse impacts.

Construction phase

6.117 To avoid accidental damage to nesting habitat associated with reens, ditches and hedgerows exclusion zones to boundary features will be protected from accidental damage by a suitable temporary fence during the construction phase. There will be no access, storage of materials, ground disturbance, burning or contamination within the fenced areas.

6.118 Existing field access points will be used to provide access over reens.

6.119 Prior to works in the accepted bird nesting season (March to August inclusive) suitable habitats will be thoroughly inspected by a qualified person prior to disturbance. If nesting birds are found, all activities likely to damage the immediate area (within 5 metres) will be delayed until chicks have fledged. The 5 metre buffer will be delineated with a suitable temporary fence as detailed in the LEMP.

6.120 Breeding Lapwing mitigation detailed in Appendix 2 of the LEMP (Appendix 2.3) will be in place prior to the first bird nesting season (March to August) within the construction period.

6.121 Wintering Lapwing mitigation detailed in Appendix 3 of the LEMP will be in place prior to the first wintering season (October to March) within the construction period.

Operational phase

6.122 Permanent access tracks and parking/storage areas will be seeded with a suitable grass mix through hydro-seeding.

6.123 Breeding and wintering Lapwing mitigation detailed in Appendix 2 and 3 of the LEMP (Appendix 2.3) will be retained for the operational phase of the project.

6.124 Hedgerow, reen and ditch management will take place outside the accepted bird nesting season.

Efficacy of the secondary mitigation proposed

6.125 The majority of valued breeding birds are associated with field boundary features. By ensuring boundary features are protected during all phases of development, the associated ecological receptors will be properly protected, and adverse effects on the majority of breeding bird habitats avoided.

6.126 Checking suitable habitats for nesting birds prior to any construction works in the accepted nesting season will ensure individual nesting pairs are not impacted, whilst avoiding an offence under relevant wildlife legislation.

6.127 Lapwing are unlikely to attempt to breed within this site following development, as they require open breeding habitat. Breeding Lapwing mitigation will provide optimal habitat for this bird which is currently is struggling to successfully breed within the existing agricultural operations at site. Breeding Lapwing are an interest feature of Newport Wetlands SSSI and Lapwing are listed under Section 7 of Environment (Wales) Act 2016.

6.128 Lapwing are unlikely to forage within this site following development as they require open foraging habitat. Wintering Lapwing mitigation will comprise land managed specifically for Lapwing to the south of the proposed development. Much of this is set within a block of fields in which 20% of all Lapwings were recorded during winter months. This will ensure sufficient suitable habitat is available during winter months to support the small numbers of birds recorded here 2018 to 2020. Wintering Lapwing are an interest features of Severn Estuary SPA and Lapwing are listed under Section 7 of Environment (Wales) Act 2016.

ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

Construction phase

6.129 During the construction phase, there is predictable adverse effects which are generally unavoidable; many are temporary or short term and can be minimised as part of construction management, but some have the potential for more lasting effect. These include:

- Temporary habitat loss associated with temporary access routes, cable trenches, storage, and site buildings and site compounds;
- areas for plant maintenance and for storage of oils, fuels and chemicals;
- dust generation;
- environmental incidents and accidents;
- acoustic disturbance and vibration from construction activities;
- ground excavation;
- horizonal directional drilling operations;
- removal of site offices and temporary compounds/tracks; and,
- vegetation clearance.

6.130 However, the permanent loss of habitat under the development is addressed as an operational effect.

6.131 The potential for adverse impacts has been minimised as far as possible through the application of good practice techniques and adherence to well-designed method statements. These will be managed through the LEMP, CTMP and CEMP and are detailed as Primary (embedded) and Secondary mitigation.

Designated sites

Magor Moor SSSI

6.132 The proposed development is located 430 metres from Magor Marsh SSSI which is of National (UK) value for its breeding birds including Cetti's Warbler, Reed Warbler, Moorhen and Little Egret that were present within the assessment site during the breeding season.

6.133 The primary pathway of effect would be disturbance whilst birds associated with Magor Marsh SSSI were breeding. Due to separation distances, it is unlikely that any birds within the SSSI would be directly impacted during the construction phase. Furthermore, the two warbler species and Coot do not range over large distances and birds nesting within this SSSI are unlikely to be actively foraging within the assessment site during the construction phase. Occasional Little Egret were recorded within the assessment site towards then end of the breeding bird survey period in 2019.

