

13 COMBINED AND CUMULATIVE EFFECTS

13.1 Introduction

- 13.1.1 This chapter considers the potential cumulative environmental effects as a result of the Proposed Scheme in accordance with the EIA Regulations. The purpose of the assessment is to assess whether the combination of multiple effects upon a common receptor would result in an effect of greater significance than the individual effects alone (as reported in **Technical Chapters 5-12**).
- 13.1.2 As set out in **Chapter 4: EIA Process**, there are two aspects to the cumulative assessment which have been considered in the ES; **inter-project cumulative effects** and **intra-project combined effects**.

13.2 Statutory and planning context

- 13.2.1 In preparing this chapter of the ES, consideration has been given to relevant legislation, planning policy, and guidance documents. This includes, but is not limited to, the documents summarised in **Table 13.1**.

Table 13.1: Legislation, planning policy, and guidance documents relevant to this chapter

Document	Summary
Legislation	
EIA Regulations	Regulation 2(e) and Schedule 4 (sub-section 5(e)) set out the requirement for applicants to consider the potential for cumulative effects as part of the EIA process.
Planning Policy	
Future Wales: The National Plan 2040 (2021)	Future Wales provides a framework for planning change and development and has development plan status. Policy 18 (Renewable and Low Carbon Energy Developments of National Significance) identifies the need for proposed renewable energy projects to consider the cumulative impacts of existing and consented renewable energy schemes.
Guidance	
Planning Inspectorate's Advice Note 17: Cumulative Effects Assessment (2019)	An advice note prepared by the Planning Inspectorate on a staged process that should be followed by applicants who are required to deliver a cumulative environmental assessment as part of any Nationally Significant Infrastructure Project.

13.3 Consultation

- 13.3.1 A summary of the key points from the Scoping Direction (May 2020), relevant scoping responses and other consultations with relevant organisations is provided in **Table 13.2**, along with details of how the comments have been addressed in this chapter.

Table 13.2: Consultation Responses

Consultee	Summary of Consultation	Comment / Action Taken
Planning and Environment Decisions Wales (PEDW)	Scoping Direction, Section 5.4: <i>Based on the information set out in the scoping request, the approach to the assessment of cumulative impact is considered largely appropriate. Effects deemed individually not significant from the assessment, could cumulatively be significant, so inclusion criteria based on the most likely significant effects from this type of development may prove helpful when identifying what other developments should be accounted for. The criteria may vary from topic to topic.</i> <i>Best practice is to include proportionate information relating to projects that are not yet consented, dependent on the level of certainty of them coming forward.</i> <i>All of the other development considered should be documented and the reasons for inclusion or exclusion should be clearly stated. Professional judgement should be used to avoid excluding other development that is close to threshold limits but has characteristics likely to give rise to a significant effect; or could give rise to a cumulative effect by virtue of its proximity to the proposed development. Similarly, professional judgement should be applied to other development that exceeds thresholds but may not give rise to discernible effects. The process of refinement should be undertaken in consultation with CCBC, MTCBC and other consultees, where appropriate.</i> <i>The scope of the cumulative assessment should be fully explained and justified in the ES. Although intended for larger schemes, the Planning Inspectorate's guidance for Nationally Significant Infrastructure Projects – Advice Note 17: Cumulative Effects Assessment sets out a staged process for assessing cumulative impacts that may be of relevance to the Applicant.</i>	PEDW's comments are noted. The scope and approach has been presented in this chapter, including reference to the Planning Inspectorate's guidance where relevant.

Consultee	Summary of Consultation	Comment / Action Taken
PEDW	Scoping Direction, Table 1, ID13: <i>The Inspectorate advises that the cumulative study area should be based on the extent of potential impacts. The cumulative assessment should not only consider the impacts where the development would be visible in relation to other turbines, but should also consider other vantage points where there would be an increased awareness of wind turbines visible from the same location but in multiple directions.</i> <i>The cumulative assessment should also include all projects that may lead to cumulative visual effects within the study area (such as other major energy infrastructure projects) rather than just wind energy schemes. The list of cumulative schemes should be agreed with the relevant consultees.</i>	PEDW's comments are noted. The scope and approach has been presented in this chapter. Non-renewable projects for consideration within the assessment have been agreed with Merthyr Tydfil County Borough Council (MTCBC).
PEDW	Scoping Direction, Table 1, ID27: <i>The Applicant's attention is drawn to MTCBC comments at Appendix 1 regarding other wind turbines developments that should be considered as part of the cumulative impact assessment. In addition, the Inspectorate expects the cumulative assessment to consider all projects that may lead to cumulative effects (such as other major energy infrastructure projects) rather than just wind energy schemes. The list of cumulative schemes should be agreed with the relevant consultees.</i>	PEDW's comments are noted. The scope and approach has been presented in this chapter. Non-renewable projects for consideration within the assessment have been agreed with MTCBC.
PEDW	Scoping Direction, Table 1, ID33 (Noise): <i>The Applicant should comply with the detailed methodology set by section 5 the Institute of Acoustic Good Practice Guide to the application of ETSU-R-97 (2013) regarding the derivation of the appropriate lower fixed limits in the cumulative impact assessment. The ES should clearly identify all the relevant wind farms affecting the same receptors and the correct noise limits the proposal should comply with as part of the cumulative assessment, in agreement with the relevant authorities.</i>	PEDW's comments are noted. The scope and approach has been presented in this chapter.

