

Chapter 11: Biodiversity

11. Biodiversity

11.1. Introduction

11.1.1. Author

The Environment Partnership (TEP) Ltd.

Author – Shona Redman (BSc (Hons), MSc, MCIEEM)

Shona Redman, Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM), has been a professional ecologist for five years, having qualified with a BSc (Hons) in Zoology and a MSc in Species Identification and Survey Skills, both at the University of Reading. Shona became a member of the ecology team at TEP in 2023.

Reviewer – Anne Pritchard (CEnv, MCIEEM)

Anne Pritchard, TEP Ecology Team Manager, with 17 years of consultancy experience including authoring and reviewing Ecology ES chapters. Full member of CIEEM and a Chartered Environmentalist, having qualified with a BSc (Hons) in Biology from the University of Bristol and a Masters in Ecology from the University of Durham.

11.1.2. Chapter Purpose

This chapter of the ES reports the outcome of the assessment of the likely significant Biodiversity effects of the proposed development during the demolition and construction stage and completed development stage. The chapter and its supporting appendices describe the planning policy context; the assessment methodology; the baseline conditions at the application site and surroundings; the likely significant effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the inter-project cumulative effects.

All figures are provided within Appendices 11.2 to 11.13 in ES Volume IV.

The chapter is supported by the following technical appendices in ES Volume IV:

- Appendix 11.1: Consultation;
- Appendix 11.2: Ecology Desk Study;
- Appendix 11.3: Phase 1 Habitat Survey Technical Appendix;
- Appendix 11.4: Arboricultural Impact Assessment;
- Appendix 11.5: Hedgerows Regulations Assessment;
- Appendix 11.6: Great Crested Newt Technical Appendix;
- Appendix 11.7: Bat Roost Technical Appendix;
- Appendix 11.8: Bat Activity Technical Appendix;
- Appendix 11.9: Breeding Bird Technical Appendix;
- Appendix 11.10: Winter Bird Technical Appendix;
- Appendix 11.11: Lesser Silver Water Beetle Survey Report;
- Appendix 11.12: Bat Tree Roost Technical Appendix; and
- Appendix 11.13: Off-site Mitigation Drawing.

11.2. Methodology

11.2.1. Guidance

National guidance and industry standards:

- CIEEM ‘Guidelines for Ecological Impact Assessment in the UK and Ireland’ (2018) (1), hereafter referred to as the ‘CIEEM Guidelines’; and

- Birds of Conservation Concern (BoCC) Wales 4 (2022) (2).

11.2.2. Legislation and Policy

International Legislation:

- The Convention on Wetlands of International Importance especially as Waterfowl Habitat (‘Ramsar Convention’ or ‘Wetlands Convention’) (1971) (3);
- The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) (1979) (4);
- The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS) (1979) (5);
- The Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO World Heritage Convention) (1972) (6); and
- The Convention on Biological Diversity (Biological Convention or CBD) (1992) (7).

National Legislation and Policy:

- Planning Policy Wales (2021) (8), specifically Chapter 6: Distinctive and Natural Places, and supplemented by Technical Advice Note 5: Nature Conservation and Planning (2009) (9);
- Securing Biodiversity Enhancements letter to Heads of Planning at Welsh Government (10);
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019) (11);
- The Wildlife and Countryside Act (WCA) (1981) (as amended) (12);
- The Countryside and Rights of Way (CRoW) Act (2000) (13);
- The Environment (Wales) Act (2016) (14);
- The Hedgerows Regulations (1997) (15);
- The Protection of Badgers Act (PBA) (1992) (16);
- The National Parks and Access to the Countryside Act (1949) (17);
- The Environment Act 2021 (Commencement No. 1 and Saving Provision) (Wales) Regulations (2022) (18); and
- BS 42020:2013 Biodiversity – Code of practice for planning and development (19)

Regional Policy:

- Natural Resources Wales Area Statement for North East Wales (2022) (20).

Local Policy:

- Wrexham Unitary Development Plan 1996 – 2011 (adopted 2005) (21), specifically Policies PS11, GDP1, EC2, EC4 and EC6;
- Wrexham Local Development Plan 2 (LDP2) 2013 – 2028 (in preparation) (22);
- Wrexham Local Planning Guidance Note No. 17: Trees & Development (2012) (23);
- Wrexham Local Planning Guidance Note No. 32: Biodiversity & Development (2011) (24); and
- Wrexham Local Biodiversity Action Plan (archived 2011) (25).

11.2.3. Consultation

Separate to the EIA scoping exercise (described below), consultation was undertaken with Wrexham County Borough Council (CBC) to agree the approach and methodology for the phosphate assessment, required to determine potential operational impacts on River Dee and Bala Lake Special Area of Conservation (SAC). In addition, consultation with Wrexham CBC and Natural Resources Wales (NRW) has been ongoing between March and June 2023 in respect of the great crested newt (GCN) strategy and the requirement for a mitigation strategy. The full correspondence is presented within Appendix 11.1.

The EIA Scoping Report (Appendix 2.1, ES Volume IV) was submitted to Wrexham CBC on 02 November 2022. The proposed scope of the Biodiversity ES chapter was set out in Chapter 5: Topics with Potential for Likely Significant Effects.

Wrexham CBC provided their Scoping Opinion on 02 June 2023.

Table 11.2.1 summarises the key EIA Scoping Opinion comments with respect to the biodiversity assessment and how and where these have been addressed in the chapter.

Table 11.2.1
Comments Provided in Scoping Opinion

Scoping Comments	How addressed in the ES chapter
Wrexham CBC 02 June 2023	
The application site is within: - 2.6km of the River Dee Site of Special Scientific Interest (SSSI) - 2.7km of the River Dee and Bala Lake SAC - 3.3km of Midlands Meres and Mosses Ramsar / Vicarage Moss SSSI - 4.8km of Sontley Marsh SSSI - 4.9km of Marford Quarry SSSI The project has the potential to affect air quality and have indirect effects on protected sites during both the construction and operational phase (due to both air pollution and dust). The ES should fully assess impacts of air pollution and dust on protected sites. We would expect the ES to include an assessment of the amount of predicted pollution from the proposal against relevant critical loads and critical levels for any designated sites that may be affected.	Air quality impacts on ecological designated sites from air pollution during the demolition and construction and completed development stages are considered in ES Chapter 9: Air Quality in accordance with the NE guidance 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations' (26). In line with the guidance, all sites within 200m of the road network that would be affected by vehicular movements associated with the proposed development have been considered and the potential for impacts have been screened based on the AADT traffic flow threshold (1,000 AADT). Given that the AADT flows on road links within the relevant distances of each of the sensitive ecological receptors do not exceed 1,000, it has been concluded that air quality impacts on the ecological designated sites are not significant (refer to Section 9.2.7 of Chapter 9: Air Quality). As such, air quality impacts to ecological receptors have not been considered further. The effects of dust are not considered as dust was scoped out at EIA scoping stage.
The development will increase foul water flows that enter the River Dee via the Waste water Treatment Works (WwTW) at Five Fords. The Dee forms part of the River Dee and Baka Lake Special Area of Conservation (SAC) and in January 2021, Natural Resources Wales (NRW) introduced stringent standards on the discharge of phosphorus into the SAC. Increases in phosphorus discharges into the SAC have the potential to cause damaging effects on the SAC. Whilst the WwTW has provision to remove a percentage of phosphorous from treated water, water entering the river from it will still contain phosphorous. The WwTW is operating within the limits of its existing consent but the consent itself is out of date and pre-dates the new more stringent targets. The development will therefore increase phosphorous entering the SAC and therefore adversely impact upon it. By itself the development is considered unlikely to result in a significant increase in additional phosphorous entering the river and therefore any adverse impact will not be significant. Nevertheless the development could only proceed following the completion of a separate Habitat Regulations Assessment which concludes no adverse impact. This will only be possible where measures are in place to mitigate for the additional phosphorous. These will either be delivered by way of upgrades to existing foul water infrastructure or other mitigation measures that developers will need to contribute to financially or deliver directly themselves. Accordingly there is adequate regulation in place to ensure no adverse impact on the SAC. The impact on the SAC due to	HRA has been undertaken, the results of which are included within the Shadow HRA Report, which forms a standalone document which accompanies the planning application. The HRA concluded that following the implementation of additional mitigation, no adverse effect on the integrity of the SAC would occur as a result of phosphorus discharge. Effects of phosphorus on the water quality within the SAC (and underpinning SSSI) have also been assessed within ES Volume 1, Chapter 12 <i>Ground Conditions and Contamination</i>., the results of which have been used to inform the assessment presented within this chapter. Given that phosphate impacts to the water quality within the River Dee and Bala Lake SAC have been identified as Negligible Beneficial, following the implementation of additional mitigation, potential impacts on the ecological value of the SAC has been scoped out of a detailed assessment within this chapter (see Section 11.2.4 for a summary of the assessment scope).

Scoping Comments	How addressed in the ES chapter
additional phosphorous therefore does not need to fall within the scope of the ES. NRW have made a number of recommendations regarding the information that should be included within the ES to enable the impact of the proposed development on protected species to be assessed. Having regard to NRW's recommendations, Biodiversity should be included within the scope of the ES.	The HRA undertaken considered potential waterborne pollution effects on River Dee and Bala Lake SAC and concluded there would be no adverse effects at the HRA screening stage. As discussed in the response to NRW's comments below, impacts on the River Dee and its tributaries from contamination have been considered within Chapter 12 <i>Ground Conditions and Contamination</i>, the results of which have been used to inform the assessment presented within this chapter. Given that contamination impacts on the River Dee and Bala Lake SAC from accidental spills/leakages have been identified as Negligible Beneficial following the implementation of additional mitigation, potential impacts on the ecological value of the SAC would also be Negligible. As such, a detailed assessment of impacts relating to accidental spills/leakages has been scoped out of this assessment.
Natural Resource Wales (NRW) (Issued 05 December 2022 & re-issued 04 April 2023 following further consultation with Wrexham CBC (see Appendix 2.3))	
The ES should contain sufficient information to enable decision makers to determine the extent of any environmental impacts arising from the proposed scheme. Evaluation of the impacts of the scheme should include: direct and indirect; secondary; cumulative; short, medium and long-term; permanent and temporary; positive and negative, and construction and operation phase and long-term site security impacts on the nature conservation resource, landscape and public access.	Addressed throughout ES chapter. The ES is considered to contain sufficient information to inform decision making. The potential impacts and resultant effects, such as direct and indirect, secondary, cumulative etc. are set out within Sections 11.5, 11.7, 11.9 and 11.10.
The ES should consider significance (both alone and in combination) and where applicable conservation status. In respect of conservation status, consideration to be given to current conservation status (CCS), and demonstration of no likely detriment to maintenance of favourable conservation status (FCS) during construction and operation in accordance with European Commission (EC) Guidance (28).	To confirm this has been considered within this ES chapter. Refer to Tables 11.7.1 and 11.8.1.
Habitat surveys should accord with the JNCC Phase 1 survey guidelines (29). Phase 1 surveys should be undertaken during summer to ensure the best chance of identifying the habitats present. Habitats Directive Annex 1 habitats should be identified as part of this.	As summarised in Section 11.2.6, the habitat surveys have been undertaken in accordance with the JNCC Phase 1 survey guidelines. Further details of Phase 1 survey methodology are provided in Appendix 11.3.
The application site should be assessed to determine the likelihood of protected species being present with targeted species surveys for all species scoped in. These should comply	Based on the findings of the Phase 1 Habitat Survey, protected species surveys have been undertaken, as summarised in Section 11.2.6. Further details of survey methodologies are provided in

Scoping Comments	How addressed in the ES chapter
with current best practice guidelines and any deviations should be fully justified in the ES. Should protected species be found during the surveys, information should be provided identifying the species-specific impacts in the short, medium, and long-term along with any mitigation and compensation measures proposed to offset the impacts identified. The ES should set out how the long-term site security of any mitigation or compensation will be assured, including management and monitoring information and long-term financial, tenure, and management responsibility. Where the potential for significant impacts on protected species is identified, a Conservation Plan for the relevant species should be included as an Annex to the ES. In respect of European protected species (EPS), there should be consideration of Section 3.3.2 of EC Guidance (28). Where an EPS is identified and the development proposal is predicted to likely contravene the legal protection they are afforded, a licence should be sought from NRW. The ES should include consideration of the requirements for a licence and set out how the works will satisfy each of the three requirements as set out in the Conservation of Habitats and Species Regulations 2017 (as amended).	Appendices 11.6 – 11.11. The full assessment of potential impacts to protected species is presented within this chapter, with information on mitigation and compensation measures provided in Tables 11.6.1 and 11.8.1 . As described in Table 11.8.1 , a mitigation strategy (equivalent of a conservation plan) would be produced for GCN and for roosting bats if found to be present following further bat surveys in the outline area, at Reserved Matters Stage. These would be produced and submitted as part of a licence application to NRW which requires planning consent. As such, they are not appended to this ES chapter. These licence applications will set out how the works satisfy the three requirements under the Conservation of Habitats and Species Regulations 2017 (as amended).
The LPA’s ecologist should be consulted on the ES scope to ensure that regional and local biodiversity issues are adequately considered, particularly those habitats and species listed in the relevant Local Biodiversity Action Plan (LBAP), and areas that are considered important for the conservation of biological diversity in Wales. The developer should contact other relevant sources for biological information/records relevant to the application site and its surrounds. These include the appropriate Local Records Centre and any local ecological interest groups (e.g., bat groups, mammal groups).	As summarised in Appendix 11.1, consultations have been undertaken with the LPA ecologist. Local records relevant to the application site were retrieved during the desk study described in Section 11.2.6 with further details provided in Appendix 11.2.
The ES must audit compliance of relevant nature conservation legislation (UK and Wales) and local and national policies including BS 42020:2013.	This assessment has been undertaken in accordance with the relevant guidance and legislation, as set out in Sections 11.2.1 and 11.2.2.
We concur with the Biodiversity ES chapter being supported by a Great Crested Newt Assessment.	GCN technical report provided as Appendix 11.6.
We concur with the Biodiversity ES chapter being supported by Breeding Bird Survey and Winter Bird Survey Reports.	Breeding bird survey and winter bird survey reports provided as Appendices 11.9 and 11.10 respectively.
We concur with the Biodiversity ES chapter being supported by Preliminary Roosting Assessment and Emergence / re-entry bat survey results.	Bat roost survey report provided as Appendix 11.7 and 11.12.

As discussed in ES Chapter 2 *EIA Methodology*, statutory pre-application consultation was undertaken for a period of 28 days between 19 June 2023 and 17 July 2023. **Table 11.2.2** summarises the key comments made in respect of the biodiversity assessment and how and where these have been addressed in the chapter.

Table 11.2.2
Statutory Pre-Application Consultation Comments

Scoping Comments	How addressed in the ES chapter
Natural Resource Wales (14 July 2023) <u>Great Crested Newts</u> NRW have reviewed the ecology reports submitted in support of the application and advise that there is insufficient information to assess potential effects on GCN, and how any effects will be avoided or mitigated. NRW advise that further information is required to assess the extent of adverse effects on the species and any avoidance or mitigation measures required. This must demonstrate that the proposed development would not be likely to be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range.	The assessment presented within this chapter considers the potential effects on GCN during both the demolition and construction and completed development stages. As presented in Sections 11.4 – 11.10 of the ES Chapter and ES Volume IV, Appendix 11.6, the baseline conditions on-site and in the surrounding area, as well as the potential impact of the proposed development, are well understood and it is considered there is sufficient information to assess the potential effects on GCN. In response to NRW comments further aquatic and terrestrial habitat for the population has been provided off site, as well as on-site ecology corridors and mitigation areas. The precise details of GCN mitigation can be secured by planning condition. Further details are provided in the remainder of this table.
NRW consider that it is possible that the species utilizes the application site for breeding, foraging, dispersal or sheltering purposes. In our view, we consider that construction and operational phases of the proposal have the potential to adversely affect GCN. We therefore consider the overall proposal has the potential to cause disturbance to GCN and/or loss or damage to their resting places. GCN and their breeding and resting places are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and they are classed as a material consideration for planning under the provisions of Technical Advice Note 5: Nature Conservation and Planning (TAN5).	It is agreed that the construction and to a lesser extent the operational phase of the proposal have the potential to adversely affect GCN. The impacts are considered in Tables 11.7.1 and 11.7.2 respectively of this chapter. The potential to cause disturbance to GCN and/or loss or damage to their resting places is recognised and as referenced in section 11.8/Table 11.8.1 of the ES Chapter a European protected species mitigation licence (EPSML) for GCN would be applied for from NRW following planning approval. This would contain a mitigation strategy detailing required mitigation, compensation and enhancement in respect to all anticipated impacts on GCN.
NRW note that Table 11.4.1 describes GCN population as being of local importance in terms of ecological receptors. However, we consider that Wrexham Industrial Estate and its environs, supports a nationally important population of GCN and therefore advise that any impacts cannot be considered as local.	The GCN population is described as being of local importance in Table 11.4.1 based on the surveys undertaken and the fact that their presence within the county borough of Wrexham is widespread. Although the application site to the north of the Wrexham Industrial Estate, the application site is separated from it by Bryn Lane which is lined by kerb stones on each side and is used by a high volume of heavy goods road traffic 24 hours a day. Whilst Wrexham Industrial Estate may support a nationally important population of GCN, the application site is separated from it and therefore unlikely to support a nationally important population. During consultation with NRW Senior Species Officer it was agreed a large GCN population could be assumed as being present within the application site and that additional surveys were not required to confirm this. An EPSML will be applied for on the basis of a large GCN population.
We consider that the scheme constitutes a significant adverse risk to the current conservation status of the Wrexham Industrial Estate GCN population and therefore fails to demonstrate no detriment to the maintenance of the favourable conservation status of the local population of GCN. Our concerns include but are not necessarily limited to:	As discussed above the application site is not physically connected to the Wrexham Estate GCN population due to the intervening Bryn Lane and its use by road traffic. To maintain the favourable conservation status of the local population a number of embedded mitigation measures (section 11.6) and additional mitigation measures (section 11.8) are proposed within this Chapter. A response to each point is provided as follows:

Scoping Comments	How addressed in the ES chapter
– the proposed extent of ecology areas associated with the development. We advise that at this locality the extent of ecology areas shall be at least equivalent in area to the size of the development, therefore an additional hectare should be allocated for long term species conservation purposes; – Inadequate widths of the wildlife corridors along the northern boundary and through the site, insufficient detail regarding the viability and functionality of the wildlife tunnel connecting with off-site 3rd party land; – Further consideration of the long-term tenure of ecology areas; – Proposed approach to post development surveillance; – Prevention of incidental capture/killing during the operational phase of the proposals; and – Maintenance proposals set out appear to be tailored to SuDS specification, further information to demonstrate a clear difference in maintenance operations between SuDS features and ecology areas should be provided.	- The NRW response requests an additional 1ha of land to be allocated for long term species conservation purposes. In addition to the on-site green corridors containing retained and newly created ponds, the Applicant has identified approximately 3.6 ha of off-site land to be developed and secured for the long term conservation of GCN in response to NRW's comments. The mitigation site is located to the east of the Industrial Estate, to the west of Maesgwyn Lane. The plans of the proposed mitigation proposals are included in Appendix 11.13 of this chapter. As a result the overall residual effects on GCN and common toad during the demolition and construction stage are considered to range from negligible, not significant to minor beneficial, significant at the Local level, and at the completed development stage impacts on GCN (and other S7 amphibians) from habitat loss/degradation and maintenance of FCS, with the implementation of additional mitigation are minor beneficial, significant at the Local Level. - There are no definitive prescribed widths for wildlife corridors. The proposed width of the corridors along the northern boundary are approximately 20m wide on average, and the eastern landscaping corridor is approximately 25m wide on average. The proposed landscaping area and bund to the north west of the site is approximately 50m wide. The proposed central north-south ecology corridor which runs through the site is approximately 38m wide. The wildlife tunnel has been proposed to allow movement for amphibian species (as well as small mammals) between the off-site pond to the south and the green corridor within the site i.e. underneath the estate access road. Details can be secured by planning condition. The tunnel does not enter into the third party land and therefore it is deliverable within the Applicant's ownership. - The requirement for long-term tenure of the ecology areas (both on and off-site) is acknowledged and following further discussions with NRW, the LPA and other parties this can be secured either by condition or Unilateral Undertaking legal agreement. - The requirement for post development surveillance is acknowledged and will be form part of a Habitat Management Plan (HMP). This can be secured by condition. - The incorporation of wildlife kerbs and amphibian friendly gully pots will avoid incidental capture/killing of GCN during the operational phase of development. Details can be secured by condition. Sensitive management of areas of amenity grassland will be included within the Landscape Ecology Management Plan (LEMP), which can be secured by condition.