6.134 Protection of boundary habitats will ensure negligible effect on this receptor during the construction phase.

Severn Estuary SSSI

6.135 The proposed development is located 1.3km to the north of the Severn Estuary SSSI which is of National (UK) value for its wintering and passage birds including, Shelduck, Curlew, Snipe and Wigeon that were present within the assessment site.

6.136 The primary pathway of effect would be temporary loss of habitats to construction activities and disturbance during the wintering season affecting interest feature birds that are also active within this SSSI.

6.137 These species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period.

6.138 Wintering birds associated with the assessment site which are SSSI interest features would exploit largely similar habitats to wintering Lapwing. The provision of Lapwing mitigation will ensure adverse effect on these interest features of this SSSI is unlikely. Any effect would be negative, minor and temporary for the period of construction.

Newport Wetlands SSSI

6.139 Newport Wetlands SSSI lies 4.5km to the south west and is of National Importance for overwintering and breeding birds. Of these interest features, Shelduck (wintering), Wigeon (Wintering), Cetti's Warbler (breeding), Curlew (wintering) and Lapwing (breeding) were recorded within the assessment site.

6.140 The primary pathway of effect would be temporary habitat loss to construction activities and disturbance during the wintering and breeding seasons affecting interest feature birds that also active within this SSSI.

6.141 Due to separation distance, it is extremely unlikely that breeding Cetti's' Warbler and breeding Lapwing from this SSSI would be active within the development site.

6.142 Only very small numbers of Shelduck and Wigeon were recorded within the development site during wintering bird surveys whilst these species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period.

6.143 It is near-certain that there will be a negligible effect on this receptor during the construction phase.

Severn Estuary Ramsar

6.144 The proposed development is located 1.3km to the north of the Severn Estuary Ramsar which is of International value for its wintering and passage birds. Of these interest features Lesser Black-backed Gull and Shelduck were recorded here.

6.145 The primary pathway of effect would be temporary habitat loss to construction activities and disturbance during the wintering season affecting interest feature birds that also active within this Ramsar.

6.146 These species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period and it is near certain there will be a negligible effect on this receptor during the construction phase.

Severn Estuary SPA

6.147 The proposed development is located 1.3km to the north of the Severn Estuary SPA which is of International value for its wintering and passage birds. Of these interest features Lapwing, Mallard, Snipe, Lesser Black-backed Gull, Shelduck, Pochard, Teal, Bewick's Swan, Curlew and Wigeon were recorded during the 32 site visits between October 2018 and March 2020.

6.148 Of these species, Wigeon, Teal, Pochard, Curlew and Bewick's Swan were only encountered in small numbers on a single visit.

6.149 Shelduck were present on five survey visits with a maximum of 5 birds, Lesser Black-backed Gulls were present on five survey visits with a maximum of 77 individuals, Snipe were present on 13 survey visits with a maximum of 43 birds, Mallard were present on 24 survey visits with a maximum of 50 birds and Lapwing were recorded on 21 survey visits with a maximum of 164 birds.

6.150 However, average numbers per survey visit over the two years were far below these peaks at 16.34 birds for Lapwing, 6.94 bird for Mallard, 4.34 birds for Snipe, 3.34 birds for Lesser Black-backed Gulls and 0.59 birds for Shelduck.

6.151 A better indication of wintering Lapwing use of the site is given by the median value of 5 as the majority of values are clustered towards the lower end of the scale, with 164 being the maximum on a single visit in November 2018, followed by 60 birds in October 2018 and 52 birds in December 2019.

6.152 The primary pathway of effect would be temporary habitat loss to construction activities and disturbance during the wintering season affecting birds that also active within this SPA.

6.153 The development site supports less than 1% of the population of species listed as interest features of this SPA[9].

[9] Where assemblage population rather than species specific numbers have been given in the SPA citation, the population of the of each assemblage species has been taken from WeBs data annual peak (5-year average) within the Severn Estuary. See Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2020. *Waterbirds in the UK 2018/19: The Wetland Bird Survey*. BTO/RSPB/JNCC. Thetford.

6.154 Wintering birds associated with the assessment site that are SPA interest features would exploit largely similar habitats to wintering Lapwing. The provision of wintering Lapwing mitigation will ensure negligible effect during construction on the interest features of this SPA.

Wintering and passage birds

6.155 The assessment site is of County value for wintering and passage birds with three bird species listed under Section 7 of Environment (Wales) Act 2016 present during winter and small numbers of birds associated with nearby statutory nature conservation sites present.