Consultee	Summary of Consultation	Comment / Action Taken
Bannau Brycheiniog National Park (BBNPA)	Response to PAC: <i>The draft ES concludes no significant effects from cumulative effects. It states there is no consented wind energy developments in close proximity to the proposed scheme (ie within 20km). As highlighted above, there are a number of other DNS schemes through various stages of the consenting process and whilst these may be beyond the 20km distance could still have a cumulative impact which needs to be accounted for. We are concerned with the potential for a proliferation of such schemes on the fringes of the National Park should these be consented and note the cut-off point of February 2022 mentioned in the draft ES. We concur with NRW's comments that there are potential cumulative effects on landscape and visual matters can occur over a large radius. We are concerned with the cumulative impact which will result should these schemes be consented.</i>	In response to PAC comments made by BBNPA in relation to the emerging pattern of development to the south of the BBNP, an assessment of the scoping scenario is also included in the LVIA. (Chapter 5: Landscape and Visual) The effects identified in this scoping scenario are considered as being less likely to arise than the application stage and consented scenarios, as it is possible that scoping stage projects will not ultimately be developed in the form set out at Scoping, or may not gain consent or become operational, which reduces the likelihood of scoping stage scenario effects arising in full.

13.4 Assessment methodology

Impact assessment and significance criteria

- 13.4.1 There is no widely accepted methodology or best practice for assessing cumulative effects, although various guidance documents exist. However, the assessment methodology largely reflects that set out in the *Planning Inspectorate's Advice Note 17: Cumulative Effects Assessment*, as this is considered to represent best practice in respect of cumulative effects assessment. The significance criteria that will be used for the cumulative assessment will follow the policy and guidance documents outlined above and the general EIA approach methods presented in **Chapter 4: EIA Process**. Inter-project cumulative effects and intra-project combined effects that are of moderate and above are considered significant effects in relation to the EIA Regulations.

Inter-project cumulative effects

- 13.4.2 The approach to the assessment of inter-project effects has considered the changes to the baseline at common sensitive receptors as a result of changes brought about as a result of the Proposed Scheme in combination with one or more committed developments. The assessment of the inter-project effects will be based upon the residual (post-additional mitigation) effects that have been identified in the various factor assessments for the Proposed Scheme, as well as available environmental information for the committed developments.
- 13.4.3 In accordance with Advice Note 17 and the 2020 Scoping Direction, a list of committed developments which need to be considered as part of the inter-project cumulative effects assessment has been prepared, please refer to **Technical Appendix 13.1 (Volume 4)**.
- 13.4.4 The following criteria was used to inform the list of committed developments:
- Renewable / non-renewable developments that are under construction but that will not be completed prior to the Proposed Scheme commencing (except in the case of LVIA, where scoping schemes have been considered in response to PAC comments from BBNPA);
 - Renewable / non-renewable developments with planning permission within the last five years¹, but not yet implemented;
 - Submitted planning applications which are not yet determined;
 - Refusals subject to appeal procedures not yet determined;
 - EIA development not yet submitted but the subject of an EIA scoping request; and
 - Projects/sites allocated in the local development plan.
- 13.4.5 Development projects that are at EIA screening stage will not be considered, as they are not considered 'committed'.

¹ A five-year period is considered a reasonable time period to capture all approved developments that still have the potential to be built. Developments with planning permission older than five years will likely have been built or will not likely be built at all.

- 13.4.6 A Zone of Influence (Zol) was established for each environmental factor being assessed within the ES. The Zol has been defined by considering relevant topic guidance and the geographic scope of any potential impacts.
- 13.4.7 The list of committed developments was developed in consultation with MTCBC, Caerphilly County Borough Council (CCBC), Powys County Council (PCC), and Brecon Beacons National Park Authority (BBNPA) within the maximum Zol. Information has been drawn from relevant planning portals for each local authority and PEDW's DNS Portal.
- 13.4.8 Each environmental topic has reviewed the list of committed developments against the following criteria to determine which committed developments need to be considered as part of their inter-project cumulative effects assessment:
- The committed development has a construction, operational and/or demolition phase that is concurrent with the Proposed Scheme;
 - The committed development and the Proposed Scheme share common sensitive receptors/resources which are assessed and described in the supporting environmental documentation, and have the potential to be significantly affected by the combination of the committed development and the Proposed Scheme; and
 - The committed development has sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment. The assessment of each committed development on the list will be proportionate to the environmental assessment information available.
- 13.4.9 As the Proposed Scheme has an estimated design life of 35 years, inter-project cumulative effects during decommissioning are not considered as it is not possible to predict the developments which would be in progress at that point in time. In addition, any subsequent project applications will need to consider the Proposed Scheme in their respective cumulative assessments.

Intra-project combined effects

- 13.4.10 The approach to the assessment of interactions of environmental effects has considered the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been identified as experiencing likely significant effects by more than one environmental factor) due to the Proposed Scheme. The assessment has considered residual (post-mitigation) effects of 'slight' or greater significance only.
- 13.4.11 The assessment of the intra-project combined effects has been undertaken using a two-stage approach.

Stage 1 - Screening

- 13.4.12 Screening has been undertaken to determine whether a sensitive receptor is exposed to more than one type of residual (post-additional mitigation) effect during all phases of the Proposed Scheme. Those common sensitive receptors exposed to two or more types of residual (post-additional mitigation) effects, with significance of 'slight' or greater have been taken forward to Stage 2 of the assessment. If there is only one type of effect on a sensitive receptor (i.e. only one technical chapter has identified

effects on that sensitive receptor), then it will be considered that there are no potential intra-project combined effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment.

Stage 2 - Assessment of Intra-Project Combined Effects

- 13.4.13 A quantitative assessment of the overall significance of the cumulative effects on common sensitive receptors identified at Stage 1 will be undertaken based on technical information provided in the technical chapters and supporting appendices as well as professional judgement. Given that the types of effects may be very different in some cases, a quantitative assessment may not be possible, and it may be necessary to apply professional judgement in determining the level of significance.