Scoping Comments	How addressed in the ES chapter
NRW therefore advise that additional information should be provided for the purposes of demonstrating that it will not be detrimental to the maintenance of the FCS of the GCN population at this locality. The further or amended additional information should include but not necessarily limited to: – Submission of details and associated plans concerning GCN avoidance and mitigation measures including: fence design, specifications and proposed locations; fence monitoring and maintenance requirements; and supervised removal of barrier fences. Submission to include proposed timescales and reporting requirement. – Submission of revised details concerning on-site and/or off-site compensatory proposals including plans, extent, access, current and proposed tenure. This to include the functionality of ecology area for connectivity purposes. Extent to be at least equivalent to the area of development. Details shall identify areas of terrestrial and aquatic habitat to be retained, enhanced, and created. Submission to include future tenure, timescales and reporting requirements. – Submission of a long-term site management plan (for a duration of not less than 25 years*) that includes: – defined aims and objectives (including targets that can be used as key performance indicators for monitoring purposes); – habitat management prescriptions for aquatic and terrestrial habitats; – appropriate amphibian reasonable avoidance measures; – contingency prescriptions if fish and/or invasive non-native species (INNS) are detected; – site liaison, wardening, incident reporting and response arrangements; – detail of the skills and competencies required by those undertaking the works or activities including whether they require European Protected Species licenses for the activities proposed; – current and proposed changes to tenure of the ecology area (freehold tenure of the ecology area to be approved by the discharging Authority in consultation with Natural Resources Wales) to ensure appropriate control over the land is established and the effective targeted delivery of long-term actions. We would – suggest the LPA consider the example provided of “responsible” under Part 7 of the Environment Act 2021;	– Maintenance regimes for the SUDS and ecology areas will be set out separately within the LEMP. The requirement for a European protected species mitigation licence (EPSML) for GCN from NRW following planning approval is acknowledged in Table 11.8.1 of this chapter. This would contain a mitigation strategy detailing required mitigation, compensation and enhancement in respect to all anticipated impacts on GCN, together with long term monitoring. In addition to the NRW EPSM, this detail can also be secured by planning condition. With regard to NRW’s request relating to the extent of on/offsite compensatory proposals, there is no policy requirement to provide an area at least equivalent to the area of the development. The application site is identified as an employment allocation under Policy SP11 of the emerging replacement Local Development Plan, as allocation reference KSS3 ‘Land to the north of Bryn Lane, Wrexham Industrial Estate’ and Policy SP11 does not require the provision of an ecology area at least equivalent to the area of the development. Extensive green corridors are proposed around the perimeter of the site and to the north of Unit 2 and as a central north-south corridor through the site. This reflects the policy requirements of Policy SP11 in relation to ecological corridors. In addition to these on-site areas, an off-site ecological mitigation area of c. 3.6ha is also proposed, in response to the comments received from NRW to date, as described above.

Scoping Comments	How addressed in the ES chapter
– provision for periodic review mechanism for the Environment Management Plan; and – Reporting requirements associated with species surveillance and habitat management – Contingency measures that are capable of being implemented in the event of failure to undertake or appropriately implement / correct management or surveillance prescriptions including any required actions arising from unforeseen situations;	
– Submission of measures designed to prevent the accidental capture/killing of newts (amphibians) during operational (and decommissioning) phases of the scheme (i.e. post construction). This is essentially the installation and maintenance of an amphibian friendly surface water management system that does not include gully pots (or other similar features); – Details of timing, phasing and duration of construction activities and conservation measures; – Timetable for implementation demonstrating that works are aligned with the proposed development; – Ecological Compliance Audit, including key performance indicators (see below); – Post-construction monitoring plan. Monitoring plan to include: – Methodology: the Wales Great Crested Newt Monitoring Scheme shall be used with surveys being carried out on an [annual] basis; – Duration: Not less than 25 years; – Surveys shall be abundance counts and habitat quality assessments using Habitat Suitability Index (HSI) scores; – Identification of individuals/bodies being responsible for monitoring and reporting results; – Each water body shall be individually numbered on site and added to the Wales Great Crested Newt Monitoring Scheme, (see https://www.cofnod.org.uk/LinkInfo?!ID=7) – Submission of a biosecurity risk assessment (See below)	
When consulted by the LPA in conjunction with a full planning application, we would advise that any subsequent consent should also be subject to the provisions of a planning obligation (Section 106 Agreement/Unilateral Undertaking). Suggested planning obligation provisions should consider the following within any preliminary “Heads of Terms” document and subsequent obligation: – A defined commuted sum and/or requirement for index-linked ground rent service charges to resource ecological surveillance, management and wardening	Noted. The requirement for long-term tenure of ecology areas (both on and off-site) is acknowledged and following further discussions with NRW and the LPA this can be secured either by condition or Unilateral Undertaking legal agreement. We would welcome more detailed discussion on this with NRW to address points a, b and d. In relation to the third point, it is noted that this would not appear to be covered by NRW’s current scheme of charging (Natural Resources Wales / Our Charging Schemes). Further detail is requested in terms of the proposed cost and scope of this, in order for the Applicant to understand this element of the response.

Scoping Comments	How addressed in the ES chapter
(as informed by the updated Ecological Management Plan). – Management Plan review and update. – Funding to cover the cost of input from Public Bodies if required to review monitoring results/undertake liaison and comment on proposed Environment Management Plan Reviews. – Tenure and any proposed changes to tenure to be carried out to the satisfaction of the discharging Authority in consultation with Natural Resources Wales to ensure the implementation of long term measures is secure.	
Bats NRW advise that the Ecological Assessment has insufficient information to assess the need for avoidance / mitigation measures. Bats and their breeding and resting places are protected under the Conservation of Habitats and Species Regulations 2017. Where bats are present and a development proposal is likely to contravene the legal protection they are afforded, the development may only proceed under licence issued by Natural Resources Wales, having satisfied the three tests set out in the Regulations (Please also refer to Paragraph 6.3.7 of Technical Advice Note 5: Nature Conservation and Planning). Please note, for the purposes of providing advice at the planning application stage, our comments are limited to the test relating to “demonstration of no detriment to the maintenance of the favourable conservation status of European protected species”. We advise that further information should be submitted to assess the extent of adverse effects on the bats and any avoidance or mitigation measures required. This must demonstrate that the proposed development would not be likely to be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range.	Bat surveys of those trees with high or moderate potential for roosting bats which will be impacted by the detailed component of the proposed development were completed in June and July 2023 (see Appendix 11.12) and no roosts were identified. Any trees with high or moderate potential for roosting bats located within the outline component which require removal to facilitate the proposed development will be surveyed during the detailed design stage, prior to a reserved matters application. As confirmed in Table 11.8.1 of this chapter, these further surveys will be secured via an appropriately worded planning application, as well as adherence with legislation.
NRW note that the activity survey of the buildings on site confirmed no bats observed emerging from the buildings. Section 4.5 and Table 8 of the Bat Roost Survey report confirms a total of 49 trees as having moderate to high suitability for roosting bats. Section 4.6 states that trees that will be ‘unavoidably impacted by the development’ require additional survey in the form of nocturnal roost surveys and this should include lighting assessments. We concur with the report and advise that the results of the surveys should be submitted together with an assessment of the impacts of the scheme on these roost sites and proposals to avoid, mitigate or compensate for them. Where appropriate, this should be supported with detailed plans. All surveys should be undertaken in accordance with current published guidance.	As per the above response, bat surveys of those trees with high or moderate potential for roosting bats which will be impacted by the detailed component of the proposed development were completed in June and July 2023 (see Appendix 11.12). Given that no roosts were identified during the survey, no specific mitigation for the loss of these potential tree features is required. As confirmed above, surveys of those trees to be removed within the outline component and that high or moderate potential for roosting bats, will be undertaken prior to the reserved matters application, once the scheme proposals have been developed. The embedded mitigation (Table 11.6.1) includes planting of a minimum of 1,121 trees across the site including pedunculate oak trees which would be planted with sufficient space to become mature, thereby potentially becoming suitable for roosting bats in the long-term. Embedded mitigation also includes the provision of a minimum of 25 bat boxes within the site. The provision of details

Scoping Comments	How addressed in the ES chapter
	of such measures are anticipated to be secured by way of a planning condition. A Sensitive Lighting Strategy will be implemented during the construction and operational stages of the development, as confirmed in Table 11.8.1. The overall residual effects on bats at the completed development stage range from negligible, not significant to positive/minor beneficial, significant at the Local level.
In the meantime, we are unable to give you any assurance that the proposal would not be likely to be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range.	No roosts were identified in the trees to be impacted the detailed component of the application. Although the extent of the tree loss within the outline component is currently unknown the proposal is considered to unlikely to be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range. The overall residual effects on bats at the completed development stage range from negligible, not significant to positive/minor beneficial, significant at the Local level.

11.2.4. Assessment Scope

Technical Scope

The technical scope of the assessment has considered the potential impacts and likely effects of the proposed development on biodiversity in relation to designated sites, habitats and protected species in respect of the following:

- Direct, permanent and temporary loss, damage and disturbance to habitats within the application site during the demolition and construction stage and the resulting effects on species;
- Killing/injury/disturbance of individual species during the demolition and construction stage;
- Loss or degradation of retained and newly created habitats during the completed development stage;
- Impacts on species during the completed development stage from habitat loss and fragmentation; and
- Killing/injury/disturbance of individual species during the completed development stage.

The potential impacts relating to contamination (namely impacts on the River Dee and Bala Lake SAC from phosphates and accidental spills) have been assessed within Chapter 12 Ground Conditions and Contamination and separately in the standalone HRA submitted alongside the planning application. In respect of this SAC, following the implementation of additional mitigation, potential impacts on water quality from contamination have been identified as Negligible Beneficial in connection with both accidental spills/leakages and phosphate emissions. The HRA also concluded that there would be no adverse effects on the SAC as a result of phosphates and waterborne pollution. As such, impacts on the ecology of the SAC would also be Negligible and has therefore been scoped out of further assessment. No hydrological links to any of the other designated sites described in the ecological baseline (**Table 11.4.1**) were identified and there would therefore be no significant effects on the integrity of these sites from contamination. These effects have been scoped out of further assessment.

As discussed in **Table 11.2.1**, air impacts on ecologically designated sites are not considered to be significant and have been scoped out of further assessment.

Spatial Scope

The study area for this assessment reflects the zone of influence (ZoI) of the proposed development relevant to the identified ecological receptors. Consideration was given to potential direct and indirect impacts that may occur during the lifespan of the project, including disturbance associated with artificial lighting, recreational activities of workers and visitors to the operational site and any indirect hydrological impacts. Consideration was also given to conservation objectives of designated sites. The study area and therefore the ZoI of each ecological receptor/feature is as follows:

- International statutory designated sites – up to 10 km from the application site boundary;
- National statutory designated sites – up to 5 km from the application site boundary;
- Local non-statutory designated ecological sites – up to 2 km from the application site boundary;
- Scattered trees – the application site boundary plus adjacent trees with root protection area (RPA) partially inside application site boundary;
- Veteran trees – the application site boundary plus adjacent trees where a construction exclusion zone (CEZ) would overlap with the application site boundary;
- All other habitats – the application site boundary only;
- GCN and other S7 amphibian species – up to 500 m from the application site boundary;
- LSWB – the application site boundary only;
- Bats – up to 10 m from the application site boundary;
- Badger – up to 30 m from the application site boundary;
- Breeding birds – up to 100 m from the application site boundary;
- Wintering birds – up to 500 m from the application site boundary;
- Hedgehog – the application site boundary only;
- Brown hare – the application site boundary only; and
- Polecat – application site boundary only.

11.2.5. Assessment Scenario

- Scenario 1: Existing Baseline;
- Scenario 2: Existing Baseline + Proposed Development; and
- Scenario 3: Existing Baseline + Proposed Development + Cumulative Schemes.

11.2.6. Baseline Characterisation Approach

Desk Study

Data was obtained from the following sources in order to establish the baseline conditions within the study area:

- Natural Resources Wales;
- LANDMAP;
- North Wales Environmental Information Service (COFNOD); and
- Wrexham CBC.

Full details of the desk study approach are provided in Appendix 11.2.

Field Study

In summary, the following field surveys were undertaken to inform the baseline characterisation:

- Extended Phase 1 habitat survey in December 2021 and March 2023 – using the Joint Nature Conservation Committee (JNCC, 2010) (29) standard ‘Phase 1’ survey technique. This was ‘extended’ by undertaking an assessment of the application site to support protected, notable and invasive species, following the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) (30);
- Hedgerows Regulations Assessment in August 2022 – a survey of hedgerows within the application site boundary was undertaken to ascertain whether any qualify as ‘important’ under the Hedgerows Regulations;
- Arboricultural survey in February 2022, March 2022 and March 2023 – hedgerows, trees and trees groups on the application site were surveyed and classified in accordance with British Standard BS 5837:2012 (31);
- Habitat suitability index (HSI) assessments in December 2021– during the extended Phase 1 habitat survey, HSI assessments were undertaken of all ponds on and within 500 m of the application site, not separated by major barriers to amphibian dispersal. Assessments followed the standard methodology (32);
- Environmental DNA (eDNA) surveys in June 2022– water samples of all suitable ponds on and within 500 m of the application site were taken in accordance with standard methodology and guidelines (33);

- LSWB survey in May and July 2023 –All seven ponds on the application site were assessed for their suitability for LSWB and were surveyed using nets, visual and hand searches for adults, larvae and egg cocoons of the species;
- Preliminary roost assessment (PRA) in March 2022 – a PRA of all built structures on site was undertaken in accordance with best practice guidelines (34);
- Nocturnal bat roost surveys (buildings) in June and July 2022 – nocturnal emergence surveys were undertaken of buildings assessed during the PRA as having suitability for roosting bats. Surveys were undertaken in accordance with best practice guidelines (34);
- Ground level tree assessment (GLTA) in March 2022 – a GLTA of all trees in the application site boundary was undertaken in accordance with best practice guidelines (34);
- Aerial inspections of trees in June and July 2022 – daytime aerial inspections of potential roost features (PRFs) were undertaken of trees identified during the GLTA to have high or moderate suitability, or as having PRFs whose suitability could not be confidently categorized during the GLTA that were suitable to be climbed and would likely require removal to facilitate the proposed development (based on the Parameters Plan dated 16 May 2022 (ref. UG_1331_UD_DRG_PP_Ro1);
- Nocturnal bat roost surveys (trees) in June and July 2023 – nocturnal emergence surveys were undertaken of trees with high and moderate bat roost potential impacted by the detailed component of the proposed development, in accordance with best practice guidelines;
- Bat activity surveys monthly from May to October 2022 – Nocturnal transect surveys and monitoring surveys were undertaken in accordance with best practice guidelines (34) and based upon the application site being assessed as having moderate suitability for foraging and commuting bats during the Extended Phase 1 habitat survey. The surveys focused on the application site itself but any bats observed flying outside of the application site boundary were also recorded;
- Badger survey in December 2021 – during the Extended Phase 1 habitat survey a search for badger signs was undertaken following the standard methodology (35). This survey was extended to a 30 m radius around the application site boundary where access was granted;
- Breeding bird surveys (BBS) from April – July 2022 – four BBS of the application site were undertaken by experienced ornithologists using a walked transect methodology, as per the most recent guidelines (36). The survey effort was reduced from the recommended six visits based upon the limited nesting habitats in the application site and the limited potential for the application site to support breeding BoCC. The surveys focused on the application site itself but any birds observed within a 100 m radius of the application site were also recorded;
- Wintering bird surveys (WBS) from October 2021 to April 2022 – seven WBS of the application site were undertaken by experienced ornithologists using a walked transect methodology. The surveys focused on the application site itself but any birds observed within a 500 m radius of the application site were also recorded.