6.156 The primary pathway of effect would be disturbance during the wintering season and temporary habitat loss.

6.157 Wintering birds associated with the assessment site would exploit largely similar habitats to wintering Lapwing. The provision of Lapwing mitigation will ensure adverse effect due to habitats loss on these birds is unlikely. Any effect would be associated with disturbance, and would be negative, minor and temporary for the period of construction.

Hedgerow nesting birds

6.158 The assessment site is of Local value for hedgerow nesting birds with six bird species listed under Section 7 of Environment (Wales) Act 2016 present during breeding bird surveys, five of which were definitely breeding here.

6.159 The primary pathway of effect would be disturbance during the breeding season. Hedgerow nesting birds in modern agricultural landscapes are normalized to certain levels of disturbance associated with crop and livestock management, and these birds tend to avoid open habitats.

6.160 Any food items (such as soil invertebrates) exposed during construction in the nesting period would be a positive effect.

6.161 Protection of boundary habitats with a suitable temporary fence will ensure it is near-certain that there will be a negligible effect on this receptor during the construction phase.

Marshland and water nesting birds

6.162 The assessment site is of Local value for marshland and water nesting birds with Mallard and Mute Swan recorded breeding here.

6.163 The primary pathway of effect would be disturbance during the breeding season and temporary habitat loss. Nesting birds in modern agricultural landscapes are normalized to certain levels of disturbance associated with crop and livestock management, whilst buffers would minimize impacts associated with construction. However, marshland and water nesting birds tend to be larger and more readily take flight when disturbed, when compared to hedgerow nesting birds.

6.164 Any food items (such as soil invertebrates) exposed during construction in the nesting period would be a positive effect.

6.165 Protection of boundary habitats with a suitable temporary fence and the use of existing bridges to provide access over reens will ensure it is likely that there will be a negligible effect on this receptor during the construction phase.

Ground nesting birds

6.166 The assessment site is of Site value for ground nesting birds with small numbers of Lapwing and Skylark recorded here, but without any observable breeding success largely due to agricultural practices.

6.167 The primary pathway of effect would be disturbance during the breeding season and temporary habitat loss. However, it could be argued that displacing birds from this site into adjacent areas where agricultural management is less intense could be beneficial as it will facilitate successful breeding.

6.168 Any food items (such as soil invertebrates) exposed during construction in the nesting period would be a positive effect.

6.169 The provision of Lapwing breeding mitigation and nesting bird checks prior to the start of works would minimize adverse effect on individual breeding birds during the construction phase. It is near-certain there would be a negative, minor and temporary effect for the period of construction due to disturbance. This would not affect local ground nesting bird populations in the short term.

Operational phase

6.170 During the operational phase, effects may arise from:

- maintenance;
- changes in land-management;
- loss of habitat and habitat fragmentation.

6.171 The potential for adverse impacts have been minimised as far as possible through the application of good practice techniques and adherence to well-designed method statements. These will be managed through the LEMP and are detailed as Primary (embedded) and Secondary mitigation.

Designated sites

Magor Moor SSSI

6.172 The proposed development is located 430 metres from Magor Marsh SSSI which is of National (UK) value for its breeding birds including Cetti's Warbler, Reed Warbler, Moorhen and Little Egret that were present within the assessment site during the breeding season.

6.173 The primary pathway of effect would be disturbance during maintenance operations, although due to separation distances it is unlikely that any birds within the SSSI would be directly impacted during the operational phase.

6.174 It is certain that there will be negligible effect on this receptor during the operational phase.

Severn Estuary SSSI

6.175 The proposed development is located 1.3km to the north of the Severn Estuary SSSI which is of National (UK) value for its wintering and passage birds including Shelduck, Curlew, Snipe and Wigeon that were present within the assessment site.

6.176 The primary pathway of effect would be permanent loss of habitat used by interest feature birds of this SSSI.

6.177 These species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period.

6.178 Wintering birds associated with the assessment site which are SSSI interest features would exploit largely similar habitats to wintering Lapwing. The provision of Lapwing mitigation will ensure adverse effect on these interest features of this SSSI is extremely unlikely.

Newport Wetlands SSSI

6.179 Newport Wetlands SSSI lies 4.5km to the south west and is of National Importance for overwintering and breeding birds. Of these interest features, Shelduck (wintering), Cetti's Warbler (breeding), Curlew (wintering) and Lapwing (breeding) were recorded within the assessment site.

6.180 The primary pathway of effect would be permanent loss of habitat used by interest feature birds of this SSSI.

6.181 Due to separation distance, it is extremely unlikely that breeding Cetti's' Warbler and breeding Lapwing from this SSSI would be active within the development site.

6.182 Only very small numbers of Shelduck and Teal were recorded within the development site during wintering bird surveys whilst these species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period.