13.5 Assessment of Effects: Inter-Project Cumulative Effects

Landscape and visual

- 13.5.1 The detailed methodology, approach, and conclusions to the landscape and visual inter-project cumulative assessment is presented in **Chapter 5: Landscape and Visual**.
- 13.5.2 The Proposed Scheme would not result in significant landscape or visual effects with the consented and application cumulative schemes included in the LVIA. There are no consented or application cumulative wind energy developments in close proximity to the Proposed Scheme. Where consented cumulative schemes are visible from key landscape and visual receptors, they would appear within a context and backdrop of existing wind energy development, substantially limiting their cumulative influence when considering the additional effect of the Proposed Scheme.
- 13.5.3 When considering the application scenario Mynydd Carn y Cefn intensifies the cumulative influence experienced in parts of the study area and a significant visual effect is found at viewpoint 16 Pen Garbugail as a result of the addition of the Proposed Scheme to this scenario.
- 13.5.4 When considering the Scoping scenario, the cumulative influence of further wind farm development within the study area results in additional significant landscape and visual effects in this cumulative scenario. As described in the cumulative development baseline, the effects identified in this scoping scenario are considered as being less likely to arise than the application stage and consented scenarios, as it is possible that scoping stage projects will not ultimately be developed in the form set out at Scoping, or may not gain consent or become operational, which reduces the likelihood of scoping stage scenario effects arising in full.

Geology, Hydrogeology, and Peat

- 13.5.5 The potential for the Proposed Scheme to contribute to cumulative effects in relation to other projects within 5 km was assessed. In addition, the potential for cumulative effects in relation to other projects directly downstream of the Proposed Scheme was assessed up to 10 km from the Site Boundary.

- 13.5.6 The nine projects presented in **Table 13.3** were identified as requiring further assessment. No projects within 10 km downstream of the Proposed Scheme were identified.

Table 13.3: Projects requiring cumulative assessment

Project name	Project type	Distance from Proposed Scheme
A465 Dowlais Top to Hirwaun	Infrastructure - roads	0.7 km SW
Ffos y Fran	Open cast mining	2.1 km SW
Not provided (Blaenau Gwent)	Buildings change of use	2.1 km E
Not provided (Blaenau Gwent)	Retention of earthworks	2.9 km NE
Not provided (Blaenau Gwent)	Residential development	3.3 km E
Not provided (Blaenau Gwent)	Construction of affordable homes	3.4 km E
Old Highways Depot, Pontlottyn	Variation of planning conditions relating to housing development	3.7 km SE
Land at Wauntysswg Farm, Abertysswg	Variation of planning condition (solar farm)	4.3 km SE
Circuit of Wales Solar Farm (DNS)	Ground-mounted solar array	4.3 km E

Geology and Soils

- 13.5.7 Effects on geology and soils are very localised. Cumulative effects are only likely to occur when two projects are at the same phase of work at the same time, and in close proximity (within 1 km).
- 13.5.8 One project is located within 1 km of the Proposed Scheme, the A465 Dowlais Top to Hirwaun road development. This project is noted to be under construction (and scheduled to be complete in 2025). It is reasonable to assume that construction for this development would be complete prior to any construction activity taking place for the Proposed Scheme.
- 13.5.9 It is assumed that both developments would employ best practice soil handling, storage and reinstatement methods. As a result, no cumulative effects are anticipated on geology and soils.

Peat

- 13.5.10 As peat is a relatively rare resource in Wales, effects on peat are considered to have a regional impact regardless of the scale of development. There are no projects within 5 km of the Proposed Scheme that are noted to be on or affecting any areas of peat. As a result, no cumulative effects are anticipated on peat.

Hydrogeology

- 13.5.11 Effects on hydrogeology are confined to developments within the same hydrogeological catchment area. Of greatest significance in this context is the Source Protection Zone (SPZ) for the Carboniferous Limestone aquifer. One project is located within 5 km of the Proposed Scheme and also within the SPZ.
- 13.5.12 This project is noted only as 'Retention of earthworks to reprofile land'. It is located adjacent to Trevil Quarries and may be associated with the quarry operations. The indicated project has no suggestion that excavations or groundworks are planned as part of the earthworks retention. It is unlikely, therefore, that it would have any effect on the groundwater within the SPZ. As a result, no cumulative effects are anticipated in relation to hydrogeology.

Hydrology and designated sites

- 13.5.13 No effects on designated sites are anticipated arising from the Proposed Scheme, indicating that cumulative effects cannot occur as a result of the proposals.
- 13.5.14 There are four projects located within the same watercourse catchments as the Proposed Scheme and within a 5 km radius of the Site Boundary. These projects are:
- A465 Dowlais Top to Hirwaun road development;
 - Ffos y Fran open cast mining;
 - Old Highways Depot, Pontlloftyn, variation of planning conditions; and
 - Land at Wauntysswg Farm, Abertysswg, variation of planning condition (solar farm).
- 13.5.15 The first two projects are located within the River Taff catchment, and the second two are within the River Rhymey catchment.
- 13.5.16 As discussed above, the A465 road development is currently under construction. It is unlikely therefore that there would be any time overlap between the construction phase of the A465 road development and the Proposed Scheme. Assuming both projects employ best practice water management, sediment management and pollution prevention controls, cumulative effects from the two projects are not anticipated.
- 13.5.17 Ffos y Fran open cast mine is a major open cast coal mining and land reclamation scheme. The site is currently operational, including existing and established surface water management, sediment management and pollution prevention procedures in place. It is assumed that these procedures would remain in place and operational until the site works are complete. If the mitigation measures associated with the Proposed Scheme are fulfilled and no significant change to site management takes place at Ffos y Fran, cumulative effects from the two projects are not anticipated.
- 13.5.18 The project at Old Highways Depot, Pontlloftyn, includes a request for a previous condition relating to drainage to be removed as a result of the introduction of Sustainable Drainage Approval Bodies. No details as to the development timeline are provided, although planning consent was previously granted in 2016 and the request to amend conditions was granted in 2017, indicating that construction of both projects in parallel is unlikely. If the mitigation measures associated with the Proposed

Scheme are fulfilled and best practice with relation to sustainable drainage provision is undertaken at Old Highways Depot, cumulative effects from the two projects are not anticipated.

