

# ENVIRONMENTAL STATEMENT (VOLUME II)

## Chapter 9 - Biodiversity

### Padeswood Carbon Dioxide Spur Pipeline Proposed Development

Town and Country Planning Act 1990

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## 9. BIODIVERSITY

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### 9.1. INTRODUCTION

9.1.1. This Chapter reports the assessment of the likely significant effects of the Padeswood Spur Pipeline Proposed Development on Biodiversity and describes:

- Relevant, legislation, policy and guidance;
- Consultation undertaken;
- Assessment methodology;
- Baseline conditions
- Potential effects of the Construction, Operational and Decommissioning Stages of the Padeswood Spur Pipeline Proposed Development;
- Potential design, mitigation and enhancement measures;
- Residual effects; and
- Next steps.

9.1.2. This Chapter (and its associated Figures and Appendices) is intended to be read as part of the wider ES, with particular reference to **Chapter 12 – Landscape and Visual (Document Reference: PW.3.2.12)**, **Chapter 17 – Water Resources and Flood Risk (Document Reference: PW.3.2.17)** and **Chapter 18 – Combined and Cumulative Effects (Document Reference: PW.3.2.18)**. This Chapter should be read in conjunction with the following supporting appendices:

- **Appendix 9.1 - Arboricultural Impact Assessment (Document Reference: PW.3.3.9.1).**
- **Appendix 9.2 – Preliminary Ecological Appraisal Report (Document Reference: PW.3.3.9.2);**
- **Appendix 9.3 – Great Crested Newt Survey Report (Document Reference: PW.3.3.9.3).**
- **Appendix 9.4 – Bat Survey Report (Document Reference: PW.3.3.9.4).**
- **Appendix 9.5 – Hedgerow Survey Report (Document Reference: PW.3.3.9.5).**
- **Appendix 9.6 – Badger Survey Report (Confidential) (Document Reference: PW.3.3.9.6).**
- **Appendix 9.7 – Riparian Mammal Survey Report (Document Reference: PW.3.3.9.7).**
- **Appendix 9.8 – Preliminary Aquatic Ecological Appraisal (Document Reference: PW.3.3.9.8).**

- Appendix 9.9 – Aquatic Ecology Survey Report (Document Reference: PW.3.3.9.9).

9.1.3. This Chapter has been prepared by competent experts with relevant and appropriate experience.

## 9.2. LEGISLATIVE AND POLICY FRAMEWORK

9.2.1. A summary of the international, national, and local legislation, planning policy and guidance relevant to this Biodiversity assessment for the Padeswood Spur Pipeline Proposed Development is set out below.

### LEGISLATIVE FRAMEWORK

9.2.2. The following legislation is relevant to the Padeswood Spur Pipeline Proposed Development.

The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats Regulations) (HMSO, 2017a)

9.2.3. The Habitats Regulations consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations Transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations are transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats etc.) Regulations 1994.

9.2.4. All species listed under Annex IV of the Habitats Directive require strict protection and are known as European Protected Species (EPS). Under Regulation 42 of the Habitats Regulations, it is unlawful to: Deliberately kill, capture or disturb; Deliberately take or destroy the eggs of; and Damage or destroy the breeding site/resting place of any species protected under this legislation.

9.2.5. If it is determined that impacts to an EPS are unavoidable then the works may need to be carried out under a site-specific mitigation licence from the relevant statutory body.

9.2.6. Certain EPS are also listed under Annex II of the Habitats Directive and are afforded protection by the establishment of core areas of habitat known as Special Areas of Conservation. This means these species are a relevant consideration in a Habitats Regulations Assessment (HRA) (see **Habitats Regulations Assessment, Document Reference: PW.4.4** for further detail).

- 9.2.7. The Birds Directive seeks to maintain populations of all wild bird species across their natural range (Article 2). All bird species listed under Annex I of the Birds Directive are rare or vulnerable and afforded protection by the classification of Special Protection Areas (SPAs) or Ramsar, these are also designated under all regularly occurring migratory species, with regard to the protection of wetlands of international importance (Article 4). This means these bird species and communities are a relevant consideration in an HRA.
- The Wildlife and Countryside Act 1981 (as amended) (WCA) (HMSO, 1981)
- 9.2.8. Protected birds, animals and plants are listed under Schedules 1, 5, 8 and 9 respectively of the Wildlife and Countryside Act 1981 (WCA).
- 9.2.9. Birds listed under Schedule 1 of the WCA are afforded additional protection with regard to intentional or reckless disturbance whilst nest-building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.
- 9.2.10. Species listed in Schedule 5 can either be fully protected or be partially protected under Section 9, which makes it unlawful to intentionally: kill, injure or take; possess or control (live or dead animal, part or derivative); damage or destruct any structure used for shelter or protection; disturb them in a place of shelter or protection; obstruct access to place of shelter or protection; sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative); and advertise for buying or selling.
- 9.2.11. The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8.
- 9.2.12. Invasive species listed under Schedule 9 are prohibited from release into the wild and the Act prohibits planting or “causing to grow” in the wild of any plant species listed in Schedule 9. It should be noted that certain bird species listed on Schedule 1 of the WCA are also listed on Schedule 9 to prevent release of non-native and captive individuals, this includes barn owl, red kite, goshawk and corncrake.
- 9.2.13. Under the WCA, all birds, their nests and eggs (with exception of species listed under Schedule 2) are protected by the WCA.
- Environment Act Wales (2016) (HMSO, 2016)
- 9.2.14. The Environment (Wales) Act 2016 puts in place the legislation needed to plan and manage Wales’ natural resources in a more proactive, sustainable and cohesive way. Section 7 replaces the duty in Section 42 of the Natural Environment and Rural Communities 2006 and it places

a duty on the Welsh Ministers to publish, review and revise lists of living organisms and types of habitats which they consider are of key significance to sustain and improve biodiversity in Wales. The species and habitat lists are identical to those in Section 42.

Countryside and Rights of Way Act 2000 (HMSO, 2000)

- 9.2.15. The Countryside and Rights of Way (CRoW) Act has amended the WCA in England and Wales strengthening the protection afforded to Sites of Special Scientific Interest (SSSI) and the legal protection for threatened species. It adds the word 'reckless' to the wording of the offences listed under Section 9(4) of the WCA. This alteration makes it an offence to recklessly commit an offence, where previously an offence had to be intentional to result in a breach of legislation.

The Protection of Badgers Act 1992 (HMSO, 1992)

- 9.2.16. It is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Under the Protection of Badgers Act 1992 their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and statutory bodies takes this definition to include seasonally used setts that are not occupied but that show sign of recent use by badgers.

The Hedgerow Regulations 1997 (HMSO, 1997)

- 9.2.17. Under The Hedgerows Regulations it is an offence to remove a hedgerow (as defined within the Regulations) without obtaining local planning authority (LPA) permission. Should the hedgerow be deemed unimportant according to the criteria within the Regulations, the LPA is obliged to allow removal; however, if the hedgerow qualifies as 'Important' under the Regulations the LPA must decide whether the reasons for removal justify the loss of an 'Important Hedgerow', with a presumption for retention.

The Wild Mammals (Protection) Act 1996 (HMSO, 1996)

- 9.2.18. An Act providing protection for wild mammals against certain acts of deliberate harm. "Wild mammal" means any mammal which is not a "protected animal" within the meaning of the Animal Welfare Act 2006 (Schedule 3, Section 13 of the 2006 Act). The following offences are specified in relation to any wild mammal: to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate. The offences require proof of intent to inflict unnecessary suffering.

Salmon and Freshwater Fisheries Act 1975 (HMSO, 1975)

- 9.2.19. This Act covers regulation of fisheries in England and Wales and includes legislation that covers the introduction of polluting effluents, the obstruction of fish passage (screens, dams, weirs, culverts etc) illegal means of fishing, permitted times of legal fishing and fishing licencing (which covers electric fishing).
- 9.2.20. Under this act any person who causes or knowingly permits to flow, or puts or knowingly permits to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, shall be guilty of an offence.
- 9.2.21. The act also requires that fish passes are installed on new and rebuilt barriers that affect waters frequented by salmon or migratory trout. In the future, it is likely that fish passage facilities will need to be designed to accommodate all fish species and life stages, with nature-like bypass channels being the most appropriate solution currently available.

The Eels (England and Wales) Regulations 2009 (HMSO, 2009)

- 9.2.22. The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 of the Council of the European Union, which required Member States to establish measures for the recovery of the stock of European eel. The regulations apply to England and Wales.
- 9.2.23. They give powers to the regulators (the Environment Agency and Natural Resources Wales) to implement recovery measures in all freshwater and estuarine waters in England and Wales. The aim of the regulations is to achieve 40 per cent escapement of adult eels relative to escapement levels under pristine conditions. The measures, as set out in the legislation, by which this is to be achieved are to reduce fishing pressures, improve access and habitat quality and reduce the impact of impingement and entrainment.
- 9.2.24. Under the Regulations, the regulators can serve notice to companies detailing their legal obligation to screen intakes and outfalls for eel and/or to remove or modify obstructions to eel migration. However, it is possible for companies to be granted with exemptions if the costs of works greatly exceeds the benefits. In such a situation it is likely the regulator will seek a package of more cost effective, “alternative measures”.

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (2000/60/EC) (HMSO, 2017b)

9.2.25. These regulations revoke and replace the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (SI 2003 No. 3242). They continue to transpose for England and Wales Directive 2000/60/EC establishing a framework for Community action in the field of water policy (the Water Framework Directive). They also transpose aspects of Directive 2006/118/EEC on the protection of groundwater against pollution and deterioration (the Groundwater Directive) and of Directive 2008/105/EC on environmental quality standards in the field of water policy (the Environmental Quality Standards Directive).

9.2.26. The purpose of the Water Framework Directive (WFD) is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater and for all waterbodies (unless artificial or heavily modified) to achieve “good” ecological status. Ecological Status is expressed in terms of five classes (high, good, moderate, poor or bad) established on the basis of specific criteria and boundaries defined against biological, physico-chemical and hydromorphological elements.

Environment Act 2021 (HMSO, 2021)

9.2.27. The Environment Act 2021 has two main functions:

- To give a legal framework for environmental governance in the UK.
- To bring in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation.

9.2.28. Most of this Act does not make any immediate changes for organisations other than regulators. Changes to duties for businesses and other organisations are expected in subsequent legislation made under this Act.

## POLICY

### National

- The Planning Policy Wales (PPW) (2024) (Welsh Government, 2024a), states “planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity”.
- The Wellbeing of Future Generations (Wales) Act 2015 (Welsh Government, 2015b).

- Nature Recovery Action Plan Wales (NRAP) – the Biodiversity Strategy for Wales. Part 1: Out Strategy for Nature (2015) (Welsh Government , 2015). and Part 2: Nature Recovery Action Plan (2020-2021) (Welsh Government , 2020).
- Future Wales – The National Plan 2040 (Welsh Government, 2019).

#### Local

9.2.29. Padeswood Spur Pipeline Proposed Development is located within the administrative boundary of Flintshire County Council (FCC). The local planning policies of relevance are:

- Flintshire Local Development Plan 2015 – 2030 (Flintshire County Council (FCC), 2023).
- FCC Biodiversity Plan ‘Supporting Nature in Flintshire 2020-2023’ (FCC, 2020).
- FCC: Council Plan for 2022-2023 (FCC, 2022).
- FCC: Urban Tree and Woodland Plan (FCC, 2018).

9.2.30. The Flintshire LDP, adopted on the 24 January 2023 (Flintshire County Council, 2023), is the current development plan for the county, produced by FCC. The aim of the Plan is:

“to enable the delivery of sustainable development in a manner that balances all of the Well-Being requirements in a sensible and proportionate way, to allow the right development to occur in the right places.” The LDP not only seeks to protect the natural environment but where possible enhance this through a sustainable approach to development.”

9.2.31. The following Strategic Policies (STR) and Detailed Policies (EN) within The Flintshire LDP are relevant:

- Strategic Policy STR13 Natural and Built Environment, Green Networks and Infrastructure.
- Overarching National Policy Statement for Energy (EN-1) (The Department for Business, Energy, and Industrial Strategy (BEIS), 2011).
- EN3 Undeveloped Coast and Dee Estuary.
- EN6 Sites of Biodiversity Importance.
- EN7 Development Affecting Trees, Woodland and Hedgerows.
- EN11 Green Wedges.

#### GUIDANCE

9.2.32. Baseline data collection, mitigation, and enhancement options have been collated in line with relevant current good practice guidelines,

with specific reference to those within the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidance list (CIEEM, 2021).

- 9.2.33. Surveys have been completed in line with CIEEM guidance alongside each receptor's individual best practice guidelines (detailed in **Table 9.1**). The impact assessment and methodology follow CIEEM's Ecological Impact Assessment (EclA) guidelines (CIEEM, 2024). Where deviations from best practice, or where no best practice guidelines are available, approaches to survey effort have been detailed and justified within survey methods and/or limitations within this Chapter and its supporting technical appendices.
- 9.2.34. As part of the approach to assessing Net Benefit for Biodiversity, an assessment of the biodiversity value of the land has been undertaken and the proposed mitigation has been assessed in relation to the holistic approach necessary and in line with the Environment (Wales) Act (HMSO, 2016) guidelines.

### **9.3. SCOPING OPINION AND CONSULTATION**

#### RESPONSE TO THE SCOPING OPINION

- 9.3.1. An EIA Scoping Opinion was received by the Applicant from the Local Planning Authority (LPA) on 8 May 2024, including formal responses from Statutory Consultees. The responses from the LPA in relation to Biodiversity and how these requirements should be addressed by the Applicant are set out in **Appendix 1.3 Scoping Opinion Responses (Document Reference: PW.3.3.1.3)**.

#### CONSULTATION UNDERTAKEN TO DATE

- 9.3.2. **Table 9.1** provides a summary of the consultation undertaken to inform the Biodiversity assessment to date.

**Table 9.1 - Summary of Consultation Undertaken**

Body/Organisation	Meeting Dates and Other Forms of Consultation	Summary of Outcome of Discussions
Flintshire County Council	22/03/2024 – email discussion and phone call regarding species survey requirements.	Agreed to use UKHabs and or JNCC Phase 1 for baseline habitat survey. Scoping out of dormouse from further survey. Provided with third party organisation details regarding GCN survey data.
Flintshire County Council	1/11/2024 – online meeting to discuss the approach to net benefit for biodiversity (NBB) and green infrastructure.	Update to FCC on project boundary and detail. Outline of proposals to achieve net benefit for biodiversity i.e. three areas for mitigation spread geographically across the route. Confirmation there is no other policy guidance than that publicly available. Consideration of short term impacts i.e. 2 years versus 5 years, long term management: FCC confirmed they would consider 30 years post-construction management. Green infrastructure statement to be incorporated into the NBB report; confirmed to be acceptable to FCC.
Wildground	April 2024 - email consultation for great crested newt data from the monitoring work they carry out of Deeside and Buckley Newt sites SAC.	Provision of great crested newt population data from previous 10 years.
RSK	March 2024 - provision of ecological data for areas of the Padeswood Spur Pipeline Proposed Development.	Provision of eDNA data for great crested newts for large areas within or near to the Red Line Boundary. Provision of a Preliminary Ecological Appraisal Report for the Padeswood Above Ground Installation (AGI) located at the Padeswood CCS Plant.
Heidelberg Materials UK and Enfys Ecology	April 2024 - provision of GCN survey data of waterbodies within the Padeswood Cement Works which are monitored under EPS licence conditions.	Survey data relating to great crested newt population monitoring of waterbodies within the Padeswood Cement Works (Padeswood AGI) for 2023 and 2024.
Flintshire County Council	May 2024 - survey methodology relating to invasive and non-native species.	Surveying for Invasive Non Native Species (INNS) would be carried out to a distance of 10 m beyond the Red Line Boundary. FCC Ecologist advised that consideration should be given to extending this area for Giant Hogweed which is a significant problem within the Northop Country Park and local area.
Natural Resource Wales (NRW)	December 2024 – email discussion seeking derogation for works, including installation of temporary culverts and trenched crossings, within the closed season for coarse fish (15 March to 15 June) and Salmonids (1 October to 31 May).	Derogation given based on the implementation of proposed mitigation, the lack of risk to spawning fish and the minimal, short term and localised risk to eels.

## **9.4. SCOPE OF THE ASSESSMENT**

9.4.1. The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 5 - EIA Methodology (Document Reference: PW.3.2.5) of this ES.**

9.4.2. This section provides an update to the scope of the assessment and re-iterates the evidence base for scoping out elements following further iterative assessment.

### **ELEMENTS SCOPED OUT OF THE ASSESSMENT**

9.4.3. The elements shown in **Table 9.2** are not considered to give rise to likely significant effects as a result of the Padeswood Spur Pipeline Proposed Development and have therefore not been considered further within this assessment.

**Table 9.2 - Elements Scoped Out of the Assessment**

Element Scoped Out	Justification
Dormouse <i>Muscardinus avellanarius</i>	Following consultation with the FCC ecologist and reviewing the desk study data it was considered that dormouse is unlikely to be present within the Padeswood Spur Pipeline Proposed Development Red Line Boundary. Therefore, no construction, operational or decommissioning impacts are anticipated.
Other Mammals (including brown hare <i>Lepus europaeus</i> and hedgehog <i>Erinaceus europaeus</i> )	Habitats exist within the Red Line Boundary which have the potential to support other mammal species, such as brown hare and hedgehog. Therefore, potential exists for direct physical impacts (e.g. injury, mortality) as well as indirect impacts (e.g. disturbance, increased pollution, noise and vibration) affecting their habitats. However, given the short term, localised and temporary nature of constructing the Padeswood Spur Pipeline Proposed Development, and the location of permanent features such as AGIs on habitats of low ecological value, it is considered unlikely to significantly impact such populations across the Red Line Boundary. Mitigation measures included within this ES will ensure the protection of other mammal species, including brown hare and hedgehog during construction. Therefore, no significant impacts in relation to construction, operational or decommissioning activities are anticipated. Mitigation measures detailed within this ES (and included within the <b>Outline Environmental Management Plan (OEMP) (Document Reference: PW.4.1)</b> ) will ensure the protection of mammals, through the implementation of Precautionary Working Methods and the supervision of an Ecological Clerk of Works present during construction works.
Reptiles	Suitable habitat for reptiles within the Red Line Boundary is limited to small, isolated pockets with connectivity via hedgerows. Therefore, potential exists for direct physical impacts (e.g. mortality or loss of hibernacula, basking and foraging resource) to reptiles as well as indirect impacts (e.g., disturbance, increased pollution, noise and vibration) affecting their habitats. However, given the short term, localised and temporary nature of constructing the Padeswood Spur Pipeline Proposed Development, and the location of permanent features such as AGIs on habitats of low ecological value, it is considered unlikely to significantly impact reptile populations across the Red Line Boundary. Mitigation measures detailed within this ES (and included within the <b>OEMP (Document reference: PW.4.1)</b> ) will ensure the protection of reptiles, through the implementation of Precautionary Working Methods and the supervision of an Ecological Clerk of Works present during construction works. Therefore, no construction, operational or decommissioning impacts are anticipated.
Invasive Non-Native Species (INNS)	INNS species are present across the Red Line Boundary and there is potential for accidental spread and/or propagation of INNS within both terrestrial and aquatic habitats. Mitigation measures included within this ES will ensure that INNS are dealt with appropriately and will include the preparation of a Biosecurity Method Statement prior to commencement. Therefore, no construction, operational or decommissioning impacts are anticipated.

## ELEMENTS SCOPED INTO THE ASSESSMENT

### Construction Stage

9.4.4. In the absence of embedded and secondary mitigation, the below ecological features are considered to have likely significant effects during construction and have been scoped into the impact assessment.

- Statutory and Non-Statutory Designated Sites;
- Habitats of Conservation Importance (Priority Habitats);
- Hedgerows;
- Watercourses and waterbodies;
- Great crested newt (GCN) *Triturus cristatus*;
- Barn owl *Tyto alba*;
- Bats;
- Breeding birds;
- Wintering birds;
- Badger (*Meles meles*);
- Riparian mammals (otter *Lutra lutra* and water vole *Arvicola amphibius*);
- Aquatic habitats – watercourses and waterbodies;
- Fish;
- Aquatic macroinvertebrates; and
- Macrophytes.

### Operation Stage

9.4.5. In the absence of embedded and secondary mitigation, the below ecological features are considered to have likely significant effects during the Operational Stage and have been scoped into the impact assessment:

- Bats;
- Breeding birds; and
- Aquatic habitats and species.

### Decommissioning Stage

9.4.6. In the absence of embedded and secondary mitigation, the below ecological features are considered to have likely significant effects during the Decommissioning Stage and have been scoped into the impact assessment:

- Great crested newts;

- Bats; and
- Breeding birds.

## 9.5. ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

### STUDY AREA

- 9.5.1. The Study Areas used to inform the EIA have been developed on the basis of the likely Zones of Influence (Zol) of the Red Line Boundary, during construction, operation and decommissioning and its potential to result in significant impacts / effects on relevant ecological features. Study Areas of varying extents have therefore been applied in response to perceived potential impacts / effects or else to ensure that an individual receptor is fully surveyed and assessed in line with relevant best practice guidelines and methods. At the time of the surveys, a larger Red Line Boundary was used, this has since been refined to the current Red Line Boundary that can be seen in **Figure 9.1 Site Location Plan (Document Reference: PW.3.4.9.1)**.
- 9.5.2. Specific trenchless installation technique at each location will be subject to ongoing refinement and will, in some cases, be dependent on a variety of factors including ground conditions, the type of feature to be crossed, the length of the crossing etc. as such the Zol at such locations has been taken into account.

### METHOD OF BASELINE DATA COLLECTION

- 9.5.3. The biodiversity baseline has been determined through a combination of desk study and field surveys, as summarised below. The extent of individual receptor Study Areas applied during the baseline data gathering exercise are also identified.

#### Desk Study

- 9.5.4. A desk study was undertaken to identify nature conservation designations and protected/notable habitats and species potentially relevant to the Padeswood Spur Pipeline Proposed Development, in line with CIEEM Guidelines (CIEEM, 2017). The desk study included a review of publicly available resources and databases, such as the Multi Agency Geographic Information for the Countryside (MAGIC) website (Natural England, 2024) and the following third-party data sources:
- Cofnod (Cofnod, 2023);
  - DataMap Wales (Welsh Government, 2024b);
  - Natural Resources Wales (NRW) (NRW, 2024) and NBN Atlas Wales (NBN, 2024);

- Environment Agency Fish and Ecology Data Explorer (Environment Agency , 2024); and
- Ancient Tree Inventory (The Woodland Trust, 2024).

9.5.5. The following search distances and parameters were applied:

- Up to 10 km from the Padeswood Spur Pipeline Proposed Development for statutory designated sites of international importance<sup>1</sup>, and those listed within the National Site Network (extended to 30 km for Special Areas of Conservation (SAC) designated for bat species);
- Statutory designated sites of national importance<sup>2</sup> within 2 km of the Padeswood Spur Pipeline Proposed Development;
- Statutory designated sites of international or national importance hydrologically linked to watercourses located within the Red Line Boundary;
- Locations of non-statutory designated sites<sup>3</sup> within 2 km of the Padeswood Spur Pipeline Proposed Development;
- Priority habitats and woodland listed on the Ancient Woodland Inventory (AWI) within 1 km of the Padeswood Spur Pipeline Proposed Development;
- Records of historic protected species licences within 2 km of the Padeswood Spur Pipeline Proposed Development;
- Records of protected and/or notable species within 2 km of the Padeswood Spur Pipeline Proposed Development;
- Statutory designated sites of international importance for bats within 30 km and of national importance for bats within 2 km. Records of bat roosts and activity within 5 km of the Padeswood Spur Pipeline Proposed Development;
- Records of fish, aquatic macroinvertebrate, and macrophyte species within 2 km of the Padeswood Spur Pipeline Proposed Development; and
- Arboricultural features within 15m of the Padeswood Spur Pipeline Proposed Development, and veteran trees within 30 m of the Padeswood Spur Pipeline Proposed Development to ensure compliance with BS5837.