Full survey methodologies are detailed within the appendices of this biodiversity chapter.

11.2.7. Assessment Method

Demolition and Construction Stage & Completed Development Stage

The ecological impact assessment (EcIA) has been undertaken with due consideration for the CIEEM Guidelines. The guidelines provide a robust framework for EcIA, which has been adapted, using professional judgement, to the generic and widely accepted EIA methodology of using EIA terminology to determine the likely significant effects.

In summary, the following procedure was undertaken during this EcIA:

- Establish a robust and accurate ecological baseline for the application site;
- Identify and evaluate the nature conservation/biodiversity interest present;
- Identify any potential effects arising from the proposed development;
- Establish the character and significance of those identified effects;
- Identify mitigation measures to address the significant effects;
- Assess any residual effects and the need for any compensation; and,
- Assess cumulative effects from other surrounding developments.

Given that each individual receptor may be subject to a number of potential impacts (for example, from both habitat disturbance and contamination), consideration has been given to each impact individually, followed by an overall scale of effect, which takes into account the combined effect.

The assessment has been based on the scheme information and planning application drawings presented in ES Chapter 4 *Proposed Development* and the construction methodology presented in ES Chapter 6 *Construction Strategy and CEMP*. In respect of the outline component, a conservative assessment has been undertaken whereby all habitats within the extent of the outline component, as illustrated in the parameter plan, would be removed. This is with the exception of certain trees and ponds which are proposed for retention, as illustrated in Appendix 11.4: Drawing 4 – Arboricultural Impacts Overview, and in Figure 4.3.16: Pond Strategy (ES Chapter 4), respectively.

Cumulative Development Stage

The cumulative assessment has been undertaken based on the list of cumulative schemes presented in Chapter 2: EIA Methodology.

With reference to the biodiversity baseline of the application site, the review of the cumulative schemes has included consideration of habitat loss, reduction in foraging, sheltering or breeding habitat for species, habitat fragmentation and disturbance effects. When determining the potential for effects to accumulate, it considers the geographical and as far as can be determined, temporal nature of any effects and associated mitigation proposals.

In line with the approach to cumulative assessment in EIA, the assessment can only consider existing and available information relating to baseline conditions and mitigation proposals when identifying the potential for cumulative effects to arise. Wherever possible, definitive and fixed information relating to each permission, application or allocation, has been used to ensure that the assessment is as robust as is reasonably possible.

11.2.8. Assessment Criteria

Importance of Ecological Receptors

Whilst the CIEEM Guidelines refers to ‘ecological features’, to be consistent with the terminology used through the ES, ‘ecological receptors’ have been used throughout this chapter.

The CIEEM Guidelines confirm that detailed assessment of ecological receptors that are widespread, un-threatened and resilient to proposed development impacts is not necessary. It is therefore necessary to determine which ecological receptors are sufficiently important (and potentially impacted by the proposed development). Decisions on relative importance consider quality, extent, rarity (including local rarity) and threats or declines of a receptor/feature. Relevant statutory and non-statutory designations, legislation and policies are taken account of, although not all populations of legally protected species show the same rarity or distribution, so contextual information is presented where relevant (for example, while GCN are afforded statutory protection at a European level, a small population situated within an optimal geographic location is unlikely to be of ecological value at a European level). Importance could also relate to the supportive function of the ecological receptor/feature (i.e., providing a buffer, connections or opportunities for expansion or climate change resilience of a neighbouring receptor/feature).

The importance of an ecological receptor/feature has been identified within a defined geographical context. The scales relevant to the proposed development and its ecological receptors that have been used to define the geographic context of important ecological receptors are presented in **Table 11.2.2**. Professional judgement has also been used, as required, where specific site conditions, together with information on the local and wider context, may result in different criteria being applied.

Table 11.2.3
Geographic context of important ecological receptors

Geographic Context	Criteria
International and European	Designated or proposed/candidate Special Areas for Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites and their qualifying features, some of which may depend on land outside

Geographic Context	Criteria
	the designation boundaries. Candidate or proposed designations are treated as of equal value to fully designated sites. Land that is set aside as compensation for adverse effects of development on European Sites should also be regarded as of European value. Species populations or habitat areas (such as those listed in Annex I, II or IV of the Habitats Directive (Council Directive 92/43/EEC) or Annex I of the Birds Directive (Directive 2009/147/EC) of international importance due to relative size, rarity or quality of the receptor/feature.
National	Designated or proposed Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Marine Nature Reserves (MNR) and their qualifying features, some of which may depend on land outside the designation boundaries. A viable area of ancient woodland. Species populations or habitat areas (including legally protected or Environment (Wales) Act 2016 Section 7 (S7) species or habitats) of national importance due to relative size, rarity or quality of the receptor/feature.
County	Designated or proposed Local Wildlife Sites (LWS) and their qualifying features where they occur within the designation boundaries. ‘Important’ hedgerows (as described under the Hedgerows Regulations 1997) where these occur as an extensive network. Species populations or habitat areas (including legally protected or S7) or Nationally Scarce species or habitats of district or county importance due to relative size, rarity or quality of the receptor/feature. Sites should comfortably exceed LWS criteria if these exist, but not meet SSSI selection criteria.
Local	Local Nature Reserves (LNR) (unless also designated at a higher level) and other nature conservation designations (under local planning policies). Green infrastructure designations where these contribute to local landscape connectivity and/or buffer other ecological receptors/features valued at least this geographic scale. Species populations or habitat areas (including legally protected or S7 species or habitats) of local importance due to relative size or quality. Receptors/features that appreciably enrich the local ecological resource, although these may themselves be common and widespread, such as long-established hedgerows, woodlands and ponds.
Immediate Zone of Influence (Izol)	Species populations or habitat areas of value within the immediate ZoI, usually identified within or immediate to the application site (including legally protected species or habitats).
Negligible	Habitats of little or no ecological value or function e.g., densely urbanised environments, amenity grassland, hardstanding etc.

Characterisation of Impact

It is good practice to describe potential impacts on ecological receptors without and with mitigation. The proposed development may result in multiple potential impacts on an important ecological receptor. The CIEEM approach requires that only those that are likely to occur and have significant impacts need be assessed, although a precautionary approach to scoping potential impacts is recommended. The impacts have been characterised by the following variables:

- Nature (Positive or negative);
- Magnitude and extent (e.g. area of habitat and number of individuals);
- Duration;
- Frequency;
- Timing; and
- Reversibility.

The assessment only needs to describe the characteristics relevant to understanding the ecological effect of the impacts as a result of the proposed development and to determine the significance of the impacts.

Likelihood of Effect

The following four-point scale has been used to express the degree of confidence in the prediction of impact significance, for residual impacts this scale will also indicate the reliability of mitigation proposals:

- Certain/near certain;
- Probable;
- Possible; and
- Extremely unlikely.

Significance of Effects

Once an impact has been described it is necessary to determine if the effect is ‘significant’. In the context of the CIEEM Guidelines a ‘significant’ effect is one that either ‘*supports or undermines biodiversity conservation objectives for important ecological features*’. A significant effect is therefore an effect that is ‘*sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project*’. Significant effects can include impacts on the structure and function of sites and habitats or the conservation status of habitats and species (i.e., the extent, distribution or abundance). The decision on significance is made irrespective of the geographical scale of importance of the receptor; if an effect is found not to be significant at the level at which the receptor has been valued, it may be significant at a more local level. A significant negative effect is not necessarily one that would make the proposed development unacceptable. A significant effect is simply an effect that is sufficiently important to require assessment and reporting to establish the environmental consequences of permitting proposals.

The CIEEM Guidelines make reference to an alternative approach outlined by Box et al. (2017) (37) which is not based on a matrix of important (or value) and ‘magnitude’ but can be used for categorising significant residual effects if required within an ES. The significance of impacts on biodiversity have been determined in accordance with CIEEM Guidelines. However, where residual ecological effects are identified within this Biodiversity chapter, the significance of these effects at the geographical scale (in accordance with the CIEEM Guidelines) is converted into effects deemed to be significant at the minor, moderate and major level, which is consistent with the remainder of the ES. **Table 11.2.3** provides a framework for transposing the significance of residual ecological effects. This has been done for the residual effects reported in Section 11.9.

Table 11.2.4
Translation between traditional EIA and CIEEM terms of significance

Scale of residual effect significance following CIEEM guidelines	Equivalent scale of residual effect significance using traditional EIA approach
International / national (positive or negative)	Major (adverse or beneficial)
County / District (positive or negative)	Moderate (adverse or beneficial)
Local (positive or negative)	Minor (adverse or beneficial)
Not significant / below Local significance (positive or negative)	Negligible

11.2.9. Human Health

Access to green space and nature can be beneficial to wellbeing. The Landscape Institute’s position statement ‘Public Health and Landscape; creating healthy places’ (2013) (37) states that “healthy places make people feel comfortable and at ease, increasing social interaction and reducing antisocial behaviour, isolation and stress” and that “healthy places are restorative, uplifting, and healing for both physical and mental health conditions”. Therefore, human health has been indirectly considered as part of this assessment.

11.2.10. Climate Change

EU guidance (2013) (38) requires that EclA's should consider the effects of projects on climate change and on biodiversity. Although the guidance document treats the two topics as separate issues, it notes there are interactions between climate change and biodiversity, and advises that assessment of permanent effects of a project, and the mitigation thereof, should take account of climate change projects applicable to the nature and scale of development.

The EU guidance indicates that effects which are only likely to be experienced in the next 20 years should be based on current weather patterns or near-future projections if available and relevant. In relation to biodiversity, all long-term effects have been assessed as negligible. Despite this, the three material considerations pertinent to climate change and biodiversity long-term effects have been taken into account, as discussed below.

Firstly, how projects might be assessed in terms of their effects on the 'manageability' of the Natura 2000 network (2013) (38). SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network. However, the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created an equivalent National Site Network on land and at sea, including both the inshore and offshore marine areas in the UK. With respect to the application site, there is one Ramsar site (these are not included in the National Site Network) and three National Site Network sites located within 10km. In order of distance from the application site these are: River Dee and Bala Lake SAC (Wales), River Dee and Bala Lake SAC (England), Midland Meres and Mosses Ramsar and Johnstown Newt Sites SAC. As presented within this chapter and the standalone HRA, no direct or indirect residual effects of the proposed development are predicted for these Sites. Therefore, development of the application site is very unlikely to contribute to existing pressures on National Site Network sites, affect the ability for site managers to maintain dialogue with a range of stakeholders, constrain the possibility of adaptive management plans for the sites themselves, or constrain future monitoring of climate change effects on biodiversity within the sites.

Secondly, the EIA Guidance requires developers to ensure that their designs and mitigation measures are resilient to projected climate change. For the application site, the retention and creation of new green corridors, public open space and other landscape enhancement through tree, shrub and grassland planting and pond creation would maintain network connectivity and increase opportunities for biodiversity to thrive. Any tree, scrub and hedgerow planting and other new landscapes would be planted in accordance with guidance set out by Forestry Commission's UK Forestry Standard concerning Forests and Climate Change (2017) (39) and utilising species which take account of climate change predictions. Climate change may cause changes in distribution of fauna with certain species moving north as temperatures warm, as is being seen with certain species such as the Cetti's warbler *Cettia cetti*. Provision of a green network within the proposed development, would ensure migration corridors are available along which fauna can move.

Thirdly, the EU guidance about assessing the impact of development on the manageability of National Site Network sites is transferable to a consideration of the impact on general manageability of biodiversity in the area of the application site. This can be assessed in terms of management of the network of designated sites, bearing in mind Government commitments to maintain SSSIs in favourable condition and for the majority of LWSs to be actively managed. With regards to the application site, there are five SSSIs and three LWSs within 5km and 2km, respectively. As presented within this chapter, no direct or indirect residual effects of the proposed development are predicted for these Sites. Therefore, the proposed development would not contribute to existing pressures on surrounding habitat and local wildlife sites. No constraints to information-sharing and the ability for site managers to maintain dialogue with a range of stakeholders would occur.

11.2.11. Risk of Major Accidents and/or Disasters

The only type of major accident and/or disaster that has been scoped into the EIA and is of relevance to this technical topic is potential impacts from accidental oil/fuel spills during the demolition and construction stage and completed development stage (as identified within Chapter 12 *Ground Conditions and Contamination*). The potential effects on ecological receptors in relation to contamination are reported in this chapter, as informed by the assessment presented within Chapter 12.

11.2.12. Relevant Associated Development

Given the hybrid nature of the planning application, the full extent of any associated development, such as utilities or junction works outside the application site boundary, are not confirmed at this stage. However, any such works are not expected to be substantial in the context of the proposed development as a whole and are not considered likely to affect the outcome of this assessment. As such, associated development has not been considered further in this chapter.

11.2.13. Assumptions / limitations

In undertaking the biodiversity assessment, there are a number of limitations and constraints affecting the outputs from this work. These include:

- Survey-specific limitations as detailed in the appendices of this chapter. They are all standard for this type of assessment and are not considered to affect the validity of the results.
- This assessment has been undertaken on the best available data, based on the information gathered from stakeholders, other data sources and the surveys undertaken between December 2021 and July 2023. Although the majority of surveys were undertaken in the appropriate seasons and in line with industry standards for the specific survey, surveys will only identify habitats present at the application site at the time of surveys and the species investigated are mobile and will move into and out of areas over time.
- With the exception of bat emergence/re-entry surveys of trees to be removed within the outline component, all necessary protected species surveys have been undertaken. These outstanding surveys will be undertaken during the detailed design stage and the results will be submitted alongside any future reserved matters applications. For these reasons, a precautionary approach has been taken in regard to the assessment of effects on these receptors. Where there is any doubt, except where specifically noted, a species is assumed present and the effect is assessed on this basis.
- It has been assumed for the purposes of this assessment that the current land uses adjacent to the application site will remain as they are at the time the application is determined, except in the cases where planning permission has already been granted for development. For consented developments, it has been assumed that the developments will take place. These have been considered in the inter-project cumulative assessment.
- As a construction contractor has not yet been appointed and given that the application site is subject to a hybrid planning application, reasonable conservative assumptions have been used in the assessment of potential impacts during the demolition and construction and completed development stages. Assumptions used in respect of the anticipated construction methods are set out in Chapter 6: Construction Strategy & CEMP.
- In respect of the outline component, a conservative assessment has been undertaken whereby all habitats within the extent of the outline component, as illustrated in the parameter plan, would be removed. This is with the exception of certain trees and ponds which are proposed for retention, as illustrated in Appendix 11.4: Drawing 4 – Arboricultural Impacts Overview, and Figure 4.3.16: Pond Strategy (ES Chapter 4), respectively.
- The assessment has been based on the fact that combustion plant is not proposed for the proposed development once operational. The assessment has also considered that the proposed development will be in operation 24 hours per day, 7 days a week and 3-5 m high bunds from the proposed ground level will be created along parts of the northern and western application site boundaries.

11.3. Important Receptors

Existing Receptors

The existing important ecological receptors that have been identified and considered in the assessment are summarised as follows:

- Semi-natural broadleaved woodland;
- Native hedgerows;
- Scattered trees;
- Veteran trees;

- Standing water (ponds);
- Great crested newt (GCN) (*Triturus cristatus*) and other priority (Section 7 (S7)) amphibian species;
- Bats;
- Badger (*Meles meles*);
- Breeding birds;
- Wintering birds;
- Hedgehog (*Erinaceus europaeus*); and
- Brown hare (*Lepus europaeus*).

The following existing ecological receptors have also been considered in the Baseline Conditions section (Section 11.4). However, as set out in the Potential Effects section (Section 11.5) they are not considered further in this chapter on the basis that all potential impacts are dealt with adequately in other chapters or documents, that no significant impacts are anticipated, or because CIEEM guidance does not require ecological features of less than Local importance to be taken forward for assessment::

- International statutory designated sites – River Dee and Bala Lake SAC (Wales and England), Midlands Meres and Mosses Ramsar, Johnstown Newt Sites SAC;
- National statutory designated sites – River Dee SSSI (Wales and England), Vicarage Moss SSSI, Sontley Marsh SSSI, Marford Quarry SSSI;
- Non-statutory designated sites – Wrexham Industrial Estate LWS, Cefn Park LWS, Borrass Wood North LWS;
- Semi-natural broadleaved woodland;
- Arable land;
- Semi-improved neutral grassland;
- Poor semi-improved grassland;
- Modified neutral grassland;
- Amenity grassland;
- Dense scrub;
- Tall ruderal;
- Ditches;
- Introduced shrub;
- Bare ground with ephemeral/short perennial vegetation;
- Buildings;
- Hardstanding;
- Lesser silver water beetle (LSWB) (*Hydrochara caraboides*); and
- Polecat.

Introduced Receptors

The proposed development would introduce soft landscaping across the application site, which is considered a sensitive receptor.

11.4. Baseline Conditions

11.4.1. Existing Baseline

Table 11.4.1 sets out the existing biodiversity baseline conditions. The future baseline conditions are expected to remain consistent with the existing baseline conditions reported in **Table 11.4.1** below.