- 13.5.19 The project at Wauntysswg Farm, Abertysswg, relates to development of a solar farm and the associated applications relate to the variation or discharge of planning conditions. Solar arrays require relatively limited groundworks as a result of the support frameworks used to hold the solar panels. It is assumed that aspects relating to surface water and sediment management and pollution prevention would be undertaken in line with best practice guidance. Given that the project has been consented and a number of planning conditions were discharged in 2021, it is unlikely that the construction phase of this project and the Proposed Scheme would occur in parallel. If mitigation commitments attached to the solar farm and the Proposed Scheme are fulfilled, and that best practice with relation to surface water and sediment management and pollution prevention is undertaken, cumulative effects from the two projects are not anticipated.

Ecology

- 13.5.20 This section considers the potential cumulative impacts on ecology for all important ecological features for which detailed assessment has been undertaken and for which effects are likely.

Habitat (SINC) Effects

- 13.5.21 One other development has been identified that would affect the land encompassed by Pen March and Traed y Milwyr, Llechryd SINC or Merthyr Common North SINC designation boundaries. The improvements to the A465 Sections 5 and 6 between Dowlais Top and Hirwaun (currently under construction) would result in the loss of 1.66 ha within the Pen March and Traed y Milwyr, Llechryd SINC. This would be compensated by enhancements to the (highways) soft estate, and the A465 Sections 5 and 6 ES (Welsh Government, 2017) predicts a slight positive residual impact.
- 13.5.22 The cumulative effect on the Pen March and Traed y Milwyr, Llechryd SINC of the Proposed Scheme and the A465 Sections 5 and 6 would be a combined permanent and temporary loss of 23.16 ha of habitat within the SINC. This is assessed as a likely significant cumulative negative effect on a feature of county level importance.
- 13.5.23 The loss of habitat would, however, be offset by the Habitat Management Plan for the Proposed Scheme and by the proposed enhancements to the (highways) soft estate, therefore no significant cumulative effects are likely.

Reptiles

- 13.5.24 The A465 Sections 5 and 6 has been identified as the only development that could affect reptile populations within or adjacent to the Site. Reptiles were scoped out of the EIA for the A465 Sections 5 and 6 (Welsh Government, 2017), although it is stated that good practice measures would be employed during construction to ensure compliance with relevant legislation.
- 13.5.25 It is also noted that proposed enhancements to the (highways) soft estate will benefit reptiles. Following the implementation of the proposed mitigation measures, both for

the A465 Sections 5 and 6 and the Proposed Scheme, no significant cumulative effects on reptiles are likely.

Bats

- 13.5.26 The 2020 Scoping Report stated that the cumulative assessment for bats during wind farm operation would be restricted to other wind farms within 10 km. Within 10 km of the Site there are 11 other wind developments which are operational, one consented development, and three other developments at the scoping stage (see **Figure 5.22a (Volume 3)** of the ES). Of these, almost all represent small (<100m to blade tip) single turbine developments. The only exceptions to this are the operational Pen Bryn Oer Wind Farm (three turbines) and the proposed Manmoel Wind Farm (five turbines).
- 13.5.27 An online search found no information relating to bats for a majority of these other committed developments. For those where environmental information was available:
- An assessment for the operational turbine at Cefn Bach Farm (Brooks Ecological, 2015) found very low levels of bat activity and concluded the turbine posed minimal risk to bats.
 - The assessment for the operational turbine at Cruglwyn (Axis, 2014) considered the site to be of very low value for bat species.
 - The assessment for the operational turbine at Pen-yr-heol Farm (Simon Geary Ecology Services Limited, 2015) classed the site as low risk for bats.
 - The decision notice for the consented turbine at Unit 19, Rassau Industrial Estate (BGCBC, 2021) notes that curtailment measures will be employed during the bat active season and concludes that residual impacts on bats will not be significant.
- 13.5.28 A planning application for Manmoel Wind Farm has yet to be submitted and no information is available regarding potential operational effects on bats.
- 13.5.29 Based on the above, no significant cumulative effects on bats during the operational phase of the Proposed Scheme are predicted, although it is noted that available data for other projects within the study area were limited.

Ornithology

- 13.5.30 This section considers the potential cumulative effects on ornithology for all species for which detailed assessment has been undertaken and for which effects are likely (cumulative effects are not possible for species for which no effects are likely from the Proposed Scheme alone). The cumulative assessment is based on consideration of residual effects, assuming that proposed mitigation and compensation measures for other committed developments are implemented.
- 13.5.31 The approach to identifying the short list of other projects for inclusion in the assessment of cumulative effects on bird species is based on the use of the core foraging range for each species included in the assessment, to determine the spatial extent of the assessment.
- 13.5.32 The core foraging areas for species included in the assessment are as follows, taken from NatureScot 2016 unless otherwise stated:
- Curlew: 1 km, with a maximum range usually within 2 km.