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<sup>1</sup> Special Areas of Conservation (SAC), candidate SAC (cSAC), Special Protection Areas (SPA), potential SPA (pSPA) and Ramsar Sites.

<sup>2</sup> Site of Special Scientific Interest (SSSI), Local Nature Reserve (LNR), National Nature Reserve (NNR)

<sup>3</sup> Wildlife Sites (WS)

## Site Visits and Surveys

- 9.5.6. Field surveys scoped into the assessment as highlighted within the **EIA Scoping Report (Appendix 1.1, Document Reference: PW.3.3.1.1)** are detailed in **Table 9.3**. Field Surveys commenced in April 2024 and continued until November 2024. The survey data collected is sufficient to inform a robust reasonable worst-case assessment, as provided in this Chapter and supporting Appendices.
- 9.5.7. Additional survey data will be submitted to corroborate the findings, conclusions, recommendations and mitigation presented within this ES. Further survey data will be provided as Supplementary Information following the completion of surveys and data analysis.
- 9.5.8. Baseline conditions were established through a range of preliminary surveys including:
- UK Habitat Survey (UKHab)/Phase 1 habitat surveys;
  - Preliminary Roost Assessment (PRA) of buildings and structures for bats;
  - Ground Level Tree Assessment (GLTA) surveys and Potential Roosting Feature (PRF) inspection surveys for bats;
  - Emergence surveys of trees for bats;
  - Automated static detector surveys to monitor bat activity at crossing points (e.g. hedgerows);
  - Habitat Suitability Index (HSI) assessments of waterbodies, eDNA and presence/absence surveys for great crested newt;
  - Habitat suitability survey for barn owl;
  - Riparian mammal surveys;
  - Badger surveys;
  - Hedgerow surveys (including for Hedgerow Regulations Assessment);
  - Aquatic habitat surveys;
  - Aquatic ecology surveys including electric fishing, eDNA for fish and crayfish, aquatic macroinvertebrates, macrophytes and pond (PSYM) surveys; and
  - BS 5837 arboricultural walkover survey.
- 9.5.9. Preliminary surveys, whilst influencing the Padeswood Spur Pipeline Proposed Development Design in their own right, additionally helped to define a suite of detailed/targeted survey requirements for a range of protected and/or notable species and habitat assessments.
- 9.5.10. **Table 9.3** details the scope of surveys completed to support the preparation of the ES for the Padeswood Spur Pipeline Proposed

Development, alongside Survey Areas applied to each individual receptor. References to best practice methods or guidelines are also provided where applicable.

- 9.5.11. Survey Areas cited provide the broadest extent of survey effort applied. Where deviations from best practice methods/guidelines have occurred, full justification has been provided within this ES and it's supporting appendices (**see Appendices 9.1 – 9.9, Document References: PW.3.3.9.1 – PW.3.3.9.8**).

**Table 9.3 - Receptor, Survey Area and Reference to Best Practice Guidelines**

Receptor	Survey Area	Current Good Practice Guideline Reference <sup>4</sup>	Relevant Appendix
Habitats	Entire Red Line Boundary.	UK Habitat Survey (UKHab Ltd., 2023) and Phase 1 Habitat Survey: Joint Nature Conservation Committee (JNCC., 2010).	Appendix 9.2 Preliminary Ecological Appraisal (Document Reference: PW.3.3.9.2).
	Entire Red Line Boundary.	Hedgerow Regulations (HMSO, 1997).	Appendix 9.5 Hedgerow Survey Report (Document Reference: PW.3.3.9.5).
	Entire Red Line Boundary.	Watercourses (Gurnell, England, & Shuker, 2019) and Ponds (Predicative Systems for Multimetrics (PSYM) surveys) (Pond Action, 2002).	Appendix 9.8 Preliminary Aquatic Ecological Appraisal (Document Reference: PW.3.3.9.8) and Appendix 9.9 Aquatic Ecology Survey Report (Document Reference: PW.3.3.9.9).
Arboricultural Impact Assessment	Entire Red Line Boundary.	British Standards Institute. BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations. London: BSI (British Standards Institute, 2012).	Appendix 9.1 Arboricultural Impact Assessment (Document Reference: PW.3.3.9.1).
Great Crested Newt	Entire Red Line Boundary +250 m buffer.	Habitat Suitability Index Assessment (Oldham R.S., 2000), Environmental DNA (eDNA) surveys (Biggs, 2014) and Presence/Absence Surveys (Langton, 2001).	Appendix 9.3 Great Crested Newt Survey Report (Document Reference: PW.3.3.9.3).
Bat	Entire Red Line Boundary.	Bat Conservation Trust (BCT) Good Practice Survey Guidelines (Colins, 2023) and BCT and Institution of Lighting Professionals (Institution of Lighting Professionals and Bat Conservation Trust, 2023), Bats and Artificial Lighting at Night.	Appendix 9.4 Bat Survey Report (Document Reference: PW.3.3.9.4).
Badger	Entire Red Line Boundary +30 m buffer.	The classification of badger <i>Meles meles</i> Setts in the UK: A review and guidance for surveyors. (Andrews, 2013), Badger Protection: Best Practice Guidance for Developers, Ecologists and Planners (England) (Badger Trust, 2023) and Surveying Badgers. The Mammal Society. (Creswell, 1990).	Appendix 9.6 Badger Survey Report (Document Reference: PW.3.3.9.6).
Otter	Entire Red Line Boundary +150 m <sup>5</sup> .	Monitoring the Otter <i>Lutra lutra</i> (Chanin, 2003).	Appendix 9.7 Riparian Mammal Survey Report (Document Reference: PW.3.3.9.7).
Water vole	Entire Red Line Boundary +150 m <sup>6</sup> .	The Water Vole Mitigation Handbook (Dean, 2016).	Appendix 9.7 Riparian Mammal Survey Report (Document Reference: PW.3.3.9.).
Barn Owl	Entire Red Line Boundary.	Barn owl <i>Tyto alba</i> assessment undertaken utilising desk study, baseline habitat survey (UKHab/Phase 1) and barn owl habitat suitability survey data (Shawyer, 2012).	Incorporated in Appendix 9.2 Preliminary Ecological Appraisal (Document Reference: PW.3.3.9.2).
Breeding and Wintering birds	Entire Red Line Boundary.	No specific surveys carried out; breeding and wintering birds assessment undertaken utilising desk study, previous DCO survey data and baseline habitat survey (UKHab and Phase 1).	Not applicable.
Fish	Entire Red Line Boundary.	British Standards Institution (BSI, 2003), Environment Agency (EA, 2001), and Environment Agency (EA, 2007).	Appendix 9.8 Preliminary Aquatic Ecological Appraisal (Document Reference: PW.3.3.9.8) and Appendix 9.9 Aquatic Ecology Survey Report (Document Reference: PW.3.3.9.9).

<sup>5</sup> Upstream and downstream of proposed watercourse crossing points or beyond the Red Line Boundary

<sup>6</sup> Upstream and downstream of proposed watercourse crossing points or beyond the Red Line Boundary

Receptor	Survey Area	Current Good Practice Guideline Reference <sup>4</sup>	Relevant Appendix
Aquatic Macro-invertebrates	Entire Red Line Boundary.	British Standards Institution (BSI, 2012) and Environment Agency (EA, 2017).	Appendix 9.8 Preliminary Aquatic Ecological Appraisal ( <b>Document Reference: PW.3.3.9.8</b> ) and Appendix 9.9 Aquatic Ecology Survey Report ( <b>Document Reference: PW.3.3.9.9</b> ).
Macrophytes	Entire Red Line Boundary.	Water Framework Directive – United Kingdom Technical Advisory Group (WFDUKTAG) (WFD-UKTAG , 2014).	Appendix 9.8 Preliminary Aquatic Ecological Appraisal ( <b>Document Reference: PW.3.3.9.8</b> ) and Appendix 9.9 Aquatic Ecology Survey Report ( <b>Document Reference: PW.3.3.9.9</b> ).

## IMPACT ASSESSMENT METHODOLOGY

- 9.5.12. The assessment has been undertaken in accordance with the CIEEM 'Guidance for Ecological Impact Assessment in the UK and Ireland' (2018) (CIEEM, 2024) (herein referred to as the 'CIEEM Guidelines'). The CIEEM Guidelines represent the current best practice for assessing impacts to ecological receptors as a result of development projects.
- 9.5.13. Through application of the impact assessment methodology, as per CIEEM Guidelines, this chapter ensures that assessment of protected sites, habitats and species as per the requirements of the Infrastructure (Wales) Act (Senedd Cymru, 2024) that achieved Royal Assent on 3 June 2024.

### Nature Conservation Evaluation

- 9.5.14. To characterise the impacts and effects of the Padeswood Spur Pipeline Proposed Development on ecological receptors, the nature conservation importance of each ecosystem, habitat and species is assigned a level of importance for nature conservation based on criteria detailed within the CIEEM Guidelines, as detailed in **Table 9.4**.
- 9.5.15. The rarity, ability to resist or recover from environmental change, uniqueness of an ecological receptor, function / role within an ecosystem, and level of legal protection or designation afforded to a given ecological receptor are all factors considered in determining its importance. Consideration has also been given to the importance of a species or habitat and its conservation status at a geographic level, taking population size, life cycle, rarity and/or distribution into consideration, particularly where distribution is changing as a result of global trends and climate change.
- 9.5.16. In addition, the importance of an ecological receptor takes into account any statutory or non-statutory designations, the intrinsic importance of the ecological receptor and whether it supports legally protected or notable species.
- 9.5.17. The assessment for bats was informed by an evaluation of the Padeswood Spur Pipeline Proposed Development Red Line Boundary for foraging, commuting and roosting bats, as detailed within the **Bat Survey Report - Appendix 9.4 (Document Reference: PW.3.3.9.4)** which provides guidance on the evaluation of the bat fauna in terms of a geographical context. This method uses numerical criteria (dependent on the species of bat recorded, number of bats recorded, number of nearby roosts and habitat characteristics) to arrive at an appropriate valuation. This guidance method has been used along with professional judgement and current conservation status information on each species.

9.5.18. Standard EIA terminology uses generic criteria to define the level of sensitivity, whereas the CIEEM Guidelines details the significance of effects within a relevant geographic frame of reference. To provide a standardised approach to the EIA, whilst still being compliant with the approach detailed within the CIEEM Guidelines, **Table 9.4** provides comparison of the two approaches. For a level of sensitivity categorised as negligible, the comparable nature conservation value has been defined as the area for the Padeswood Spur Pipeline Proposed Development only where ecological effects are assessed as being significant at a less than local level. This differs from the frame of references outlines within the CIEEM Guidelines which allow for adaptation of geographical context to suit local circumstances.

**Table 9.4 - Importance Criteria**

Sensitivity (EIA Criteria)	Nature Conservation Value (CIEEM EcIA Guidelines) Geographic Scale	Criteria
Very High	International	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>• Internationally designated areas or undesignated areas that meet the criteria for designation and/or</li> <li>• Viable populations of species of international conservation concern.</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>• Species whose presence contributes to the maintenance of qualifying habitats, communities;</li> <li>• assemblages that occur within internationally designated sites or within undesignated areas that meet the criteria for such designation and</li> <li>• Resident, or regularly occurring, populations of species that may be considered at an International level, where:               <ul style="list-style-type: none"> <li>- The loss of the population would adversely affect the conservation status or distribution of the species at this geographical scale; or</li> <li>- The population forms a critical part of a wider population at this scale; or</li> <li>- The species is at a critical phase of its life cycle at this scale.</li> </ul> </li> </ul>
High	UK or National	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>• Qualifying communities and assemblages that occur within nationally designated sites or within undesignated areas that meet criteria for such designation; and/or</li> <li>• Viable populations of species of national conservation concern;</li> <li>• Areas of Ancient Woodland and</li> <li>• Habitats listed for their principal importance for biodiversity (Section 7 of the Environment (Wales) Act (HMSO, 2016).</li> </ul> <p>Species whose presence contributes to:</p> <ul style="list-style-type: none"> <li>• The maintenance of qualifying habitats, communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designations; or</li> <li>• The maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the Environment (Wales) Act (HMSO, 2016) Section 7 requirements.</li> </ul> <p>Resident, or regularly occurring, populations of species that may be considered at an International (as detailed above), National or UK level including those receiving legal protection (listed within Schedule 1, 5 and 8 of the WCA) or listed for their principal importance for biodiversity or conservation status, where:</p> <ul style="list-style-type: none"> <li>• The loss of the population would adversely affect the conservation status or distribution of the species at this geographical scale; or</li> <li>• The population forms a critical part of a wider population at this scale; or</li> <li>• The species is at a critical phase of its life cycle at this stage.</li> </ul>
Medium	Regional (North Wales)	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>• Populations of species of conservation concern within the region.</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>• Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems within the region; and/or</li> <li>• Resident, or regularly occurring, populations of species that may be considered at an International, UK or National level (as detailed above), where:               <ul style="list-style-type: none"> <li>- The loss of the population would adversely affect the conservation status or distribution of the species at this geographical scale; or</li> <li>- The population forms a critical part of a wider population at this scale; or</li> <li>- The species is at a critical phase of its life cycle at this scale.</li> </ul> </li> </ul>
Medium	County (Flintshire)	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>• Populations of species of conservation concern within the authority area (Flintshire).</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>• Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems within Flintshire; and/or</li> </ul>

Sensitivity (EIA Criteria)	Nature Conservation Value (CIEEM EcIA Guidelines) Geographic Scale	Criteria
		<ul style="list-style-type: none"> <li>• Resident, or regularly occurring, populations of species that may be considered at an International, UK or National level (as detailed above), where:               <ul style="list-style-type: none"> <li>- The loss of the population would adversely affect the conservation status or distribution of the species at this geographical scale; or</li> <li>- The population forms a critical part of a wider population at this scale; or</li> <li>- The species is at a critical phase of its life cycle at this scale.</li> </ul> </li> </ul>
Low	District/Local	<p>Ecosystems and Habitats - Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> <li>• Populations of species of conservation concern within the local area / district (for example a Local Nature Reserve).</li> </ul> <p>Species:</p> <ul style="list-style-type: none"> <li>• Species whose presence contributes to the maintenance and restoration of biodiversity and ecosystems at a local level; and/or</li> <li>• Resident, or regularly occurring, populations of species that may be considered at an International, UK or National level (as detailed above), where:               <ul style="list-style-type: none"> <li>- The loss of the population would adversely affect the conservation status or distribution of the species at this geographical scale; or</li> <li>- The population forms a critical part of a wider population at this scale; or</li> <li>- The species is at a critical phase of its life cycle at this scale.</li> </ul> </li> </ul>
Negligible	Less than Local	Ecosystems or habitats that do not meet the above criteria, i.e., supporting at least populations of species of conservation concern within the Padeswood Spur Pipeline Proposed Development. Usually common or widespread habitats and species.

## Characterising Potential Impacts

- 9.5.19. CIEEM Guidelines (CIEEM, 2024) notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects, either adverse or beneficial, on important ecological receptors. Significant effects are those that undermine or enhance the conservation status<sup>7</sup> of important ecological receptors.
- 9.5.20. Knowledge and understanding of baseline conditions, construction methods (including site preparation) and operational activities associated with the Padeswood Spur Pipeline Proposed Development, in tandem with ecologist's professional judgement, knowledge and experience of similar large-scale infrastructure schemes, has been used to identify the potential impacts of the Padeswood Spur Pipeline Proposed Development on ecological receptors.
- 9.5.21. Habitats and species considered to have a nature conservation status of "Less than Local" are not considered important ecological receptors<sup>8</sup> in the context of this assessment. Any impact on such a receptor as a result of the Padeswood Spur Pipeline Proposed Development is considered unlikely to have a significant effect on the conservation status of such habitat or species at a local, national, regional, or international scale. Therefore, features assessed to be of Less than Local nature conservation importance have been scoped out of the EIA.
- 9.5.22. In line with CIEEM Guidelines (CIEEM, 2021) the following parameters have been considered in assessing effects on ecological structure and function:
- **Impact:** The physical change in the environment that may lead to an effect upon an ecological feature.
  - **Effect:** The consequence of an impact upon an ecological feature.
  - **Probability:** What the probability of the impact is of occurring – Certain, Probable, Unlikely.
  - **Positive or negative:** Whether the impact will have a positive (beneficial) or negative (adverse) change on the quality of the ecological feature.

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<sup>7</sup> Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure or function as well as the long-term distribution and abundance of its population within a given geographical area. Conservation status for species is determined by the sum of influences acting on the species concerned that may affect the long-term distribution or abundance of its population within a geographical area.

<sup>8</sup> An ecological receptor is considered important based on multiple factors including, but not limited to, rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in CIEEM Guidelines (CIEEM, 2024).

- **Magnitude:** The 'size' or 'amount' of an effect determined on a quantitative basis e.g., total or partial.
- **Extent/Complexity:** The geographical area over which the effect occurs, whether Direct, Indirect or Cumulative.
- **Duration:** The period over which the effect is expected to last prior to recovery or replacement of the resource or feature, for example, short-term (up to 1 year), medium term (between 1 and 10 years) or long-term (greater than 10 years).
- **Reversibility:** Whether recovery from the effect is possible or not, e.g. irreversible (permanent) effects or reversible (temporary) effects.
- **Timing and frequency**

#### SIGNIFICANCE CRITERIA

- 9.5.23. The CIEEM Guidelines (CIEEM, 2024) define a significant effect in the context of an ecological impact assessment as “an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general”. Significant effects, as defined by the CIEEM guidelines, are determined by assessing any deviation in baseline conditions of a feature of ecological importance that may occur as a result of individual or cumulative impacts during the Construction, Operational or Decommissioning Stages of a development.
- 9.5.24. When determining the level of significance of an ecological effect, **Table 9.5** has been used as a guide in tandem with professional judgement and will apply to a determination of significance for both beneficial and adverse effects. These effects are expressed in terms of geographical scale, however, the geographical scale at which an effect is significant can vary from the geographical importance of the ecological feature being assessed. For example, an effect on an ecological receptor of county level importance could be considered Major if a particularly high proportion of the county resource were to be affected.

**Table 9.5 - Significance Categories or Effects on Ecological Receptors**

Typical Descriptors of Effect (Nature Conservation)	Significance Category
An impact on one or more receptor(s) of International, National or Regional importance.	Major
An impact on one or more receptor(s) of County importance.	Moderate
An impact on one or more receptor(s) of Local importance.	Minor
No significant impacts on key nature conservation receptors or impacts to receptors of Less than Local importance.	Negligible

Net Benefits for Biodiversity

9.5.25. Welsh policy states that developments must demonstrate they have maintained and enhanced biodiversity and created resilient ecological networks, in accordance with relevant legislation and policy including The Environment (Wales) Act (HMSO, 2016) and Planning Policy Wales (Welsh Government, 2024a).

9.5.26. Net Benefit for Biodiversity puts an emphasis on the proactive consideration of biodiversity early in the design process and encourages the developer to take a whole system approach when conducting the Net Benefit for Biodiversity assessment. Any planning proposal must demonstrate that it has both maintained and enhanced biodiversity and built resilient ecological networks.

9.5.27. A Net Benefit for Biodiversity Report (**Document Reference: PW.4.3**) has been produced quantifying losses and proposed mitigation and compensation areas.

**ASSUMPTIONS AND LIMITATIONS**

9.5.28. Broad assumptions and limitations are provided below. Receptor specific assumptions and limitations are provided within Appendices (**Appendices 9-1 – 9-8, Document References: PW.3.3.9.1 – PW.3.3.9.8**), as required.

9.5.29. All efforts have been made to complete field surveys across the entirety of the Red Line Boundary in liaison with landowners and land managers. However, areas of land were unable to be accessed (6.87 ha) for completion of field surveys; due to physical inaccessibility (e.g. physical barriers) of land through continued refusal of access by landowners as well as concerns for surveyor health and safety. As such it has been necessary to apply a precautionary approach to assessment and mitigation in the absence of field survey data (in line with CIEEM

Guidelines (CIEEM, 2021). Where a precautionary approach has been applied this has been identified within this ES and its supporting appendices. In such cases, the employment of a reasonable worst-case scenario (for example, assumed presence) has been applied and is considered sufficient to inform this impact assessment.

- 9.5.30. The exact route of the pipeline will be finalised during the detailed design phase, an indicative route is presented in **Figure 9.1 (Document Reference: PW.3.4.9.1)**. For the purposes of this assessment, a worst-case scenario (for example assumed presence) has been applied and is considered sufficient to inform this impact assessment.
- 9.5.31. Waterbodies separated from the Padeswood Spur Pipeline Proposed Development by significant barriers that will prevent great crested newt dispersal (for example, major roads and rivers) have not been subject to survey or assessment on the basis that the Padeswood Spur Pipeline Proposed Development will not result in direct or indirect impacts to populations as a consequence of barrier presence. Such waterbodies have not been considered within this impact assessment.

#### BASELINE CONDITIONS

- 9.5.32. Baseline conditions were established through a range of preliminary surveys including UK Habitat surveys, Preliminary Bat Roost Assessment (PBRA) of trees; Habitat Suitability Index (HSI) assessments of waterbodies for great crested newt; hedgerow assessment surveys, riparian mammal surveys, badger *Meles meles* surveys and aquatic habitat surveys. Preliminary surveys, whilst influencing the Preliminary Design in their own right, additionally helped to define a suite of detailed / targeted survey requirements for a range of protected and/or notable species and habitat assessments.

#### EXISTING BASELINE

##### Designated Sites

- 9.5.33. The desk study identified eight statutory designated sites of international importance within a 10 km radius of the Red Line Boundary. This included six SAC sites, one Ramsar site and one Special Protection Area (SPA).
- 9.5.34. Three nationally designated sites were identified within 2 km of the Red Line Boundary comprising SSSI/LNR.
- 9.5.35. Forty-nine non-statutory designated sites, all of which are Local Wildlife Sites (LWS) but referred to as Wildlife Sites (WS) in Flintshire, within 2 km of the Red Line Boundary.

9.5.36. These sites are described in **Table 9.6** and **Table 9.7** and presented in **Figures 9.2** and **9.3** (Document References: PW.3.4.9.2 and PW.3.4.9.3).