6.183 It is near-certain that there will be a negligible effect on this receptor during the operational phase.

Severn Estuary Ramsar

6.184 The proposed development is located 1.3km to the north of the Severn Estuary Ramsar which is of International value for its wintering and passage birds. Of these interest features Lesser Black-backed Gull and Shelduck were recorded within the assessment site.

6.185 The primary pathway of effect would be permanent loss of habitat used by interest feature birds of this Ramsar.

6.186 These species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) during the construction period and it is near certain there will be a negligible effect on this receptor during the operational phase.

Severn Estuary SPA

6.187 The proposed development is located 1.3km to the north of the Severn Estuary SPA which is of International value for its wintering and passage birds. Of these interest features Lapwing, Mallard, Snipe, Lesser Black-backed Gull, Shelduck, Pochard, Teal, Bewick's Swan, Curlew and Wigeon were recorded during the 32 site visits between October 2018 and March 2020.

6.188 Of these species, Wigeon, Teal Pochard, Curlew and Bewick's Swan were only encountered in small numbers on a single visit.

6.189 Shelduck were present on five survey visits with a maximum of 5 birds, Lesser Black-backed Gulls were present on five survey visits with a maximum of 77 individuals, Snipe were present on 13 survey visits with a maximum of 43 birds, Mallard were present on 24 survey visits with a maximum of 50 birds and Lapwing were recorded on 21 survey visits with a maximum of 164 birds.

6.190 However, average numbers per survey visit over the two years were far below these peaks at 16.34 birds for Lapwing, 6.94 bird for Mallard, 4.34 birds for Snipe, 3.34 birds for Lesser Black-backed Gulls and 0.59 birds for Shelduck.

6.191 A better indication of wintering Lapwing use of the site is given by the median value of 5 as the majority of values are clustered towards the lower end of the scale, with 164 being the maximum on a single visit in November 2018, followed by 60 birds in October 2018 and 52 birds in December 2019.

6.192 The primary pathway of effect would be permanent loss of habitat used by interest features species of this SPA.

6.193 The development site supports less than 1% of the population of species listed as interest features of this SPA[10].

[10] Where assemblage population rather than species specific numbers have been given in the SPA citation, the population of the of each assemblage species has been taken from WeBs data annual peak (5-year average) within the Severn Estuary. See Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2020. *Waterbirds in the UK 2018/19: The Wetland Bird Survey*. BTO/RSPB/JNCC. Thetford.

6.194 Wintering birds associated with the assessment site that are SPA interest features would exploit largely similar habitats to wintering Lapwing. The provision of wintering Lapwing mitigation will ensure negligible effect on the interest features of this SPA.

Wintering and passage birds

6.195 The assessment site is of County value for wintering and passage birds with three bird species listed under Section 7 of Environment (Wales) Act 2016 present during winter, and small numbers of birds associated with nearby statutory nature conservation sites present.

6.196 The primary pathway of effect would be permanent habitat loss.

6.197 Wintering birds associated with the assessment site would exploit largely similar habitats to wintering Lapwing. The provision of Lapwing mitigation will ensure the effect on these birds is negligible.

Hedgerow nesting birds

6.198 The assessment site is of Local value for hedgerow nesting birds with six bird species listed under Section 7 of Environment (Wales) Act 2016 present during breeding bird surveys, five of which were definitely breeding here.

6.199 The primary pathway of effect would be associated with disturbance or destruction of nests during maintenance, and increased food items associated with changes in land management.

6.200 Protection of boundary habitats, management of hedgerows, ditches and reens outside the nesting season, and changes in land management will ensure that it is near-certain there will be a positive, minor effect on this receptor for the operational phase of this development.

Marshland and water nesting birds

6.201 The assessment site is of Local value for marshland and water nesting birds with Mallard and Mute Swan recorded breeding here.

6.202 The primary pathway of effect would be disturbance during maintenance in the breeding season, and increased food items associated with changes in land management.

6.203 Protection of boundary habitats, management of hedgerows, ditches and reens outside the nesting season, and changes in land management will ensure that it is near-certain there will be a positive, minor effect on this receptor for the operational phase of this development.

Ground nesting birds

6.204 The assessment site is of Site value for ground nesting birds with small numbers of Lapwing and Skylark recorded here, but without success largely due to agricultural practices.

6.205 The primary pathway of effect would be disturbance during the breeding season and habitat loss.

6.206 The grey literature reports that Skylark are known to nest within boundary habitats to solar farms and will include these areas in their territories[11], whilst Lapwing did not successfully nest here in 2019 due to agricultural operations. This is likely to be the case most years.