- Red kite: 4 km, with maximum range of up to 6 km.
- Peregrine: 2 km, with a maximum recorded distance in GB of 18 km.
- Golden plover: 3 km, with maximum range of 11 km.
- Kestrel and snipe: We are unaware of published core foraging areas for these species, for snipe the core foraging area for curlew has been used as a proxy. For kestrel the core foraging area for peregrine has been used as a worst-case scenario, but it is considered likely to be much smaller.

13.5.33 Other projects considered in the cumulative effects assessment are those within *circa* 8 km. This is based on red kite, which has the largest core foraging area of the species included in the assessment (4 km), and the inclusion of committed projects which could potentially affect a red kite territory located 4 km from the Proposed Scheme. Committed projects considered in the assessment are detailed in **Table 13.4**.

Table 13.4: Committed developments considered in the cumulative effects assessment

Site name	Type	Description	Status	~Distance (km)	Relevant species
Pengarnddu Industrial estate	Wind turbine	Single turbine, 55 m hub height, max height 77 m	Operational	Adjacent to south-west boundary	Unknown - relevant information not available in an online search
St Merryn Meat Factory	Wind turbine	Single turbine, 50 m hub height, max height 77 m	Operational	Adjacent to south-west boundary	No bird survey undertaken
A465 Sections 5 and 6 Improvements	Road	Dualling of A465 between Hirwaun and Dowlais Top	Under construction	Adjacent to southern boundary	Lapwing
Rassau Industrial Estate	Wind turbine	Single turbine, 43.5 m hub height, max height 72 m	Operational	4	Unknown - relevant information not available in an online search
Tafarnaubach Industrial Estate	Wind turbine	Single turbine 46 m hub height, max height 74 m	Operational	4	Unknown - relevant information not available in an online search

Site name	Type	Description	Status	~Distance (km)	Relevant species
Circuit of Wales Solar Farm	Solar	Ground mounted solar array with associated access and ancillary infrastructure	Pre application	4.3	Unknown - relevant information not available in an online search
Unit 19 Rassau Industrial Estate	Wind turbine	Single turbine, hub height 54 m, max height 80 m	Consented	5	Gulls mentioned in planning officer report but no further information available in an online search
Former Tech Board Site	Wind turbine	Single turbine, hub height 46 m, max height 74 m	Consented	6	Unknown, no bird-related issues reported in planning officer statement
Pen Bryn Oer	Wind farm	Three wind turbines, hub height 65 m, max height 110 m	Operational	6	Unknown - relevant information not available in an online search
Manmoel Wind Farm	Wind farm	Wind farm of up to five wind turbines of up to 180 m maximum tip height, and ancillary development	Pre application	6.7	Red kite Peregrine

Site name	Type	Description	Status	~Distance (km)	Relevant species
Cruglwyn	Wind farm	Two wind turbines, hub height 60 m maximum height 86.5 m	Operational	8	Bird survey vantage points on four dates in September 2014 only, identified kestrel, goshawk <i>Accipiter gentilis</i> , peregrine, red kite and hobby <i>Falco subbuteo</i>
Bedlwyn Farm	Wind turbine	Single turbine, hub height 60 m max height, 86.5 m	Operational	8	No specific ornithology survey, red kite recorded as part of general ecology survey
Pen-yr-heol Farm	Wind turbine	Single turbine, hub height 70 m, max height 77.9 m	Operational	8	Red kite, curlew, peregrine and kestrel
Cefn Bach Farm	Wind turbine	Single turbine hub height 50 m max height 77 m	Operational	8	No bird survey data, assessment of character and desk study bird records only

13.5.34 Further discussion is provided below of the identified committed developments with relevant bird data.

A465 Sections 5 and 6

13.5.35 The only important bird species subject to detailed assessment within the ES for the A465 Sections 5 and 6 Improvements was lapwing, for which it was predicted that up to 12 pairs would be lost at Dowlais Top. A mitigation area is therefore proposed to the east of Dowlais Top at Blaencarno. Plans showing the location of the proposed mitigation area are redacted within the ES but from the description provided the mitigation area is understood to be located to the south of the A465.

- 13.5.36 Although lapwing is not subject to detailed assessment in respect of the Proposed Scheme, it is necessary to consider whether the Proposed Scheme could affect the mitigation area for lapwing proposed as part of the A465 Sections 5 and 6 project. Even assuming that the mitigation area is located directly adjacent to the A465 (so at the closest point to the Site) it will still be over 1 km from the closest turbine and separated from the Proposed Scheme by a busy dual carriageway. As such, no cumulative effect on lapwing is likely.

Unit 19 Rassau Industrial Estate

- 13.5.37 A single turbine development in association with an industrial unit, the ornithology assessment was found to be robust and only gulls are mentioned in the planning officer's report. Gulls were not included in the assessment for the Proposed Scheme, due to the small number of flights recorded overall and as such no significant cumulative effects are likely.

Manmoel Wind Farm

- 13.5.38 Up to five turbines and associated infrastructure located at approximate grid reference 316386, 207281, 6.7 km from the Site Boundary of the Proposed Scheme. This is potentially within the core foraging area for red kite and golden plover.
- 13.5.39 According to the Ornithology ES chapter for Mynydd Carn y Cefn (Wood, 2022), vantage point surveys commenced at Manmoel in September 2019 with surveys completed during the non-breeding season 2019/20, the breeding season 2020 and the non-breeding season 2020/21. A further season of breeding bird surveys was also completed in 2021 though this information has not yet been made publicly available.
- 13.5.40 Species recorded at the site included regular flights of red kite, with other raptors (including goshawk, hen harrier, merlin and peregrine) only recorded on one or two occasions during each season of vantage point survey. Breeding raptor surveys in 2020 did not record any nests of red kite, goshawk or merlin within 1 km of the Manmoel Wind Farm boundary. Collision risk predictions for red kite will be provided as part of the EIA but are not currently available. Impacts on goshawk, hen harrier, merlin and peregrine have been ruled out, due to low numbers of flights recorded.
- 13.5.41 From the information available for Manmoel Wind Farm, it is considered unlikely that curlew, peregrine, kestrel, golden plover or snipe are likely to be subject to cumulative effects arising from the Proposed Scheme, as either these species have not been recorded on site at all, or have been recorded very infrequently (peregrine). Red kite has been recorded in the proposed development area for Manmoel Wind Farm and the proposed development is within the 8 km range specified for red kite. However, Collision Risk Model (CRM) results were not available for Manmoel Wind Farm, therefore the cumulative effect on red kite could not be assessed.