**Table 9.6 - Summary of Statutory Designated Sites**

Site Name	Designation	Distance from Survey Area	Reason For Designation
Deeside and Buckley Newt sites (Wales)	SAC	Adjacent to Red Line Boundary area	Waterbodies throughout the site support one of the largest breeding populations of the great crested newt in Great Britain, along with other widespread amphibian species including smooth newt <i>Triturus vulgaris</i> palmate newt <i>Triturus. Helveticus</i> common frog <i>Rana temporaria</i> and common toad <i>Bufo bufo</i> . The presence of great crested newt is the primary reason for SAC designation due to their significance as a European protected species.
The Dee Estuary (England and Wales)	Ramsar	3.8 km north	The Dee Estuary lies on the boundary between England and Wales on the north-west coast of Britain. It is a large funnel-shaped sheltered estuary, covering an area of 14,302 ha and is one of the top ten estuaries in the UK for wintering and passage waterfowl populations. The estuary supports internationally important numbers of waterfowl and waders, that are of importance under the Ramsar Convention on Wetlands of International Importance.
Dee Estuary/Aber Dyfrdwy (Wales and England)	SAC	3.8 km north	Dee Estuary/Aber Dyfrdwy covers an area of 15,805.27 ha. It is a large, funnel-shaped, sheltered estuary that supports extensive areas of intertidal sand-flats, mud-flats and saltmarsh. The presence of these habitats is the primary reason for SAC designation. The saltmarshes grade into transitional brackish and swamp vegetation on the upper shore. The site is of major importance for waterbirds. In addition, the site supports Annex II species, sea lamprey <i>Petromyzon marinus</i> , river lamprey <i>Lampetra fluviatilis</i> and petalwort <i>Petalophyllum ralfsii</i> .
The Dee Estuary (England/Wales)	SPA	3.8 km north	The Dee Estuary lies on the border between England and Wales on the northwest coast of Britain, covering an area of 14,291.56 ha. It is a large, funnel-shaped, sheltered estuary, which supports extensive areas of intertidal sand and mudflats and saltmarsh. The site is of major importance for waterbirds. During the winter, the intertidal flats and saltmarshes provide feeding and roosting sites for large populations of ducks and waders, which is the primary reason for SPA designation. In summer, the site supports breeding populations of two species of terns at levels of European importance. The site is also important during migration periods, particularly for wader populations moving along the west coast of Britain and for sandwich terns post-breeding.
River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid	SAC	3.9 km northeast	River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid (Wales) covers an area of 1151 ha. It extends from the upland source of the Dee at Bala Lake in Snowdonia, Wales through lowland Shropshire and Cheshire in England, to its outflow into the Dee Estuary, and includes some of the tributaries such as the Ceiriog. It is considered of European importance due to the habitat it provides for plant communities and a number of species, primarily water-crowfoots ( <i>Ranunculus spp</i> ). Atlantic salmon ( <i>Salmo salar</i> ) and floating water-plantain ( <i>Luronium natans</i> ) are both primary reasons for the designation of the site. In addition, the site supports also Annex II species, sea lamprey ( <i>Petromyzon marinus</i> ) river lamprey ( <i>Lampetra fluviatilis</i> ) brook lamprey ( <i>Lampetra planer</i> ), bullhead ( <i>Cottus gobio</i> ) and otter.
Halkyn Mountain/ Mynydd Helygain (Wales)	SAC	4.3 km northwest	Halkyn Mountain has the most extensive recorded area of the metalliferous NVC type OV37 <i>Festuca ovina – Minuartia verna</i> grassland community in Wales and is the primary reason for SAC designation due to its significance as a European habitat of importance. Halkyn Mountain covers an area of 610.36 ha. The site supports many former mineral workings including metalliferous mine spoil tips along with small chert and limestone quarries. supports a mosaic of calcareous grasslands, bracken and dry heath with localised heavy metal tolerant vegetation developed on old metal mine spoil, with small areas of rush pasture, wet heath, marshy grasslands and fen communities where surface drainage is impeded.
Alyn Valley Woods/ Coedwigoedd Dyffryn Alun	SAC	4.8 km west	Alyn Valley Woods/Coedwigoedd Dyffryn Alun covers an area of 168.3 ha. The site predominantly occupies the steep Carboniferous Limestone escarpment alongside the River Alyn, together with adjoining areas. The site supports a large stand of semi-natural broadleaved woodland namely the Primary SAC feature 'Tilio – Acerion forests of slopes, screes and ravines'. The valley bottom and floodplains are dominated by wet woodland corresponding to the SAC feature 'Alluvial forest with alder <i>Alnus glutinosa</i> and ash <i>Fraxinus excelsior</i> ( <i>Alno – Padion, Alnion incanae, Salicion alvae</i> )'.

Site Name	Designation	Distance from Survey Area	Reason For Designation
			Several small areas of species rich calcicolous grassland constitute the third SAC feature 'Semi natural dry grasslands and scrubland facies: on calcareous substrates <i>Festuco- Brometalia</i> .
Berwyn a Mynyddoedd De Clwyd/Berwyn and South Clwyd Mountains	SAC	8.5 km southwest	Berwyn a Mynyddoedd De Clwyd /Berwyn and South Clwyd Mountains is a large upland site covering an area of 27,221.21 ha and is the largest area of blanket bog and European dry heath in Wales; the presence of these habitats is the primary reason for SAC designation. The SAC is predominantly a mixture of dry heath and blanket bog vegetation with patches of transition mires and quaking bogs vegetation found as an intricate mosaic, usually on acidic rock types, and can together be described as upland moorland. Berwyn is the most important upland in Wales for breeding birds. The calcareous screes in this area support many rare species such as the limestone fern <i>Gymnocarpium robertianum</i> , with the rocky slopes or cliffs supporting rigid buckler fern <i>Dryopteris submontana</i> , a nationally scarce fern of limestone pavement and scree at the southern edge of its distribution.
Maes y Grug	SSSI/LNR	Adjacent	Maes y Grug SSSI covers an area of 17.4 ha and is situated near Alltami approximately 3 km northeast of Mold. The site is of special interest for its large population of the great crested newt. The waterbodies at Maes y Grug are surrounded by a mosaic of grassland, scrub and woodland habitats and support one of the largest known populations of the great crested newt in northeast Wales, along with other widespread amphibian species. This SSSI forms part of the Deeside and Buckley Newt Sites SAC.
Buckley Claypits and Commons	SSSI/LNR	900 m east	Buckley Claypits and Commons covers an area of 99.7 ha and is a composite site located around the northern and eastern boundaries of the town of Buckley. It is of special interest for its population of the great crested newt, its assemblage of widespread amphibian species, and for its mosaic of semi natural grassland, it supports one of the largest breeding populations of the great crested newt in Great Britain.
Connah's Quay Ponds and Woodland	SSSI/LNR	1.3 km northeast	Connah's Quay Ponds and Woodland covers an area of 207.52 ha. This composite site in north-east Flintshire is situated on the coastal slopes overlooking the Dee Estuary. The solid geology of the site consists of deposits of Carboniferous Middle Coal Measures. These include siltstone, mudstone, sandstone, fireclay and coal. Water bodies throughout the site support one of the largest breeding populations of the great crested newt in Great Britain, along with other widespread amphibian species.

**Table 9.7 - Summary of Non-Statutory Designated Sites (illustrated on Figure 9.4)**

Site Name	Designation	Distance from Survey Area	Reason For Designation
Bistre Wood	Wildlife Site (WS) <sup>9</sup>	Within the Red Line Boundary	The site consists of a broadleaved woodland along a stream valley. The canopy includes wild cherry ( <i>Prunus padus</i> ) oak ( <i>Quercus</i> sp) ash and birch ( <i>Betula</i> sp).
Coed Plas Major	WS	Within the Red Line boundary	The site consists of a thin strip of semi-natural broadleaved woodland in a steep sided valley, dominated by sycamore and sessile oak ( <i>Quercus petraea</i> ).
Warred Wood	WS	Within the Red Line Boundary	Warred Wood consists of an area of broadleaved semi-natural woodland and coniferous plantation woodland.
Marleyfield Meadow and Copse	WS	3 m north	Marleyfield Meadow and Copse is an area of broadleaved woodland and semi-improved grassland. The woodland canopy is dominated by sessile oak, and aspen.
Coed Argoed	WS	40 m north	The site is a narrow woodland in a steep-sided valley on the outskirts of Mynydd Isa. The woodland is broadleaved and dominated by sycamore and sessile oak.
Ffordd Argoed Wetland	WS	100 m northwest	The site is a tall herb fen, dominated by great willowherb <i>Epilobium hirsutum</i> and lesser pond-sedge <i>Carex acutiformis</i> .
Padeswood Pasture	WS	100 m south	Padeswood pasture consists of a historic rubbish tip with man-made pools. At the western end of the site is a dismantled railway, with significant disturbance and soil/rubble tipping.

Site Name	Designation	Distance from Survey Area	Reason For Designation
Padeswood Pool	WS	100 m south	Padeswood Pool is a large pool surrounded by broadleaved woodland. The pool is fed by streams and is used as a fishery. The pool forms part of a complex of kettle-hole meres.
Tyddyn Hall Wood	WS	100 m southeast	The site is an area of ancient semi-natural woodland consisting predominantly of oak, ash and sycamore.
Black Brook Plantation	WS	200 m south	The site is a narrow broadleaved plantation on the banks of Black Brook. The southern end of the site has a small area of marshy grassland.
Cobbler's and Stonybeach Woods	WS	500 m east	The site consists of a narrow stand of semi-natural broadleaved woodland in a steep valley. Oak, ash and sycamore <i>Acer pseudoplatanus</i> are the dominant canopy trees with some birch and willow <i>Salix sp.</i>
Padeswood Marsh	WS	500 m southwest	Padeswood Marsh consists of a small fen with two pools, an area of alder carr and marshy grassland.
Soughton Hall & Gorse Wood Ponds	WS	600 m northwest	The site consists of mixed plantation, parkland, semi-improved grassland and two small ponds which are known to support great crested newts. The site is located 0.57km north-west of Route A.
The Willows Common	WS	800 m east	The Willows Common is a complex of acid grassland, marshy grassland, heath, scrub, scattered trees and ponds.
Coed Andrew	WS	800 m northwest	Coed Andrew is a small semi-natural broadleaved woodland.
Hartsheath	WS	800 m south	Hartsheath is an area of wood pasture and parkland, with over-mature ash, beech, sycamore and oak trees.
Llong Meadow	WS	800 m southwest	The site is an area of species-rich grassland, with wet hollows in places. There are abundant bryophytes on the southern bank of the ditch.
Pentrehobin	WS	800 m southwest	Pentrehobin is an area of woodland consisting of over-mature sycamore, beech and lime.
Leeswood Bridge	WS	1 km south	Leeswood bridge is an area of wet woodland consisting of alder and willow carr, alongside an area of semi-improved neutral grassland.
Leadbrook Wood	WS	1 km north	The site consists of semi-natural broadleaved woodland occupying the dingles in which the Lead Brook and its tributaries flow. In the north the woodland surrounds a reservoir. Near the south there is an area of species rich marshy grassland, as well as herb rich meadow.
Knowl Hill	WS	1.1 km north	The site consists of semi-improved grassland, bracken <i>Pteridium aquifolium</i> , scattered scrub and heath. The site is designated for its habitats and ornithological interest.
Top-y-fron Dingle and Kelserton Brook	WS	1.1 km northeast	The site consists of a semi-natural broad-leaved woodland occupying two narrow steep-sided steam valleys that join into one south of Kelserton. The dominant woodland canopy species is sycamore, but sessile oak, alder, ash and birch are all locally dominant.
Pontblyddyn Marsh and Coppa Wood	WS	1.1 km south	The site is formed of a broadleaved woodland running along the River Alyn, with marshy grassland to the west of the river.
Brook Park Farm Wood	WS	1.2 km east	The site consists of a Semi-natural broadleaved and mixed broad-leaved and coniferous plantation along a stream valley.
Coed Ffoulkes	WS	1.2 km northwest	The site consists of a broadleaved woodland on a small disused quarry, consisting mainly of oak, sycamore and ash.
Plas Newydd Farm Lake	WS	1.2 km south	The site consists of areas of scattered scrub, swamp and mesotrophic standing water.
Maes Gruffydd Wetland	WS	1.2 km west	The site is an area of species rich marshy grassland alongside the main road, with a ditch running down the centre.
Optec Pond	WS	1.3 km northeast	The site is a small pond which supports breeding great crested newts. Semi-improved neutral grassland surrounds the pond.
Lees Wood and The Mount	WS	1.3 km southwest	Lees Wood and the Mount is formed broadleaved semi-natural woodland, mixed plantation, marshy grassland and standing water. The eastern half of the woodland is largely conifer plantation, while the central block is

Site Name	Designation	Distance from Survey Area	Reason For Designation
			semi-natural broadleaved woodland. The mount is a mixed woodland, with yew <i>Taxus baccata</i> , lime <i>Tilia sp.</i> , hornbeam <i>Carpinus betulus</i> and sycamore. The Mill Pond is a waterbody in the north-east of the site.
Riding School Wood and Grassland	WS	1.3 km southwest	A broadleaved secondary woodland dominated by sycamore ash and willow, with an area of semi-improved grassland.
Pentre Moch Pond	WS	1.4 km east	Pentre Moch Pond is formed of a small swamp and pond, surrounded by marshy grassland.
Coed Bryn Llys and Marsh	WS	1.4 km south	The site is a broadleaved woodland dominated by sycamore and beech with an area of marsh.
Maes Gwern	WS	1.4 km southwest	Maes Gwern is designated for the wet woodland and pasture meadow it supports. Marshy grassland is present along a small watercourse.
Tower Wood	WS	1.4 km southwest	The site is a wooded stream valley with areas of marshy grassland to the east. The site is designated for the woodland and grassland habitats, and the ornithological value of the site.
Buckley Mountain and the Trap	WS	1.5 km east	The site consists of a large pool surrounded by semi-improved neutral and acid grassland.
Parry's Pit, Alltami	WS	1.5 km east	The site consists of two large pools with a fringe of woodland within an old quarry. The ponds support breeding great crested newts.
Tyny Caeau	WS	1.5 km west	The site is a series of ponds, created for an amphibian translocation programme, adjacent farmland and former woodland. Great crested newt are known to be present on site.
Price's Hill Wood	WS	1.6 km east	The site consists of semi-natural broadleaved woodland with marshy areas within the woodland.
Wepre Wood	WS	1.6 km east	This site consists of a long narrow semi-natural broadleaved woodland in the Wepre Brook valley.
Etna Road Pools	WS	1.6 km north	Etna Road Pools are located within a disused clay pit and are surrounded by willow scrub and brambles.
Gwysaney Alder Carr, Marsh and Pools	WS	1.6 km northwest	The site consists of alder carr, marshy grassland, pools and broadleaved plantation. It is designated for the uncommon plant species, wet woodland and pasture/meadow habitats.
The Spinney	WS	1.6 km southwest	The site is small and fragmented by the A494 bypass. It consists of three areas of wet woodland with an area of scrub and planted scattered trees in between.
Green Cottage Wood and Marsh	WS	1.6 km west	The site is a small semi-natural broadleaved woodland and area of marshy grassland. Several springs and streams flow through the site.
Garth Wood and Hartsheath	WS	1.7 km south	The southern half of the site is formed of Garth Wood and Upper Garth Wood, with canopies dominated by sycamore and oak. Hartsheath broadleaved woodland run adjacent to the banks of the River Alyn.
Keeper's Spinney	WS	1.7 km southwest	The site consists of herb-rich grassland with broadleaved woodland along the banks of a small stream.
The Dingle Wood, Pontbyddyn	WS	1.7 km southwest	The Dingle Wood is a strip of woodland along a watercourse with rough grassland and a smaller woodland to the north.
Gwysaney Hall	WS	1.8 km northwest	No description provided.
Coed Afon Terrig	WS	2 km south	No description provided of the one of its tributaries. Sycamore is prominent with oak and ash and occasional birch, wild cherry and beech ( <i>Fagus sylvatica</i> ).
Coed y Nant	WS	2.1 km south	The site contains habitats of interest particularly ancient woodland.

## Habitats

- 9.5.37. Habitats were described and mapped following the Professional Version 2.0 of the UKHab classification survey methodology using the UKHab Habitat Classification Version 2.0 (UKHab Ltd., 2023). Where appropriate, consideration was given to whether habitats qualify or could qualify as a 'Priority Habitat' as published under Section 7 of the Environment (Wales) Act 2016 following habitat descriptions published by BRIG (JNCC., 2010) and The UK Habitat Classification Habitat Definitions Version 2.0. Habitat types were also recorded according to standard definitions, using the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Survey methodology (JNCC., 2010) and their suitability to support protected and notable species was assessed.
- 9.5.38. **Table 9.8** shows any important habitats recorded from inventories within the study area, and the distance of these from the site. A total of 41 areas of Priority Habitats were identified within 1 km of the Survey Area and are shown on **Figure 9.5 (Document Reference: PW.3.4.9.5)**.

**Table 9.8 - Important/Priority Habitats**

Important/Priority Habitats	No. Parcels/Area	Closest Area
Ancient woodland.	50	Within the Red Line Boundary, towards the north and adjacent in several locations across the Padeswood Spur Pipeline Proposed Development.
Ancient Tree Inventory.	7 veteran trees and 11 notable trees.	250 m east.
Purple moor-grass and rush pastures Priority Habitat.	6	200 m south.
Lowland fens and Reedbeds Priority Habitats (two separate Priority Habitats but grouped together in the data source).	3	200 m south.
Lowland meadows Priority Habitat.	6	270 m north.
Traditional orchards Priority Habitat.	22	30 m east.

Important/Priority Habitats	No. Parcels/Area	Closest Area
Wood-pasture and parkland Priority Habitat.	2	170 m west.
Open mosaic habitat on previously developed land (OMHoPDL) Priority Habitat.	2	200 m southeast.

Habitat Survey

9.5.39. The habitats that were identified in the Red Line Boundary are shown on **Figure 9.6** (UKHAB) and **Figure 9.7** (Phase 1) (**Document References: PW.3.4.9.6 and PW.3.4.9.7**). Habitats are listed and described in **Table 3-5** of the PEA (**Document Reference: PW.3.3.9.2**) and labelled with secondary codes. A description of the dominant and notable species, and the composition and management of each habitat is provided in **Table 9.9**.

**Table 9.9 - UK Habitats and secondary codes with corresponding Phase 1 Codes**

Habitat	Phase 1 code	Area (ha)	Length (m)	Summary Description	Irreplaceable or Priority Habitat
g3c – other neutral grassland	Semi-improved neutral grassland B2.2	3.82	N/A	Other/semi-improved neutral grassland was present throughout the Survey Area. Several areas contained scattered trees (32) such as cherry and oak species. Some areas contained scattered (14) rushes such as soft-rush ( <i>Juncus effusus</i> ), hard rush ( <i>Juncus inflexus</i> ) and compact rush ( <i>Juncus conglomeratus</i> ). Grazed management (100) was frequently evident in these areas. Species identified within this grassland habitat included meadow foxtail ( <i>Alopecurus pratensis</i> ) common nettle ( <i>Urtica dioica</i> ), cow parsley ( <i>Anthriscus sylvestris</i> ), cock's-foot ( <i>Dactylis glomerata</i> ), Yorkshire fog ( <i>Holcus lanatus</i> ), creeping buttercup ( <i>Ranunculus repens</i> ), willowherb species ( <i>Epilobium spp.</i> ) and sweet vernal grass ( <i>Anthoxanthum odoratum</i> ). Species which were rarely occurring comprised pignut ( <i>Conopodium majus</i> ), meadow buttercup ( <i>Ranunculus acris</i> ), cuckoo flower ( <i>Cardamine pratensis</i> ) and common sorrel ( <i>Rumex acetosa</i> ).	No
g4 – modified grassland	Improved grassland B.4	121.82	N/A	Much of the Survey Area comprised g4 – modified grassland/improved grassland. Most of this habitat was cattle grazed (101), sheep grazed (102) or mown (106) with a short sward dominant. Where areas were heavily grazed, perennial rye-grass ( <i>Lolium perenne</i> ) was dominant and species diversity was generally poor, with other species including cock's-foot, dandelion ( <i>Taraxacum agg.</i> ), common nettle and thistle species ( <i>Cirsium spp.</i> ) Where grazing pressure was lower, while perennial rye-grass largely remained dominant, species diversity was generally higher with species such as meadow foxtail, Yorkshire-fog, white clover ( <i>Trifolium repens</i> ), ribwort plantain ( <i>Plantago lanceolata</i> ), sweet vernal grass and chickweed ( <i>Stellaria media</i> ).	No
w1 – broadleaved and mixed woodland (33 – line of trees)	Broadleaved woodland A.1.1	N/A	1725.32	Lines of trees (33) were present throughout the Survey Area. Several lines of trees were associated with roadside verges (801) with most comprising young to semi-mature planted trees. Species of tree comprised oak species, ash, hawthorn ( <i>Crataegus monogyna</i> ), blackthorn ( <i>Prunus spinosa</i> ), elder ( <i>Sambucus nigra</i> ), sycamore, apple ( <i>Malus sylvestris</i> ), alder ( <i>Alnus glutinosa</i> ), hazel ( <i>Corylus avellana</i> ), cherry ( <i>Prunus sp.</i> ), and willow species.	No
w1g – Other broadleaved woodland (Priority Habitat)	Semi-natural broadleaved woodland A1.1.1	4.20	N/A	Several small parcels of woodland were located across the survey area with the majority identified as semi-natural (30), four areas identified as ancient woodland sites (28) and two areas identified as plantation (29). Cattle grazing (101) was evident in several woodland parcels. Many of these woodland parcels were identified as the Priority Habitat listed as deciduous woodland during the desk study.  Canopy and understorey species identified include sycamore, oak species, blackthorn, hawthorn, elder, alder, apple, ash, holly <i>Ilex aquifolium</i> , beech <i>Fagus sylvatica</i> , wych elm <i>Ulmus glabra</i> , European lime <i>Tilia x europaea</i> and rowan <i>Sorbus aucuparia</i> .  The ground flora often comprised Ancient woodland indicator species (AWIS) including wood sorrel ( <i>Oxalis acetosella</i> ), dog's mercury ( <i>Mercurialis perennis</i> ), bluebell ( <i>Hyacinthoides non-scripta</i> ) wood anemone ( <i>Anemone nemorosa</i> ), pignut and wood speedwell ( <i>Veronica montana</i> ) as well as common nettle, bramble ( <i>Rubus</i>	Yes – Lowland Mixed Deciduous Woodland