6.207 Providing optimal habitat away from agricultural operations in the breeding Lapwing mitigation area will give local ground nesting birds the opportunity to nest and successfully raise chicks. Positive effect on ground nesting bird populations is near-certain. This would be minor and permanent for the period of operation.

Decommissioning

6.208 The solar park will have a minimum lifetime of 35 years. During decommissioning the above ground infrastructure (solar panels and supports, substation, inverters, switchgear, CCTV & fencing) and the underground cabling will be removed from site. Tracks will be removed, unless the landowner wished for them to be retained.

6.209 The site is to be reinstated to its former state and condition, as at the date of the lease. As such, the land will be returned to its original state - available and suitable for its current agricultural use. The baseline for receptors assessed here are those present prior to the construction phase.

6.210 Decommissioning impacts will be assessed through updated protected species surveys prior to works to allow a proper assessment taking into account future wildlife legislation and guidelines and changes to the site during its operational life.

Magor Moor SSSI

6.211 The proposed development is located 430 metres from Magor Marsh SSSI which is of National (UK) value for its breeding birds.

6.212 The primary pathway of effect would be temporary habitat loss to construction activities and disturbance whilst birds associated with Magor Marsh SSSI were breeding. Due to separation distances, it is unlikely that any birds within the SSSI would be directly impacted during the decommissioning phase.

6.213 It is near-certain that there will be no effect on this receptor during the decommissioning phase.

Severn Estuary SSSI

6.214 The proposed development is located 1.3km to the north of the Severn Estuary SSSI which is of National (UK) value for its wintering and passage birds.

[11] H. Montag, G Parker & T. Clarkson. 2016. The Effects of Solar Farms on Local Biodiversity; A Comparative Study. Clarkson and Woods and Wychwood Biodiversity.

6.215 The primary pathway of effect would be temporary habitat loss to construction activities and disturbance whilst overwintering or on passage.

6.216 The operational phase is unlikely to be important for overwintering birds, therefore it is near-certain that there will be no effect on this receptor during the decommissioning phase.

Newport Wetlands SSSI

6.217 Newport Wetlands SSSI lies 4.5km to the south west and is of National Importance for overwintering and breeding birds.

6.218 The primary pathway of effect would be temporary habitat loss and disturbance during the wintering and breeding seasons affecting birds that also active within Newport Wetlands SSSI.

6.219 Due to separation distance, it is near-certain that there will be no effect on this receptor during the decommissioning phase.

Severn Estuary Ramsar

6.220 The proposed development is located 1.3km to the north of the Severn Estuary Ramsar which is of International value for its wintering and passage birds.

6.221 The operational phase is unlikely to be important for overwintering birds, therefore it is near-certain that there will be no effect on this receptor during the decommissioning phase.

Severn Estuary SPA

6.222 The proposed development is located 1.3km to the north of the Severn Estuary SPA which is of International value for its wintering and passage birds.

6.223 The operational phase is unlikely to be important for overwintering birds, therefore it is near-certain that there will be no effect on this receptor during the decommissioning phase.

Wintering and passage birds

6.224 The operational phase is unlikely to be important for overwintering birds, therefore it is near-certain that there will be no effect on this receptor during the decommissioning phase.

Hedgerow nesting birds

6.225 The assessment site is of Local value for hedgerow nesting birds with six bird species listed under Section 7 of Environment (Wales) Act 2016 present during breeding bird surveys, five of which were definitely breeding here.

6.226 The primary pathway of effect would be disturbance during the breeding season and temporary habitat loss. Hedgerow nesting birds in modern agricultural landscapes are normalized to certain levels of disturbance associated with crop and livestock management, and these birds tend to avoid open habitats.

6.227 Any food items (such as soil invertebrates) exposed during decommissioning in the nesting period would be a positive effect.

6.228 It is near-certain that there will be no adverse effect on this receptor during the decommissioning phase.

Marshland and water nesting birds

6.229 The assessment site is of Local value for marshland and water nesting birds.

6.230 The primary pathway of effect would be disturbance during the breeding season and temporary habitat loss. Nesting birds in modern agricultural landscapes are normalized to certain levels of disturbance associated with crop and livestock management, whilst buffers would minimize impacts associated with construction. These birds tend to avoid open habitats.

6.231 Adverse effect on individual breeding birds is likely. This would be negative, minor and temporary for the period of decommissioning. This would not affect populations.