Cruglwyn Wind Farm

- 13.5.42 Two operational wind turbines are located at the site which is approximately 8 km from the Proposed Scheme. The Environmental Statement (Axis, 2014) reports vantage point surveys occurring on four dates in September 2014. These surveys identified the following species included in the Proposed Scheme's ornithology assessment: kestrel, red kite and peregrine.
- 13.5.43 A detailed assessment of collision risk and displacement was not available and therefore a quantitative assessment of cumulative effects is not possible. However, given the intervening distance and the fact that Cruglwyn Wind Farm consists of only two relatively small turbines, significant cumulative effects are considered unlikely.

Pen-yr-heol Farm Wind Turbine

- 13.5.44 Bird surveys were undertaken for this application, including three vantage point surveys, two in May and one in June 2015 (Simon Geary Ecology Services Limited, 2015). The following species included in the Proposed Scheme's ornithology assessment were recorded: curlew, peregrine and kestrel.
- 13.5.45 A detailed assessment of collision risk and displacement was not available and therefore a quantitative assessment of cumulative effects is not possible. However, the report stated: '*Survey of bird flight activity in the area indicates there is a low risk of bird collision with the proposed wind turbine. The number of potentially sensitive species or numbers of birds in the area is small and not one flight of such species occurred over the proposed turbine site during vantage point survey.*' On that basis together with the intervening distance and Pen-yr-heol Farm consisting of one relatively small turbine, significant cumulative effects are considered unlikely.

Conclusion

- 13.5.46 Based on the above, no significant cumulative effects are identified at this time, although it is noted that available data for committed developments within the study area are limited.

Noise and vibration

- 13.5.47 The detailed methodology, approach, and conclusions to the inter-project cumulative noise assessment is presented in **Chapter 9: Noise**.
- 13.5.48 The cumulative assessment concludes that at all assessed receptors, apart from receptors R21 and R23, the cumulative development noise immissions are predicted to meet the associated noise limits across all assessed wind speeds. At R21 and R23, where there are exceedances of the associated noise limits, noise immissions from cumulative developments, namely St Merryn Wind Turbine, are greater (>10 dB) than those from the Proposed Scheme.
- 13.5.49 As advocated in the IOA GPG (2013) (Par 5.1.2), where consented (or if the development is proposed, calculated) noise immissions from cumulative wind farms can be demonstrated to be at least 10 dB lower than those associated with the Proposed Scheme, cumulative noise impacts are considered to be 'negligible' and not 'significant' in EIA terms. This is also the case where noise immission from the

Proposed Scheme can be demonstrated to be 10 dB lower than those associated with existing or consented cumulative wind farms, which is the case at R21 and R23.

- 13.5.50 Consequently, it is concluded that the Proposed Scheme in combination with cumulative developments will have no significant effects in relation to noise.

Access, Traffic and Transport

- 13.5.51 This section considers the potential cumulative effects on access, traffic, and transport for which detailed assessment has been undertaken and for which effects are likely. The cumulative assessment is based on consideration of residual effects, assuming that proposed mitigation and compensation measures for other committed development are implemented.

- 13.5.52 As presented in **Chapter 10: Access, Traffic and Transport**, the use of National Road Traffic Forecast (NRTF) growth assumptions has provided a basis for general local development growth within the study area. The use of NRTF covers other committed development traffic flows within the study area.

Asda Superstore Wind Turbine

- 13.5.53 Planning consent has been granted for one wind turbine with a maximum blade tip height of 77 m, to the north of Asda Superstore (MTCBC planning reference P/15/0241). A review of the online planning application documents presents a Transport Management Plan (TMP) which includes a two-week delivery schedule. and shows a maximum of two deliveries per day with the exception of Day 8 where concrete deliveries will account for 35 deliveries. The TMP notes that “*Ahead of the selected day for pouring of concrete the contractor will give timely notice of the activity to all stakeholders.*”

Wind turbine on land adjacent to the Valley Heights Filling Station

- 13.5.54 One wind turbine with a maximum blade tip height of 20.2 m has been granted on land adjacent to the Valley Heights Filling Station, along the Heads of the Valleys Road (MTCBC planning reference P/16/0384). A review of the online planning documents notes that construction works will take place over a total of nine days, with a maximum of 14 movements occurring in week one, which is an average of three movements per day.

Abergorki Wind Farm

- 13.5.55 Abergorki Wind Farm (Rhondda Cynon Taf County Borough Council planning reference 13/0663/10) is located approximately 16 km to the south-west of the Proposed Scheme and has been granted planning permission for a total of three wind turbines. It is not expected that construction traffic associated with Abergorki Wind Farm will impact on the Proposed Scheme’s study area.

Other Developments

- 13.5.56 A review of local planning applications found that planning permission has been granted for the provision of 36 camping pods and five chalets, as well as on-site facilities at the existing Bike Park Wales, Abercanaid site (MTCBC planning reference

P/19/0073). Estimated daily trips associated with the development are included in 2025 Future Baseline Flows.