Habitat	Phase 1 code	Area (ha)	Length (m)	Summary Description	Irreplaceable or Priority Habitat
				<i>fruticosus</i> agg.), cleavers ( <i>Galium aparine</i> ), hogweed ( <i>Heracleum sphondylium</i> ), herb robert ( <i>Geranium robertianum</i> ) and dock species ( <i>Rumex</i> spp.)	
w1h – other woodland; mixed (Priority Habitat)	Plantation Mixed woodland A1.3.2	1.66	N/A	There were two areas of other woodland; mixed/plantation woodland located adjacent to each other centrally within the Survey Area. The areas were identified as ancient woodland sites (28) and plantation (29) and identified as HPI deciduous woodland during the desk study. The woodland was dominant in oak, with hawthorn, blackthorn, holly, ash and scot's pine ( <i>Pinus sylvestris</i> ) present.  Ground flora included bramble, nettle, cow parsley and hogweed. AWIS included wood avens ( <i>Geum urbanum</i> ), wood speedwell, herb robert and dog's mercury.	Yes – Lowland Mixed Deciduous Woodland
h2a – hedgerow (Priority Habitat)	Native species-rich hedge and trees J231	N/A	17402.51	A total of 165 hedgerows were identified within the Survey Area. All hedgerows were present along field boundaries, to both arable and grazed pasture fields. Management of hedgerows varied, with hedgerows adjacent to arable fields trimmed and dense, often flailed (116) and those elsewhere more outgrown.  Species diversity varied across the survey area ranging from single species in a hedge to over 5 native woody species, with many hedgerows contained trees (11). Many hedgerows were dominant in hawthorn and blackthorn with ash, elder, oak, holly, field and dog ( <i>Rosa arvensis</i> ) and ( <i>R. canina</i> ), willow, and sycamore recorded. Ground flora largely comprised common nettle, rough meadow grass ( <i>Poa trivialis</i> ), cocksfoot, hogweed, cow parsley, cleavers, willowherb, bramble and honeysuckle ( <i>Lonicera periclymenum</i> ), wood avens, and meadowsweet ( <i>Filipendula ulmaria</i> ).  A description of each hedgerow individually is provided <b>Appendix 9.5 - Hedgerow Survey Report (Document Reference: PW.3.3.9.5)</b> .	Yes - Hedgerow
h3 – dense scrub	Dense Scrub A21	0.24	N/A	The majority of scrub identified within the Survey Area during the habitat survey was mixed scrub (h3h). Some scrub contained scattered trees (32), and/or tall forbs (16). Species common across all scrub areas surveyed included bramble, hawthorn, common nettle, willowherb, elder, willow, and blackthorn.	No
c1c – cereal crop	Arable J11	6.89	N/A	Several arable fields were identified within the survey area, growing cereal crop species including wheat <i>Triticum</i> sp. and barley <i>Hordeum vulgare</i> .	No
u1b – developed land, sealed surface	Hard standing	3.03	294.85	A network of public and private lanes run through the Survey Area.	No
u1b5 - buildings	Buildings J36	0.0053	N/A	Two small buildings were located within the survey area.	No
u1c – artificial unvegetated, unsealed surface	Hard standing	N/A	445.37	A network of public and private lanes run through the Survey Area.	No
u1e – built linear features	Fence J24	0.0193	2913.46	Built linear features were present within the Survey Area, in the form of fence lines.	No
r1g – other standing water ponds)	Eutrophic standing open water R1	0.075	N/A	Two small waterbodies (42) were present in the Survey Area, duckweed <i>Lemna minor</i> was identified in one of the waterbodies.	No

Habitat	Phase 1 code	Area (ha)	Length (m)	Summary Description	Irreplaceable or Priority Habitat
r1g – other standing water (ditches)	Eutrophic standing open water R1	0.022	1377.48	<p>A total of 17 ditches (50) were identified within the Survey Area. These form a network of drainage ditches which are present throughout the wider landscape. Water levels varied with some completely dry.</p> <p>The banks of all ditches comprised of mud and often heavily vegetated. Mud and deep silt substrates were common, with ditches often overgrown with dense vegetation, such as grasses, willowherb, soft rush, creeping buttercup, common reed (<i>Phragmites australis</i>). Other species present included common nettle, cow parsley, hogweed and cock's-foot.</p> <p>One ditch was identified to contain aquatic vegetation including floating sweet-grass <i>Glyceria fluitans</i>, hemlock water dropwort <i>Oenanthe crocata</i> and brooklime <i>Veronica beccabunga</i>.</p>	No
r2b – other rivers and streams	Running open water R2	0.100	614.72	<p>One small stream was identified within the survey area. Active bank side erosion, natural meanders and cattle grazing were evident.</p> <p>Species present included hemlock water drop wort, floating sweetgrass in the channel of the stream. Patches of nettles, dock, silverweed <i>Potentilla anserina</i>, thistle, cow parsley and soft rush evident within the bankside vegetation.</p>	
NOT SURVEYED		6.87	N/A		
TOTAL		141.88	24773.71		

### Aquatic Habitats

- 9.5.40. An aquatic habitat survey of watercourses and waterbodies within the Red Line boundary was completed in June 2024 as detailed within **Appendix 9.8 – Preliminary Aquatic Ecology Appraisal (PAEA) Report (Document Reference: PW.3.3.9.8)**. These assessments form the preliminary phase of the aquatic ecology surveys and were used to characterise watercourses and identify any further survey requirements.
- 9.5.41. Several watercourses scoped out for further assessment during the **PAEA (Document Reference: PW.3.3.9.8)** were characterised by small channel dimensions, extensive shading and limited hydrogeomorphic activity (low energy systems) with adjoining grazing/arable land-use. Habitat diversity was poor, with low water levels and uniform bed profiles dominated by glide/slack flow and fine sediment, no or few channel features (such as pools, riffles, and bars) and no or few marginal features (such as exposed/submerged tree roots and undercut banks. This included several ditches which were dry at the time of survey.
- 9.5.42. Whilst most watercourses assessed during the PAEA were characterised by poor habitat diversity, nine watercourses did comprise a more diverse substrate type, canopy cover, overhanging riparian vegetation and in channel aquatic vegetation. These watercourses contained suitable habitat essential to support aquatic species including fish, aquatic macroinvertebrates and macrophytes.
- 9.5.43. Habitat diversity at Wepre Brook and the River Alyn was observed to be better than other watercourses; varying flow types and a range of substrate (gravel, pebble, and cobble with overlying silt) were recorded. The River Alyn had varying water depths; multiple in-channel features, including an unvegetated side bar; undercut banks and exposed tree roots all of which provide habitat diversity for aquatic species. Wepre Brook had undercut banks, and gravel substrate with marginal/in-channel emergent vegetation, providing additional cover for aquatic species.
- 9.5.44. Following the outcome of the aquatic habitat survey, pond PSYM surveys were conducted on five ponds as detailed within **Appendix 9.9 Aquatic Ecology Survey Report (Document Reference: PW.3.3.9.9)**. Waterbody diversity was generally poor; characterised by poor water quality and low macrophyte diversity. PSYM quality categories ranged from very poor to moderate as overall diversity was poor.

## Species

- 9.5.45. The desk study, extended Phase 1 habitat and aquatic habitat surveys identified habitats suitable for the following species or species groups:
- Great crested newt;
  - Bats;
  - Badger;
  - Barn owl;
  - Breeding birds;
  - Wintering birds;
  - Reptiles;
  - Water vole;
  - Otter;
  - Fish;
  - Aquatic macroinvertebrates (including white clawed crayfish (*Austropotamobius pallipes*); and
  - Macrophytes.
- 9.5.46. Species-specific surveys were completed to obtain baseline information to determine the presence, or otherwise, of protected and/or notable species within the Red Line Boundary. Full methodologies and results of each receptor surveyed are detailed within **Appendices 9.1 to 9.8 (Document References: PW.3.3.9.1 – PW.3.3.9.8)** and have been summarised in **Table 9.10** below.
- 9.5.47. Targeted surveys for other species not listed above were not undertaken for this assessment but were recorded where incidentally observed during other surveys. Given the broadly short term, temporary and localised nature of the Padeswood Spur Pipeline Proposed Development and acknowledging the distribution and abundance of suitable habitat within the surrounding landscape, general mitigation measures to safeguard wildlife, provided within **Section 9.8** and **9.10**, are considered sufficient to safeguard other species.

**Table 9.10 - Desk Study and Field Study Results relating to Red Line Boundary**

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
Great crested newt	<p><b>Desk Study</b></p> <p>Three statutory sites which have GCN as a qualifying feature are present within 1 km of the Padeswood Spur Pipeline Proposed Development; Deeside and Buckley Newt Sites SAC (0.07 km), Maes Y Grug SSSI (0.07 km) (overlapping designation with the SAC) and Buckley Claypits SSSI (0.9 km).</p> <p>Four non-statutory sites which refer to GCN within the designation are present within 2km of the Padeswood Spur Pipeline Proposed Development. Desk study data for GCN obtained by Cofnod during the ecological desk study included 110 records of GCN within 2 km of the Survey Area, from the past 10 years.</p> <p>A desk-based study identified 48 waterbodies through a digital aerial imagery search, four further waterbodies were identified during habitat surveys increasing the total identified waterbodies within 250 m of the Survey Area to 52. Not all 52 identified waterbodies were subject to all surveys. Ponds were scoped out from surveys for a variety of reasons, including being dry at the time of survey, being monitored by a conservation organisation or as part of a European Protected Species (EPS) mitigation licence, or access via landowner agreement not being in place.</p> <p><b>Field Survey</b></p> <p>Twenty one waterbodies were subject to a Habitat Suitability Index (HSI) assessment, of these, 20 waterbodies were subject to eDNA presence/likely absence surveys. Two positive results for GCN were returned from eDNA surveys and GCN were recorded in a third pond during an initial presence/likely absence survey visit.</p> <p>Waterbodies 10, 11 and 41 were subject to traditional surveys of six visits between May and June 2024. Waterbodies 10 and 11 had a peak count of one GCN and P41 a peak count of three GCN indicating two 'low' population sizes within the Survey Area recorded by WSP surveys in 2024.</p> <p>The GCN data provided by third party surveys from 2023 and 2024 (Wildground and Enfys) confirmed the presence of an 'excellent' GCN population present within Deeside and Buckley Newt Sites SAC/Maes Y Grug SSSI and an unknown population size at the Padeswood Cement Works. All identified GCN populations and their supporting aquatic and terrestrial habitat will be taken into consideration for the Padeswood Spur Pipeline Proposed Development design and the need for mitigation and licensing during construction, due to functionally linked land and connecting terrestrial habitat between the Site and the waterbodies with a known GCN presence.</p>	<p>GCN are afforded protection under the Habitats Regulations (HMSO, 2017a) and WCA (HMSO, 2000). GCN are also afforded additional consideration under the Environment (Wales) Act (HMSO, 2016).</p>	National	<p>Appendix 9.3 - Great Crested Newt Survey Report (Document Reference: PW.3.3.9.3).</p>

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
<p>Bats – Roosting Foraging and commuting</p>	<p><b>Desk Study</b></p> <p>The desk study did not return any internationally designated sites for bats within 30 km of the Red Line Boundary or nationally designated sites designated for bats within 2 km of the Red Line Boundary.</p> <p>A total of 18 bat roost records and 55 bat activity survey records were identified within 5 km of the Red Line Boundary in the last 10 years. Desk study records included nine bat species comprising common pipistrelle (<i>Pipistrellus pipistrellus</i>) soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) brown long-eared bat (<i>Plecotus auritus</i>) noctule (<i>Nyctalus noctula</i>) whiskered bat (<i>Myotis mystacinus</i>) Natterer's bat (<i>M nattereri</i>) Brandt's bat (<i>M. Brandtii</i>) Daubenton's bat (<i>M. Daubentonii</i>) and lesser horseshoe bat (<i>Rhinolophus hipposideros</i>).</p> <p>The closest roost records (within 0.5 km of the Study Area) included the following species natterer's bat, Daubenton's bat, whiskered bat and lesser horseshoe bat.</p> <p><b>Field Survey</b></p> <p>Habitats across the Padeswood Spur Pipeline Proposed Development were assessed as having high and moderate suitability for flightpaths and foraging habitats for bats. Habitats included woodland, hedgerows, ditches, scattered mature trees and grassland areas.</p> <p>Based on the indicative route a total of seven PRF-M trees (T27, T31, T90, T106, T265, T266 and T267) and ten PRF-I trees (T351, T354, T468, T361, T362, T269, T281, T326, T478 and T345) had the potential to be directly affected by the Padeswood Spur Pipeline Proposed Development (<b>Figure 9.10</b>).</p> <p>A common pipistrelle bat roost was found at T275 located on the final Red Line Boundary, with a single bat found to re-enter during an emergence survey undertaken during one of the three visits. The roost at T275 is to be retained (<b>Figure 9.10</b>). No further roosts have been identified at this stage.</p> <p>There are no buildings or structures located within the Red Line Boundary.</p> <p>A total of 38 automated static detectors were deployed at crossing points where hedgerows were identified as having a 'Good' suitability based on habitat assessments and the WSP Bat Habitat Suitability Assessment methodology, along with a small number of ancient woodland locations (for baseline data which are not to be directly affected by the Padeswood Spur Pipeline Proposed Development).</p> <p>The following species were recorded (starting with the most frequently occurring): common pipistrelle, soprano pipistrelle, <i>Myotis</i> species, brown long-eared, noctule, lesser horseshoe bat, Nathusius' pipistrelle, serotine and a single barbastelle pass.</p>	<p>All bat species in the UK are principally afforded protection under the Habitats Regulations (HMSO, 2017a) and WCA (HMSO, 1981). Certain bat species are also afforded additional consideration under the Environment (Wales) Act (HMSO, 2016).</p> <p>Common pipistrelle are Britain's commonest bat species, being widely distributed across the UK. The population of common pipistrelle are considered to have increased from across the UK. (Wray, S., Wells, D., Long, E. and Mitchell-Jones, T., 2010) classify common pipistrelle as common in both England and Wales with roosts attributed a local valuation (Bat Conservation Trust, 2024).</p> <p>Soprano pipistrelles are widely distributed across the UK and alongside the common pipistrelle are considered one of Britain's commonest species (Bat Conservation Trust, 2024), with the population stable within the UK; it is a Priority Species. (Wray, S., Wells, D., Long, E. and Mitchell-Jones, T., 2010) classify soprano pipistrelle as common in both England and Wales with roosts attributed a local valuation.</p> <p>Noctule are considered relatively common and widespread across England and Wales with the population considered to be stable with the UK classify noctule as rarer in England and rarest in Wales with roosts attributed a regional valuation (Wray, S.,</p>	<p>Common pipistrelle – Local</p> <p>Soprano pipistrelle – Local</p> <p>Noctule – Local</p> <p>Brown long eared – Local</p> <p><i>Myotis</i> species – Local</p> <p>Barbastelle –County</p> <p>Lesser horseshoe – County</p> <p>Serotine - County</p>	<p>Appendix 9.4 - Bat Survey Report (Document Reference: PW.3.3.9.4).</p>

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
	<p>The hedgerow crossing points with the highest Bat Activity Index Value (BAIV) with over 100 passes per hour (pph) were attributed to common or soprano pipistrelle bats and were located at:</p> <ul style="list-style-type: none"> <li>• Summer monitoring: S3 (122.42 pph); S4 (113.65 pph); S5 (107.01 pph); S9 BL (144.23 pph); S13 (128.44 pph); S14 (174.26 pph); S22 (121.57 pph) and S33 (110.68 pph).</li> <li>• Autumn monitoring: S11 (127.29 pph) and S31 (119.62 pph).</li> </ul> <p>These locations are shown in <b>Figure 9.11</b> and full crossing point data is located in <b>Appendix 9.4 - Bat Survey Report, Document Reference: PW3.3.9.4.</b></p>	<p>Wells, D., Long, E. and Mitchell-Jones, T., 2010).</p> <p>Brown long-eared bat is considered common and widespread across England and Wales (Bat Conservation Trust, 2024) with the population considered to be stable within England and to have increased in Wales (Bat Conservation Trust, 2024). Wray <i>et al</i> (2010) classify brown long-eared bat as common in England and rarer in Wales with roosts attributed valuations of local and regional, respectively.</p> <p>Barbastelle is a very rare species, only found in southern and central England and Wales. It is a Priority Species and a record of a single foraging barbastelle was identified through the automated static monitoring surveys. This is valued at County level.</p> <p>Serotine is only infrequently recorded in Wales. This species is assumed as valuable at County level.</p> <p>Wales is a stronghold for lesser horseshoe bats, whilst this species has declined nationally, there is evidence of an increase in Wales, including North Wales and this species is valued at County level.</p> <p>One pipistrelle roost of a single soprano pipistrelle has been identified in a tree (T275).</p> <p>Roosts of common species (pipistrelle species and brown long-eared bat) are of a Local value.</p> <p>The extent of features identified with suitability to support</p>		

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
		roosting bats across the Survey Area has also been taken into account as part of each species valuation.		
Badger	<p><b>Desk Study</b> The desk study identified 278 records of badger within 2 km of the Red Line Boundary of the Padeswood Spur Pipeline Proposed Development. No records of badger were identified within the Red Line Boundary; however, the closest record was 10m north of the Red Line Boundary.</p> <p><b>Field Survey</b> During the field survey evidence of badger was recorded throughout the Padeswood Spur Pipeline Proposed Development. The following setts were recorded within the Red Line Boundary or within 30 m of the Red Line Boundary:</p> <ul style="list-style-type: none"> <li>• 2 main setts (S7 and S14);</li> <li>• 2 subsidiary setts (S6 and S12) and</li> <li>• 5 outlier setts (S3, S5, S8, S11 and S15).</li> </ul> <p>These are described and shown in the Confidential Badger Survey Report (<b>Appendix 9.6, Document Reference PW 3.3.9.6</b>). Additionally, signs of badger including guard hairs, snuffle holes, latrines, dung pits and footprints were recorded evidencing presence of badger across the Padeswood Spur Pipeline Proposed Development.</p>	Badgers and their setts are afforded protection within the UK under the Protection of Badgers Act 1992 (HMSO, 1992) and the WCA (HMSO, 1981). However, badgers are not identified as a Priority Species. The valuation has taken into account presence of setts located across the Survey Area and the propensity for badger to move throughout a landscape. The surrounding landscape connected to the Survey Area includes extensive habitat with potential for badger sett creation and foraging.	Local	Appendix 9.6 - Badger Survey Report (Confidential) ( <b>Document Reference: PW.3.3.9.6</b> ).
Riparian Mammals (Otter and Water vole)	<p><b>Desk Study</b> Of the 35 watercourses identified within the Red Line Boundary, ten were scoped out prior to the surveys. Out of the remaining 25 watercourses, all have been subject to at least one survey. Of these, three were scoped out following the first suite of surveys due to lack of habitat suitability and therefore no further riparian mammal surveys were required. Five watercourses were assessed as unsuitable following the second suite of surveys.</p> <p><b>Otter</b> A total of 12 records of otter within 2 km of the pipeline route from the past ten years were obtained. Three records of otter exist within the Red Line Boundary of the route, associated with the River Alyn. The most recent of these is from 2016.</p> <p><b>Water Vole</b> One record of water vole within 2 km of the pipeline route was obtained. This record is from 2014 and located approximately 0.10 m from the route red line boundary.</p> <p><b>Field Survey</b> <b>Otter</b></p>	<p>Otter is afforded protection under the Habitats Regulations (HMSO, 2017a) and WCA (HMSO, 1981). Water vole are afforded protection under the WCA (HMSO, 1981). Otter and water vole are additionally listed as a Priority Species under the Environment (Wales) Act (HMSO, 2016).</p> <p>Evidence of otter activity has been recorded on two watercourses across the Survey Area and, given their propensity to move throughout a landscape, their presence is considered likely.</p> <p>Habitat suitable for supporting water vole is present within the Survey Area but no evidence of</p>	Otter – Local Water Vole – not present	Appendix 9.7 - Riparian Mammal Survey Report ( <b>Document Reference PW.3.3.9.7</b> ).

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
	<p>A summary of the riparian mammal survey results, including habitat suitability and field signs recorded, for each of the watercourses surveyed is presented on <b>Figure 9.8</b> and <b>Figure 9.9 (Document Reference: PW.3.4.9.8 and PW.3.4.9.9)</b>. An otter footprint was identified on the banks of the River Alyn during the June survey. An otter spraint was identified on Wepre Brook during the September survey. No other otter field signs were observed.</p> <p><b>Water Vole</b></p> <p>Some small mammal burrows were observed on the following watercourses: River Alyn and Tributary of River Alyn 5, however, due to the absence of any other field signs these have not been conclusively attributed to water vole. Small mammal footprints were identified on the River Alyn and Black Brook Tributary 2 during the September surveys; however, they have not been conclusively attributed to water vole. American mink footprints were identified on the River Alyn during the September survey.</p>	<p>water vole was recorded although records in the wider area exist. The challenges faced by water vole in terms of geographic distribution and conservation status have been taken into account as part of this valuation and it is considered that water vole are not present within the Survey Area, therefore no valuation is provided.</p>		
Fish	<p><b>Desk Study</b></p> <p>The desk study returned two records of European eel (<i>Anguilla anguilla</i>) within 2 km of the Padeswood Spur Pipeline Proposed Development Red Line Boundary (approximately 0.75km to the west and 0.4 km to the south-east) (Cofnod, 2023). One INNS was returned in the desk study, the goldfish <i>Carassius auratus</i>. No further records of fish were returned within 2 km of the Red Line Boundary.</p> <p><b>Field Survey</b></p> <p>Following the PAEA, several watercourses within the Padeswood Spur Pipeline Proposed Development Red Line Boundary were identified as suitable to support fish and as such further surveys were undertaken.</p> <p>A single run electric fishing survey was completed on Wepre Brook where one species was caught, the 3-spined stickleback <i>Gasterosteus aculeatus</i>. eDNA samples were also taken from Bracken's Drain, Black Brook Tributary 2 and Well's Drain but no fish DNA was returned at any of these locations.</p>	<p>All native freshwater fish species are afforded a level of protection under the Salmon and Freshwater Fisheries act 1975 (HMSO, 1975).</p> <p>European eel are listed as a SPI under the Environment (Wales) Act (HMSO, 2016). European eel are also listed under the Eels (England and Wales) Regulations 2009 (HMSO, 2009). European eel are listed as Critically Endangered under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Pike, Crook, &amp; and Gollock, 2020).</p>	National	<p>Appendix 9.8 – Preliminary Aquatic Ecology Appraisal (Document Reference: PW.3.3.9.8) and Appendix 9.9: Aquatic Ecology Baseline Report (Document Reference: PW.3.3.9.9).</p>
Aquatic Macroinvertebrates	<p><b>Desk Study</b></p> <p>One record of mud pond snail <i>Omphiscola</i> sp. was returned within 2 km of the Red Line Boundary (approximately 1.8 km to the east) (Cofnod, 2023).</p> <p>EA data was returned from a survey on Shotwick Brook (NGR SJ 32084 69059), approximately 6 km to the north-east of the Red Line Boundary from 2018. Shotwick Brook is not directly hydrologically connected to the Red Line Boundary but drains into the River Dee estuary which is less than 2 km upstream of confluence of Wepre Brook with the River Dee. One species of conservation interest was</p>	<p>No aquatic macroinvertebrate species were returned in the desk study or field survey that are listed on Schedule 5 of the WCA or listed as a SPI under the Environment (Wales) Act.</p> <p>The valuation has taken into account the conservation value of the aquatic macroinvertebrate species</p>	Local	<p>Appendix 9.8 – Preliminary Aquatic Ecology Appraisal (Document Reference: PW.3.3.9.8) and Appendix 9.9: Aquatic Ecology Baseline Report (Document</p>