Table 11.4.1
Existing baseline conditions

Sensitive receptors	Description of Baseline Condition	Importance of ecological receptor	Further information
Statutory designated site – Afon Dyfrdwy a Llyn Tegid (River Dee and Bala Lake) SAC (in both Wales and England)	This SAC is approximately 3.1 km east of the application site. It is designated for its riverine habitat and species including bullhead <i>Cottus gobio</i> , river lamprey <i>Lampetra fluviatilis</i> , brook lamprey <i>Lampetra planeri</i> , sea lamprey <i>Petromyzon marinus</i> , Atlantic salmon <i>Salmo salar</i> , otter and floating water-plantain <i>Luronium natans</i> .	International	Appendix 11.2 – Section 4.1, Figure 2 and Appendix A
Statutory designated site – Midlands Meres and Mosses Ramsar	This Ramsar is approximately 3.5 km north-west of the application site. It is designated for its wetland habitats and associated rare plants and invertebrate populations.	International	Appendix 11.2 – Section 4.1, Figure 2 and Appendix A
Statutory designated site – Johnstown Newt Sites SAC	This SAC is approximately 8 km south of the application site. It is designated for its population of GCN.	International	Appendix 11.2 – Section 4.1, Figure 2 and Appendix A
Statutory designated site – Afon Dyfrdwy (River Dee) SSSI (in both Wales and England)	This SSSI is approximately 3.1 km east of the application site and underpins the River Dee and Bala Lake SAC designation. It is designated for its geomorphological and geological interest, as well as its habitats and populations of floating water-plantain, slender hare’s-ear <i>Bupleurum tenuissimum</i>, sea barley <i>Hordeum marinum</i>, hard-grass <i>Parapholis strigosa</i>, otter, Atlantic salmon, bullhead, brook lamprey, river lamprey, sea lamprey, club-tailed dragonfly <i>Gomphus vulgatissimus</i> and other aquatic invertebrates. The proposed development falls within the Natural England Impact Risk Zone (IRZ) of River Dee SSSI but is not of a type requiring Natural England consultation. This SSSI underpins the River Dee and Bala Lake SAC.	National	Appendix 11.2 – Sections 4.3 – 4.5, Figures 3 - 4 and Appendix B
Statutory designated site – Vicarage Moss SSSI	This SSSI is approximately 3.5 km north-west of the application site. It is designated for its geomorphological and botanical interest, in particular the basin mire habitat on site. This SSSI underpins the Midlands Meres and Mosses Ramsar.	National	Appendix 11.2 – Section 4.3, Figure 3 and Appendix B
Statutory designated site – Sontley Marsh SSSI	This SSSI is approximately 4.7 km south-east of the application site. It is designated for its mesotrophic mire habitat.	National	Appendix 11.2 – Section 4.3, Figure 3 and Appendix B
Statutory designated site – Marford Quarry SSSI	This SSSI is approximately 5.0 km north-west of the application site. It is designated for its butterfly and moth populations which are associated with the calcareous plant communities on site.	National	Appendix 11.2 – Section 4.3, Figure 3 and Appendix B
Non-statutory designated site – Wrexham Industrial Estate LWS	This LWS is approximately 0.6 km south of the application site. The reason for this designation is unknown, but habitats present include grassland and ancient woodland.	County	Appendix 11.2 – Section 4.7 and Figure 6
Non-statutory designated site – Cefn Park LWS	This LWS is approximately 1.3km south-west of the application site. The reason for this designation is unknown, but the site contains broadleaved woodland.	County	Appendix 11.2 – Section 4.7 and Figure 6
Non-statutory designated site – Borrás Wood North LWS	This LWS is approximately 1.6 km north of the application site. The reason for this designation is unknown, but the site contains ancient woodland habitats.	County	Appendix 11.2 – Section 4.7 and Figure 6
Semi-natural broadleaved woodland	The application site contains a small area of semi-natural broadleaved woodland surrounding two small waterbodies (P4a and P4b). The canopy is dominated by willow <i>Salix</i> sp. With the understorey comprising occasional bramble <i>Rubus fruticosus</i> agg., common nettle <i>Urtica dioica</i> and ivy <i>Hedera helix</i> . The woodland is small and isolated from other woodland in the wider landscape. It also has relatively low species diversity and as such does not qualify as the S7 habitat ‘Lowland Mixed Deciduous Woodland’. The woodland provides foraging and refuge habitat for a range of protected and notable species including bats, breeding birds, badgers, hedgehogs, amphibians and invertebrates. Although the woodland does qualify as the LBAP habitat ‘Woodland’ it has only been assessed as important at the IZol level due to its small size and poor quality.	IZol	Appendix 11.3 – Section 2.8, Appendix A and Drawings
Native hedgerows	Although 25 hedgerows were recorded as part of the arboricultural survey, qualification as a hedgerow under British Standard 5837 differs to that of a Phase 1 habitat survey and each should be interpreted independently. For the purposes of this assessment, hedgerows are discussed with reference to	County	Appendix 11.3 – Sections 2.25 – 2.29, Appendix A and Drawings

Sensitive receptors	Description of Baseline Condition	Importance of ecological receptor	Further information
	the Phase 1 habitat survey and Hedgerows Regulations assessment baseline information, as detailed below. There are 29 hedgerows within the application site. All of these are native and over 20m in length so qualify as a S7 habitat. Two of them (H12 and H15) contain sufficient native woody species and associated features to be classified as ‘Important’ under the Hedgerows Regulations 1997. If any hedgerows are subsequently found to support protected species during further surveys in 2023 e.g. roosting bats in associated trees, these hedgerows would also be classified as ‘Important’. The hedgerows provide foraging, commuting and refuge habitat for a range of protected and notable species and they form part of a larger habitat network across the wider landscape. Due to all 29 hedgerows qualifying as S7 habitat and 2 classifying as ‘Important’, the hedgerows have been assessed as an important ecological receptor at the County level.		Appendix 11.4 – Sections 2.50 – 2.51 Appendix 11.5 – Sections 3.1 – 4.2, Appendix A and Drawings
Scattered trees	The arboriculture survey identified 122 individual trees, 17 tree groups and 25 hedges equating to approximately 1.55 ha of canopy cover and 4.83 km of hedgerow in the application site and directly adjacent such that at least part of the RPA falls within the application site. Of these, 26 features are high quality (Category A), 73 are moderate quality (Category B), 36 are low quality (Category C) and four are poor quality (Category U). The trees are mostly broadleaved with pedunculate oak <i>Quercus robur</i> the dominant species. Trees are mostly mature and the most significant area of continuous canopy cover is along the eastern application site boundary. The desk study identified no Tree Preservation Orders (TPOs) within the application site boundary but trees on the opposite side of Ridleywood Road are protected by TPO no. 60 1991. There are no Conservation Areas or Ancient Woodland within the application site. The trees provide suitable commuting and refuge habitat for a range of protected and notable species including breeding birds and bats. These trees have been assessed as an important ecological receptor at the Local level.	Local	Appendix 11.3 – Sections 2.9 – 2.11 and Drawings Appendix 11.4 – Sections 2.4 – 2.16
Veteran trees	One tree in the centre of the application site (T101) was identified as veteran. One further tree outside of the application site boundary to the south-east on the opposite side of Ridleywood Road (T120) was identified as veteran. Although outside of the application boundary, the CEZ partially overlaps with the application site boundary and this tree has therefore been included in this assessment. As above, the trees provide suitable commuting and refuge habitat for a range of protected and notable species including breeding birds and bats. These trees were assessed as an important ecological receptor at the County level.	County	Appendix 11.4 – Sections 2.33 – 2.40
Standing water (Ponds)	There are seven ponds and three ephemeral waterbodies in the application site. Two of these (P1 and P2) are confirmed as S7 habitat due to the known presence of GCN. A further two have historically supported GCN (P3 and P4a) but both were dry during the 2022 surveys. P4b and P5a were both also dry during the 2022 surveys. The ponds also provide suitable habitat for other amphibians, aquatic invertebrates (including possibly for LSWB) and waterfowl. As at least some of the ponds are S7 habitat, standing water was assessed as an important ecological receptor at the Local level.	Local	Appendix 11.3 – Sections 2.16 – 2.21, Appendix A and Drawings Appendix 11.6 – Section 3.4
Arable	The application site predominantly comprises a series of large arable fields, sown with a grass ley at the time of survey except for the south-eastern-most field which was sheep-grazed. Perennial rye-grass <i>Lolium perenne</i> is abundant with rare creeping buttercup <i>Ranunculus repens</i>, white clover <i>Trifolium repens</i> and broad-leaved dock <i>Rumex obtusifolius</i>. These fields, particularly the margins, offer foraging and commuting potential to invertebrates, birds, amphibians and small mammals but only at the level of the application site. These fields do not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.3, Appendix A and Drawings
Semi-improved neutral grassland	There is a semi-improved neutral grassland field in the north-east of the application site with ridge and furrow present. The field contained abundant creeping buttercup and frequent Yorkshire-fog <i>Holcus lanatus</i> and common sorrel <i>Rumex acetosa</i>. This field offers foraging and commuting potential to invertebrates, birds, amphibians and small mammals, and may provide suitable ground nesting habitat for birds, but only at the level of the application site. This field does not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.4, Appendix A and Drawings
Poor semi-improved grassland	The south of the application site contains a series of horse-grazed fields, separated by fences. The largest of these contains frequent creeping bent <i>Agrostis stolonifera</i> and creeping buttercup, with occasional cock’s-foot <i>Dactylis glomerata</i>, timothy <i>Phleum pratense</i>, greater plantain <i>Plantago major</i> and white clover. Patches of marginally higher species diversity were identified in the west of this field. These fields offer foraging and commuting potential to invertebrates, birds, amphibians and small mammals but only at the level of the application site. These fields do not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.5, Appendix A and Drawings
Modified neutral grassland	A small stretch of modified neutral grassland is present on the roundabout verge between the Industrial Estate Road and Bryn Lane. This area is dominated by Yorkshire-fog with abundant cock’s-foot, red fescue <i>Festuca rubra</i>, creeping buttercup and broad-leaved dock. Other recorded species include frequent cow parsley <i>Anthriscus sylvestris</i>, hogweed <i>Heracleum sphondylium</i> and dandelion <i>Taraxacum officinale</i> agg., and occasional knapweed <i>Centaurea nigra</i> and ribwort plantain <i>Plantago lanceolata</i>. The grassland offers minor foraging and commuting potential for invertebrates, birds, amphibians and small mammals but only at the level of the application site. It does not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.6, Appendix A and Drawings
Amenity grassland	A small area of amenity grassland is present within the centre of the roundabout in the south-west of the application site. The grassland is regularly mown and provides no suitable habitat for protected or priority species. It does not qualify as a S7 habitat.	Negligible	Appendix 11.3 – Section 2.7 and Drawings
Dense scrub	There is a large patch of dense scrub surrounding two small waterbodies (P5a and P5b) in the centre of the application site, comprising frequent goat willow <i>Salix caprea</i> and rare bramble. There is a separate patch of dense willow scrub in the centre of a small waterbody (P2) in the north-east of the application site. The scrub offers foraging and commuting potential for invertebrates, birds, amphibians and small mammals as well as bird nesting	Izol	Appendix 11.3 – Sections 2.12 – 2.13, Appendix A and Drawings

Sensitive receptors	Description of Baseline Condition	Importance of ecological receptor	Further information
	potential and hibernation/refuge potential for amphibians, hedgehogs and invertebrates. It is generally considered a low-quality habitat, important only at the level of the application site. It does not qualify as a S7 habitat.		
Tall ruderal	In the north-west of the application site there is a large area of tall ruderal surrounding a small pond (P3). The vegetation comprises occasional rosebay willowherb <i>Chamaenerion angustifolium</i> and common nettle. To the south-west of this is another area of tall ruderal growing along a fence line with similar species composition. This habitat offers foraging and commuting potential for invertebrates, birds, amphibians and small mammals but only at the level of the application site. It does not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.14 and Drawings
Ditches	Along the north-west boundary of the application site beyond a hedgerow is a short section of ditch holding a small volume of shallow water, flowing east. There is another short section of ditch between two arable fields in the south-east which holds water and flows north. There are also several dry ditches present across the application site, predominantly located along hedgerows. The ditches offer foraging and commuting potential to bats and invertebrates but only at the level of the application site. They do not qualify as a S7 habitat.	Izol	Appendix 11.3 – Sections 2.22 – 2.24 and Drawings
Introduced shrub	A small area of introduced shrub is located in the south of the application site, within the yard area adjacent to Bryn Lane. This shrub offers bird nesting potential but only at the level of the application site and is considered a low-quality habitat. It does not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.15 and Drawings
Bare ground with ephemeral/short perennial vegetation	In the south of the application site is a large yard associated with The Acorns which comprises bare ground with ephemeral/short perennial vegetation. Mosses are frequent with occasional creeping bent, annual meadow-grass <i>Poa annua</i> and creeping buttercup. The habitat offers minor opportunity for foraging invertebrates but is generally of low-quality to wildlife and does not qualify as a S7 habitat.	Izol	Appendix 11.3 – Section 2.31, Appendix A and Drawings
Buildings	Fourteen buildings are present in the application site, located in two complexes; a residential property in the north and an equine unit and associated residential property in the south. These offer opportunities for roosting bats and breeding birds. They do not qualify as a S7 habitat, and as a standalone habitat/botanical feature were assessed as being of negligible importance.	Negligible	Appendix 11.3 – Section 2.32 and Drawings
Hardstanding	Bryn Lane and Industrial Estate Road are present in the south-west of the application site. There is also a small access track which links Bryn Lane to the buildings in the south of the application site. These are largely devoid of vegetation and provide no suitable habitat for protected or priority species. It was assessed as an ecological receptor of negligible importance.	Negligible	Appendix 11.3 – Section 2.33 and Drawings
Great crested newt and priority (S7) amphibians species	The desk study returned records of GCN within the application site and in further locations within 500 m. Records of common toad <i>Bufo bufo</i> were also returned within 2 km of the application site. GCN is a European protected species, a S7 species and a LBAP species. Common toad is a S7 species. Of the seven on-site ponds, one was assessed as being of ‘excellent’ quality for GCN, two as ‘good’ and the remaining four as ‘poor’ with respect to this assessment. eDNA surveys confirmed the presence of GCN in P1 and P2 within the application site though no population data were available as NRW confirmed eDNA data would be sufficient for a licence application. GCN have been previously recorded in two further ponds within the application site (P3 and P4a) but these were both dry during the 2022 eDNA surveys. There are a further seven ponds within 500 m of the application site. eDNA surveys confirmed the presence of GCN in one of these (P9) and GCN have also historically been recorded in P6, P7, P8, P10 and P12. However, during the 2022 eDNA surveys P12 was found to no longer exist, having been removed to facilitate a development, and P7 was dry. In the absence of data it is assumed that common toad is present in at least some of the on-site ponds. The application site contains suitable terrestrial habitat for foraging, refuge and commuting amphibians including dense scrub, tall ruderal vegetation, semi-improved and poor semi-improved grasslands, dry ditches and hedgerows. Rubble piles around P4a and P4b are likely suitable hibernacula. Although GCN are an EPS and are confirmed present on site, their presence within Wrexham is widespread and the site population was therefore assessed as an important ecological receptor at the Local level.	Local	Appendix 11–2 - Section 6.1 Appendix 11.3 – Sections 3.2, 3.4, 3.6 and Appendix A Appendix 11.6 – Sections 3.3 – 3.6 and Drawings
Lesser silver water beetle	The desk study returned no records of LSWB within 2 km but P1, P2 and P3 were flagged during the extended Phase 1 habitat survey as having the potential to support aquatic invertebrate species. As LSWB is protected under WCA5, and is notable as a S7 and red data list species, further consideration is required. One survey by a licensed surveyor in May 2023 identified no signs of LSWB in any of the on-site ponds but P1, 2 and 3 were confirmed as having some areas of suitable LSWB habitat. A second survey in July 2023 identified no signs of LSWB in P1, 2 and 3 and the ponds were considered as sub-optimal for LSWB. LSWB may be present in suitable habitat in the wider landscape and therefore are considered as an important ecological receptor but only at the IZol level.	IZol	Appendix 11–2 - Section 6.1 Appendix 11.11 – Section Interim Results Appendix 11.13 – Sections 3.1 – 3.2 and 4
Bats	Roosting The desk study returned records of at least nine bat species within 2 km, but none from within the application site itself. The closest record was that of a brown long-eared bat <i>Plecotus auritus</i> approximately 0.5 km south. All bat species in the UK are European protected species and of those returned in the desk study, brown long-eared bat, common pipistrelle <i>Pipistrellus pipistrellus</i>, soprano pipistrelle <i>Pipistrellus pygmaeus</i>, noctule <i>Nyctalus noctula</i> and lesser horseshoe <i>Rhinolophus hipposideros</i> are all S7 species and lesser horseshoe is also a LBAP species. The PRA identified two buildings (B1 and B8) with moderate suitability for roosting bats, and four (B3, B6, B7 and B13) with low suitability. Nocturnal surveys of these buildings recorded no bats emerging from or returning to roost.	Local	Appendix 11–1 - Section 6.1 Appendix 11.3 – Sections 3.4 – 3.6 Appendix 11.7 - Sections 3.2 – 3.10 and 4.5, Appendix A and Drawings Appendix 11.8 – Sections 5.1 – 6.4 and Drawings Appendix 11.12 – Sections 3.5-3.9 and 4.1