Conclusion

- 13.5.57 Any crossover of traffic associated with the committed developments outlined above and the Proposed Scheme (including abnormal indivisible load movements to the north of Asda Superstore and adjacent to Valley Heights Filling Station) would be addressed via an overarching Traffic Management Plan, to be secured by way of a planning condition. The inclusion of further traffic flows in the base line (i.e. including non-consented traffic) will dilute the potential impact that the Proposed Scheme will have.

Cultural Heritage

- 13.5.58 There are numerous other developments proposed or ongoing within the vicinity of the Proposed Scheme. Only those major applications within the 10 km study area have been further considered as part of this assessment, as those beyond this zone are too far away to be considered to have a cumulative effect with the Proposed Scheme on historic assets.
- 13.5.59 Assessing cumulative effects of these upon historic assets within the vicinity of the Site Boundary can be considered in terms of direct effects on archaeological remains and the indirect effects on designated historic assets in the wider area.
- 13.5.60 Cumulative effects with other developments either operational, under construction or in the planning system will cause no additional impacts to archaeological remains within the Site Boundary. Investigation and recording of the remains within the area will remove elements of an irreplaceable resource but will provide information on those remains accessible through the Historic Environment Record (HER) and National Monuments Record (NMR). Any similar archaeological works undertaken on other developments constantly increases our knowledge and understanding of archaeology in the wider area.
- 13.5.61 There are two Developments of National Significance (DNS) within the 10 km area assessment area of the Proposed Scheme, including the Circuit of Wales Solar Farm (DNS CAS), which lies approximately 4 km to the north-east. The development will comprise ground mounted solar arrays and associated infrastructure. It is presumed that the solar panels will face south to maximise sun light. As this will be a low level development it is not considered that it will cause any cumulative impacts with the Proposed Scheme to historic assets.
- 13.5.62 The second DNS application is the Manmoel Wind Farm approximately 6 km to the south-east of the Proposed Scheme (DNS/3239181). The layout of the wind farm has not been determined at this stage, but it is considered unlikely that any significant cumulative effects will occur.
- 13.5.63 There are four major applications within Merthyr Tydfil:
- the major ongoing works associated with the improvement of the A465 Heads of the Valleys Road (A465, Section 5 and 6 Dowlais Top to Hirwaun) directly south;

- the Ffos Y Fran Open Cast mining site visible on the other side of the A465 to the south (no ref);
- the proposed Rhydycar West tourism and leisure development over 5 km to the south-west beyond Merthyr Tydfil (no ref); and
- the proposed camping pod site and associated infrastructure and leisure site some 6.2 km to the south-west near Abercanaid (P22/0192). These sites all lie within the higher Zone of Theoretical Visibility (ZTV) areas.

- 13.5.64 The A465 improvements and the Ffos Y Fran open cast mine are both ongoing and may be intervisible with some of the same heritage assets as the Proposed Scheme. As is noted above, the region of Merthyr Tydfil is located in the valleys of south-east Wales. The area has been used for gathering resources for power and metalworking for over 200 years and the majority of listed buildings, conservation areas and the Merthyr Tydfil Historic Landscape in Wales are directly associated with this. Development, resource gathering and innovation is part of the landscape and many of the other cumulative developments in the region are a continuation of this process.
- 13.5.65 These developments are relatively low lying and small scale and are very unlikely to increase any cumulative impacts on historic assets.
- 13.5.66 There are two major developments within the 10 km area within Caerphilly County Borough Council area, a proposed solar farm north of Abertysswg, which has no intervisibility with the Proposed Scheme and therefore no cumulative impacts on historic assets, and a residential development within Pontlottyn.
- 13.5.67 The residential development lies within the Proposed Scheme's ZTV (approximately 4 km south-east of the Proposed Scheme), but it will be a low lying (ground level residential) development within an existing built up area such that there is unlikely to be any intervisibility with the Proposed Scheme that would cause a significant cumulative impact, if any at all.
- 13.5.68 There are 17 major developments within Blaenau Gwent County Borough Council, the majority of which are located within the Ebbw Vale valley or the adjacent valley at Brynmawr and will have no intervisibility with the Proposed Scheme and therefore cause no cumulative impacts to historic assets.
- 13.5.69 The remaining six developments include the change of use of buildings at the Tafarnaubach Industrial Estate (planning reference C/2019/0330) 2 km to the east of the Proposed Scheme, which although lying within the highest level ZTV will lead to little visible change and result in no cumulative impact.
- 13.5.70 Two areas of residential development of affordable homes (planning references C/2018/0191 and C/2016/0231) within Waundeg some 4.5 km east of the Proposed Scheme are low level residential developments in an existing built up area will result in no cumulative impacts.
- 13.5.71 The proposed retention of earthworks to reprofile land (planning reference C/2018/0019) around 3 km to the north-east of the Proposed Scheme will result in no cumulative impacts.
- 13.5.72 An application for a large industrial development located 5.5 km to the east (planning reference C/2018/0310) is for low lying development within an existing built up area west of Carmeltown and will cause no cumulative impacts.