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
	<p>identified, the salt marsh snail (<i>Assiminea grayana</i>). Twenty-six further species were recorded, including two non-native species the New Zealand mud snail (<i>Potamopyrgus antipodarum</i>) and the freshwater amphipod (<i>Crangonyx pseudogracilis/floridanus</i>). However, it must be noted that these are both widespread throughout the UK and are now considered naturalised.</p> <p><b>Field Survey</b></p> <p>Following the PAEA, several watercourses within the Red Line Boundary were identified as suitable to support aquatic macroinvertebrates including white clawed crayfish and as such further surveys were undertaken.</p> <p>Aquatic macroinvertebrate samples were taken at seven locations in summer 2024 and nine locations in autumn 2024. The results indicate that the aquatic macroinvertebrate communities within the Red Line Boundary are under pressure from both flow and fine sediment. Two aquatic macroinvertebrate species of conservation interest were recorded following the surveys, the flatworm (<i>Planaria torva</i>) and the leech (<i>Dina lineata</i>) which are both Regionally Notable species. One non-native New Zealand mud snail was also identified at five of the summer sampling locations.</p> <p>eDNA sampling for crayfish was undertaken at a location on the River Alyn and Wepre Brook. No crayfish eDNA was detected in either of the samples.</p>	<p>found within the desk study and field surveys, the number and connectivity of the waterbodies across the wider landscape, the ability for species expansion across the landscape and the expected recolonisation of species following potential loss from an area.</p>		<p>Reference: PW.3.3.9.9).</p>
<p>Macrophytes</p>	<p><b>Desk Study</b></p> <p>No legally protected macrophyte species or macrophyte SPI were identified within 2 km of the Red Line Boundary from the Cofnod North Wales Environmental Records. However, 11 records of locally important macrophyte species were identified at several locations within 2km of the Red Line Boundary.</p> <p>Three records of Canadian waterweed (<i>Elodea canadensis</i>) were identified (approximately 0.6 km to the south-east, 1.4 km to the north, and 1.7 km to the east), as well as two records of least duckweed (<i>Lemna minuta</i>) (approximately 0.36 km to the south-east and 9.6 km to the north-east).</p> <p><b>Field Survey</b></p> <p>Following the PAEA, several watercourses within the Red Line Boundary were identified as suitable to support macrophytes and as such further surveys were undertaken.</p> <p>Macrophyte surveys were undertaken on eight watercourses within the Red Line Boundary. The macrophyte communities recorded are typical of those that dominate under moderately to highly nutrient enriched conditions. No species of conservation interest was recorded during the surveys.</p>	<p>No macrophyte species were returned in the desk study or the field surveys that are listed under the Habitats Regulations (HMSO, 2017a), the Environment (Wales) Act (HMSO, 2016) or WCA (HMSO, 1981) Schedule 8.</p> <p>The valuation has taken into account the distribution and abundance of macrophytes within the Red Line Boundary and their propensity to spread across a landscape where connected watercourses are present.</p>	<p>Local</p>	<p>Appendix 9.8 – Preliminary Aquatic Ecology Appraisal (Document Reference: PW.3.3.9.8) and Appendix 9.9: Aquatic Ecology Baseline Report (Document Reference: PW.3.3.9.9).</p>

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
Breeding Birds	<p><b>Desk Study</b></p> <p>Habitats within the Survey Area, including arable fields, grasslands, woodland, scrub, hedgerow, trees and standing water provide suitable habitat for nesting, roosting, foraging and breeding birds. A barn owl box was recorded (TN8) within the Red Line Boundary which may be utilised by breeding barn owl (<b>Figure 9.6</b>).</p> <p><b>Field survey</b></p> <p>Breeding bird surveys were not included within the survey programme for Padeswood. Justification for this decision is that - breeding birds surveys are designed to focus on a specific season, the breeding bird survey season is taken to be from mid-March until early July (inclusive). The project was confronted with limited time which necessitated a more focused approach to breeding birds. In addition, changes in the pipeline route land access will have severely limited the planning of breeding bird surveys.</p>	<p>All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), and additional protection is extended to species listed under Schedule 1 such as Cetti's warbler. The BoCC list does not confer additional protection under legislation or planning policy, however it provides a basis for informing evaluation of a Site and for targeting conservation effort and is a widely used resource for interpreting bird populations. Evaluation of the Site for breeding birds has been based on desk study, professional opinion of the habitats present and guidance from (Eaton, Mark &amp; Brown, Andy &amp; Noble, David &amp; Musgrove, Andy &amp; Hearn, Richard &amp; Aebischer, Nicholas &amp; Gibbons, David &amp; Evans, Andy &amp; Gregory, Richard., 2009).</p>	Local	Not Applicable.
Wintering Birds	<p><b>Desk Study</b></p> <p>Habitats within the Survey Area, including arable fields, grasslands, woodland, scrub, hedgerow, trees and standing water are likely to provide suitable habitat for nesting, roosting, foraging and breeding birds.</p> <p>The River Dee Estuary SPA and Ramsar site is located 3.8 km north of the Site with suitable habitat present within the Padeswood Spur Pipeline Proposed Development to be utilised by migratory and overwintering wildfowl and waders.</p> <p><b>Field Survey</b></p> <p>Wintering bird surveys were not included within the survey programme for Padeswood. No habitats likely to support wintering birds in significant numbers were identified through desk study and this was verified through the habitat survey.</p>	<p>All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), and additional protection is extended to species listed under Schedule 1 such as Cetti's warbler.</p> <p>The BoCC list does not confer additional protection under legislation or planning policy, however it provides a basis for informing evaluation of a Site and for targeting conservation effort and is a widely used resource for interpreting bird populations.</p> <p>Evaluation of the Site for wintering birds has been based on desk study, professional opinion of the habitats present</p>	Redshank – Regional All other species - Local	Not Applicable.

Receptor	Desk Study and Field Study Results Summary	Rationale for Valuation	Importance	Relevant Appendix
bird surveys	<p><b>Desk Study</b> North Wales Environmental Information Services: Cofnod, returned 10 records of barn owl within a 2 km search area from the Site. The closest record for barn owl was located approximately 0.6km north-west. The results from the assessment of the habitat surveys include: 5 Potential Nesting Site (PNS) and 3 Temporary Roosting Site (TRS) no barn owl pellets recorded, or barn owl observations were recording during the survey.</p> <p><b>Field survey</b> A barn owl box was recorded within the Padeswood Cement Works at the site of the proposed Padeswood AGI (TN8) which may be utilised by breeding barn owl (Figure 9.6).</p>	<p>and guidance from Eaton <i>et al.</i> (2009).</p> <p>Barn owls are afforded protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (HMSO, 1981). Barn owl is included the Green List of Birds of Conservation Concern (Eaton, Mark &amp; Brown, Andy &amp; Noble, David &amp; Musgrove, Andy &amp; Hearn, Richard &amp; Aebischer, Nicholas &amp; Gibbons, David &amp; Evans, Andy &amp; Gregory, Richard., 2009). An evaluation of the Site for barn owl has been undertaken based on desk study, survey data and guidance from (Shawyer, C. R. , 2011)</p>	Local	Appendix 9.2 – Preliminary Ecological Appraisal Report ( <b>Document Reference: PW.3.3.9.2</b> ).

## FUTURE BASELINE

- 9.5.48. The future baseline scenario has considered the Padeswood Carbon Capture and Storage (CCS) Plant as developed prior to the Padeswood Spur Pipeline Proposed Development commencing. In the event the Padeswood Spur Pipeline Proposed Development does not proceed, it is considered likely that habitats within the Padeswood Spur Pipeline Proposed Development Red Line Boundary will remain similar to that of the current baseline. The current land use is predominately agricultural, with a combination of arable and grazing pastures, thus it is considered that ecological conditions will be unlikely to significantly change in the absence of the Padeswood Spur Pipeline Proposed Development. Where agricultural management practices cease or lapse over time, natural succession will be expected.
- 9.5.49. Although species abundance and distribution within the Survey Area may naturally fluctuate, in the absence of the Padeswood Spur Pipeline Proposed Development it is assessed there will be no significant changes to species or habitat status aside from natural succession of habitats and natural increases and decreases in species populations and geographical extent.
- 9.5.50. Anthropogenic influences and future development will be anticipated within the footprint of the Survey Area given the presence, and likely continued expansion, of urban and suburban areas. Such developments, alone or in combination, are likely to have an effect on habitat and species distribution and number within the landscape.
- 9.5.51. A review of information from **Chapter 7 - Climate Resilience (Document Reference: PW.3.2.7)** has also been undertaken to confirm a Future Baseline and assess any impacts within the context of climate change. The UKCP18 (Met Office, 2018) probabilistic projections for RCP8.5, (high emission scenarios) have been used to inform future changes in a range of climate variables that may affect the vulnerability of the Padeswood Spur Pipeline Proposed Development to climate change. The Padeswood Spur Pipeline Proposed Development is partly located along the River Alyn, flowing into the River Dee and out to the Irish Sea. The Padeswood Spur Pipeline Proposed Development is not likely to be impacted by sea level rise due to its location and the proposed pipeline will be located at least 75m above sea level; due to the local topography where ground level is at least 100m above sea level. With regards to future changes, rising winter temperatures are likely to reduce the amount of precipitation that falls as snow in winter.

## 9.6. SENSITIVE RECEPTORS

9.6.1. The following Sensitive Receptors have been assessed and are displayed in **Table 9.11** below.

**Table 9.11 - Sensitive Receptors**

Value/Sensitivity of Receptors	Receptor
Negligible	Other Mammals including brown hare and hedgehog
	Waterbodies
	Invasive Non-Native Species (INNS)
	Reptiles
Minor	Wintering Birds
	Breeding Birds
	Aquatic Macroinvertebrates
	Macrophytes
Moderate	Non-Statutory Designated Sites
	Watercourses
	Habitats of Conservation Importance e.g. Ancient Woodland, Hedgerows, and Priority Habitats
	Great Crested Newts
	Badger
	Bats
Major	Statutory Designated Sites
	Fish

9.6.2. In addition to the above, although INNS are not considered to be 'important' as such in a biodiversity context as they have a negative effect on biodiversity, INNS also require specific consideration during construction to ensure that INNS are not spread as a result of the Padeswood Spur Pipeline Proposed Development. INNS found within the Survey Area are detailed within **Preliminary Ecological Appraisal Report -Appendix 9.2 (Document Reference: PW.3.3.9.2)**. INNS are scoped out of further assessment as their presence can be a factor causing a negative effect on biodiversity receptors, rather than being a receptor in their own right.

## **9.7. DESIGN DEVELOPMENT, IMPACT AVOIDANCE AND EMBEDDED MITIGATION**

9.7.1. Table 9.12 presents measures that have been embedded into the design of the Padeswood Spur Pipeline Proposed Development. These include a suite of measures to provide preliminary avoidance of important ecological features alongside mitigation to ameliorate impacts resulting from the Padeswood Spur Pipeline Proposed Development at the Preliminary Design stage.

**Table 9.12 - Embedded mitigation designed for the Padeswood Spur Pipeline Proposed Development**

Receptor	OEMP Reference	Description
Statutory Designated sites	Including, but not limited to: PW-BD-001 and PW-WR-031	<p>The Padeswood Spur Pipeline Proposed Development will be close to Maes y Grug Site of Special Scientific Interest (SSSI) a compartment of the Deeside and Buckley Newt Sites Special Area of Conservation (SAC). The SAC will not directly be affected. Great crested newt habitats outside the SAC in which animals could be sheltering or migrating will be affected by the proposals where vegetation clearance is necessary and there is the risk of injuring great crested newts during habitat removal, particularly hedgerows or scrub depending on the timing of construction (and de-commissioning). The development could also result in barriers to amphibian dispersal/migration to ponds.</p> <p>Wepre brook in the north of the Red Line Boundary is hydrologically connected to the River Dee Estuary SPA, SAC and Ramsar, land within the north of the Site is suitable for overwintering species such as wildfowl and waders which could utilise the habitat for roosting and feeding. Trenchless installation techniques are proposed underneath Wepre Brook which reduces the likelihood of pollution impacts/hydrological changes to the watercourse. Habitat loss within the Padeswood Spur Pipeline Proposed Development is temporary and minor in relation to the suitable habitat associated with functionally linked land of the Dee Estuary. Noise and visual disturbance during the Construction Stage will be short term and unlikely to impact populations of birds roosting and foraging.</p> <p>The River Alyn which is hydrologically connected to the River Dee and Bala Lake SAC at present will not be directly impacted by the Padeswood Spur Pipeline Proposed Development, embedded mitigation will minimise any impacts including prevent pollution or disturbance to qualifying species such as otter which utilise the watercourse.</p> <p>Development should avoid direct impacts to valuable habitats such as Ancient Woodland through use of trenchless installation techniques. Impacts arising from construction upon habitats and species associated with designated sites will be avoided or reduced.</p> <p>An Outline Environmental Management Plan (OEMP) has been prepared and has been submitted as part of the Planning Application (<b>Document Reference PW.4.1</b>). The OEMP includes the overarching construction management measures the Construction Contractor will implement to avoid and/or reduce the potential environmental impacts during the Construction Stage. The Construction Contractor will adopt the OEMP and use it to produce a detailed Construction Environmental Management Plan (CEMP(s)) for implementation at the Construction Stage.</p>
Ancient Woodland	PW-BD-002	Ancient Woodland has been excluded from the Padeswood Spur Pipeline Proposed Development. Trenchless installation techniques to avoid and reduce adverse effects on Ancient Woodland present within the Padeswood Spur Pipeline Proposed Development will be implemented.
Terrestrial Habitats	PW-BD-003	Micro-siting techniques will be employed throughout the Detailed Design of the Padeswood Spur Pipeline Proposed Development, including during pre-construction and construction to avoid waterbodies, sensitive habitats, trees (including ancient and veteran trees and trees covered by Tree Preservation Orders and trees within Conservation Areas), hedgerows, etc., as much as practicably possible. Where opportunities exist for routing through existing gaps in hedgerows, scrub and woodlands, avoiding the need to remove vegetation, these will be prioritised.
Woodland	N/A	The presence of Priority Habitats: Lowland Mixed Deciduous Woodland and Hedgerows are a key consideration. Land take and vegetation clearance required as part of the Padeswood Spur Pipeline Proposed Development could result in temporary loss of sections of hedgerow habitats. No Lowland Mixed Deciduous Woodland is anticipated to be lost.
Waterbodies	PW-BD-004	All waterbodies identified during baseline surveys are outside the Red Line Boundary and will be retained and will not be temporarily or permanently lost to facilitate construction of the Padeswood Spur Pipeline Proposed Development. Where necessary the ECoW will advise on the need for the installation of temporary exclusion buffer to avoid/reduce potential adverse impacts to waterbodies and associated terrestrial bankside habitat and associated aquatic receptors from construction.
Trees and Hedgerows	PW-BD-005	Where hedgerow removal is required to facilitate the development, it is assumed that this will be kept to a maximum width of 17 m (this includes both hedgerows and the trees within hedgerows). Where the pipeline crosses vegetation at a 90 degree angle, losses will be a maximum of 12 m. All trees and hedgerows sited above any trenchless crossing point will be retained.
Aquatic Habitats and Species	PW-WR-003 PW-WR-011	The Construction Contractor will ensure a sufficient working area is made available for effective sediment management for works near or within watercourses, including adopting a minimum working width practicable for open cut crossings. Sediment traps will be implemented to capture any site runoff within 10 m of watercourses. In addition, any entry or exit pits for trenchless crossings will be located a minimum of 8 m away from main river bank tops.
Habitats and Species	PW-BD-008	Plant, personnel and site traffic will be constrained to a prescribed working corridor through the use of temporary barriers, where practicable, to firstly avoid and secondly minimise damage to habitats, encroachment of the construction easement, and potential direct mortality and/or disturbance of fauna located within and adjacent to the construction corridor

## **9.8. PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS**

- 9.8.1. This section details the preliminary assessment of predicted impacts and effects for the Padeswood Spur Pipeline Proposed Development during the Construction, Operational and Decommissioning Stages.
- 9.8.2. As stated in **Section 9.4** and **Table 9.2**, a number of receptors have been scoped out of the assessment where impacts to the receptor is considered to be less than Moderate adverse.

### **CONSTRUCTION STAGE**

- 9.8.3. The likely significant effects for biodiversity associated with the Construction Stage are set out below in **Table 9.13**.

**Table 9.13 - Likely Significant Effects during the Construction Stage**

Ecological Receptor	Potential Impacts	Likely Significant Effect
<p><b>Statutory Designated Sites (International and National)</b></p>	<p>A HRA Stage 1: Screening to determine if the Padeswood Spur Pipeline Proposed Development has the potential to result in Likely Significant Effects upon qualifying features of the internationally designated sites will be completed. The results of the screening will determine whether mitigation is required to ameliorate potential effects and necessitate progression to Stage 2: Appropriate Assessment. Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Potential vibration caused by trenchless installation activities impacting on GCN within the Red Line Boundary but which are features of the Deeside and Buckley Newt Sites SAC/Maes Y Grug SSSI Site.</li> <li>• Loss of habitat of functionally linked land to Deeside and Buckley Newt Sites SAC/Maes Y Grug SSSI Site which provides terrestrial foraging and refuge opportunities for GCN and suitable commuting corridors to waterbodies within the wider landscape.</li> <li>• Indirect impacts to water quality, hydrological and hydromorphological processes due to changes in groundwater and drainage links to the River Dee SAC/SSSI during construction.</li> <li>• Potential for pollution events (River Alyn and tributaries, Wepre Brook), discharges of sediment, frac-out and release of drill fluid to ground or watercourses/waterbodies during construction. Potential for dispersal downstream in the event of discharge to watercourses, with potential for effects to be spread over a larger distance than the point of origin. Discharge of sediment or drill fluid may impact fauna and flora, both aquatic and terrestrial.</li> <li>• Potential noise/vibration caused by trenchless installation activities impacting on migratory fish/fish passage and other protected species that are qualifying features of the River Dee SAC.</li> <li>• Potential disturbance to qualifying bird species of the River Dee SPA and Ramsar utilising functionally linked land through noise and visual disturbance during construction and decommissioning activities, temporary loss of suitable habitat during construction.</li> <li>• Direct and indirect effects upon statutory designated sites, whilst temporary in nature, may result in negative effects significant at a National/International scale.</li> </ul>	<p>In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance (<i>Significant</i>)</p>
<p><b>Non-Statutory Designated sites</b></p>	<p>Warred Wood and Coed Plas Major are non-statutory designated sites within the Padeswood Spur Pipeline Proposed Development that, in the absence of mitigation, will be impacted by the proposed works. The embedded mitigation of the use of trenchless crossings at Warred Wood and Coed Plas Major will ensure that woodland within these WS for which the sites are designated will not be felled. The following LWS are in close proximity to the Padeswood Spur Pipeline Proposed Development: Bistre Wood, Marleyfield Meadow and Copse, and Coed Argoed but are outside the Red Line Boundary and should not be directly affected. Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Pollution events, discharges of sediment, frac-out and release of drill fluid to ground or watercourses/waterbodies during construction. Potential for dispersal downstream in the event of discharge to watercourses, with potential for effects to be spread over a larger distance than the point of origin. Discharge of sediment or drill fluid may impact fauna and flora, both aquatic and terrestrial.</li> <li>• Potential noise and vibration caused by trenchless installation activities including sheet piling impacting on migratory fish/fish passage and other protected species, such as otter and water vole identified within non-statutory designated sites.</li> </ul>	<p>In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance (<i>Significant</i>)</p>

Ecological Receptor	Potential Impacts	Likely Significant Effect
	<ul style="list-style-type: none"> <li>Potential disturbance as a result of construction activities/movements and noise disturbance and artificial illumination of habitats from lighting due to the proximity of construction activities.</li> <li>Temporary and short-term habitat severance/fragmentation of functionally linked habitat in proximity to non-statutory designated sites.</li> <li>Direct and indirect effects upon non-statutory designated sites, whilst temporary in nature, may result in negative effects significant at a County scale.</li> </ul>	
Ancient Woodland and Priority Habitats (excluding waterbodies and watercourses)	<p>Ancient Woodland and Lowland Mixed Deciduous Woodland and Hedgerows Priority Habitats are found within the Red Line Boundary.</p> <p>Several small parcels of woodland are located across the survey area with the majority identified as Lowland Mixed Deciduous Woodland Priority Habitats. Four areas within or adjacent to the Red Line Boundary are identified as ancient woodland sites including Bistre Wood, Coed Plas Major, Warred Wood, Coed Argoed.</p> <p>The embedded mitigation of the use of trenchless crossings at Warred Wood and Coed Plas Major will ensure ancient woodland will not be felled. Potential impacts could include:</p> <ul style="list-style-type: none"> <li>Temporary short-term and permanent direct and indirect loss and/or damage (through compaction and disturbance) of woodland and soils could result from construction activities in the vicinity of woodlands without mitigation.</li> <li>There is potential for permanent and temporary loss and fragmentation of woodland and hedgerows due to land clearance requirements to facilitate construction.</li> <li>There is potential for dust emissions, noise and vibration disturbance and artificial illumination from lighting due to the proximity of construction activities.</li> <li>Damage to retained habitat due to changes in hydrological conditions.</li> <li>Damage to retained woodland (e.g. damage to roots of trees), impacting receptor health or longevity.</li> <li>Direct and indirect effects upon Priority Habitats, including temporary and short-term impacts and permanent impacts, may result in negative effects significant at a County scale.</li> </ul>	In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance ( <i>Significant</i> )
Hedgerows (Priority Habitats)	<p>Potential impacts to hedgerow include the following:</p> <ul style="list-style-type: none"> <li>Temporary and permanent direct and indirect loss and/or damage (through compaction and disturbance) of all hedgerows within the footprint of the Padeswood Spur Pipeline Proposed Development due to open cut trench techniques.</li> <li>Temporary and short-term fragmentation of hedgerows due to land clearance requirements to facilitate construction.</li> <li>Potential for dust emissions, noise and vibration disturbance and artificial illumination from lighting due to the proximity of construction activities.</li> <li>Damage to retained habitats/features (e.g. damage to roots of trees and hedgerows), impacting receptor health or longevity.</li> <li>Direct and indirect effects to hedgerows, including both temporary and short term, and permanent effects, may result in negative effects significant at a County scale.</li> </ul>	In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance ( <i>Significant</i> )
Aquatic habitat - Watercourses	Potential impacts to watercourses include:	In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance ( <i>Significant</i> )

Ecological Receptor	Potential Impacts	Likely Significant Effect
	<ul style="list-style-type: none"> <li>• Temporary and permanent direct and indirect loss and/or damage of habitat from open cut trench crossing techniques. Potential habitat fragmentation and loss of sensitive life stage dependent habitat types, flow refugial and cover.</li> <li>• Temporary barriers (culverts and cofferdams) directly impact fish passage, as well as disrupt flow and sedimentation dynamics, with indirect loss and fragmentation of habitat upstream and downstream of the crossing point.</li> <li>• Direct and indirect loss and/or deterioration of habitat and water quality, and consequently aquatic species, through accidental pollution and discharge of materials (sediment/drill fluid) into watercourses (including blow-out/frac-out from trenchless installation techniques). Potential for pollution to disperse downstream and effects spread over a wider distance from the point of origin.</li> <li>• Potential spread of invasive non-native species (INNS) during construction activities in close proximity to watercourses.</li> <li>• Direct and indirect effects to aquatic habitats, including both temporary and short term, and permanent effects, may result in negative effects significant at a County scale.</li> </ul>	
Aquatic habitat - Waterbodies	<p>No waterbodies are proposed to be lost to facilitate the Padeswood Spur Pipeline Proposed Development. Construction activities in close proximity to waterbodies may result in the spread of invasive non-native species. Accidental pollution and discharge of materials (sediment/drill fluid) into waterbodies may impact water quality, which may negatively impact aquatic ecology (for example, reduction in oxygen content or increased turbidity) and potentially decrease biodiversity through loss of habitat. There will be direct and indirect effects to waterbodies, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.</p>	In the absence of secondary mitigation, construction could lead to effects of <i>Minor adverse</i> significance ( <i>Not Significant</i> )
Great Crested Newt	<p>Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Temporary (short-term) and permanent loss and/or damage to supporting terrestrial habitats within 250 m of a confirmed GCN waterbody. For example as a result of topsoil stripping and vegetation clearance, and temporary removal of connective features, such as hedgerows to facilitate construction. GCN have been confirmed within the following waterbodies through survey or third party data: Waterbodies 10, 11, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 41, 47 and 48</li> <li>• Temporary short-term reduction in foraging and sheltering opportunities and temporary severance of commuting habitats.</li> <li>• Whilst waterbodies are to be retained, given the proximity of works, potential for temporary disturbance of GCN within or adjacent to waterbodies as a result of indirect impacts (e.g. light spill, dust, vibration) at a national scale.</li> </ul>	In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance ( <i>Significant</i> )
Bat Roosts	<p>Construction of the Padeswood Spur Pipeline Proposed Development will not result in the direct permanent loss of bat roosts or features with the potential to support roosting bats. A bat roost was identified on a boundary tree (T275) which is to be retained, with a single common pipistrelle recorded during one of the three emergence surveys. Further surveys are required of trees within the Red Line Boundary in 2025 to be conducted in the Spring active season of 2025 which was not possible due to land access restrictions in 2024. If further bat roosts are identified at that stage, or during pre-construction surveys appropriate mitigation and licence will need to be in place prior to commencement of construction. Construction may result in temporary short-term disturbance of roosting bats due to the proximity to construction and associated disturbance (noise, vibration, and light levels). There will be direct and indirect effects to roosting bats, including both temporary and short term may result in negative effects significant at a Local scale.</p>	In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance ( <i>Significant</i> )