Sensitive receptors	Description of Baseline Condition	Importance of ecological receptor	Further information
	All other buildings were assessed as having negligible suitability for roosting bats. The GLTA and aerial inspections identified 77 trees within the application site with suitability for roosting bats: 16 with high, 33 with moderate and 28 with low suitability. Nocturnal surveys of trees with high or moderate bat roost potential (T69, T70, T75, T99, G10.4) which will be impacted by the detailed component of the proposed development recorded no bats emerging or returning to roost. The presence/likely absence status of bat roosts in trees within the outline component is currently unknown. As such, roosting bats were taken forward in this assessment as an important ecological receptor at the Local level. Foraging and commuting Habitats within the application site have moderate suitability for foraging and commuting bats including hedgerows, ditches, scrub, standing water and tall ruderal vegetation. Activity surveys recorded at least five bat species using the application site for foraging and commuting but the majority of bat passes were made by common and soprano pipistrelles. The greatest level of activity was recorded in July and September with most activity along boundary features and the semi-improved grassland in the north-east of the application site. Very few social calls were recorded. Based upon the species and activity levels recorded, the application site was evaluated as being of Local importance to foraging and commuting bats.		
Badger	The desk study returned records of badger within 2 km of the application site. Badger is a protected species under the PBA and is also an LBAP species. No setts have been recorded in the application site to date but suitable habitat for sett building does exist including dense scrub, hedgerows, woodland, arable and grass field margins. Mammal paths (including one with a badger guard hair present) and a latrine have been recorded within the application site , and feeding remains of wasp nests, snuffle holes and a latrine have been recorded within the IZol. The application site contains extensive foraging and commuting habitat including arable, semi-improved grassland and poor semi-improved grassland. There is good connectivity between the application site and further examples of suitable habitats in the wider landscape to the north and the east. Badgers are a highly mobile species but setts are currently assumed to be absent from the application site. Due to their confirmed use of the application site, at least for foraging and commuting, badger was assessed as an important ecological receptor at the Local level.	Local	Appendix 11-2 - Section 6.1 Appendix 11.3 – Sections 2.36 – 2.37 and Appendix A
Breeding birds	The desk study returned records of 81 protected or notable bird species. The application site contains suitable habitat for nesting and foraging including woodland, dense scrub, tall ruderal vegetation, standing water, trees, buildings and hedgerows. Several of the mature trees were noted as containing cavities potentially suitable for nesting barn owl <i>Tyto alba</i> during the extended Phase 1 habitat survey. The potential for ground-nesting species is limited due to regular grazing within the application site. The BBS recorded 33 species in the application site and a further three in the 100 m buffer. Of these, six were confirmed breeding in the application site, 11 were probable breeding and 13 were possible breeding though some species were classified in more than one of these categories due to multiple pairs of the species being present in different locations within the application site, displaying different breeding (or suspected breeding) behaviours. No significant breeding bird concentrations or nationally rare breeding species were recorded. Most of the notable species were using habitats on the application site boundaries and field boundaries, suggesting the dominant habitats in the application site are of low value to breeding birds. Breeding birds were assessed as an important ecological receptor at the Local level.	Local	Appendix 11-2 - Section 6.1 Appendix 11.9 – Sections 3.1 – 4.19
Wintering birds	The desk study returned records of 81 protected or notable bird species. The application site contains extensive areas of arable fields suitable for foraging and roosting during winter. The application site is also approximately 3 km from the River Dee which is known to provide important over-wintering sites for pintail when flooded. The WBS recorded 21 protected or notable bird species on the ground within the application site including two WCA1 species, seven S7 species and 19 species listed under Wales BoCC 3 (the current edition at time of survey). However, the two Sch1 species recorded do not breed in this part of the UK. An additional eight protected or notable species were recorded in the 500 m buffer. The BoCC Wales 4 was published in December 2022, after completion of the surveys. Species added to the Amber or Red list in BoCC 4 that were previously listed as Green were not recorded during the visits and the application site may therefore support slightly more BoCC species than were recorded. The species count was sufficiently low for the wintering bird assessment to judge that the proposed development would have limited impact on the species. However, on a precautionary basis wintering birds were carried forward in this assessment as an important ecological receptor at the Local level to allow for the recent publication of BoCC 4.	Local	Appendix 11.2 - Section 6.1 Appendix 11.10 – Sections 3.7 – 4.21
Hedgehog	The desk study returned records of hedgehog, a S7 species, within 2 km of the application site, the closest was approximately 0.3 km away. The application site contains suitable habitat for foraging, refuge and hibernation including woodland, hedgerows, dense scrub, grasslands and tall ruderal vegetation. The arable field margins may also be used for commuting. Hedgehog has not been observed in the application site to date and the presence/likely absence status of this species is therefore currently unknown. There is abundant suitable habitat on site and hedgehog could be present. They were assessed as an important ecological feature at the Local level.	Local	Appendix 11.2 - Section 6.1 Appendix 11.3 – Section 3.3
Brown hare	The desk study returned records of brown hare, a S7 species, within 2 km of the application site and one was observed within the application site during the extended Phase 1 habitat survey. Arable and grassland fields and hedgerows within the application site provide foraging, refuge and commuting habitat. As brown hare are confirmed to use the application site they were assessed as an important ecological receptor at the Local level.	Local	Appendix 11-2 - Section 6.1 Appendix 11.3 – Appendix A

Sensitive receptors	Description of Baseline Condition	Importance of ecological receptor	Further information
Polecat	The desk study returned historic records of polecat within the application site. The application site contains woodland and dense scrub which could provide refuge habitat including rabbit burrows in the woodland which could be used as a den though no current use by polecat was observed during the extended Phase 1 habitat survey. The arable and grassland fields and habitats around waterbodies may be used for foraging and commuting within the application site. Polecat has not been observed in the application site to date and the presence/likely absence status of this species is therefore currently unknown. Habitats within the application site are limited for den building and are well connected to further suitable habitat in the wider landscape to the north and east that polecat could disperse into, if present. Polecat has been considered an important ecological receptor but only at the IZol level.	IZol	Appendix 11-2 - Section 6.1

11.5. Potential Impacts

Table 11.5.1 sets out the receptors that have been scoped out of detailed consideration on the basis that: potential impacts to these receptors have been screened out of further assessment following the assessment of other environmental effects which would impact biodiversity (i.e. impacts relating from air quality); or because CIEEM guidance does not require ecological features of less than Local importance (e.g. of IZol or negligible importance) to be taken forward for assessment as significant impacts are considered unlikely at this level.

The impacts considered to have the potential to result in significant effects (prior to inclusion of any embedded mitigation) on all other receptors are reported in **Table 11.5.2**

Table 11.5.1
Receptors Scoped Out

Sensitive Receptor Scoped out of Further Assessment	Reason for Scoping Out
Statutory designated sites River Dee and Bala Lake SAC River Dee SSSI	As confirmed in the Technical Scope section in Section 11.2.4, air quality impacts on ecological designated sites are not considered to be significant and have been scoped out of further assessment. Also detailed in Section 11.2.4, contamination and pollution impacts (including phosphates) on these sites are considered in the standalone HRA and Chapter 12, and are not required to also be assessed in this chapter. No other direct or indirect impacts on these statutory designated sites are anticipated due to the distance of this site from the application site, a lack of species interactions and a lack of any other obvious impact pathways.
Statutory designated sites Midlands Meres and Mosses Ramsar Vicarage Moss SSSI Sontley Marsh SSSI Marford Quarry SSSI	As confirmed in the Technical Scope section in Section 11.2.4, air quality impacts on ecological designated sites are not considered to be significant and have been scoped out of further assessment. No other direct or indirect impacts on these statutory designated sites are anticipated due to the distance of this site from the application site, a lack of species interactions and a lack of any other obvious impact pathways (including hydrological).
Statutory designated site Johnstown Newt Sites SAC	No direct or indirect impacts on this designated site are anticipated due to the distance of this site from the application site, a lack of species interactions and a lack of any other obvious impact pathways (including hydrological).
Non-statutory designated site Wrexham Industrial Estate LWS Cefn Park LWS	As confirmed in the Technical Scope section in Section 11.2.4, air impacts on these non-ecological designated sites are not considered to be significant and have been scoped out of further assessment. No other direct or indirect impacts on these non-designated sites are anticipated due to the distance of this site from the application site, a lack of species interactions and a lack of any other obvious impact pathways (including hydrological).
Non-Statutory designated site Borras Wood North LWS	No direct or indirect impacts are anticipated due to the distance of the designated site from the proposed development (over 1 km) and its location beyond main roads and existing development.
Habitats Semi-natural broadleaved woodland Arable Semi-improved neutral grassland Poor semi-improved grassland Modified neutral grassland Dense scrub Tall ruderal Ditches Introduced shrub Bare ground with ephemeral/short perennial vegetation	Assessed as important only at the IZol level. CIEEM Guidance does not require features of this importance to be carried forward for assessment.
Habitats Amenity grassland Buildings Hardstanding	Assessed as being of negligible importance. CIEEM Guidance does not require features of this importance to be carried forward for assessment. Buildings are scoped out from assessment as a habitat type but are considered further in the assessment of impacts on roosting bats and breeding birds.
Lesser Silver Water Beetle	Not present on site and assessed as important only at the IZol level. CIEEM Guidance does not require features of this importance to be carried forward for assessment.

Sensitive Receptor Scoped out of Further Assessment	Reason for Scoping Out
Polecat	Assessed as important only at the IZol level. CIEEM Guidance does not require features of this importance to be carried forward for assessment.

Table 11.5.2
Potential significant impacts

Stage	Description of Potential Impacts		Positive/negative
Demolition and Construction Stage	and	Direct, permanent and temporary loss, damage and disturbance to habitats within the application site (semi-natural broadleaved woodland, native hedgerows, scattered trees, veteran trees and ponds) from construction works and the resulting effects on species (GCN and other S7 amphibians, bats, badger, breeding birds, wintering birds, hedgehog and brown hare) from habitat loss and fragmentation and displacement effects.	Negative
Demolition and Construction Stage	and	Killing/injury/disturbance of individual species (GCN and other S7 amphibians, bats, badger, breeding birds, wintering birds, hedgehog and brown hare) from construction works.	Negative
Completed Development Stage		Loss or degradation of retained and newly created habitats (native hedgerows, scattered trees, veteran trees and ponds) from recreational use by workers and visitors.	Negative
Completed Development Stage		Impacts on species (GCN and other S7 amphibians, bats, breeding birds) during the completed development stage from habitat loss and fragmentation.	Negative
Completed Development Stage		Killing/injury/disturbance of individual species (GCN and other S7 amphibians, bats, badger, breeding birds, wintering birds, hedgehog and brown hare) from increased traffic levels and operational lighting.	Negative

11.6. Embedded Mitigation

Table 11.6.1 identifies those design interventions and that have been incorporated into the design of the proposed development, as well as any control methods that have been incorporated into the proposed development to mitigate the potential impacts identified during the course of the design evolution process. These measures are collectively referred to as embedded mitigation.

Table 11.6.1
Embedded Mitigation

Embedded Mitigation	Description	Reason for Intervention	Further information
Veteran tree (T101) buffer zone	The development has been designed to include a CEZ for veteran tree T101 in addition to the standard RPAs, within which no buildings or hardstanding would be located. Surrounding tree cover and waterbodies to the east of T101 will be retained to preserve the immediate environment around the tree and avoid changes to existing shelter, shading and hydrology.	To prevent damage to the veteran tree (T101).	Tree Protection Plan (within Appendix 11.3) Design and Access Statement (DAS)
Retention of scattered trees and hedgerows	The development has been designed to include the retention of scattered trees and hedgerows, where possible, totaling 0.72 ha scattered trees and 1.81 km hedgerow length in the detailed component. Of the trees and tree groups proposed to be retained, 14 were rated good condition and 33 were rated moderate condition by the arboriculture survey. Retention of trees and hedgerows in the outline component is uncertain. However, a minimum of 19 trees, 4 tree groups and 6 hedgerows are proposed to be retained.	To minimize habitat loss and thereby impacts on protected species.	Landscaping Strategy Proposed Masterplan Tree Protection Plan (within Appendix 11.3)
Retention and relocation of ponds	The development has been designed to include the retention of ponds, where possible. Ponds P5a and P5b in the centre of the application site would be retained, enhanced and incorporated into the green corridor (see below). The development has been designed to allow relocation of P1, P2 and P3 in close proximity to their original position.	To minimize loss of a S7 habitat and suitable GCN and common toad habitat.	Landscaping Strategy Proposed Masterplan DAS
Creation of green corridor including ‘stepping stone’ ponds	The development has been designed to include a green corridor running north-south through the centre of the application site. It would include retained and newly created ponds and would create a corridor through which wildlife can commute.	To minimize permanent habitat loss. To minimize habitat fragmentation and isolation effects during operation, particularly concerning the field to the south bounded by the application site and Bryn Lane which would otherwise become isolated.	Landscaping Strategy Proposed Masterplan

Embedded Mitigation	Description	Reason for Intervention	Further information
Creation of bunds along northern site boundary (in detailed component)	Earth bunds, 3-5 m high above ground level, have been designed into the development along parts of the northern boundary in the detailed component. These would be planted with wildflower grass mixes, native trees and native scrub mixes with some bare earth mosaic patches for invertebrates.	Primarily for landscape and visual purposes but would perform an additional function of reducing disturbance impacts to breeding and wintering birds in the fields to the north of the application site during operation. It would also create a wide, largely undisturbed commuting and foraging corridor along part of the application site boundary for a range of species including amphibians, bats, birds, badger, hedgehog and brown hare. This corridor would also minimize effects from habitat fragmentation and isolation for these species during operation by providing connectivity both within the application site and between the application site and neighbouring landscape.	Landscaping Strategy Proposed Masterplan
Wildlife tunnel	A 200 x 200 mm concrete wildlife tunnel has been designed into the detailed component between the green corridor and the off-site parcel to the south.	To provide a safe passage route beneath the central road for amphibians and other small animals e.g. hedgehogs. This will minimize the risk of mortality/injury from traffic and will help improve habitat connectivity between the on-site green corridor and the off-site land to the south which includes a GCN pond.	Landscaping Strategy
Landscape design (detailed component)	The majority of wildlife-friendly planting is around the application site boundaries, designed to attract wildlife to parts of the application site which would not be under notable disturbance from the operation of the proposed development. This is shown in the detailed landscape plans and as a landscaping buffer in the parameters plan. Landscaping will contain a mixture of tree, hedgerow, shrub and grassland planting, of mostly native species, as well as pond creation. Conversely, landscaping within central areas of the site in the detailed component contains more ornamental species.	To minimize net habitat loss and provide a commuting and foraging corridor around the site boundary that wildlife can use. This would aid connectivity with the wider landscape and should attract wildlife away from the active central areas of the operational site where they may be at risk from mortality/injury and disturbance.	Landscaping Strategy Parameters Plan
Tree planting	A minimum of 1,121 trees would be planted, comprising 575 in the detailed component and a minimum of 546 in the outline component. These would be a mixture of native species with a particular focus on pedunculate oak which occurs frequently in the area.	To compensate for tree habitat loss and provide habitat for protected species including bats and nesting birds.	Landscaping Strategy DAS
Provision of bird and bat boxes	A minimum of 25 bird and 25 bat boxes would be provided within the proposed development.	To minimize net loss of nesting and roosting opportunities for birds and bats.	Landscaping Strategy DAS

11.7. Assessment of Effects (including Embedded Mitigation)

11.7.1. Demolition and Construction Stage

The assessment of the likely biodiversity effects of the proposed development during the demolition and construction stage (including embedded mitigation) is set out in **Table 11.7.1**.

Table 11.7.1
Demolition and Construction Stage Assessment

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
Native hedgerows	County	Potential Impacts from Habitat Loss Embedded mitigation has enabled the retention of 1.81 km of hedgerow in the detailed component. However, there would be certain loss of 1.36 km hedgerow in the detailed component. The full length to be removed qualifies as S7 habitat and both ‘Important’ hedgerows would be lost. In respect of the outline component, the detailed landscaping plans are not available at this stage. As such, a precautionary approach has been taken and it has been assumed that there would be a total loss of 0.79 km of hedgerow in the outline component. As such, there would be an overall loss of up to 2.15 km of native hedgerows. The landscaping strategy does contain compensatory hedgerow planting which will be undertaken during the demolition and construction stage. However, they will take time to mature and the benefit will only be forthcoming in the completed	Negative effect, significant at County level	Yes	Landscaping Strategy Parameters Plan Appendix 11.4 – Section 3.20 Appendix 11.5 – Sections 3.1 – 4.2

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		development stage. Hedgerow loss is therefore considered a certain, temporary effect in the short-term until the habitats during the completed development stage are established.			
		Potential Impacts from Habitat Damage Direct damage to retained hedgerow from encroachment by construction machinery. All retained hedgerow qualifies as S7 habitat and could be impacted in this way. In a worst-case scenario this is considered a probable, permanent and irreversible effect.	Negative effect, significant at Izol level	Yes	N/A
		Potential Indirect Impacts from Pollution and Contamination Indirect impacts on retained hedgerow from demolition and construction works such as airborne dust, pollution events and ground water contamination. All retained hedgerow qualifies as S7 habitat and could be impacted in this way. This is considered a probable, temporary effect in the short-term, reversible in the long-term.	Negative effect, significant at Izol level	Yes	N/A
		Overall Effect The overall effect on native hedgerows during the demolition and construction stage is considered to range from negative effect, significant at the IZoL level to negative effect, significant at the County level.	Negative effect, significant at Izol level to negative effect, significant at County level	Yes	N/A
Scattered trees	Local	Potential Impacts from Habitat Loss Embedded mitigation has enabled the retention of 14 Category A and 33 Category B trees and tree groups. Despite this, there would be certain loss of 0.36 ha scattered trees including 1 Category A and 18 Category B trees in the detailed component . There is anticipated loss of up to 0.20ha scattered trees in the outline component including two Category A trees, nine Category B trees and one Category B tree group. Category A and B trees are considered to have arboricultural, landscape and/or cultural value, and this can often be translated into having biodiversity value also. Embedded mitigation includes the planting of a minimum of 1,121 trees across the proposed development including pedunculate oak trees which will be planted with sufficient space to become mature, similar to those currently present in the application site. Although these will be planted in the demolition and construction stage, they will take time to mature and the benefit will only be forthcoming in the completed development stage. Tree loss in the demolition and construction stage is therefore considered a certain, temporary effect in the short-term until the habitats during the completed development stage are established.	Negative effect, significant at Local level	Yes	Landscaping Strategy Proposed Masterplan Parameters Plan DAS Appendix 11.3 – Sections 2.9 – 2.11 Appendix 11.4 – Sections 3.8 – 3.14
		Potential Impacts from Habitat Damage Direct damage to non-veteran retained trees from encroachment by construction machinery. This includes potential damage within RPAs of trees outside of the application site boundary. All retained trees could be impacted in this way. In a worst-case scenario this is considered a probable, permanent and irreversible effect.	Negative effect, significant at Izol level	Yes	N/A
		Potential Indirect Impacts from Pollution and Contamination Indirect impacts on retained trees from demolition and construction works such as airborne dust, pollution events and ground water contamination. All retained trees could be impacted in this way. This is considered a probable, temporary effect in the short-term, reversible in the long-term.	Negative effect, significant at Izol level	Yes	N/A
		Overall Effect The overall effect on scattered trees during the demolition and construction stage is considered to range from negative effect, significant at the IZoL level to negative effect, significant at the Local level.	Negative effect, significant at Izol level to negative effect, significant at Local level	Yes	N/A
Veteran trees	County	Potential Impacts from Habitat Damage Embedded mitigation has enabled the retention of the single veteran tree within the application site and ensures an appropriate buffer would be maintained around the on-site and off-site veteran trees to prevent any direct damage during construction.	Negligible effect, not significant	Not required	Landscaping Strategy Proposed Masterplan Appendix 11.4 – Sections 3.15 – 3.17
		Potential Indirect Impacts from Pollution and Contamination Indirect impacts on retained veteran trees from demolition and construction works such as airborne dust, pollution events and ground water contamination. This is considered a probable, temporary effect in the short-term, reversible in the long-term.	Negative effect, significant at Izol level	Yes	N/A
		Overall Effect The overall effect on veteran trees during the demolition and construction stage is considered to range from negligible effect, not significant to negative effect, significant at the Izol level	Negligible effect, not significant to negative effect,	Yes	N/A