Ground nesting birds

6.232 The assessment site is of Site value for ground nesting birds with small numbers of Lapwing and Skylark recorded here, but without success largely due to agricultural practices.

6.233 The operational phase is unlikely to be important for ground nesting birds, therefore it is near-certain that there will be no effect on this receptor during the decommissioning phase.

Table 6-6 Likely Effects

Receptor / resource	Phase	Sensitivity / value of receptor / resource	Nature of Potential Impact on receptor / resource	Secondary mitigation	Magnitude of potential impact	Level of effect (inlc: adverse or beneficial, temporary or permanent, short, medium or long term)	Significant / not significant
Magor Moor SSSI	Construction	National	Temporary disturbance		Negligible		Not significant
Severn Estuary SSSI	Construction	National	Temporary habitat loss and disturbance	Wintering Lapwing mitigation	Minor	Adverse, temporary, short term (for the construction period)	Not significant
Newport Wetlands SSSI	Construction	National	Temporary habitat loss and disturbance	Wintering Lapwing mitigation	Negligible		Not significant
Severn Estuary Ramsar	Construction	International	Temporary habitat loss and disturbance	Wintering Lapwing mitigation	Negligible		Not significant
Severn Estuary SPA	Construction	International	Temporary habitat loss and disturbance	Wintering Lapwing mitigation	Negligible		Not significant
Wintering and passage birds	Construction	County	Temporary habitat loss and disturbance	Wintering Lapwing mitigation	Minor	Adverse and short term due to disturbance (for the construction period)	Not significant
Hedgerow nesting birds	Construction	Local	Temporary disturbance during breeding season Increased food items	Protection of buffer zones by a suitable temporary fence during construction phase.	Negligible		Not significant

Table 6-6 Likely Effects

Receptor / resource	Phase	Sensitivity / value of receptor / resource	Nature of Potential Impact on receptor / resource	Secondary mitigation	Magnitude of potential impact	Level of effect (inlc: adverse or beneficial, temporary or permanent, short, medium or long term)	Significant / not significant
Marshland and water nesting birds	Construction	Local	Temporary disturbance during breeding season. Increased food items	Protection of buffer zones by a suitable temporary fence during construction phase. Prior to works in the accepted bird nesting season (March to August inclusive) suitable habitats will be thoroughly inspected by a qualified person.	Negligible		Not significant
Ground nesting birds	Construction	Site	Temporary habitat loss and disturbance. Increased food items	Prior to works in the accepted bird nesting season (March to August inclusive) suitable habitats will be thoroughly inspected by a qualified person Breeding Lapwing mitigation	Minor (individual birds). No effect at population level	Adverse and short term due to disturbance (for the construction period)	Not significant
Magor Moor SSSI	Operation	National	Permanent habitat loss		Negligible		Not significant
Severn Estuary SSSI	Operation	National	Permanent habitat loss	Wintering Lapwing mitigation	Negligible		Not significant

Table 6-6 Likely Effects

Receptor / resource	Phase	Sensitivity / value of receptor / resource	Nature of Potential Impact on receptor / resource	Secondary mitigation	Magnitude of potential impact	Level of effect (inlc: adverse or beneficial, temporary or permanent, short, medium or long term)	Significant / not significant
Newport Wetlands SSSI	Operation	National	Permanent habitat loss	Wintering Lapwing mitigation	Negligible		Not significant
Severn Estuary Ramsar	Operation	International	Permanent habitat loss	Wintering Lapwing mitigation	Negligible		Not significant
Severn Estuary SPA	Operation	International	Permanent habitat loss	Wintering Lapwing mitigation	Negligible		Not significant
Wintering and passage birds	Operation	County	Permanent habitat loss	Wintering Lapwing mitigation	Negligible		Not significant
Hedgerow nesting birds	Operation	Local	Increased food items associated with changes in land management	Protection of boundary habitats. Buffer zones to boundary habitats will be retained outside the development footprint. Hedgerow, reen and ditch management will take place outside the accepted bird nesting season.	Minor	Positive for the operational phase of the development	Not significant

Table 6-6 Likely Effects

Receptor / resource	Phase	Sensitivity / value of receptor / resource	Nature of Potential Impact on receptor / resource	Secondary mitigation	Magnitude of potential impact	Level of effect (inlc: adverse or beneficial, temporary or permanent, short, medium or long term)	Significant / not significant
Marshland and water nesting birds	Operation	Local	Increased food items associated with changes in land management	Protection of boundary habitats. Buffer zones to boundary habitats will be retained outside the development footprint. Hedgerow, reen and ditch management will take place outside the accepted bird nesting season.	Minor	Positive for the operational phase of the development	Not significant
Ground nesting birds	Operation	Site	Habitat loss, increased food items associated with changes in land management, increased probability of fledging broods	Breeding Lapwing mitigation	Minor	Positive for the operational phase of the development	Not significant