Ecological Receptor	Potential Impacts	Likely Significant Effect
Bats - Flightpaths and foraging habitats	<p>Flightpaths and foraging habitats of bats will be directly impacted through the removal of up to 17m sections of 'Important'/Priority Habitat hedgerows (locations shown in <b>Appendix 9.5 - Hedgerow Survey Report, Document Reference: PW.3.3.9.5</b>) and hedgerows and or trees (locations provided in <b>Appendix 9.4 - Bat Survey Report, Document Reference: PW.3.3.9.4</b>) to facilitate construction.</p> <p>Construction will cause localised, temporary (short term) and permanent severance to flightpaths and foraging habitats, where sections hedgerows and or trees are removed as a result of construction of the Padeswood Spur Pipeline Proposed Development. Alternative flight paths and foraging habitats will remain intact. Overall direct and indirect effects to flightpaths and foraging habitats, will be localised, temporary and permanent.</p> <p>Construction may result in temporary (short-term) disturbance of flightpaths and foraging habitats for bats due to the proximity to construction and associated disturbance (noise, vibration, and light levels).</p>	<p>In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance (<i>Significant</i>)</p>
Badger	<p>An access track is close to S14, a main sett located outside of the Red Line Boundary, has the potential to cause damage or disturbance during construction.</p> <p>S7 is a main sett within 30 m of the Red Line Boundary from which foraging routes have been identified within woodland within the Red Line Boundary. Direct and or indirect disturbance and direct impacts to foraging routes could result from construction activities for the trenchless crossing in this area. However, S7 is separated from the works location by a road and direct damage to the sett is not anticipated.</p> <p>In addition, an access track is proposed close to subsidiary sett S12 which has the potential to cause damage or disturbance if active at the time of construction. The following subsidiary sett S6, and outlier setts S3, S5, S11, S15 are all within 30 m of the Red Line Boundary and could be affected by damage or indirect disturbance effects.</p> <p>No other setts are to be directly impacted by the Padeswood Spur Pipeline Proposed Development as per the current design.</p> <p>Direct mortality and/or injury to badger as a result of construction activities (e.g. entrapment in voids or vehicle collision risk).</p> <p>Temporary and permanent loss of habitat, such as scrub, grassland and hedgerows impacting foraging and commuting opportunities, as well as potential sett building habitat.</p> <p>Temporary short-term indirect impacts, for example noise, light, dust, visual and vibration disturbance, may occur as a result of construction of the Padeswood Spur Pipeline Proposed Development.</p> <p>Temporary short-term and permanent habitat fragmentation/severance.</p> <p>Direct and indirect effects to commuting badger, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.</p>	<p>In the absence of secondary mitigation, construction could lead to effects of <i>Moderate adverse</i> significance (<i>Significant</i>)</p>
Riparian mammals	<p>Evidence of otter has been recorded within the Study Area, however not directly within the Red Line Boundary. No evidence of water vole has been recorded within the Padeswood Spur Pipeline Proposed Development and associated Study Area.</p> <p>Otter are known for their mobile nature and will often commute across extensive areas to access foraging locations. Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Direct mortality and/or injury to riparian mammals as a result of construction activities.</li> <li>• Temporary and short-term loss of foraging and commuting habitats as a result of construction activities.</li> <li>• Temporary and short-term disturbance (through noise, vibration, and light) and displacement of animals through loss of suitable sheltering, foraging or commuting habitat during construction activities along and adjacent to watercourses.</li> <li>• Temporary and short-term riparian habitat degradation and alteration of aquatic habitats and water quality as a result of pollution events in the absence of mitigation, resulting in impacts to foraging and commuting opportunities.</li> </ul>	<p>In the absence of secondary mitigation, construction could lead to effects of <i>Minor adverse</i> significance (<i>Not Significant</i>)</p>

Ecological Receptor	Potential Impacts	Likely Significant Effect
	<ul style="list-style-type: none"> <li>• Direct and indirect effects to riparian mammals, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.</li> </ul>	
Barn Owl	<p>A barn owl box was recorded within the Padeswood Cement Works near the Proposed Padeswood AGI location which may be utilised by breeding barn owl and without mitigation could be affected by the Padeswood Spur Pipeline Proposed Development. Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Permanent and temporary short-term loss and/or damage to habitat used by foraging and commuting barn owls, e.g., loss of grassland and hedgerows.</li> <li>• Temporary and short-term disturbance and displacement due to increased noise, vibration, visual, dust and light pollution during construction which may also lead to reduced breeding and fledging of chicks.</li> <li>• Direct and indirect effects to barn owl, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.</li> </ul>	In the absence of secondary mitigation, construction could lead to effects of <i>Minor adverse</i> significance ( <i>Not Significant</i> )
Wintering birds	<p>Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Temporary (short-term) habitat loss, including functional loss, of foraging, commuting, and sheltering habitats used by wintering birds.</li> <li>• Temporary short-term disturbance and displacement effects associated with construction affiliated operations, including increased noise, light, vibration and plant or personnel movements. Increased disturbance may lead to increased use of energy resources coupled with a decrease in foraging time, leading to depletion of fat reserves and overall decline in condition and breeding success.</li> <li>• Direct and indirect effects to wintering birds, including both temporary and short-term, and permanent effects, may result in negative effects significant at a Local scale.</li> </ul>	In the absence of secondary mitigation, construction could lead to effects of <i>Minor adverse</i> significance ( <i>Not Significant</i> )
Breeding birds	<p>Potential impacts include:</p> <ul style="list-style-type: none"> <li>• Direct mortality and/or injury as a result of construction activities; accidental loss of nests either directly or indirectly (e.g. through displacement of parent birds leading to loss of chicks/eggs).</li> <li>• Temporary (short-term) and permanent loss of nesting and foraging habitats during construction, for example hedgerow, individual trees, and scrub.</li> <li>• Temporary short-term disturbance and displacement associated with construction affiliated operations, including increased noise, light, vibration and plant or personnel movements. Increased disturbance may lead to increased use of energy resources coupled with a decrease in foraging time, leading to depletion of fat reserves and overall decline in condition and breeding success.</li> <li>• Temporary short -term habitat degradation through incidental pollution events, such as chemical spills and construction drainage run-off, impacting waterbodies and terrestrial habitat that may be used for foraging or nesting.</li> <li>• Direct and indirect effects to breeding birds, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.</li> </ul>	In the absence of secondary mitigation, construction could lead to effects of <i>Minor adverse</i> significance ( <i>Not Significant</i> )
Fish	<ul style="list-style-type: none"> <li>• Habitat severance and barriers to fish migration may occur where there is a requirement for the creation of dry-works areas and temporary culverts.</li> <li>• Temporary short-term disturbance and/or dispersal of fish populations from works areas due to increased noise, light and vibration impacts associated with construction including open cut trench and trenchless</li> </ul>	In the absence of secondary mitigation, construction impacts could lead to effects of <i>Major adverse</i> significance ( <i>Significant</i> )

Ecological Receptor	Potential Impacts	Likely Significant Effect
	<p>crossings (for example, drilling activities, pile driving and vehicle/plant movements), leading to disturbances to fish passage.</p> <ul style="list-style-type: none"> <li>• Temporary short-term habitat and water quality degradation as a result of incidental pollution events (suspended sediment or pollutant run off) may result in direct and indirect mortality and/or injury of fish.</li> <li>• Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage of habitats.</li> <li>• Direct and indirect effects to fish, including both temporary and short term, and permanent effects, may result in negative effects significant at a National scale.</li> </ul>	
Aquatic Macroinvertebrates	<ul style="list-style-type: none"> <li>• Temporary short-term direct and indirect habitat loss through open cut trench crossing techniques.</li> <li>• Temporary short-term disturbance and/or dispersal of aquatic macroinvertebrates from works areas due to increased noise, light and vibration impacts associated with construction of open cut trench crossings and installation of the embedded pipe bridge option (for example, pile driving and vehicle/plant movements).</li> <li>• Temporary short-term habitat and water quality degradation as a result of incidental pollution events (suspended sediment or pollutant run off) may result in direct and indirect mortality.</li> <li>• Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage of habitats.</li> <li>• Direct and indirect effects to aquatic macroinvertebrates, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.</li> </ul>	In the absence of secondary mitigation, construction impacts could lead to effects of <i>Minor adverse</i> significance ( <i>Not significant</i> )
Macrophytes	<ul style="list-style-type: none"> <li>• Open cut trench crossing techniques have the potential to impact macrophyte communities both directly, through riverbank and channel bed removal, and indirectly through water quality degradation as a result of incidental pollution events (suspended sediment or pollutant run off).</li> <li>• Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage of habitats.</li> <li>• Direct and indirect effects to macrophytes, including both temporary and short term, and permanent effects, may result in negative effects significant at a less than Local scale.</li> </ul>	In the absence of secondary mitigation, construction impacts could lead to effects of <i>Negligible</i> significance ( <i>Not significant</i> )

## OPERATIONAL STAGE

- 9.8.4. The likely significant effects for Biodiversity associated with the Operational Stage of the Padeswood Spur Pipeline Proposed Development are presented below.
- 9.8.5. The majority of the impacts of the Padeswood Spur Proposed Development to biodiversity receptors will occur during the construction of the underground Padeswood Carbon Dioxide Spur Pipeline. The Operational Stage of the Padeswood Carbon Dioxide Spur Pipeline is therefore of negligible concern to ecological receptors. Whilst maintenance of the Carbon Dioxide Pipeline may be required throughout its lifecycle, this is likely to be a rare occurrence and impacts associated with such maintenance activities will be short term, temporary and localised.
- 9.8.6. Operation of the Padeswood Spur Pipeline Proposed Development will require new external lighting at each of the AGI locations, where perimeter, local task and emergency lighting will be required. Where lighting is required, this will be of short duration during personnel site presence and during low-light conditions (e.g. winter and night-time working) and will otherwise as default be unlit/turned off. Operation of the AGIs will also result in a marginal increase in noise levels, potentially increasing indirect impacts of noise disturbance, particularly in proximity to AGI locations where baseline noise levels are minimal. This is likely to be short-term, infrequent, and associated with pipeline maintenance activity and are therefore considered to be negligible significance. There will be air conditioning units and fans on the electric and instrumentation kiosks (E&I kiosks) operating continuously but no additional noise-generating equipment is required at Northop AGI which is located in the more rural part of the route. However, given the worst-case predicted noise levels (65 dBA at 1 m, see **Chapter 14 Noise and Vibration, Document Reference: PW.3.2.14** for additional detail) this is considered to be of negligible significance.
- 9.8.7. Receptors that are potentially sensitive to disturbance as a result of operation of AGI locations within the Padeswood Spur Pipeline Proposed Development comprise roosting, commuting, and foraging bats and breeding birds.
- 9.8.8. It is anticipated that these receptors will avoid areas where lighting exists, and where light spill illuminates any areas beyond the boundaries of the AGIs or else will become habituated to their presence. Given the temporary nature of active lighting (i.e. default to being off), impacts associated with lighting are likely to be minimal.

- 9.8.9. Of more concern is the impacts of additional lighting in relation to the presence of more light sensitive species such as lesser horseshoe and brown long eared bats in a landscape where existing lighting is restricted to scattered housing and farms with urban development lying further west and east at Mold and Mynydd Isa respectively.
- 9.8.10. Drainage associated with AGI locations will contain appropriate filtration and treatment devices and designed as such to prevent adverse impacts to watercourses, where drainage leads to outfalls to existing watercourses.
- 9.8.11. Acknowledging the above, impacts arising during the Operational Stage of the Padeswood Spur Pipeline Proposed Development is therefore to be of Negligible significance. Notwithstanding, the lighting specification in terms of lux levels, frequency of use, type of lighting, and direction of light spill, will in rural areas, account for the sensitivity of hedgerows and woodlands.

#### DECOMMISSIONING STAGE

- 9.8.12. The likely significant effects for Biodiversity associated with the Decommissioning Stage are set out below. Full decommissioning details are described within **Section 3-9 of Chapter 3 - Description of the Padeswood Spur Pipeline Proposed Development (Document Reference: PW.3.2.3)**. Decommissioning will include the removal of AGIs, with ground conditions restored to their previous condition and the Padeswood Carbon Dioxide Spur will be decommissioned safely, filled with nitrogen and left in situ.
- 9.8.13. In advance of decommissioning works, ecology surveys will be undertaken, where required, to determine the ecological baseline and presence, or otherwise, of protected and/or notable species to determine any mitigation or licensing requirements in advance of decommissioning works commencing.
- 9.8.14. When considering decommissioning, similar impacts to those identified during construction are anticipated. With the implementation of appropriate mitigation measures prior to, during and following decommissioning, likely significant effects on ecological receptors during decommissioning are assessed to be of Negligible significance (not significant).

### **9.9. MITIGATION AND ENHANCEMENT MEASURES**

- 9.9.1. This Section sets out the preliminary avoidance, mitigation and compensation measures which are likely to be required to address the significant effects as assessed in **Section 8. Table 9.14** sets out the details of mitigation relating to ecology during the Construction Stage.

No additional Operational Stage mitigation or enhancement measures are required as these have been incorporated within embedded mitigation.

- 9.9.2. On the basis the Padeswood Carbon Dioxide Spur Pipeline will remain in situ, impacts arising from decommissioning are not anticipated. Decommissioning of the above ground infrastructure (AGI) may require further mitigation; however, any such requirements will be clarified on completion of an appropriate suite of ecological surveys to establish the baseline at the that time. The **OEMP (Document Reference: PW.4.1)** will cover activities relating to decommissioning.
- 9.9.3. Construction Stage measures have been devised to address significant effects.
- 9.9.4. Embedded mitigation measures (see **Table 9.12**), along with additional measures relating to mitigation, compensation and enhancement, have been included within the design of the Padeswood Spur Pipeline Proposed Development. Within this Section the terms 'mitigation', 'compensation' and 'enhancement' are defined as follows:
- **Mitigation** - the methods, processes and actions put in place to avoid or reduce the potential adverse impacts of the Padeswood Spur Pipeline Proposed Development on ecological receptors.
  - **Compensation** - the measures taken to offset effects as a result of the loss of, or permanent damage to, ecological receptors despite mitigation.
  - **Enhancement** – measures proposed to enhance the status and / or condition of ecological receptors within the Padeswood Spur Pipeline Proposed Development.

#### HABITATS

- 9.9.5. Construction of the Padeswood Spur Pipeline Proposed Development will result in the loss of habitats, for which mitigation and compensation will be implemented.
- 9.9.6. Measures to be incorporated into the design include:
- Retention of existing vegetation where possible;
  - Reinstatement of habitat features where possible maintaining connectivity to existing retained habitat features;
  - Habitat creation to compensate for habitat loss, e.g. hedgerows and trees; and
  - Use of native species and plant stock of local provenance within the mitigation planting design.

### Woodland and Individual Tree Mitigation

- 9.9.7. To facilitate the construction of the Padeswood Spur Pipeline Proposed Development, the loss of trees, both individual trees and those from woodlands, will be required. A reasonable worst-case scenario has been assessed against those trees/woodlands assessed as 'at risk' of removal as assessed within **Appendix 9.1 Arboricultural Impact Assessment Report, Document Reference PW.3.3.9.1**). It is not possible to reinstate trees above or within 12 m either side of the Padeswood Carbon Dioxide Spur Pipeline. Where practicable, trees will be planted as close as possible to those lost, however these are likely to form a mixture of replacement hedgerows and trees.

### Ecological Enhancement

- 9.9.8. Enhancement opportunities will be outlined within the measures in the OEMP (**Document Reference: PW.4.1**), and will include the following:
- 9.9.9. Where possible, cleared deadwood, felled trees and arisings from site clearance works will be used in a variety of locations to benefit wildlife. These locations will be advised by the Ecological Clerk of Works (ECoW) or suitably experienced person and based on site conditions at the time. Materials will be stored in a suitable location away from the working area to prevent risk of damage and then placed within areas of retained woodland or woodland planting at an appropriate time.
- 9.9.10. Additional bat and bird nest boxes could be installed on suitable mature trees/structures or mounted on poles. Bat boxes will be installed in unlit areas on multiple aspects (including facing south, west or east) at a height of a minimum of 3 m and have a clear flight path to the access point. The bat boxes will be located within existing or newly created suitable foraging and commuting habitats. The requirements of the bird boxes will be specific to the type installed and manufacturers advice will be followed. The bat and bird boxes could be placed within existing retained woodlands, during construction or once mature, the boxes could be placed within newly created woodlands, (on poles or mature existing trees along the edge), post-construction.
- 9.9.11. **Table 9.14** below indicates the avoidance, mitigation and enhancement measures that will be incorporated within the Padeswood Spur Pipeline Proposed Development.