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
			significant at Izol level		
Standing water (ponds)	Local	Potential Impacts from Habitat Loss Embedded mitigation ensures two ponds would be retained within the proposed development and that there would be a series of 16 small new ponds created in a green corridor running north-south through the centre of the proposed development. Embedded mitigation also includes a commitment to relocate P1, P2 and P3 in close proximity to their original positions though these would be temporarily lost to the development and will not become established until the completed development stage. However, the remaining two on-site ponds would be lost permanently to the development though these are known to dry out during the summer months. At least two of these ponds to be lost (either permanently or temporarily) qualify as S7 habitat due to supporting GCN and two have historically supported GCN. The new ponds included as embedded mitigation would have a greater combined area than the ponds to be lost. However, the benefit from these ponds will not be forthcoming until the completed development stage and S7 ponds cannot just be replicated, they must qualify under specific criteria. It is therefore assumed there will be a net loss in S7 habitat. This is considered a certain, temporary effect in the short-term until the habitats during the completed development stage are established.	Negative effect, significant at Local level	Yes	Landscaping Strategy Proposed Masterplan Parameters Plan Appendix 11.6 – Sections 3.3 – 3.6
		Potential Impacts from Habitat Damage Direct damage to retained ponds from encroachment of construction machinery, particularly during creation of new ponds and a footpath in the vicinity of retained ponds. This is considered a probable, permanent and irreversible effect.	Negative effect, significant at Izol level	Yes	Landscaping Strategy
		Potential Indirect Impacts from Contamination and Pollution Indirect impacts on retained ponds from construction pollution events, particularly during creation of new ponds and a footpath in vicinity of retained ponds. This is considered a probable, temporary effect in the short-term, reversible in the long-term.	Negative effect, significant at Izol level	Yes	Landscaping Strategy
		Overall Effect The overall effects on standing water during the demolition and construction stage range from negative, significant at the Izol level to negative, significant at the Local level.	Negative effect, significant at Izol level to negative effect, significant at Local level	Yes	N/A
Great crested newt (and other S7 amphibian species)	Local	Potential Impacts from Aquatic Habitat Loss Potential impacts may arise as a result of aquatic habitat loss suitable for GCN and common toad. All seven on-site ponds were assessed as having some suitability for GCN and common toad. Embedded mitigation ensures two of these would be retained but these two have not had GCN presence confirmed. Embedded mitigation also includes a commitment to relocate P1, P2 and P3 in close proximity to their original positions. However, these would still be lost temporarily and the new ponds would take time to develop and become inhabited by GCN and other amphibians. All three of these ponds have had confirmed GCN presence either in the 2022 eDNA surveys or historically. Furthermore, there would be certain permanent loss of the remaining two on-site ponds of which one has had confirmed GCN presence historically. Toad presence is unconfirmed in any of the on-site ponds. In the absence of data it is assumed that common toad are present within the ponds to be lost. Embedded mitigation includes the creation of 16 new ponds. The total area of the new and relocated ponds would be greater than the ponds to be lost but this benefit would not be forthcoming until the completed development stage and additional mitigation would be required to ensure the ponds are suitable for GCN and common toad, and remain so in the long-term. Aquatic habitat loss (and thereby loss of breeding habitat) is considered a certain, temporary effect in the short-term until the habitats during the completed development stage are established.	Negative effect, significant at Local level	Yes	Landscaping Strategy Proposed Masterplan Appendix 11.6 – Sections 3.3 – 3.6 DAS
		Potential Impacts from Terrestrial Habitat Loss Potential impacts may arise as a result of terrestrial habitat loss suitable for GCN and common toad. Although embedded mitigation includes some habitat retention, there would be unavoidable habitat loss as a result of the proposed development including suitable terrestrial habitat for GCN and common toad. This could lead to a secondary effect of habitat fragmentation and isolation. Embedded mitigation includes a green corridor which would provide a commuting corridor for amphibians north-south across the development, linking amphibians in P6 to the south of the application site with ponds in the green corridor, and ponds off-site to the north and a wildlife tunnel has been designed to allow passage between these two areas, beneath the new proposed road. However, these benefits of the green corridor would only arise in the long-term during the completed development stage. Overall habitat loss within the outline component is currently unknown. Terrestrial habitat loss and fragmentation has been assumed to be a certain, temporary effect in the short-term until the habitats during the completed development stage are established.	Negative effect, significant at Local level	Yes	Landscaping Strategy Proposed Masterplan
		Killing/Injury of Species Pond drain down, vegetation clearance and groundworks during the construction phase have the potential to kill/injure GCN and common toad, including hibernating individuals. Given the confirmed presence of at least GCN on-site, in the absence of mitigation this is considered a certain, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	N/A

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		Potential Impacts from Habitat Damage Direct damage to retained amphibian habitat (aquatic/breeding place and terrestrial/resting place) from encroachment by construction machinery. This is considered a probable, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	N/A
		Potential Indirect Impacts from Contamination and Pollution Indirect impacts to retained amphibian habitat (aquatic and terrestrial) from construction pollution events. This is considered a probable, temporary effect in the short-term, reversible in the long-term.	Negative effect, significant at Local level	Yes	N/A
		Potential Indirect Impacts from Habitat Loss The on-site habitat loss and large-scale land use change as a result of the proposed development could lead to displacement of GCN and toads into the wider landscape. This could lead to secondary effects of increased mortality and disease transmission from populations mixing / increased density of individuals in certain locations. However, given that amphibians are mobile and known to travel up to 500 m during the terrestrial phase of their lifecycle, it is likely that they would be displaced into adjacent habitat within the existing range of the metapopulation. Therefore, displacement and associated effects are considered to be not significant.	Negligible effect, not significant at Local level	Not required	N/A
		Potential Impacts on FCS of Population A combination of the above potential impacts could result in detriment to maintenance of FCS for GCN. This is considered a possible, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	N/A
		Overall Effect Overall effects on GCN and common toad during the demolition and construction stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
Bats	Local	Potential Impacts from Roosting Habitat Loss (buildings) All 14 buildings within the application site would be demolished including two with moderate roosting potential (B1 and B8) and four with low roosting potential (B3, B6, B7 and B13). Nocturnal roost surveys of these buildings with moderate or low roosting potential did not identify any bat roosts in these buildings. There would be no loss of confirmed bat roosts in buildings, however there would be loss of available potential bat roost habitat. The buildings proposed within the development will mostly be of commercial warehouse structure which are unlikely to form significant PRFs even in the long-term. Loss of roosting habitat in buildings is considered a certain, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	Proposed Masterplan Parameters Plan
		Potential Impacts from Roosting Habitat Loss (trees) Seventy-five trees on-site were assessed as having roosting potential. Embedded mitigation ensures 67 trees and tree groups would be retained within the detailed component including the veteran tree on-site. However, there would be unavoidable loss of mature trees within the application site including 17 trees with bat roosting potential in the detailed component. Nocturnal surveys of trees with high or moderate bat roost potential (T69, T70, T75, T99, G10.4) impacted by the detailed component of the proposed development did not record any bats emerging or returning to roost. The extent of tree loss within the outline component is unknown. However, embedded mitigation includes planting of a minimum of 1,121 trees across the site including pedunculate oak trees which would be planted with sufficient space to become mature, thereby potentially becoming suitable for roosting bats in the long-term. Embedded mitigation also includes the provision of 25 bat boxes. These measures would result in a net increase in suitable roosting habitat and opportunities in the long-term but the benefit would not be forthcoming until the completed development stage. As such, this is considered a certain, temporary effect in the short-term until the habitats and bat boxes during the completed development stage are established.	Negative effect, significant at Local level.	Yes	Proposed Masterplan Parameters Plan DAS
		Potential Impacts from Roosting Habitat Loss (trees) Nocturnal surveys of only those trees with high or moderate bat roost potential impacted by the detailed component of the development have been undertaken. As such, the presence of bat roosts in trees within the outline component of the application site is unknown. As such a precautionary approach has therefore been undertaken in this assessment and it is considered that the proposed development could lead to the loss of confirmed bat roosts in trees. This is considered a possible, permanent, irreversible effect.	Negative effect, significant at Local level	Yes	N/A
		Killing/injury of Species (roosting bats) Destruction of, or damage to, potential bat roosts in buildings and trees during construction could lead to the killing/injury of roosting bats if present at the time of impact. In an assumed worst-case scenario that a bat roost is present, this is considered a certain, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	N/A
		Potential Impacts from Habitat Damage Direct damage to retained trees from encroachment by construction machinery. This could cause damage to potential roost features and roosts themselves (if found to be present). This is considered a possible, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	N/A

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		Disturbance of Species (roosting bats) Indirect disturbance effects on potential roosting bats in buildings and trees both within and adjacent to the application site through noise and vibration from construction traffic and machinery. This is considered a probable, temporary and reversible effect.	Negative effect, significant at Local level	Yes	N/A
		Disturbance of Species (roosting, foraging and commuting bats) The application site is currently mostly unlit. Any proposed construction lighting could have detrimental impacts on roosting, foraging and commuting bats in the absence of mitigation both within and adjacent to the application site. It has the potential to light up buildings or trees and therefore potential bat roosting features themselves as well as foraging hotspots and key commuting routes, thereby increasing energetic costs for bats. This is considered a probable, temporary and reversible effect.	Negative effect, significant at Local level	Yes	N/A
		Potential Indirect Impacts from Habitat / Roost Loss If bat roosts are to be lost to the development, or are indirectly impacted in such a way that roosting becomes unviable, roosting bats would be displaced. This could lead to increased mortality and disease transmission from individual bats moving into new locations, interacting with other individuals and possibly increasing the density in certain locations. However, given that bats are highly mobile, frequently roost switch (particularly in trees) and the wider landscape contains vast numbers of mature trees, it is likely that any bats displaced would find sufficient alternative roosting spaces and there would not be a significant increase in mixing with bats from outside of their original roost. This displacement effect and the associated secondary effects are therefore considered not significant.	Negligible effect, not significant	Not required	N/A
		Potential Impacts on FCS of Population A combination of the above potential impacts could result in detriment to maintenance of FCS for the bat species in question. This is considered a possible, permanent and irreversible effect.	Negative effect, significant at Local level	Yes	N/A
		Potential Impacts from Habitat Loss (foraging and commuting) Embedded mitigation ensures some hedgerows, particularly around the development site boundary, would be retained. However, loss of vegetation within the application site is unavoidable. The loss of vegetation, particularly woodland, hedgerows, scrub, semi-improved grassland and ponds could disrupt bat foraging and commuting behaviour and could cause a secondary effect of habitat fragmentation. Loss of this habitat would reduce the habitat availability and potentially increase the energetic cost of foraging and commuting bats. Benefits arising from embedded mitigation (e.g. the green corridor and bunds) would not occur until the operational phase and would not fully compensate for the anticipated habitat loss. This is considered a certain, temporary effect in the short-term until the habitats during the completed development stage are established.	Negative significant effect at Local level	Yes	Proposed Masterplan Parameters Plan
		Potential Impacts from Habitat Fragmentation (foraging and commuting) Possible disruption of bat flight lines from construction of tall buildings up to 28.5 m in height. However, in the construction phase this is deemed a not significant effect as the majority of the application site would have been made unsuitable for commuting bats through habitat loss (discussed above). Therefore, at the point of building construction this is likely to have a negligible effect on commuting bats.	Negligible effect, not significant	Not required	Proposed Masterplan Parameters Plan
		Overall Effect Overall effects on bats during the demolition and construction stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
Badger	Local	Potential Impacts from Habitat Loss (setts) and Killing/injury of Species Destruction or damage of a badger sett if one is dug on site prior to construction. This is considered unlikely given no setts have been recorded on-site to-date. However, badgers are highly mobile and can readily dig new setts. This could lead to a secondary effect of killing/injuring badger if present inside the sett at time of impact. These are considered possible, permanent and irreversible effects.	Negative significant effect at Local level	Yes	N/A
		Potential Impacts from Habitat Loss (foraging and commuting) Despite embedded mitigation ensuring the retention of some habitats, the proposed development would result in certain loss of habitat suitable for badger foraging, commuting and sett building. This could result in secondary effects of habitat fragmentation and isolation. As no setts have been recorded to-date, the highest impact is expected to arise from loss of foraging and commuting habitat. However, the application site is well connected to an abundance of suitable habitat to the north and east, and embedded mitigation contains a green corridor which would maintain connectivity to the small land parcel to the south bounded by the application site and Bryn Lane where badger signs have been observed previously. The benefit of this green corridor would only arise during the operational phase but this land parcel to the south would maintain connectivity to suitable habitat (including woodland) to the south of Bryn Lane during demolition and construction. It is considered unlikely badgers would use the application site to commute west given the presence of a dual carriageway (Industrial Estate Road). Furthermore, the application site is not considered a key area of any badger territory as there are no setts present and very few field signs. The effects of habitat loss and secondary habitat fragmentation and isolation are therefore considered not significant.	Negligible effect, not significant	Not required	Proposed Masterplan Parameters Plan

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		Disturbance of Species The application site is currently mostly unlit. Any construction lighting could have a detrimental impact on foraging and commuting badgers within and adjacent to the application site. Artificial lighting has the potential to light up key commuting routes and foraging hotspots, therefore disrupting normal behaviours and increasing energetic costs for badgers. This is considered a probable, temporary and reversible effect.	Negative significant effect at Local level	Yes	N/A
		Potential Indirect Impacts from Habitat Loss and Disturbance A combination of the above could result in the potential displacement of badgers into surrounding land and into a neighbouring clan’s territory. However, as no setts have been recorded in the application site to-date, the badgers utilizing the application site for foraging and commuting must have setts in off-site land and would therefore be displaced into land they are already using in their own territory. The effect of displacement and the secondary effects of increased disease transmission and mortality are therefore considered not significant.	Negligible effect, not significant	Not required	N/A
		Killing/injury of Species Badgers are known to use the application site for foraging and commuting. Given their known presence and their high mobility, there would be potential to cause killing/injury of badgers should they get trapped within groundworks or range around the application site during clearance, earthworks or construction. This is considered a possible, permanent and irreversible effect.	Negative significant effect at Local level	Yes	N/A
		Overall Effect Overall effects on badger during the demolition and construction stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
Breeding birds	Local	Potential Impacts from Habitat Loss Embedded mitigation ensures there would be a net increase in the number of trees and tree canopy cover as a result of the proposed development (see Scattered trees above for more detail). Embedded mitigation also includes the provision of 25 bird boxes. However, the benefit from these mitigation measures will not be forthcoming until the completed development stage and the extent of other habitat loss (e.g. hedgerows and scrub) in the outline component is unconfirmed at this stage. Nesting habitat loss is considered a certain, temporary effect in the short-term until the habitats in the completed development stage are established.	Negative significant effect at Local level	Yes	Proposed Masterplan Parameters Plan DAS
		Killing/injury/disturbance of Species Vegetation clearance and building demolition, if undertaken during the bird breeding season, have the potential to damage/destroy a nest, and kill/injure/disturb nesting birds and their young. Disturbance effects could extend to birds nesting outside of the application site but within the Zol. A worst-case scenario is taken forward in this assessment assuming clearance works would occur during the breeding season. As such, this is considered a certain, permanent and irreversible effect.	Negative significant effect at Local level	Yes	N/A
		Potential Indirect Impacts from Disturbance of Species During construction there is the potential for disturbance and displacement of birds from retained habitats as a result of noise and movement of construction machinery. This could have secondary effects of increased mortality, failed nesting attempts and increased disease transmission. However, the majority of species recorded across the application site are likely to become habituated to construction activities and while there may be some displacement, it is unlikely that this would lead to a significant effect on their breeding success, particularly as bunds would be created along parts of the northern site boundary, creating a visual and audial buffer between the construction zones and adjacent fields. Furthermore, birds are mobile species and likely already utilize off-site adjacent land for foraging and commuting. It is unlikely that birds would be displaced long distances; therefore, there is minimal risk of introducing diseases to new areas or becoming exposed when previously not before. These effects are all considered not significant.	Negligible effect, not significant	Not required	N/A
		Overall Effect Overall effects on breeding birds during the demolition and construction stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
Wintering birds	Local	Potential Impacts from Habitat Loss Large areas of habitat suitable for the 29 wintering bird species recorded within the application site would be lost as a result of the proposed development. However, the application site is well-connected to further suitable habitat in the wider landscape particularly to the north and east which the wintering bird population is likely already utilizing. Due to the availability of habitat in adjacent land, this is considered a not significant effect.	Negligible effect, not significant	Not required	Proposed Masterplan Parameters Plan
		Killing/injury/disturbance of Species	Negligible effect, not significant	Not required	Appendix 11.9 – Sections 3.7 – 4.21