OPPORTUNITIES FOR ENHANCEMENT

6.234 Enhancement is improved management of ecological features or provision of new ecological features, resulting in a net benefit to biodiversity, which is unrelated to a negative impact or is 'over and above' that required to mitigate/compensate for an impact

6.235 Enhancement measures should be designed to deliver biodiversity objectives that are specified in relevant policy documents, and evidence should be provided to support the likelihood of delivering the predicted benefit. They should be incorporated into scheme design and assessed within the EcIA. To ensure that enhancements are enduring, their delivery and management should normally be guaranteed through a legal obligation, such as, in England and Wales, a planning obligation under section 106 of the Town and Country Planning Act 1990, or its equivalent provision elsewhere.

6.236 New nesting opportunities for passerines will be created comprising bird nesting boxes fixed to suitable trees on the field boundaries.

6.237 However, the most important enhancement for the majority of birds will be gained through changes in land management, and the creation of wide buffers to boundary features. Although these are not primarily designed to provide ecological enhancement of the site for birds, that will be the result.

Monitoring

6.238 Monitoring should be agreed with RSPB and NRW, to include wintering/passage and ground nesting birds associated with mitigation areas.

Delivery of mitigation and monitoring proposed

6.239 In line with Scoping Direction this ES provides reference to how the delivery of measures proposed to prevent/ minimise adverse effects is secured (through legal requirements or other suitably robust methods) and whether relevant consultees are aware of the measures proposed.

6.240 Mitigation, enhancement and monitoring is proposed for valued receptors. This is detailed within the LEMP (Appendix 2.3) and it is expected that this will be secured through a pre-commencement planning condition requiring the LEMP to be approved by NCC and NRW.

CUMULATIVE EFFECTS

6.241 Cumulative impacts are those additional changes caused by a proposed development in conjunction with similar developments, or as the combined effect of several developments taken together.

6.242 An assessment of the cumulative impact arising from the solar park development at this site requires that the relevant information relating to the individual impact of adjacent developments is available.

6.243 Approved developments that have the potential for a cumulative impact, and with sufficient data available within the public domain, are considered here.

6.244 Cumulative impacts arising from two or more developments may be:

- Additive - effects are summed
- Antagonistic – the cumulative impacts are less than their summed values
- Synergistic – the cumulative impact is greater than the summed impact.

DNS application DNS/3213968 on land on the Caldicot Levels, to the south of the Llanwern Steelworks Site, Newport

6.245 The application description is: Erection of a renewable energy hub with a net installed generation capacity and maximum export to grid of 49.9MW comprising of up to 245,000 ground mounted solar panels, battery storage container units (up to 200 units), underground cabling, grid connection hub, associated infrastructure, landscaping and environmental enhancements.

6.246 NRW have requested that cumulative impacts on Lapwing be considered in combination with this site.

6.247 Llanwern Solar ornithological Impact Assessment concluded that "Assuming all mitigation is implemented appropriately adverse residual impacts on the ornithological interest of the application areas will be limited to the potential loss of some breeding and wintering habitat for Lapwing. This is considered significant at the local level only."

6.248 This was based on the conclusion that the application areas do not provide important habitat for the wintering SPA species. In addition, the overall usage by wetland bird species was not considered to be significant and the application area is considered to be of importance to wintering birds associated with the Severn Estuary SPA at a Local level only.

6.249 In addition, for breeding birds only the area around a small area (Half Acre) is considered locally important for this species (Lapwing) under current land management.

6.250 Llanwern Solar Ornithological Impact Assessment determined that after mitigation there was no significant adverse effects on ornithological receptors. Cumulative effects as a result of the Llanwern Solar development is unlikely.

NCC application 18/0408 on land adjacent to and south of Rush Wall, Redwick, Newport

6.251 The application description is: Installation of single wind turbine of maximum tip height 130m and associated switch gear housing units, temporary access track, underground cabling and temporary crane hard-standing.

6.252 The impact assessment for the single wind turbine concluded slight adverse effects for summer and winter birds during the construction phase, and slight adverse effects on wintering birds during the operational phase associated with habitat loss and increased mortality from collisions. None of these effects were considered significant at the levels of assessment, whilst no effects were predicted for statutory nature conservation sites.