**Table 9.14 - Design and Mitigation Measures and their Delivery Mechanisms**

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
Red Line Boundary	Pre-construction and Construction	PW-BD-009	<p>Prior to construction, a team of suitably qualified and experienced Ecological Clerk of Works (ECoWs) will be appointed to support, oversee and monitor the Construction Contractor with the implementation of measures defined within the OEMP (Document reference: PW.4.1). ECoWs may be required during construction to ensure appropriate oversight of multiple active works locations. Broadly, the ECoW will:</p> <ul style="list-style-type: none"> <li>• Provide ecological advice to the Construction Contractor over the entire construction programme, at all times as required.</li> <li>• Undertake or oversee pre-construction surveys for protected species in the areas affected by the Padeswood Spur Pipeline Proposed Development.</li> <li>• Monitor ecological conditions during the Construction Stage to identify additional constraints that may arise as a result of natural changes to ecological baseline over time, e.g., the monitoring of badger activity within and in close proximity to construction works.</li> <li>• Provide ecological toolbox talks to site personnel to make them aware of ecological constraints and information; highlight mitigation to minimise impacts; and make site personnel aware of their responsibility with regards to wildlife and sensitive habitats in the context of legislation and policy. Toolbox talks will include, as required, all ecological receptors considered within the ES as a minimum.</li> <li>• Monitor the implementation of mitigation measures during the Construction Stage to ensure compliance with protected species legislation, licensing, and commitments within the ES.</li> </ul> <p>The ECoW will have previous experience in similar ECoW roles and be approved by the Applicant. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.</p>	To ensure implementation of mitigation measures, track compliance with commitments and legal requirements.
Red Line Boundary	Pre-construction	PW-BD-010	<p>All necessary permits, licences and consents will be applied for from relevant bodies in advance of construction or enabling works commencing. Only once licence/permit applications have been granted, and any initial licensed actions completed, can works commence. Licences and permits are likely to include, but are not limited to, derogation licences for protected species, permits for in-water works, etc. Consents are likely to be required for works in proximity to statutory designated sites (deemed granted through the planning process pending NRW approval).</p>	To protect sites, habitat and fauna.
Red Line Boundary	Pre-construction and Construction	PW-BD-011	<p>The Applicant will appoint a suitably qualified ECoW to conduct Environmental Compliance Audits during construction of the Padeswood Spur Pipeline Proposed Development. The 'Auditing ECoW' will undertake checks of the Construction Contractor and their ECoW(s) reporting on compliance of construction works, mitigation and activities on site against the ES and detailed Construction Environmental Management Plans (CEMPs), as well as any obtained licences, permits or assents.</p> <p>The ECoW will produce monthly reports (or otherwise agreed reporting deadlines in response to on-site activities) and provide written and verbal feedback to the Construction Contractor on performance and adherence with the ES, detailed CEMPs, licences, permits and assents throughout the construction period, as required.</p>	To ensure implementation of mitigation measures and legal requirements.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
Red Line Boundary	Design, Construction, Post-construction		Ecological mitigation measures will be outlined within the OEMP (Document Reference: PW.4.1).	To maintain and enhance ecological features within the landscape.
Red Line Boundary	Design, Pre-construction	PW-BD-012	A pre-commencement walkover survey will be completed by the ECoW (or appointed ecologist) of areas within the Red Line Boundary (extended where necessary to encompass a relevant zone of influence as determined by the ECoW/ ecologist) of any areas that could not be accessed during baseline surveys completed in 2024. The walkover survey shall include a ground level assessment of land in search of presence or activity of protected and or notable species. The walkover survey results will determine the need for additional survey, mitigation and/or licensing beyond that included within the ES; to be considered in advance of construction commencement. Results of surveys and any need for mitigation and licensing will be discussed with relevant stakeholders (e.g. NRW, FCC) where required, with updates captured within the detailed CEMP.	To update baseline survey results and protect species and habitats.
Red Line Boundary	Pre-construction	PW-BD-013	The need for pre-construction surveys to update baseline results across the Red Line Boundary will be assessed by the appointed ecologist/ECoW following confirmation of Detailed Design of the Padeswood Spur Pipeline Proposed Development. Pre-construction surveys may be necessary to update baseline results in advance application of protected species licenses/permits/ exemptions required to facilitate construction of the Padeswood Spur Pipeline Proposed Development.	To protect species.
Red Line Boundary	Pre-construction and Construction	PW-BD-014	Site/vegetation clearance and tree felling will be kept to a minimum as far as practicable to reduce the impacts of habitat loss and fragmentation. Areas of clearance, particularly those within temporary works, shall be identified within a works plan and agreed with the ECoW. Site clearance of dense vegetation will be undertaken carefully (where possible using hand tools) and by experienced contractors to reduce the risk of mortality to wildlife. Care will be afforded to dense stands of bramble or similar vegetation, which may be used by sheltering hedgehog or other wildlife, particularly during the winter months. Where trees and other woody vegetation are to be felled/ cleared, the felled material will, where practicable, be used to create hibernacula within appropriate retained habitats rather than being chipped. Locations will be identified by the appointed ECoW during construction.	To reduce impacts to flora and fauna, reduce habitat loss and fragmentation.
Red Line Boundary	Pre-construction, Construction and post construction/operation	PW-BD-015	Where temporary lighting is required during construction, a suitable lighting design (where necessary on a case-by-case basis) for implementation across the Padeswood Spur Pipeline Proposed Development will be developed in accordance with best practice guidance on lighting with regards to protected species, will broadly include: <ul style="list-style-type: none"> <li>• Avoidance of direct lighting on any buildings or trees that contain bat roosts or barn owl nest/roost sites;</li> <li>• Avoidance of artificial lighting of watercourses as far as practicable, particularly during the hours of darkness to prevent impacts to fish behaviour or passage;</li> <li>• Avoidance of light spill using directional and or baffled lighting;</li> <li>• The use of movement triggers, thus lighting only turns on when people (large objects) move through the area (use within Construction Compounds);</li> <li>• Positioning of lighting columns away from habitats of value to foraging and commuting bats and other nocturnal fauna (e.g. hedgerows, trees, woodland);</li> </ul>	To reduce disturbance to fauna.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			<ul style="list-style-type: none"> <li>Reducing the height of lighting columns to reduce light spill onto adjacent habitats;</li> <li>Undertaking works during daylight hours (broadly 08:00 to 18:00) reducing the need for night-time lighting; and/or</li> <li>Avoidance of use of blue-white short wavelength lights and high UV content where necessary to avoid impacts to biodiversity.</li> </ul>	
Badger within Red Line Boundary and up to 30m from it	Pre-construction	PW-BD-016	<p>Prior to works commencing a pre-commencement walkover survey for badger will be undertaken of the works area and to a distance of 30 m from the Red Line Boundary (extended at the discretion of the ECoW/appointed ecologist). A pre-works walkover survey will be undertaken by the ECoW to confirm that baseline results remain accurate and relevant. The survey work is recommended to be undertaken at least three months in advance of the commencement of works. The alignment of the Padeswood Spur Pipeline Proposed Development will, wherever practicable, maintain a 30 m buffer from all sett entrances associated with the main, annex, subsidiary, and outlier setts. Where this is not possible, at the discretion of the ECoW and in response to the type, duration and extent of works, a reduction in exclusion buffer size may be granted. Where not possible, appropriate mitigation measures will be devised and captured within a method statement alongside an application for a badger licence (where considered necessary). Mitigation measures may include the temporary or permanent closure and destruction of a sett under licence. Only upon receipt of a granted licence and following completion of all necessary licence requirements/mitigation can works commence. The following setts will require mitigation to avoid where possible direct and indirect impacts:</p> <ul style="list-style-type: none"> <li>Sett 14 – Main sett (outside Red Line Boundary within 30 m).</li> <li>Sett 7 – Main sett (outside Red Line Boundary within 30 m).</li> <li>Sett 6 (outside the Red Line Boundary within 30 m).and S12 (on the Red Line Boundary)- Subsidiary sett.</li> <li>Setts S3 (on the Red Line Boundary), S5 (outside of the Red Line Boundary but within 30 m), S8 (within the Red Line Boundary), S11 (within the Red Line Boundary) and S15 (outside of the Red Line Boundary but within 30 m) – Outlier setts.</li> </ul> <p>Setts requiring closure will be subject to protected species licence applications detailing proposed closure methods and mitigation (where necessary) and timeframes, in advance of construction commencement. The process and method of sett closure will be detailed within method statements, accompanying any licence application. Methods are broadly to follow:</p> <ul style="list-style-type: none"> <li>Preparation of method statement and licence application with submission to relevant body.</li> <li>Appointment of an appropriately experienced and licensed ecologist to oversee the closure process and adherence to licence requirements following granted licence receipt.</li> <li>Installation of wire mesh and one-way gates on and around sett entrance/s. A minimum period of 21 days monitoring post gate installation, to determine whether badger have vacated a sett.</li> </ul>	To protect species.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			<ul style="list-style-type: none"> <li>If signs of badger re-entry are recorded, exclusion measures will be repaired and extended (as required) and the 21-day monitoring period restarted.</li> <li>Following successful conclusion of 21-day period without badger activity or evidence, destruction of the sett by careful excavation under the supervision of the licensed ecologist (or named accredited agent).</li> </ul> <p>Sett closure and destruction is restricted to the period July to November inclusive. Only once the entirety of the sett exclusion period has been successfully completed (i.e. no evidence of badgers occupying or utilising the sett) can destruction of the sett take place and construction commence thereafter.</p> <p>Should a badger sett or activity be discovered within a zone of influence of proposed construction works, mitigation will be developed and, where required, an application for a derogation licence from NRW will be applied for in advance of construction. Any necessary mitigation to facilitate construction will be implemented in advance of construction commencement (within that zone of influence) following receipt of a granted licence.</p>	
Badger within Red Line Boundary and up to 30m from it	Pre-construction and Construction	PW-BD-016	<p>It is currently assumed that the Padeswood Spur Pipeline Proposed Development will maintain a 30 m buffer from all sett entrances associated with the two main setts identified.</p> <p>Where a 30 m buffer cannot be maintained, this will be discussed with the ECoW and may be reduced dependent on the type, extent and duration of works proposed. Any indirect impacts to badger setts will be assessed and associated mitigation to ameliorate impacts will be captured with a method statement.</p> <p>Where required, a protected species licence application will be made and subject to approval by NRW. Only upon receipt of a granted licence can mitigation be implemented.</p> <p>Construction in the area of an identified main sett will only commence following completion of all licence requirements and implementation of all necessary mitigation.</p>	To comply with conservation legislation and protect badger.
Badger Red Line Boundary	Pre-construction and Construction	PW-BD-017	<p>Due to the presence of foraging badgers within the Red Line Boundary, badger permeable fencing will be used, where fencing is required to allow the free movement of badger through the landscape. It may be necessary to implement temporary badger-resistant fencing around spoil heaps/storage locations to prevent any attempts of sett creation/excavation. Where possible, spoil will be stored in heaps with shallow angles to dissuade badger from sett creation attempts. Spoil heaps will be left in situ for as short a duration as possible, or else covered and secured with appropriate material (e.g. tarpaulin), where considered required by the ECoW.</p>	To avoid adverse impacts to badger movement within the landscape.
Biodiversity – General Red Line Boundary	Pre-construction and Construction	PW-BD-018	<p>To prevent entrapment of wildlife, where trenches or voids are to be left overnight, a suitable means of escape will be provided (such as a ramp at no greater than a 45° angle) at regular intervals along the excavated trench channel/excavations. Any void/trench channel should be visually inspected prior to re-starting works each morning to confirm the absence of entrapped wildlife. All escape measures will be discussed and agreed with the ECoW to ensure they are suitable for the size of void and wildlife that may become trapped. Any exposed tunnels or pipes will, where practicable, be covered or capped to prevent access to wildlife. If necessary, the ECoW may recommend additional measures such as the installation of temporary amphibian/reptile fencing around voids/trenches to prevent entry.</p>	To protect wildlife.
Bats Red Line Boundary	Pre-construction and Construction	PW-BD-019	<p><b>Confirmed bat roosts within the Red Line Boundary.</b></p> <p>At present no bat maternity or hibernation roosts have been identified and mitigation is not proposed.</p> <p>Where practicable, trees containing roosts will be retained.</p>	To protect the Conservation Status of local bat populations.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			<p>A single transitional common pipistrelle bat roost has been identified at T275 during the 2024 baseline surveys. T275 is located along the Red Line Boundary and is anticipated to be retained. Where there is a risk bat roosts could be affected indirectly by the works, an ECoW with advice from a NRW bat licensed ecologist or accredited agent will assess the potential for disturbance in response to the roost type, timing of works, duration and extent of works proposed in proximity to known roosts, advising of the need to implement mitigation if required (e.g. non-licensed bat method statement, with the roost protected and retained and demarcated to an appropriate buffer to safeguard the roost) or else apply for an NRW European Protected Species Licence (EPSL) to facilitate works.</p> <p>An NRW EPSL application will be required where trees with confirmed bat roosts cannot be retained or safeguarded and roosts will be lost.</p> <p>Further surveys to ascertain roost type, species present and number of bats will be required in advance of any NRW EPSL application to allow for the preparation of accompanying documents such as a licensed bat method statement, detailing methods of felling and necessary mitigation for any bat roosts to be lost. Works will be undertaken in compliance with an NRW EPSL when granted.</p>	
Bats – Trees with suitability to support roosting bats Red Line Boundary	Pre-construction and Construction	PW-BD-020	<p>Pre-commencement surveys on PRF-M trees which may potentially be felled or damaged (which is anticipated to be T27, T31, T90, T106, T265, T266 and T267) will be completed to update baseline survey results. This will inform any requirements for an NRW EPSL application if a roost is found or a non-licensed bat method statement where PRFs remain present and bats are likely to be absent.</p> <p>Surveys will be undertaken prior to construction and during the active bat season (May to September inclusive, with at least two visits between May and August) with three aerial PRF-inspection surveys or three emergence surveys spaced a minimum of three weeks apart.</p> <p>Where a roost is found an NRW EPSL licence will be required, works are to be completed under a licensed bat method statement, with associated documents and a work schedule which will detail:</p> <ul style="list-style-type: none"> <li>• The method, scope and requirement of pre-commencement surveys.</li> <li>• The timing of works, which will be agreed in advance with the relevant statutory body and dependant on the species and type of roost identified, following completion of updated pre-commencement baseline surveys.</li> <li>• Felling protocols for bat roosts.</li> <li>• Compensation requirements (for example, erection of compensatory bat boxes at an expected ratio of 3:1), which will be required to be installed ahead of any felling of trees covered within the EPSL.</li> <li>• Toolbox talks which will be carried out by the named bat ecologist (or accredited agent) and will provide a briefing to the site operatives to outline the planned works at each roost location, actions required if a bat is found, and their legal responsibility regarding bats and their roosts.</li> </ul> <p>Mitigation and compensation requirements are subject to agreement with NRW.</p>	To protect the Conservation Status of local bat populations.
Bats - Trees with suitability for	Pre-construction and construction	PW-BD-021	<p><b>Trees with suitability for roosting bats which cannot be retained - PRF-M trees which are not confirmed roosts following pre-construction surveys and PRF-I trees.</b></p>	To protect potential roosting bats.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
roosting bats (PRF-M) (but not confirmed roosts - Red Line Boundary			<p>It is important to note that all PRF-M trees (T27, T31, T90, T106, T265, T266 and T267) which are to be felled or damaged will have been subject to pre-commencement surveys as outlined previously at this stage.</p> <p>Upon completion of the updated pre-construction baseline surveys of PRF-M trees, trees which cannot be retained where no roost has been found, but potential roost features remain, along with PRF-I trees (i.e. trees with the potential to support individual roosting bats only: T351, T354, T468, T361, T362, T269, T281, T326, T478 and T345), will be soft felled under a non-licensed bat method statement and under ecological supervision by a suitability experienced and NRW licensed ECoW or accredited agent.</p> <p>PRF-M and PRF-I trees proposed for felling (<b>Appendix 9.4 - Bat Survey Report, Document Reference: PW.3.3.9.4</b>) will be subject to an aerial tree PRF-inspection by NRW bat licensed ecologist or accredited agent and/or dusk emergence survey no more than 24 hours prior to pruning/felling to check for roosting bats.</p> <p>Soft felling will consist of the removal of major branches and limbs followed by section felling of the main trunk. Sections of trees with features suitable to support bats will be lowered to the ground for inspection by the NRW bat licensed ECoW, ecologist or accredited agent. In the event a bat or roost is identified works will cease and liaison with NRW sought for further advice. Should a bat roost be recorded, a method statement detailing appropriate mitigation will accompany an NRW EPSL application for submission to NRW. Only upon receipt of a granted licence and implementation of necessary mitigation (as detailed within the licence application) can works take place. In the unlikely event that a bat roost is found in a PRF-I tree, further surveys to support the NRW EPSL application will be required.</p>	
Bats - All trees within the Proposed Development Red Line Boundary		PW-BD-022	<p><b>Translocation of Potential Roost Feature(s) to nearby retained trees and or veteranisation of retained trees and creation of monoliths.</b></p> <p>If practicable and at the discretion of the NRW bat licensed ECoW, ecologist or accredited agent, where trees with potential roost features suitable for bats (but absent of roosting bats as determined through surveys) are to be felled to facilitate construction, trees will be felled in such a way as to retain the potential roost feature(s). These features will then be translocated and erected on nearby retained trees under direction of the NRW bat licensed ECoW, ecologist or accredited agent to retain future viability of the feature as a roost.</p> <p>Where trees with suitable roost features (but absent of bat roosts as determined through surveys) are to be lost and it is not practicable or possible to retain potential roost features for erection on nearby retained trees; veteranisation of retained trees and creation of monoliths will be explored within the Padeswood Spur Pipeline Proposed Development under direction of the ECoW and/or suitably bat licensed ecologist, to enhance landscape opportunities to support roosting bats.</p>	
Bats Red Line Boundary		PW-BD-023	<p><b>Pre-commencement review of PRF-M and PRF-I trees to be retained on or within the Red Line Boundary.</b></p> <p>For trees which are to be retained which have been identified as PRF-M where pre-commencement surveys have not been undertaken (for example for Red Line Boundary trees), potential impacts will be reviewed with respect of the type, extent and duration of works proposed, by the ECoW, NRW licensed bat ecologist or accredited agent. The ECoW/suitably licensed bat ecologist will then assign an exclusion buffer/demarcating the potential bat roost to avoid works within that distance. It is anticipated that a minimum buffer of 10 m will be applied. However, it is at the discretion of the ECoW and NRW licensed bat ecologist and it may be</p>	To avoid adverse impacts on protected species. To protect the Conservation Status of local bat populations.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			possible to reduce the exclusion buffer where it is appropriate e.g. for minor access along an existing road. Where risk of disturbance/damage of a roost persists after an assessment by the NRW licenced ECoW or bat ecologist, further survey work will be required and where a bat roost is present an NRW EPSL will be applied for. Works will only be able to proceed legally following receipt of a granted licence from NRW and implementation of any necessary mitigation	
Hedgerows within the Construction Easement	Construction	PW-BD-024	Hedgerows that require removal to facilitate construction will be translocated during construction and maintained so they can be translocated back into the hedgerow they came from to mitigate the loss and fragmentation of Important Hedgerows and Hedgerow Priority Habitats. The full hedgerow translocation strategy will be detailed pre-construction in the Contractor's CEMP. This will need to detail the translocation methods, timings, care during and after translocation and the methods for translocation of the hedgerows on completion of the pipeline construction. Establishment will be assessed by the ECoW (as part of during construction and post-construction monitoring of reinstated habitats).	To avoid adverse impacts to Important and Priority Habitat Hedgerows and protected species and to limit the length of time hedgerows are fragmented and maintain structure post-construction.  To limit the time hedgerow gaps are present and to maintain commuting and foraging routes.
Hedgerows within the Construction Easement	Construction and Post-construction/ Operation	PW-BD-025	Mature, locally characteristic native shrubs will be used for replanting gaps in hedgerows created by the proposed works if translocation is not fully successful in maintaining viable shrubs. Establishment will be assessed by the ECoW (as part of post-construction monitoring of reinstated habitats)..	To avoid adverse impacts to Important and Priority Habitat Hedgerows and protected species and comply with conservation legislation. To maintain commuting and foraging routes.
Hedgerows within the Construction Easement	Construction and Post-construction/ Operation	PW-BD-026	Post construction, all hedgerows subject to hedgerow loss to facilitate construction and where translocation has not been successful will be reinstated with native species of local provenance in-keeping with the overall species compositions of hedgerows. Reinstatement will comprise a combination planting of whips and standard-sized shrubs. Planting shall be selected to match as close as possible, the height of any adjacent retained hedgerow. Hedgerows directly impacted as a result of the Padeswood Spur Pipeline Proposed Development (i.e. those not impacted as a result of Construction Compounds) will be reinstated within 1 year of impact.	To avoid adverse impacts to Important and Priority Habitat Hedgerows and protected species and comply with conservation legislation.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
Hedgerows within the Construction Easement		PW-BD-027	<p>Following planting of all impacted hedgerows post construction, those hedgerows identified as important for bats (<b>Appendix 9.4 - Bat Survey Report, Document Reference: PW.3.3.9.4</b>) will be supplemented through the installation of temporary flight lines to maintain linear structure whilst planted sections establish.</p> <p>In addition, such hedgerows will be subject to monitoring through monthly crossing point surveys during the first active bat season following hedgerow reinstatement (period May to September inclusive) to determine use (or otherwise) by target species (for example lesser horseshoe <i>Rhinolophus hipposideros</i> and activity levels considered sufficiently high to affect the favourable conservation status of other species (e.g. brown long-eared bat <i>Plecotus auritus</i> and <i>Myotis</i> species).</p> <p>Only once the planted hedgerow section has established to levels akin to the unimpacted hedgerow, as assessed by an appropriately experienced ecologist, can the artificial flight line be removed.</p>	To avoid adverse impacts to protected species and comply with conservation legislation. To maintain commuting and foraging routes.
Watercourses of Moderate/ High/ Confirmed suitability for riparian mammals	Pre-construction	PW-BD-028	A pre-commencement survey in search of evidence/activity of riparian mammals (namely otter and water vole) in watercourses crossed by the Padeswood Spur Pipeline Proposed Development, and those within an appropriate buffer of proposed works. Surveys should include all sections of watercourses within the Working Width, extending to 150 m either side of the Working Width, as a minimum. This should also include watercourses not crossed but within potential disturbance distance of construction works at the discretion of the ECoW/appointed ecologist. Surveys will be undertaken at least 3 months prior to construction works commencing to confirm baseline conditions and mitigation proposals remain accurate or else inform requirements for new mitigation and/or licencing.	To protect riparian mammals and update riparian mammal baseline data should an EPS or a WCA Licence application be required.
Watercourses – riparian mammals	Pre-construction and Construction	PW-BD-029	Where temporary culverts are to be installed, these will remain in place for as short a time as practicable, only to serve facilitating construction. Suitable commuting routes for riparian mammals will be demarcated around any temporary culverts. Reinstatement of habitats following culvert removal will be undertaken where considered necessary by the ECoW, or else left to naturally regenerate.	To avoid adverse impacts to protected species and comply with conservation legislation.
Location of compensation barn owl boxes	Pre-construction and Construction	PW-BD-030	<p>Trees and nest boxes recorded within the Padeswood Spur Pipeline Proposed Development which have been identified as suitable to support roosting or nesting barn owl will be subject to a pre-construction survey to ascertain the use of the feature(s) by barn owl.</p> <p>Whilst known barn owl roost and nest sites will be avoided and retained where possible, exclusion of barn owls from barn owl boxes and other features may be required under licence. Where this is required, a minimum of 30 days prior to the exclusion works compensatory barn owl boxes (at a ratio 1:1) will be erected in suitable locations under supervision of an appropriately licensed ecologist, where practicable, within 250 m of the feature/box being excluded to compensate for the temporary loss of roosting and/or nesting sites.</p> <p>Erected boxes will be sited in locations that will not be subject to disturbance or impact by construction under the advice of a barn owl licensed ecologist.</p> <p>Following the completion of construction works and the removal of Construction Compounds, any barn owl features temporarily excluded will be re-opened for use by barn owl.</p>	To compensate for the temporary loss of barn owl nesting / roosting sites and protect barn owl.
Barn owl features/ potential roost sites	Pre-construction	PW-BD-031	Trees recorded within the Padeswood Spur Pipeline Proposed Development suitable for barn owl roost sites will be subject to an ecological inspection during the winter period (October – February inclusive) prior to works commencing. Where no evidence of nesting barn owl is visible, features will be temporarily blocked up until construction works and activities within a 250 m	To reduce the impact to barn owl disturbance.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			buffer have been completed. Upon completion of construction works, features will be unblocked.	
Within proximity of a known barn owl roost	Pre-construction and Construction	PW-BD-032	<p>No barn owl nesting sites were identified within the Red Line Boundary or within 30 m of it during surveys to date. In order to adopt a suitably precautionary approach to development pre-construction surveys will be carried out to determine if any nesting sites have become established in the intervening period from surveys in 2024 and the commencement of construction</p> <p>In the event that barn owl nesting sites are identified, construction in proximity to barn owl nest sites that have not been subject to temporary exclusion measures (i.e. nests that have established after construction commencement) will be temporarily and spatially restricted to avoid or reduce impacts of disturbance in accordance with the below criteria (developed in accordance with good practice):</p> <ul style="list-style-type: none"> <li>• Pedestrian movement of a Low to Medium Disturbance Risk, e.g. site personnel walking near nests/roosts, will implement a Minimum Protection Zone of 20 m.</li> <li>• Artificial lighting of a Low to Medium Disturbance Risk, e.g. illumination of works area (no direct lighting or nest/roost), will implement a Minimum Protection Zone of 30 m.</li> <li>• Vehicular movements of a Medium Disturbance Risk, e.g., vehicles or heavy plant moving past nest / roost sites, will implement a Minimum Protection Zone of 40 m.</li> <li>• General light building and landscape works of a Medium to High Disturbance Risk, e.g., laying concrete, using mechanised plant will implement a Minimum Protection Zone of 60 m.</li> <li>• Where heavy vehicles and plant for construction could create a High Disturbance Risk in proximity of active barn owl nests, e.g. piling or compaction works, ground levelling, crushing of materials, a Minimum Protection Zone of 100 m from the nest site during the nesting season will be implemented.</li> </ul> <p>It is assumed that works will be undertaken during daylight hours, however, some night-time work will be required. Where works need to be conducted within the minimum protection zone these will be discussed with the ECoW, and where necessary a barn owl licensed ecologist, who will assess the proposed works, duration and extent and potential use of mitigation to facilitate works. Where works are deemed to pose a significant risk to nesting barn owl, licensing may be required and/or the rescheduling of works to periods outwith the most sensitive period (March to June inclusive), however, this would be at the discretion of the ECoW/barn owl licensed ecologist.</p>	To comply with conservation legislation and protect barn owl.
Invasive Non-Native Species Red Line Boundary	Pre-construction, Construction	PW-BD-033	<p>Invasive Non-Native Species (INNS) are present within the Padeswood Spur Pipeline Proposed Development (<b>Appendix 9.2 - Preliminary Ecological Appraisal Report, Document Reference: PW.3.3.9.2</b>). A Biosecurity Method Statement will be implemented throughout the construction of the Padeswood Spur Pipeline Proposed Development.</p> <p>The Biosecurity Method Statements will detail the locations and extent of any INNS and other biosecurity concerns, appropriate measures to control, prevent further spread or eradicate the species from the area if necessary. Appropriate good hygiene measures (e.g. Check, Clean, Dry methods) will also be included.</p> <p>Workers should be equipped with the necessary equipment, Personal Protective Equipment (PPE) and substances to implement biosecurity control measures, including effective hygiene</p>	To prevent the spread of invasive species and manage other biosecurity concerns.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			and sanitation practices. This will most frequently comprise disinfectant tablets, sprayers, and brushes to clean and disinfect equipment and PPE prior to entering/leaving construction areas. Other noteworthy biosecurity considerations (e.g. avian flu, bovine TB) will also be referenced within a Biosecurity Management Plan to be produced prior to commencement.	
Invasive Non-Native Species Red Line Boundary	Pre-construction, Construction	PW-BD-034	Where INNS are located and within the construction corridor, the engagement of an INNS specialist will be sought whom will provide options for treatment and or removal in advance of construction. Any remaining stands of INNS will be subject to exclusion zones which will be clearly and physically demarcated and enforced around areas of invasive species to avoid spread or propagation. The extent of buffer will be determined by the species and in consultation with the ECoW. Biosecurity measures, as detailed within a Biosecurity Management Plan to be prepared at detailed design will be implemented during construction to prevent the spread of INNS.	To prevent the spread of invasive species and manage other biosecurity concerns.
Red Line Boundary	Pre-construction, Construction	PW-BD-035	Vegetation and site clearance works will be undertaken outside the bird nesting period, recognised as March to August inclusive, to avoid damage or destruction of nests. Where this is not possible, site clearance will be preceded by an inspection from an experienced ECoW within 24 hours of clearance works commencing to confirm the absence of active nests or nesting activity. If an active nest is recorded, a minimum exclusion zone of 5 m, where practicable, within which no works can take place (exclusion zone size will be at the discretion of the ECoW and in response to the species of bird encountered) and remain in place until the nest is confirmed inactive (either eggs hatch and chicks have fledged, or the nest attempt fails). All cleared vegetation will be rendered unsuitable for nesting birds, for example, by covering or chipping depending on the end purpose of the vegetation or will be removed from the works area.	To protect nesting birds.
Within 250m of confirmed GCN waterbodies	Pre-construction and construction	PW-BD-036	Given the confirmed presence of GCN within the below listed waterbodies, an EPS Licence from NRW will be required to enable the construction of the Padeswood Spur Pipeline Proposed Development: Waterbodies 10, 11, 15 – 25, 41, 47 and 48. No waterbodies are to be lost as part of the Padeswood Spur Pipeline Proposed Development. Terrestrial habitat suitable for supporting GCN in their terrestrial phase will be temporarily or permanently impacted. Works will proceed under a GCN Precautionary Working Method Statement (PWMS) under ECoW supervision. This will include a provision for suitable timing of works to take place, i.e. where terrestrial habitat suitable for overwintering GCN is to be cleared, this will only be carried out during the active GCN season, generally from March to September, when overnight temperatures are consistently above 5°C. Clearance of such terrestrial habitat will be subject to inspection, at the discretion of the ECoW, in advance of clearance.	To protect the Conservation Status of local GCN populations.
Suitable terrestrial habitat within 250m of confirmed GCN waterbodies	Pre-construction and construction	PW-BD-037	Where suitable GCN terrestrial habitat will be impacted, either temporarily or permanently, habitat clearance will take place prior to construction works. This will be undertaken under a PWMS and ECoW supervision and will include: <ul style="list-style-type: none"> <li>• Prior to the commencement on site, it is recommended all site operatives attend a briefing from the ECoW. This will include a description of the location of known GCN populations in proximity to the works area, legislative policy, identification of GCN and other amphibians, how works will proceed under a PWMS and what occurs in the event a GCN, or other species, is found.</li> <li>• The gradual strimming of vegetation following ECoW inspection of vegetation to a short sward. Vegetation should be inspected by the ECoW, and if clear, strimmed to 10 cm; then</li> </ul>	To protect GCN and other amphibians.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			<p>checked again by the ECoW before strimming to ground level. Vegetation should then be maintained as a short sward for the duration of the construction works.</p> <ul style="list-style-type: none"> <li>The deployment of newt-proof fencing to isolate works areas.</li> </ul>	
Watercourses	Pre-construction and Construction	PW-BD-038	Where practicable, construction works will avoid works on watercourses during high flow events to reduce the risk of fine sediment release, increased flood risk, and impacts to aquatic ecology. Where possible, the Construction Contractor will seek to target activities at or near watercourses during the drier summer months to reduce this risk.	To avoid adverse impacts on water quality and aquatic species.
Watercourses	Construction	PW-BD-039	Turbidity and oxygen monitoring to be undertaken during the Construction Stage where deemed required due to the sensitivity of aquatic species receptors. The need and frequency of turbidity and oxygen monitoring would be determined by the regulatory authority and detailed in any required permits for undertaking work within or near watercourses.	To avoid adverse impacts on water quality and aquatic species.
Watercourses	Design, Construction	PW-BD-040	Watercourses will be reinstated to mimic baseline conditions as far as practicable, including bank forms, in-channel features (such as riffles, pools, point bars etc), and morphological diversity. This includes the reinstatement of the vegetation assemblage and structure, using an appropriate species mix, within the riparian zone and in-channel. Works on watercourses will be restricted to the minimal width required for the construction activity to reduce impacts, with vegetation clearance occurring immediately prior to construction where practicable. An 8 m buffer zone between the construction zone and the watercourse will be retained, wherever practicable.	To minimise and avoid impacts to waterbodies and associated riparian and aquatic receptors.
Fish	Design, Construction	PW-BD-029	Temporary culverts required on main and ordinary watercourses (i.e. not field ditches) will be suitability sized and designed/installed best practice fish pass standards.	To avoid adverse impacts to protected species and comply with conservation legislation.
Aquatic species	Construction	PW-BD-041	Temporary culverts and causeways/access routes will be removed as soon as practicable when no longer required.	To avoid adverse impacts to protected species and comply with conservation legislation.
Watercourses	Construction	PW-BD-042	Temporary discharges will comply with the requirements for permits Main Rivers from NRW, regarding both acceptable discharge volumes and water quality.	To avoid adverse impacts to protected species and comply with conservation legislation.
Watercourses	Construction	PW-GN-002 PW-WR-009	The Construction Contractor will prepare and implement appropriate measures to control the risk of pollution due to construction activities, materials, and extreme weather events. This includes to safe storage of potentially hazardous construction materials in bunds with appropriate cut-off drainage, and fuel stored in double skinned tanks with 110% capacity. The Construction Contractor will report any pollution incidents.	To avoid adverse impacts to protected species and comply with conservation legislation.
Fish	Pre-construction, Construction	PW-BD-043	Sensitivity (e.g. to noise and vibration) of those fish species present will be considered to ensure that appropriate construction methods can be implemented to minimise and avoid disturbance	To avoid adverse impacts to