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		Vegetation clearance and groundworks have the potential to kill, injure or disturb wintering birds with disturbance effects extending to birds outside of the application site but within the Zol. However, only relatively small numbers of wintering waterbirds, wildfowl and waders were recorded during the winter bird surveys and there are no sites designated for wintering birds within the Zol. Wintering birds are likely to be able to fly away from construction activities, minimizing the risk of being killed/injured. Bunds would be created along parts of the northern site boundary, creating a visual and audial buffer between the construction zones and adjacent fields. Although there may be limited negative impacts on wintering birds, these are considered not significant.			
		Potential Indirect Impacts from Habitat Loss The loss of suitable habitat on-site could result in displacement of wintering birds which itself could lead to increased mortality and disease transmission. However, due to the relatively low numbers of birds recorded on the application site during the winter bird surveys, and the high likelihood that these birds are already utilizing resources in adjacent land, any displacement effects are likely to be minor and unlikely to lead to a significant effect on their survival. As the birds are likely already utilizing off-site land and sufficient habitat exists adjacent to the application site it is considered unlikely that they would be displaced over long distances; therefore, there is minimal risk of introducing diseases to new areas or becoming exposed when previously not before. These effects are all considered not significant.	Negligible effect, not significant	Not required	N/A
		Overall Effect Overall effects on wintering birds during the demolition and construction stage are identified as negligible, not significant.	Negligible effect, not significant	Not required	N/A
		Potential Impacts from Habitat Loss Large areas of habitat suitable for hedgehog would be lost as a result of the proposed development. This could lead to a secondary effect of habitat fragmentation and isolation. Embedded mitigation includes a green corridor which would maintain connectivity to land to the south but only during the operational phase. It is considered unlikely hedgehog would use the application site to commute west or south due to the presence of roads and the application site would maintain good connectivity to suitable habitat in the wider landscape to the north and east. Although there would be some reduction in habitat and connectivity during construction, this is considered to be not significant.	Negligible effect, not significant	Not required	Proposed Masterplan Parameters Plan
	Local	Killing/injury of Species Hedgehog are likely to use the application site for foraging, commuting and refuge. There would be potential to cause killing/injury of hedgehogs should they get trapped within groundworks or be present in vegetation during clearance. This is considered a possible, permanent and irreversible effect.	Negative significant effect at Local level	Yes	N/A
		Disturbance of Species The application site is currently mostly unlit. Any construction lighting could have a detrimental impact on foraging and commuting hedgehog within and adjacent to the application site. Artificial lighting has the potential to light up key commuting routes and foraging hotspots, therefore disrupting normal behaviours and increasing energetic costs for hedgehogs. This is considered a probable, temporary and reversible effect.	Negative significant effect at Local level	Yes	N/A
		Overall Effect Overall effects on hedgehog during the demolition and construction stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
		Potential Impacts from Habitat Loss Large areas of habitat suitable for brown hare would be lost as a result of the proposed development. This could lead to a secondary effect of habitat fragmentation and isolation. Embedded mitigation includes a green corridor which would maintain connectivity to land to the south but only during the operational phase. It is considered unlikely brown hare would use the application site to commute west or south due to the presence of roads and the application site would maintain good connectivity to suitable habitat in the wider landscape to the north and east. Although there would be some reduction in habitat and connectivity during construction, this is considered to be not significant.	Negligible effect, not significant	Not required	Proposed Masterplan Parameters Plan
Brown hare	Local	Killing/injury of Species Given the presence of suitable habitat to support brown hare on-site, vegetation clearance and groundworks have the potential to cause killing/injury of brown hare. This is considered a possible, permanent and irreversible effect.	Negative significant effect at Local level	Yes	N/A
		Disturbance of Species The application site is currently mostly unlit. Any construction lighting could have a detrimental impact on foraging and commuting brown hare within and adjacent to the application site. Artificial lighting has the potential to light up key commuting routes and foraging hotspots, therefore disrupting normal behaviours and increasing energetic costs for brown hares. This is considered a probable, temporary and reversible effect.	Negative significant effect at Local level	Yes	N/A
		Overall Effect Overall effects on brown hare during the demolition and construction stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to	Yes	N/A

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
			negative effect, significant at Local level		

11.7.2. Completed Development Stage

The assessment of the likely biodiversity effects of the proposed development during the completed development stage (including embedded mitigation) is set out in **Table 11.7.2**.

Table 11.7.2
Completed Development Stage Assessment

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
Native hedgerows	County	Potential Impacts from Habitat Loss/degradation The landscaping strategy proposes the planting of an additional 4.83 km of hedgerow planting (2.57 km in the detailed component and 2.26 km in the outline component), in addition to the retained sections and all would be planted with one of two native species mixes, one of which contains sufficient diversity for the hedgerows to qualify as ‘Important’ in the long-term. Detailed landscaping plans are not available at this stage for the outline component. It is assumed all planted hedgerows could qualify as S7 habitat in the long-term and some could qualify as ‘Important’. This planting would result in a net increase in hedgerow length, hedgerow species diversity and S7 habitat length, and could lead to an increase in the number of ‘Important’ hedgerows in the long-term. Replacement planting provided as part of the landscaping strategy will have matured in the completed development stage but these habitats could degrade or become lost due to recreational pressure and without an active management strategy. Furthermore, long-term management will be required to ensure at least some of the hedgerows become ‘Important’ in the long-term. This is considered a possible, permanent effect, reversible in the long-term.	Negative effect, significant at County level	Yes	Landscaping Strategy
Scattered trees	Local	Potential Impacts from Habitat Loss The landscaping strategy contains planting of at least 1,121 trees which is sufficient to mitigate for the habitat loss that will occur during the demolition and construction stage. There would be a net increase in the number of trees, tree canopy cover and tree species diversity and it also includes pedunculate oak trees which will be given sufficient space to mature as compensation for the mature oak trees that will be lost to the development. These trees will have matured in the completed development stage but could degrade or become lost to recreation pressure and without an active management strategy. This is considered a possible, permanent effect, reversible in the long-term.	Negative effect, significant at Local level	Yes	Landscaping Strategy
Veteran trees	County	Potential Habitat Loss/degradation from Recreational Use Loss or degradation of the retained veteran tree on-site through poor management and as a result of the end occupiers undertaking pruning. Direct effects would include physical damage where pruning of retained trees is undertaken by unqualified individuals or where damaging levels of access or recreation occur in close proximity to the tree e.g. climbing by young children. This is considered a possible, permanent effect, though in the case of degradation, reversible in the long-term.	Negative effect, significant at County level	Yes	N/A
Standing water (ponds)	Local	Potential Impacts from Habitat Loss/degradation In addition to the two ponds to be retained, the landscaping strategy contains 16 new and 3 relocated ponds which would result in a net increase in the number of ponds, pond surface area and aquatic plant species diversity. These ponds will have established in the completed development stage but could degrade as a result of recreational pressure and without an active management strategy. Furthermore, long-term management will be required to ensure at least some of the ponds become S7 habitat in the long-term This is considered a possible, temporary effect, reversible in the long-term.	Negative effect, significant at Local level	Yes	Landscaping Strategy
Great crested newt (and other S7 amphibian species)	Local	Potential Impacts from Habitat Loss (aquatic and terrestrial) Habitats created in the demolition and construction stage will have matured and established in the completed development stage. However, these and the retained habitats could degrade as a result of recreational pressure and without an active management strategy. This is considered a possible, temporary effect, reversible in the long-term.	Negative effect, significant at Local level	Yes	Landscaping Strategy
		Killing/injury of Species The operational development contains multiple access roads, including the spine road which bisects the proposed green corridor. The development is assumed to be operational 24/7 and traffic could therefore be present overnight when amphibians are active. However, embedded mitigation includes a wildlife tunnel beneath the spine road and the remaining wildlife-friendly landscaping would be focused around the application site boundaries making it unlikely that significant numbers of GCN and other amphibians would be crossing other roads within the development. Killing/injury of amphibians from traffic is therefore considered a non-significant effect.	Negligible effect, not significant	Not required	Landscaping Strategy Proposed Masterplan

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		Overall Effect Overall effects on GCN and other S7 amphibian species during the completed development stage range from negligible, not significant to negative, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
Bats	Local	Potential Impacts from Habitat Loss (roosting, foraging and commuting) Habitats created in the demolition and construction stage will have matured and established in the completed development stage. However, these and the retained habitats could degrade as a result of recreational pressure and without an active management strategy. This is considered a possible, temporary effect, reversible in the long-term.	Negative effect, significant at Local level	Yes	Landscaping Strategy
		Disturbance of Species (roosting, foraging and commuting) It is assumed the development would be operational 24/7 and therefore some artificial lighting would be present for visitor and staff safety. Some of the retained trees with bat roost potential are in close proximity to the boundary of the development zones. There is the potential that the use of these trees as roost sites could be affected by artificial lighting of the surrounding areas should light spill fall on the roosts or their access points. This would also be the case for any bat boxes incorporated into the development. Light spill could disturb bats exiting or returning to roosts and could dissuade them from roosting in that location. This is considered a probable, permanent but reversible effect.	Negative effect, significant at Local level	Yes	Proposed Masterplan
		Potential Impacts from Habitat Fragmentation (foraging and commuting) The operational development contains multiple tall buildings up to 28.5 m in height. This could disrupt commuting bat flight lines across the application site, particularly of pipistrelle bats which fly relatively close to the ground. This is considered a probable, permanent, irreversible effect.	Negative effect, significant at Local level	Yes	DAS Parameters Plan
		Overall Effect Overall effects on bats during the completed development stage are identified as negative, significant at the Local level.	Negative effect, significant at Local level	Yes	N/A
Badger	Local	Killing/injury of Species Road infrastructure within the operational development would fragment badger foraging habitat and commuting routes should they range within development zones. The increased traffic using the surrounding landscape and the roads within the proposed development may increase the risk of collision between badger and vehicles. However, embedded mitigation ensures the majority of wildlife-friendly landscaping is around the application site boundaries making it unlikely that badger would commute through the centre of the site. Killing/injury of badgers from traffic is therefore considered a non-significant effect.	Negligible effect, not significant	Not required	Landscaping Strategy
		Disturbance of Species It is assumed the development would be operational 24/7 and therefore some artificial lighting would be present for visitor and staff safety. Artificial lighting has the potential to light up key commuting routes and foraging hotspots, therefore disrupting normal behaviours and increasing energetic costs for badgers. This is considered a probable, permanent but reversible effect.	Negative effect, significant at Local level	Yes	N/A
		Overall Effect Overall effects on badger during the completed development stage range from negligible effect, not significant to negative effect, significant at the Local level.	Negative effect, significant at Local level	Yes	N/A
Breeding birds	Local	Potential Impacts from Habitat Loss Habitats created in the demolition and construction stage will have matured and established in the completed development stage. However, these and the retained habitats could degrade as a result of recreational pressure and without an active management strategy. This is considered a possible, temporary effect, reversible in the long-term.	Negative effect, significant at Local level	Yes	N/A
		Disturbance of Species Disturbance to breeding birds in retained and newly planted habitats through vehicular and pedestrian movements around the operational site and from operational lighting. However, the bird species recorded in the area previously are likely to habituate to regular, predictable disturbance in the operational development and embedded mitigation includes bunds approximately 3 m tall along the northern site boundary which would minimize disturbance to birds in fields to the north of the application site. Disturbance effects are considered not significant.	Negligible effect, not significant	Not required	N/A
		Overall Effect Overall effects on breeding birds during the completed development stage range from negligible effect, not significant to negative effect, significant at the Local level.	Negligible effect, not significant to negative effect,	Yes	N/A

Receptor(s)/feature(s) affected	Receptor/Feature Importance	Description of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
Wintering birds	Local	Disturbance of Species Disturbance to wintering birds in adjacent fields within the Zol through vehicular and pedestrian movements around the operational site, operational lighting and the continual presence of tall operational buildings. As discussed above in the construction phase, the winter bird population recorded during surveys is not considered particularly vulnerable to disturbance and bunds would remain in place along parts of the northern site boundary during operation, maintaining a visual and audial buffer. The operational development would not contain sufficient optimal habitat for wintering birds to attract larger bird aggregates than are already present in the area. Furthermore, the birds are likely to habituate to regular, predictable disturbance during the operational phase and embedded mitigation includes bunds approximately 3 m tall along the northern site boundary which would minimize disturbance to birds in fields to the north of the application site. Disturbance effects on wintering birds in the operational phase are considered not significant.	significant at Local level		
			Negligible effect, not significant	Not required	N/A
Hedgehog	Local	Killing/injury of Species The increased traffic using the surrounding landscape and roads within the proposed development may increase the risk of killing and injury to hedgehog. However, embedded mitigation includes a wildlife tunnel beneath the spine road that bisects the green corridor and the remaining wildlife-friendly landscaping would be focused around the application site boundaries making it unlikely that significant numbers of hedgehogs would be crossing other roads within the development. Killing/injury of hedgehogs from traffic is therefore considered a non-significant effect	Negligible effect, not significant	Not required	Landscaping Strategy
		Disturbance of Species It is assumed the development would be operational 24/7 and therefore some artificial lighting would be present for visitor and staff safety. Artificial lighting has the potential to light up key commuting routes and foraging hotspots, therefore disrupting normal behaviours and increasing energetic costs for hedgehogs. This is considered a probable, permanent but reversible effect.	Negative effect, significant at Local level	Yes	N/A
		Overall Effect Overall effects on hedgehog during the completed development stage range from negligible effect, not significant to negative effect, significant at the Local level.	Negligible effect, not significant to negative effect, significant at Local level	Yes	N/A
Brown hare	Local	Killing/injury of Species The increased traffic using the surrounding landscape and roads within the proposed development may increase the risk of killing and injury to brown hare. However, embedded mitigation ensures the majority of wildlife-friendly landscaping is around the application site boundaries making it unlikely that brown hare would commute through the centre of the site. Killing/injury of brown hares from traffic is therefore considered a non-significant effect.	Negligible effect, not significant	Yes	Landscaping Strategy
		Disturbance of Species It is assumed the development would be operational 24/7 and therefore some artificial lighting would be present for visitor and staff safety. Artificial lighting has the potential to light up key commuting routes and foraging hotspots, therefore disrupting normal behaviours and increasing energetic costs for brown hares. This is considered a probable, permanent but reversible effect.	Negative effect, significant at Local level	Yes	N/A
		Overall Effect Overall effects on brown hare during the completed development stage range from negligible effect, not significant to negative effect, significant at the Local level.	Negligible effect to negative effect, significant at Local level	Yes	N/A

11.8. Additional Mitigation & Enhancement Measures

Table 11.8.1 identifies the additional mitigation measures that have been proposed in order to address the effects identified in Section 11.7, as well as the effectiveness of those measures, and how they would be secured. Possible enhancement measures have also been identified where relevant.

Table 11.8.1
Proposed Mitigation & Enhancement Measures

Stage		Receptor(s)/feature(s) affected	Possible effect being mitigated	Mitigation measure	How secured / trigger	Further information
Demolition and Construction Stage	and	Native hedgerows, scattered trees, ponds, GCN, bats, breeding birds	Habitat loss and fragmentation Resulting effects on species	The landscaping strategy for the outline component will be developed in accordance with the landscaping strategy for the detailed component and will be agreed with Wrexham CBC at the reserved matters stage. The landscaping strategy will include the provision of sufficient hedgerows, trees and ponds required to mitigate impacts from loss of these habitats (including as habitat for species) during demolition and construction. The benefits of this mitigation will not be forthcoming until the completed development stage.	Planning condition	Appendix 11.6 – Sections 5.3 – 5.5 Appendix 11.7 – Section 4.9 Appendix 11.8 – Section 8.2 Appendix 11.9 – Sections 4.21 – 4.22
Demolition and Construction Stage	and	Native hedgerows, scattered trees, bats	Direct impacts/damage to retained habitat Resulting effects on species from the above	Implementation of a tree protection plan in accordance with British Standard 5837: 2012 Trees in relation to design, demolition and construction. An arboricultural clerk of works (ACoW) would be appointed to ensure effective delivery of arboricultural protection measures, with a site presence at key points e.g. tree removal, installation of tree protection fencing and vacuum excavation and root pruning.	Planning condition	Appendix 11.4 – Sections 4.13 – 4.18
Demolition and Construction Stage	and	Native hedgerows, scattered trees, veteran trees, standing water (ponds) Great crested newt (and other S7 amphibian species)	Indirect impacts to retained habitat Damage to retained ponds Resulting effect on species from the above including habitat damage and disturbance	Implementation of a CEMP in accordance with British Standard 42020: 2013 Biodiversity: Code of Practice for Planning and Development to include measures to minimize any potential localized indirect impacts from potential pollution events from construction machinery, runoff, lighting and dust arisings. These measures will include: - Minimum 8 m buffer zone around retained ponds; - Best practice measures to reduce noise, dust and vibration; and - Measures to reduce incidence of contamination e.g. silt fencing, no refuelling near ponds.	Planning condition	ES Chapter 6: Construction Strategy and CEMP
Demolition and Construction Stage	and	Standing water (ponds)	Loss of S7 habitat.	The detailed landscape plan and planting plan would include replacement pond creation during the construction phase. However, ponds can only qualify as S7 habitat under specific criteria, one of which relates to regularly supporting protected or notable species including GCN. Management of ponds will be in-line with a GCN mitigation strategy and management plan to ensure they remain suitable for GCN. These management measures would increase the likelihood of the ponds supporting GCN, thereby increasing the likelihood of the ponds becoming S7 habitat in the long-term.	Planning condition	Landscaping Strategy
Demolition and Construction Stage	and	Great crested newt (and other S7 amphibian species)	Loss, damage/disturbance of habitat (aquatic and terrestrial) Killing/injury of species Habitat fragmentation and isolation Detriment to maintenance of FCS for GCN	A European protected species mitigation licence (EPSML) for GCN from NRW would be applied for following planning approval. This would contain a mitigation strategy detailing required mitigation, compensation and enhancement in respect to all anticipated impacts on GCN. This mitigation would also safeguard other amphibians that may be present e.g. common toad. Mitigation is likely to include a trapping and translocation exercise, supervision of key work stages by an ecological clerk of works (ECoW), reasonable avoidance measures (RAMs) and compensatory planting. The licence would also contain long-term management and monitoring requirements to ensure newly created habitats remain suitable for GCN. A site approximately 1.2 km south east of the application site has been identified for the purpose of providing additional habitats to off-set the on-site loss of habitat for Favourable conservation of GCN. As shown in Appendix 11.13, the proposals comprise twelve new ponds which will be delivered across the 3.6 ha site to provide long-term conservation of GCN. The site would be sown with a wildflower grass mix and native scrub mixes with the provision of hibernacula for GCN. Although the exact mitigation cannot be confirmed at this stage, NRW would not grant the licence unless the mitigation proposals were sufficient to ensure FCS is maintained. The licence application would contain consideration of how the proposed development meets the three ‘tests’ required to be granted a licence as well as an assessment of how mitigation proposals would maintain FCS. Detailed consideration of these factors is therefore not undertaken in this ES chapter.	Planning condition / legal compliance	Appendix 11.6 – Sections 4.4 – 4.5, Appendix 11.13
Demolition and Construction Stage	and	Bats, badger, hedgehog, brown hare	Disturbance of species	Implementation of a sensitive lighting strategy to minimize potential disturbance effects on species. This would include measures such as: - Minimizing requirement for artificial lighting as far as is reasonable practicable both spatially and temporally; - Focusing lighting towards work areas only; - Directing lighting away from key habitat features such as ponds, trees and linear habitat features e.g. hedgerows, with an increase of less than 1 Lux within 10 m of these features; - Maintaining dark corridors around application site boundaries; - Preferential use of LED and warm white lighting; and - No upward light spill.	Planning condition	Appendix 11.7 – Section 4.7