- 13.5.73 The final development lies 5.5 km to the east of the Proposed Scheme adjacent to the A465 and is for the construction of new business units (planning reference C/2019/0009). This will be low lying, in an existing built up area and will cause no cumulative impacts.
- 13.5.74 As noted above, the majority of the historic assets in the study area are associated with the post medieval industrial development and exploitation of the landscape. Where designated assets are associated with medieval and earlier remains, there is a different emphasis on this change. Prior to the 18th century the valleys were a rural area mostly used for farming. In the prehistoric period, especially during the Bronze Age, not only would the area have had dispersed settlements and associated agricultural processes ongoing, but the upland areas were also used funerary monuments such as cairns and round barrows. These were often intervisible across valleys although the feasible distance of this intervisibility cannot cover every hill or mountain top in the region.
- 13.5.75 The Proposed Scheme does not encroach into the intervisibility between groups of these monuments in the local area. The presence of another development considered as part of the cumulative impact assessment could not be said to increase any encroachment of the Proposed Scheme into any such intervisibility.
- 13.5.76 For medieval remains, where visibility was part of their purpose and significance, these are mostly associated with castles and churches. There are no committed developments in the region which would combine to increase the level of change to the setting of such monuments from the Proposed Scheme.

13.6 **Assessment of Effects: Intra-project combined effects**

Stage 1 - Screening

- 13.6.1 The approach to the assessment of intra-project combined effects considers the change in baseline conditions at common sensitive receptors (i.e. those receptors that have been assessed by more than one technical topic) due to the Proposed Scheme.
- 13.6.2 The assessment is based upon residual effects only considered to be effects of minor or greater significance (i.e. excluding negligible effects).
- 13.6.3 An overall assessment of the intra-project combined effects on identified common sensitive receptors has been made using professional judgement and the technical information provided in **Technical Chapters 5-12**.
- 13.6.4 Only residual effects with the potential for effect interactions are considered. The following environmental topics are therefore excluded from the assessment:
- Ecology
 - Ornithology
 - Cultural heritage
 - Telecommunications
 - Utilities
 - Aviation

- Climate change
- Land use

13.6.5 The following technical topics are therefore included within the assessment:

- Landscape and visual (construction and operation)
- Geology, hydrogeology, and peat (construction only)
- Access, traffic, and transport (construction only)
- Noise (operation only)
- Shadow Flicker (operation only)

13.6.6 Potential intra-project combined effects during the construction and operational phases of the Proposed Scheme have been identified for the following common receptor groups:

- Residential receptors (construction only)
- Recreational receptors using the Site (construction only)

Stage 2 - Assessment of Intra-Project Combined Effects

13.6.7 **Table 13.5** presents the residual effects of the individual topics on common sensitive receptors. The potential for effect interactions are then discussed in the text following the table.

Table 13.5: Residual effects during construction

Topic	Significance of Residual Effects	
	Residential Receptors	Recreational Receptors
Landscape and visual	Adverse effects (minor and above) identified for residential receptors throughout the Study Area, significant effects largely predicted within the 3 km of the Proposed Scheme. Important to note the assessment concludes that the 'Residential Visual Amenity Threshold' will not be breached.	Adverse effects (minor and above) identified on users of Long Distance Paths and Public Right of Way (PRoW) network in close proximity to the site.
Geology, hydrogeology, and peat	Groundwater within the Source Protection Zone (SPZ) (designated as a source of public drinking water supply): Minor Adverse, long-term.	Not applicable
Access, traffic, and transport	Not applicable	Slight / Negligible effect on users of common land and PRoW Users

Residential Receptors

- 13.6.8 The visual effects of the Proposed Scheme on residential receptors are reported in detail within **Chapter 5: Landscape and Visual**, including identification of significant adverse effects as a result of the construction of the Proposed Scheme.
- 13.6.9 Turbines 1, 2, 4 and 5 are located within one a Natural Resources Wales designated SPZs for public drinking water supply. SPZs are defined around large, public potable groundwater abstraction sites, with the purpose of providing additional protection to safeguard drinking water quality through constraining the proximity of activities that may impact on a drinking water abstraction. The public water supply is drawn from the Carboniferous limestone bedrock in the area south of the Site, therefore **Chapter 6: Geology, Hydrogeology, and Peat** has assessed the potential impact of construction activities on the SPZ, and ultimately the risk of polluting effects on drinking water supply to residential areas.
- 13.6.10 As the potential effects on the SPZ (and ultimately the public water supply) would be closely managed and mitigated via the Construction Environmental Management Plan, and monitoring (during construction and post-construction), the potential for any intra-project combined effects on residential receptors (and their occupants) is not considered to be significant.

Recreational Receptors

- 13.6.11 The visual effects of the Proposed Scheme on recreational receptors are reported in detail within **Chapter 5: Landscape and Visual**, including identification of significant adverse effects as a result of the construction of the Proposed Scheme.
- 13.6.12 The assessment within **Chapter 10: Access, Traffic, and Transport** has identified the potential impacts on recreational users of the open access land and local PRow during construction of the Proposed Scheme.
- 13.6.13 There is the potential for intra-project combined effects on recreational receptors accessing the common land and local PRow network during construction of the Proposed Scheme. However, access to the Site will be carefully managed via the Construction Traffic Management Plan and Right of Way Management Plan to ensure the Site is accessible and safe to roam, where practicable. The potential for any intra-project combined effects on recreational receptors is not considered to be significant.

13.7 References

- Axis. (2014). Cruglwyn Wind Turbine Environmental Statement. Volume 3 Non-Technical Summary
- Brooks Ecological. (2015). *Ecological Appraisal Cefn Bach Farm, Deri, Caerphilly*. Report reference: R-1974-01.2, February 2015
- Blaenau Gwent County Borough Council. (2021). *Planning Applications Report C/2020/0301, Unit 19, Rassau Ind Est, Rassau, Ebbw Vale*
- Simon Geary Ecology Services Limited. (2015). *Penyhreol Farm Wind Turbine Bat and Bird Survey Report*
- Wood Group. (2022). *Mynydd Carn y Cefn Wind Farm. Draft Environmental Statement*
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics, May 2013