6.253 Due to the low levels of effect at both sites, and the high potential for antagonistic effects as the single turbine and this solar development are likely inpart to displace the same birds from the same habitat in the north of the site, cumulative effects are highly unlikely.

NCC application 12/1001 Land To The North Of Little Longlands Longlands Lane Magor Caldicot

6.254 The application description is: Erection of 1no. Wind turbine (with generating capacity of up to 1.5mw), with a maximum height to tip of 100m, together with ancillary development including electrical sub station kiosk and electrical transformer kiosk, underground cabling, onsite access tracks, access to the public highway, crane hardstandings, temporary construction compound and site signage.

6.255 The ES Statement concluded: *Following the implementation of measures to off-set site clearance impacts upon reptiles and amphibians, and disturbance impacts on nesting birds, no significant residual effects to these species would be expected.*

6.256 Cumulative effects are highly unlikely.

NCC application 18/1109 Land Adjacent And North Of Branch Railway Line Seven Stiles Avenue Newport

6.257 The application description is: construction of 1.6km of rail formation in connection with the stabling of trains including associated engineering and landscape works.

6.258 No long-term impacts were precited for designated sites. Impact was predicted for reptiles and great crested newt species, species which do not disperse over large distances during their lifecycle. Due to separation distances of greater than 5km, cumulative effect can be discounted.

NCC application 18/0756 Castle Farm Bishton Road Bishton Newport NP18 2DZ

6.259 The application description is: proposed free range egg production unit, 3no. Silos and associated work.

6.260 No ecological work has been completed for this site and it therefore cannot be objectively taken into account in this assessment.

Monmouthshire County Council application DM/2019/01937 Land At Vinegar Hill Vinegar Hill Undy Monmouthshire

6.261 The application description is: Hybrid planning application - Outline planning application for up to 155 dwellings, associated open space and infrastructure with all matters excluding access reserved, of which full planning permission is sought for 72 dwellings, associated open space and infrastructure.

6.262 Following adoption of mitigation, no significant impacts were predicted for statutory nature conservation sites, habitats or species. Cumulative effects are unlikely.

Monmouthshire County Council application DC/2016/00883 Rockfield Farm, The Elms, Undy, Caldicot, Monmouthshire, NP26 3EL

6.263 The application description is: Master planned development of 13.8 hectares of land for residential use and employment use; up to 266 Proposed residential units and approximately 5575 square meters of B1 floor space.

6.264 No formal assessment of impacts has been made. NRW have made no objection indicating that impacts on protected species and designated sites is unlikely. Cumulative effects are unlikely.

Monmouthshire County Council application DM/2018/01606 Rockfield Farm, The Elms, Undy, Caldicot, Monmouthshire, NP26 3EL

6.265 The application description is: Reserved matters application (pursuant to outline application) for the development of 144 dwellings and associated engineering works. | Rockfield Farm The Elms Undy Monmouthshire NP26 3EL.

6.266 No formal assessment of impacts has been made. NRW have made no objection indicating that impacts on protected species and designated sites is unlikely. Cumulative effects are unlikely.

Monmouthshire County Council application DC/2015/00095 Land At Ifton Manor Farm Chestnut Drive Rogiet Monmouthshire

6.267 The application description is: Residential development (12 Units) with associated development

6.268 No formal assessment of impacts has been made. NRW initially made objection relating to roosting bats although these were withdrawn during further discussions and conditioned mitigation recommended. Roosting bats are not a consideration for Rush Wall Solar Park and cumulative effects are unlikely.

Monmouthshire County Council application DM/2020/00103 Magor Brewery Newport Road Magor Caldicot

6.269 The application description is: Erection of sixteen fermentation vessels, enclosed supporting structure and external stairs; extension of existing high level access walkway; earth works; and temporary works including re-use of existing car park as vessel assembly site, creation of two temporary replacement car parks, temporary site roads and walkways, and associated works.

6.270 No formal assessment of impacts has been made and no NRW comments received. This project cannot be objectively taken into account in this assessment.

Monmouthshire County Council application DC/2015/00573 Magor Motorway Service Area, Magor, Monmouthshire, NP26 3YL

6.271 The application description is: Installation of ground mounted photovoltaic solar arrays to provide circa 5 MW generation capacity together with power inverter systems; transformer stations; internal access track; landscaping; cable trench, security measures, fencing, access gates and associated infrastructure.

6.272 No formal assessment of impacts has been made. NRW have made no objection, although they did make comments relating to dormice. Cumulative effects are unlikely.

Conclusion

6.273 Cumulative impacts are unlikely.