Stage	Receptor(s)/feature(s) affected	Possible effect being mitigated	Mitigation measure	How secured / trigger	Further information
Demolition and Construction Stage	Bats	Habitat loss/damage/disturbance (roosts) Killing/injury of species Detriment to maintenance of FCS.	Nocturnal surveys would be undertaken of all trees with high or moderate potential for roosting bats that are due to be impacted by the proposed development within the outline component. If these surveys identify the presence of any bats roosts then a EPSML would be applied for from NRW following planning approval of future Reserved Matters consents. The licence would contain a mitigation strategy for roosting bats detailing the required mitigation, compensation and enhancement in respect to all anticipated impacts on roosting bats. Mitigation is likely to include supervision by an ECoW during key stages of work, sensitive working methods and timing near roosts and provision of alternative roosting spaces suitable for the species found roosting (e.g. bat boxes). The licence would also contain long-term management and monitoring requirements to ensure the mitigation remains suitable for roosting bats in the long term. Although the exact mitigation is currently unknown, NRW would not grant the licence unless the mitigation proposals were sufficient to ensure FCS is maintained. The licence application would contain consideration of how the proposed development meets the three criteria required to be granted a licence as well as an assessment of how mitigation proposals would maintain FCS. Detailed consideration of these factors is therefore not undertaken in this ES chapter. Buildings would be demolished in winter (November – March) when bats are least likely to be present. If this is not possible, buildings would be demolished using RAMs and following a pre-commencement check of the buildings by a bat licensed ecologist. Removal of PRFs by hand may be required if deemed appropriate following this check Soft fell of any trees assessed as having low suitability for roosting bats should be undertaken under the supervision of a bat licensed ecologist. The trees removed would be replaced during the construction phase as documented in a landscape strategy. They would however take time to mature and develop PRFs. As such, the benefit would only be forthcoming in the development’s operational phase.	Planning condition / legal compliance	Appendix 11.7 – Sections 4.3, 4.6 and 4.8
Demolition and Construction Stage	Badger	Habitat loss (setts)	Pre-construction badger check no more than four weeks prior to commencement. If a sett is found, it would either be mitigated for through a NRW sett closure licence or through RAMs, dependent on the proposed works within 30 m of the sett. Exact mitigation requirements, if any, would be confirmed following the pre-construction check.	Planning condition	N/A
Demolition and Construction Stage	Badger, hedgehog, brown hare	Killing/injury of species	Implementation of RAMs to include measures such as: - Covering excavations overnight or providing a ramp so that nocturnal species do not get trapped within; and - Sensitive vegetation clearance methods and timing.	Planning condition	N/A
Demolition and Construction Stage	Breeding birds	Killing/injury/disturbance of species	Clearance of suitable nesting habitat would be undertaken outside of the typical nesting season (considered to be March to August inclusive). Where this is not possible and works need to be carried out during the bird breeding season, a nesting bird check of vegetation to be cleared or buildings to be demolished must be undertaken by an experienced ecologist no more than 24 hours prior to clearance. If any active bird nests are discovered these would be given a minimum standoff of 5 m (this may increase depending on the species/proposed works and location) within which no potentially disturbing works would take place until the young have fledged and the nest vacated. A second nesting bird check would then be undertaken to ensure the tree/vegetation does not contain any further active nests prior to felling/removal works taking place.	Planning condition	Appendix 11.7 – Section 4.4 Appendix 11.9 – Section 4.24
Completed Development Stage	Hedgerows, scattered trees, veteran trees, ponds, GCN and other S7 amphibians, bats, breeding birds	Habitat loss/degradation Resulting effects on species	The LEMP would include long-term management measures for the retained and newly created habitats to ensure the value of retained habitats and habitats planted in the demolition and construction stage is maintained in the long-term. The development would include ample roads and footpaths to minimize vehicle or pedestrian encroachment into habitats during the operational phase. Where appropriate, signage or barrier fencing could be used to protect the most sensitive habitats and to protect visitors to the development e.g. fencing around ponds.	Planning condition	N/A
Completed Development Stage	Bats, badger, hedgehog, brown hare	Disturbance of species	Implementation of a sensitive lighting strategy as described above for the Demolition and Construction Stage.	Planning condition	Appendix 11.7 – Section 4.7
Completed Development Stage	Bats	Habitat fragmentation (commuting)	Additional bunds along the northern and western boundaries of the outline component would improve connectivity, particularly around the application site boundary and these would be planted to also act as a foraging resource. The landscaping strategy for the outline component will be developed in accordance with the landscaping strategy for the detailed component and will be agreed with Wrexham CBC at the reserved matters stage. The landscaping strategy will include the provision of sufficient alternative flight lines/commuting routes around and through the application site to mitigate impacts from habitat fragmentation during demolition and construction	Planning condition	N/A

11.9. Residual Effects

Table 11.9.1 provides a tabulated summary of the outcomes of the biodiversity assessment of the proposed development.

Table 11.9.1
Residual Effects

Stage	Receptor/feature (importance)		Description of Residual Effect and Any Additional Mitigation	Residual Effect							
				Scale of Effect and Significance (CIEEM)	Scale of Effect and Significance (Traditional)	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR	
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible											
Demolition and Construction Stage	Native hedgerows (County)		Impacts on native hedgerows from habitat loss, with the implementation of additional mitigation.	Significant at County level	Moderate adverse	ADV	MT	D	T	R	
			Impacts on native hedgerows from habitat damage, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Impacts on native hedgerows from potential pollution and contamination, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Overall residual effects on native hedgerows during the demolition and construction stage are considered to range from negligible, not significant to negative/moderate adverse, significant at the County level.	Not significant to significant at County level	Moderate adverse	ADV	MT	D	T	R	
Demolition and Construction Stage	Scattered trees (Local)		Impacts on scattered trees from habitat loss, with the implementation of additional mitigation.	Significant at Local level	Minor adverse	ADV	MT	D	T	R	
			Impacts on scattered trees from habitat damage, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Impacts on scattered trees from potential pollution and contamination, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Overall residual effects on scattered trees during the demolition and construction stage range from negligible, not significant to negative/minor adverse, significant at the Local level.	Not significant to significant at Local level	Minor adverse	ADV	MT	D	T	R	
Demolition and Construction Stage	Veteran trees (County)		Impacts on veteran trees from potential pollution and contamination, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
Demolition and Construction Stage	Standing water (ponds) (Local)		Impacts on standing water (ponds) from habitat loss, with the implementation of additional mitigation.	Significant at Local level	Minor adverse	ADV	MT	D	T	R	
			Impacts on standing water from habitat damage and potential impacts from pollution and contamination, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Overall residual effects on standing water during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level.	Not significant to significant at Local level	Minor adverse	ADV	MT	D	T	R	
Demolition and Construction Stage	Great crested newt (and other S7 amphibian species) (Local)		Impacts on GCN and other S7 amphibian species from habitat loss and maintenance of FCS, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	MT	D	T	R	
			Impacts on GCN and other S7 amphibian species from killing/injury/disturbance, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Impacts on GCN and other S7 amphibian species from habitat damage and potential impacts from pollution and contamination, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
			Overall residual effects on GCN and common toad during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level.	Not significant to significant at Local level	Minor beneficial	BEN	MT	D	T	R	

Stage	Receptor/feature (importance)	Description of Residual Effect and Any Additional Mitigation	Residual Effect							
			Scale of Effect and Significance (CIEEM)	Scale of Effect and Significance (Traditional)	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR	
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible										
Demolition and Construction Stage	Bats	Impacts on bats from habitat loss, fragmentation and maintenance of FCS, with the implementation of additional mitigation.	Significant at Local level	Minor adverse	ADV	MT	D	T	R	
		Impacts on roosting bats from killing/injury/disturbance, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Impacts on roosting bats from habitat (trees) damage, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Disturbance impacts on roosting bats from construction noise and vibration, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Disturbance impacts on roosting, foraging and commuting bats from construction lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Overall residual effects on bats during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level.	Not significant to significant at Local level	Minor adverse	ADV	MT	D	T	R	
Demolition and Construction Stage	Badger (Local)	Impacts on badger from habitat loss (setts), with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Disturbance impacts on badger from construction lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Killing/injury of badger, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Overall residual effects on badger during the demolition and construction stage are considered to be negligible, not significant.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
Demolition and Construction Stage	Breeding (Local)	birds	Impacts on breeding birds from habitat loss, with the implementation of additional mitigation.	Significant at Local level	Minor adverse	ADV	MT	D	T	R
			Killing/injury/disturbance of nesting birds, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Overall residual effects on breeding birds during the demolition and construction stage are considered to range from negligible, not significant to negative/minor adverse, significant at the Local level.	Not significant to significant at Local level	ADV	MT	D	T	R	
Demolition and Construction Stage	Wintering (Local)	Birds	Impacts on wintering birds from habitat loss, with the implementation of additional mitigation.	Negligible effect, not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Killing/injury/disturbance of wintering birds, with the implementation of additional mitigation.	Negligible effect, not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Potential indirect impacts from habitat loss	Negligible effect, not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Overall residual effects on wintering birds during the demolition and construction stage are considered to be negligible, not significant at the Local Level.	Negligible effect, not significant	Negligible	N/A	N/A	N/A	N/A	N/A
Demolition and Construction Stage	Hedgehog (Local)	Killing/injury of hedgehog, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Disturbance impacts on hedgehog from construction lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Overall residual effects on hedgehog during the demolition and construction stage are considered to be negligible, not significant.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
Demolition and Construction Stage	Brown hare (Local)	Killing/injury of brown hare, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Disturbance impacts on brown hare from construction lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	
		Overall residual effects on brown hare during the demolition and construction stage are considered to be negligible, not significant.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A	

Stage	Receptor/feature (importance)		Description of Residual Effect and Any Additional Mitigation	Residual Effect						
				Scale of Effect and Significance (CIEEM)	Scale of Effect and Significance (Traditional)	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible										
Completed Development Stage	Native hedgerows (County)		Loss or degradation of native hedgerows, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	LT	D	P	R
Completed Development Stage	Scattered trees (Local)		Loss or degradation of scattered trees, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	LT	D	P	R
Completed Development Stage	Veteran trees (County)		Loss or degradation of veteran trees as a result of recreational use, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
Completed Development Stage	Standing water (ponds) (Local)		Loss or degradation of ponds, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	LT	D	P	R
Completed Development Stage	Great crested newt (and other S7 amphibian species) (Local)		Impacts on GCN and other S7 amphibians from habitat loss/degradation and maintenance of FCS, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	LT	D	P	R
			Impacts on GCN from disturbance associated with the operation of the proposed development.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Overall residual effects on GCN during the operational stage range from negligible, not significant to positive/minor beneficial, significant at the local level.	Not significant to significant at Local level	Negligible to Minor Beneficial	BEN	LT	D	P	R
Completed Development Stage	Bats (Local)		Impacts on bats from habitat loss, fragmentation and maintenance of FCS, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	LT	D	P	R
			Disturbance impacts on bats from operational lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Overall residual effects on bats during the completed development stage range from negligible, not significant to positive/minor beneficial, significant at the Local level.	Not significant to significant at Local level	Negligible to Minor Beneficial	BEN	LT	D	P	R
Completed Development Stage	Badger (Local)		Disturbance impacts on badger from operational lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Impacts on badgers from disturbance associated with the operation of the proposed development.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Overall residual effect on badgers during the completed development stage would be negligible, not significant.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
Completed Development Stage	Breeding birds (Local)		Impacts on breeding birds from habitat loss, with the implementation of additional mitigation.	Significant at Local level	Minor beneficial	BEN	LT	D	P	R
			Impacts on breeding birds from disturbance associated with the operation of the proposed development	Negligible effect, not significant	Negligible	N/A	N/A	N/A	N/A	N/A
			Overall residual effects on bats during the completed development stage range from negligible, not significant to positive/minor beneficial, significant at the Local level.	Not significant to significant at Local level	Negligible to Minor Beneficial	BEN	LT	D	P	R
Completed Development Stage	Wintering birds (Local)		Impacts on wintering birds from disturbance associated with the operation of the proposed development	Negligible effect, not significant	Negligible	N/A	N/A	N/A	N/A	N/A

Stage	Receptor/feature (importance)	Description of Residual Effect and Any Additional Mitigation	Residual Effect						
			Scale of Effect and Significance (CIEEM)	Scale of Effect and Significance (Traditional)	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
Completed Development Stage	Hedgehog (Local)	Disturbance impacts on hedgehog from operational lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
		Impacts on hedgehog from the operation of the proposed development and risk of killing and injury to hedgehogs.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
		Overall residual effect on hedgehogs during the completed development stage would be negligible, not significant.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
Completed Development Stage	Brown hare (Local)	Disturbance impacts on brown hare from operational lighting, with the implementation of additional mitigation.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
		Impacts on brown hare from the operation of the proposed development and risk of killing and injury.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A
		Overall residual effect on brown hare during the completed development stage would be negligible, not significant.	Not significant	Negligible	N/A	N/A	N/A	N/A	N/A

11.10. Biodiversity: Inter-Development Cumulative Effects

The assessment of inter-development cumulative effects broadly takes place over two stages, the first of which is screening. The screening exercise undertaken for the cumulative schemes identified in Chapter 2 *EIA Methodology* of this volume of the ES, is included in **Table 11.10.1**. None were identified to have the potential to result in cumulative effects with the proposed development in relation to biodiversity.

11.10.1. Screening of Cumulative Schemes

Table 11.10.1
Biodiversity: Inter-development Cumulative Effects Assessment: Cumulative Scheme Screening

Cumulative scheme	Scheme Description	Potential for cumulative effects?	Considered assessment?	within
Land South of Ridleywood Lane and East of Bryn Lane	Erection of storage and distribution warehouse.	This project is completed and occupied in 2023 and as such there will be no inter-development cumulative effects during the demolition and construction stage. In respect of the completed development stage, this scheme has been considered in the existing baseline scenario.	No	
Unit 6, Pacific Park	Erection of 2 new industrial units.	Development is approximately 0.9 km south of the application site within an established industrial estate, with intervening urban development and no visual linkage. Development under construction and the construction phases of the developments are unlikely to overlap. The assessment concluded that there would be no adverse effects on any designated sites within the range of the application site. The application site is predominantly hardstanding and buildings with small areas of amenity grassland, scrub, mixed woodland, poor semi-improved grassland and scattered trees. All trees to be lost were categorized as Category B or C in the assessment. An arboricultural method statement was recommended to safeguard retained trees. No invasive species were identified on the application site. All trees and buildings on the application site were assessed as having negligible potential for roosting bats and other habitats were assessed as having negligible potential for foraging and commuting bats. The development includes the loss of small areas of suitable bird nesting habitat but this was assessed as unlikely to be of significance. RAMs were recommended for amphibians though the likelihood of GCN presence was considered to be low. RAMs and hedgehog highways were recommended for hedgehogs. No residual effects on any receptors were identified in the assessment. Given the construction phases of the developments are unlikely to overlap, and assuming that the above measures are implemented and providing measures outlined in this ES chapter are undertaken, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the proposed development at Land north of Bryn Lane.	No	
Land off Ash Road South	Erection of industrial unit comprising two storey office and warehouse accommodation and single storey dust extraction building and associated car parking and storage area.	Development is approximately 1 km south of the application site within an established industrial estate, with intervening urban development and no visual linkage. Development under construction and the construction phases of the developments are unlikely to overlap. The assessment concluded that there would be no adverse effects on any designated sites within the range of the application site. The application site is a mixture of unimproved grassland/tall ruderal vegetation, scrub and scattered trees. No invasive species were identified on the application site but a biosecurity risk assessment was submitted. There were no structures suitable for roosting bats. All trees were assessed as having low or negligible potential for roosting bats with no roosts identified during aerial inspections. The application site was assessed as highly suitable for reptiles. RAMs were recommended.	No	

Cumulative scheme	Scheme Description	Potential for cumulative effects?	Considered assessment?	within
		The application site was assessed as suitable for hedgehogs and they were presumed to be present. Sensitive clearance measures were recommended. Scrub and trees are suitable for nesting birds. RAMs were recommended. GCN were assumed present due to known local populations and amphibian fencing in land adjacent to the application site. This metapopulation is assumed to be separate from the metapopulation around Bryn Lane due to the distance between them and the intervening land use which reduces the likelihood of long-distance amphibian movement. A licence was granted by NRW and an ecological method statement and long-term ecological management and monitoring plan were produced. This management and monitoring plan also covered grizzled skipped for which the application site was identified as suitable. No residual effects on any receptors were identified in the assessment. Given the construction phases of the developments are unlikely to overlap, and assuming that the above measures are implemented and providing measures outlined in this ES chapter are undertaken, it is not anticipated that these proposals would result in a cumulative effect on ecology when considered alongside the proposed development at Land north of Bryn Lane.		

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