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			or avoidance behaviour. A Noise and Vibration Management Plan will be implemented. This will include, but not be limited to, information on the pile driving methodology, including commencing with a soft start, and thereafter proceeding with either press or vibration pile driving. If needed, percussion or hammer pile driving will be limited, within reason, to sink the piles to design depth.	protected species and comply with conservation legislation.
Watercourses	Construction / Operation	PW-BD-044	Seeded biodegradable fibre matting will be used to encourage re-vegetation after works on, or near, the banks of each watercourse (except field drains unless otherwise advised by the ECoW) disturbed by the works to reduce establishment time and to help support bank structure. A suitable seed mix to produce a tussocky species-rich sward will be used to mitigate for the loss of habitats suitable to support riparian mammals. Where appropriate, willow whips will be installed to both provide green bank protection and to mitigate loss of riparian habitat. A sediment boom will be used downstream of the temporary crossing to intercept any sediment artificially mobilised during the Construction Stage.	To minimise adverse impacts to watercourses and associated riparian and aquatic receptors.
Fish	Construction	PW-BD-045	During any river dewatering and/or in-channel working, a fish rescue plan will be employed. Where areas are required to be temporarily dewatered to facilitate construction activities, fish will be removed under NRW consent and relocated before dewatering. Any environmental permit(s) shall be obtained and in place before the creation of a temporary dry channel. The construction of a temporary dry channel shall be undertaken by the mitigation measures contained within the Detailed CEMPs and any other relevant measures prescribed by granted permits from NRW. A pump may be required to divert flows during construction. Where this occurs, a 2 mm screen will be fitted on the transfer intake to minimise the risk of fish and eel entrainment.	To avoid adverse impacts to protected species and comply with conservation legislation .
Watercourses	Construction	PW-BD-046	The Construction Contractor will, as far as practicable, seek to reduce watercourse crossings for those watercourses that do not intersect the Red Line Boundary, and/or those with a partial extent or reach within the Red Line Boundary.	To minimise impacts on aquatic fauna and flora through a reduction of potential watercourse crossings.
Red Line Boundary	Construction, Post-construction	PW-BD-047	Reinstatement of HPI habitats will take place post construction, however, recognising the need to reinstate with alternative habitats should former habitats potentially interfere with the buried pipeline (e.g. where trees are removed and cannot be reinstated, scrub will be planted as an alternative). Species will comprise native species of local provenance and will comprise a mixture of species (see OEMP, Document Reference: PW.4.1). Planting should be undertaken in the appropriate planting season but as soon as possible following completion of the works to reduce the likelihood of undesired colonisation by flora or INNS. Non-HPI/BAP habitats impacted by construction will be reinstated on a like-for-like basis at the locations of loss/impact. Where adjudged appropriate, certain habitats may be left to naturally recover or otherwise be left to be managed by landowners, rather than be subject to dedicated mitigation planting/sowing (e.g. arable fields, pasture grassland). Habitats requiring mitigation planting/sowing will be shown in the Landscape Design of the Padeswood Spur Pipeline Proposed Development and captured within the OEMP (Document Reference: PW.4.1). Reinstated habitats will be monitored and managed for a minimum 5-year period post reinstatement. Any dead or dying plants will be removed and replaced during the monitoring period.	To compensate for loss of habitats.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
Woodland and trees	Construction	PW-BD-048	Where woodland and trees are to be lost to facilitate construction of the Padeswood Spur Pipeline Proposed Development, these will be mitigated for through the planting of trees across areas identified within the OEMP (Document Reference: PW.4.1). Trees will be replaced at a ratio of 3:1 and will comprise planting of native species of local provenance, in-keeping with woodland within the wider landscape. Areas for planting will be sought to prioritise areas based on connections to, and to enhance, existing green infrastructure. Management of newly planted woodland and trees will be prescribed by the detailed OEMP (Document Reference: PW.4.1) but will broadly follow management across a 10-year period during establishment. Management of other habitat types (e.g. scrub and riparian planting) will be subject to a 5-year management plan.	To mitigate for the loss of woodland and trees.
Watercourses	Construction	PW-BD-049	Where woodland and trees are to be lost to facilitate construction of the Padeswood Spur Pipeline Proposed Development these will be mitigated for through the planting of trees. Riparian enhancements are proposed along the Bracken's Drain, subject to landowner agreement, to off-set tree loss along watercourses which cannot be reinstated due to the pipeline root exclusion zone.	To minimise adverse impacts on protected/ notable species and habitats.
Watercourses/ Waterbodies	Construction	PW-AQ-004	A Dust Management Plan (DMP) will be implemented on site by the Construction Contractor. There will be an adequate supply of water on site for effective dust/particulate matter suppression/mitigation using non-potable water where possible and appropriate. Machinery and dust causing activities will be located away from sensitive receptors where practicable.	To minimise adverse impacts on protected/ notable species and habitats.
Red Line Boundary	Decommissioning	PW-BD-050	In advance of decommissioning works, ecology surveys will be undertaken, where required, to determine the ecological baseline and presence, or otherwise, of protected and/or notable species to determine any mitigation or licensing requirements in advance of decommissioning works commencement.	To minimise adverse impacts on protected/ notable species and habitats.
Red Line Boundary	Construction	PW-BD-051	Opportunities for enhancement will be identified prior to and throughout construction of the Padeswood Spur Pipeline Proposed Development. Enhancement opportunities will be reflected within the detailed CEMPs as and where identified, but may include: <ul style="list-style-type: none"> <li>Where possible, cleared deadwood, felled trees and arisings from site clearance works will be used in a variety of locations to benefit wildlife. These locations will be determined by the ECoW and based on site conditions at the time. Materials will be stored in a suitable location away from the working area to prevent risk of damage and then placed within areas of retained woodland or woodland planting at an appropriate time.</li> <li>Bat boxes will be installed in unlit areas on multiple aspects (including facing south, west or east) at a height of a minimum of 3m and have a clear flight path to the access point. The bat boxes will be located within existing or newly created suitable foraging and commuting habitats. The requirements of the bird boxes will be specific to the type installed and manufacturers advice will be followed. The bat and bird boxes could be placed within existing retained woodlands, during construction or once mature, the boxes could be placed within newly created woodlands, (on poles or mature existing trees along the edge), post-construction.</li> <li>Where practical and bats are absent, potential roost feature(s) from felled trees will be translocated and erected on nearby retained trees under advice of a suitably experienced</li> </ul>	To provide opportunities for biodiversity.

Receptor/ Location	Timing of Mitigation Measures	OEMP Reference	Description	Mitigation Purpose or Objective
			<p>NRW bat licensed ecologist or accredited agent to retain future viability of the feature as a roost.</p> <ul style="list-style-type: none"> <li>Veteranisation of selected and suitable retained trees and creation of monoliths will be explored under advice of a suitably experienced NRW bat licensed ecologist or accredited agent, to enhance landscape opportunities to support roosting bats.</li> </ul>	
Red Line Boundary	Operation	N/A	<p>Post construction monitoring will be undertaken in accordance with the proposed OEMP (Document Reference: PW4.1) and Protected species licences required to facilitate construction will also require a period of monitoring post implementation which will be included within the OEMP (Document Reference: PW4.1) and the Operations and Maintenance Environment Management Plan.</p> <p>The Operations and Maintenance Environment Management Plan will be developed from the detailed CEMP and the OEMP (Document Reference: PW4.1) and will detail monitoring and management requirements and future maintenance arrangements that must be adhered to through the operation of the Padeswood Spur Pipeline Proposed Development.</p>	To protect and maintain biodiversity and comply with conservation legislation.

## **9.10. ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS**

9.10.1. This section details the assessment of likely significant effects taking account of the secondary and tertiary mitigation detailed in Section 9.9 above.

### **CONSTRUCTION STAGE**

9.10.2. The effects on biodiversity following implementation of mitigation from the Construction Stage are considered low and not significant. Through good practice precautionary methods of working, licences, and the implementation of suitable mitigation measures, the effects on habitats and species will be reduced to low and not significant. It will, however, take some time for restored or newly created habitats to fully mature and perform the same function as those habitats removed for construction.

### **OPERATIONAL STAGE**

9.10.3. With the implementation of suitable mitigation measures there are no likely significant effects anticipated during the Operational Stage of the Padeswood Spur Pipeline.

### **DECOMMISSIONING STAGE**

9.10.4. The effects on biodiversity at the Decommissioning Stage are considered likely to be similar to the Construction Stage. Through good practice precautionary methods of working, licences, and the implementation of suitable mitigation measures, the effects on habitats and species will be reduced to low and not significant.

## **9.11. MONITORING**

### **CONSTRUCTION MONITORING**

9.11.1. Monitoring requirements during construction have been detailed within **Table 9.154** and within **Appendices 9.1 - 9.10** (Volume III), in relation to protected species licensing and the **OEMP (Document Reference: PW.4.1)**.

9.11.2. During construction an ECoW and/or team of ECoWs will monitor the construction works of the Construction Contractor to ensure compliance with, for example, the detailed CEMP, any permits or exemptions, protected species licences and best practice construction guidelines and standards. The ECoW will additionally ensure compliance with all mitigation detailed within this ES, as well as any subsequent mitigation required following pre-construction survey completion.

## POST-CONSTRUCTION MONITORING

- 9.11.3. Monitoring upon completion of construction will be undertaken to confirm the successful establishment of all reinstated habitats, mitigation planting areas, and additional ecological mitigation features. Post-construction monitoring will be undertaken in accordance with the proposed Operation and Maintenance Environmental Management Plan (OMEMP).
- 9.11.4. The OMEMP will be produced in accordance with the OEMP (**Document Reference: PW.4.1**) and developed with regard to the approved detailed CEMP, detailing monitoring and management requirements (e.g. associated with protected species licence conditions), and future maintenance arrangements that must be adhered to through the operation of the Padeswood Spur Pipeline Proposed Development.
- 9.11.5. Protected species licences required to facilitate construction of the Padeswood Spur Pipeline Proposed Development are likely to require a period of monitoring post implementation to ensure mitigation performs as expected and as required of any licence. Post-completion monitoring surveys may be required for species subject to protected species licencing and will be specific to the individual species/feature/receptor.

## 9.12. RESIDUAL EFFECTS

- 9.12.1. No significant residual effects are anticipated as a result of construction, operation, and decommissioning of the Padeswood Spur Pipeline Proposed Development. **Table 9.15** below summarises the assessment of likely significant effect classifications for ecological receptors and the measures employed to reduce the significance of effect associated with the Padeswood Spur Pipeline Proposed Development.

Table 9.15 - Summary of Residual Effects

Receptor	Pre-mitigation significance of effects	Mitigation and Enhancement measure	Residual effect		
			Construction	Operation	Decommissioning
<p>Internationally Designated Sites:</p> <ul style="list-style-type: none"> <li>Buckley and Deeside Newt Sites SAC.</li> <li>River Dee Estuary SPA and Ramsar.</li> </ul>	Moderate adverse (Significant)	<p>HRA to be undertaken and working methods to be implemented into the CEMP(s) and any mitigation/compensation habitat to be within the OEMP (Document Ref: PW4.1).</p> <p>Avoidance of works and access within Buckley and Deeside Newt Sites SAC. Dee Estuary designated sites sufficiently distant from development so no direct impacts anticipated. On site works to follow precautionary methods of working (outlined in EPS Licence Method Statement) to avoid injury and disturbance to great crested newts sheltering within terrestrial habitats during vegetation clearance and construction.</p> <p>ECoW to oversee works and third party auditor to ensure CEMP is followed.</p> <p>Embedded mitigation and working methods relating to pollution prevention and controls.</p> <p>All necessary permits and licensing to be in place prior to the start of the works; and</p> <p>Post construction monitoring/ surveys to be undertaken in line with EPS Licence.</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)
<p>Nationally Designated Sites:</p> <ul style="list-style-type: none"> <li>Maes Y Grug SSSI</li> </ul>	Moderate adverse (Significant)	<p>SSSI to be taken into consideration, embedded mitigation and compensation habitat to be within the CEMP and OEMP (Document Reference: PW 4.1).</p> <p>ECoW to oversee works and third party auditor to ensure CEMP is followed.</p> <p>Embedded mitigation and working methods relating to pollution prevention and controls.</p> <p>All necessary permits and licensing to be in place prior to the start of the works; and</p> <p>Post construction monitoring/ surveys to be undertaken.</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)
<p>Non-Statutory Designated Sites:</p> <ul style="list-style-type: none"> <li>Warred Wood WS</li> <li>Coed Plas Major WS</li> </ul>	Moderate adverse (Significant)	<p>Trenchless techniques to be utilised to avoid damage to Warred Wood WS and Coed Plas Major WS.</p> <p>Habitat loss to be as minimal as possible and to avoid non-statutory sites. A suitable buffer zone from the works to be implemented between the Padeswood Spur Pipeline Proposed Development and WS sites. Habitat mitigation and compensation measures on site to include tree planting at a 3-1 ratio for any trees lost, locations to be detailed in the OEMP (Document Ref PW 4.1)</p> <p>Habitat management plan for post-construction to include establishment and monitoring to ensure all habitat loss is replaced at a better condition than prior to the works or a like for like basis;</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)

Receptor	Pre-mitigation significance of effects	Mitigation and Enhancement measure	Residual effect		
			Construction	Operation	Decommissioning
		<p>ECoW to oversee works and third party auditor to ensure CEMP is followed to avoid damage to habitat and</p> <p>Mitigation and working methods relating to pollution prevention and controls.</p>			
<p>Habitats of Conservation importance:</p> <ul style="list-style-type: none"> <li>• Hedgerows</li> <li>• Ancient Woodland/ Semi-natural broadleaved woodland</li> <li>• Watercourses and waterbodies</li> </ul>	Moderate adverse (Significant)	<p>Habitat loss to be as minimal as possible and to avoid habitats of conservation importance. A suitable buffer zone from the works to be implemented between the Padeswood Spur Pipeline Proposed Development and habitats of conservation importance.</p> <p>Habitat mitigation and compensation measures on site to include translocation of hedgerows in the shortest possible time during construction, tree planting at a 3-1 ratio for any trees lost and a mix of whips and standard-sized shrubs to replant gaps in hedgerows where translocation has not been successful as well as additional hedgerows to be planted throughout the Padeswood Spur Pipeline Proposed Development - locations to be detailed in the <b>OEMP (Document Reference: PW 4.1)</b>.</p> <p>Habitat management plan for post-construction to include establishment and monitoring to ensure all habitat loss is replaced at a minimum of like for like basis.</p> <p>Where it is not possible to replace habitat exactly (mature trees over the pipeline), bespoke mitigation will be detailed within the <b>OEMP (Document Reference: PW 4.1)</b>.</p> <p>ECoW to oversee works and third party auditor to ensure CEMP is followed to avoid damage to habitat.</p> <p>Embedded mitigation and working methods relating to pollution prevention and controls.</p>	Minor adverse (Not significant)	<i>Minor adverse</i> through establishment period (Not significant)	Negligible (Not significant)
Great crested newt	Moderate adverse (Significant)	<p>No waterbodies are to be lost as part of the Padeswood Spur Pipeline Proposed Development.</p> <p>All necessary EPS licensing to be in place prior to the start of the works.</p> <p>PWMS under ECoW supervision to cover works affecting GCN in terrestrial habitat to be implemented and works to be overseen by a suitably experienced ECoW.</p> <p>This will include a provision for suitable timing of works to take place, i.e. where terrestrial habitat suitable for overwintering GCN is to be cleared, this will only be carried out during the active GCN season, generally from March to September, when overnight temperatures are consistently above 5°C. Clearance of such terrestrial habitat will be subject to inspection, at the discretion of the ECoW, in advance of clearance.</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)

Receptor	Pre-mitigation significance of effects	Mitigation and Enhancement measure	Residual effect		
			Construction	Operation	Decommissioning
		<p>Where suitable GCN terrestrial habitat will be impacted, either temporarily or permanently, habitat clearance will take place prior to construction works. This will be undertaken under a PWMS and ECoW supervision and will include:</p> <ul style="list-style-type: none"> <li>• Prior to the commencement on site, it is recommended all site operatives attend a briefing from the ECoW. This will include a description of the location of known GCN populations in proximity to the works area, legislative policy, identification of GCN and other amphibians, how works will proceed under a PWMS and what occurs in the event a GCN, or other species, is found.</li> <li>• The gradual strimming of vegetation following ECoW inspection of vegetation to a short sward. Vegetation should be inspected by the ECoW, and if clear, strimmed to 10 cm; then checked again by the ECoW before strimming to ground level. Vegetation should then be maintained as a short sward for the duration of the construction works.</li> <li>• The deployment of newt-proof fencing to isolate works areas.</li> </ul> <p>Mitigation measures such as creation of hibernaculum and refugia as part of the OEMP (Document Ref: PW 4.1).</p> <p>Post construction monitoring as per the conditions of any EPS.</p>			
Barn Owl	Minor adverse (Not Significant)	<p>Detailed pre-construction survey to be undertaken for barn owl; particularly of barn owl box at location of Padeswood AGI.</p> <p>All necessary licensing to be in place prior to the start of the works where required – where possible barn owl roosts will be avoided.</p> <p>PWMS to be implemented and works to be overseen by a suitably licensed/experienced ECoW.</p> <p>Barn owl boxes to be erected on suitable trees/posts to provide additional nesting habitat within the Red Line Boundary.</p> <p>Post construction monitoring and replacement roost features such as barn owl boxes as per the conditions of any licence to be put in place prior to construction.</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)
Bats	Moderate adverse (Significant)	<p>Pre-commencement surveys are to be undertaken in advance of felling/damage to PRF-M trees.</p> <p>Pre-commencement review of PRF-M and PRF-I trees to be retained on or within the Red Line Boundary by NRW bat licenced ecologist or accredited agent in relation to works/timings and demarcation/buffer zone around trees to an</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)

Receptor	Pre-mitigation significance of effects	Mitigation and Enhancement measure	Residual effect		
			Construction	Operation	Decommissioning
		<p>appropriate distance from works will be undertaken. This will form part of a non-licensed bat method statement. For PRF-M and PRF-I trees which are to be felled and or damaged where no roosts are present but PRFs remain this undertaken in accordance with a non-licensed bat method statement, with surveys immediately prior to soft felling and supervised by an NRW bat licensed ecologist or accredited agent.</p> <p>Where roosts are present all necessary EPSL to be in place prior to the start of the works.</p> <p>Suitable alternative roosting features (bat boxes, translocation of PRFs and veteranisation of retained trees and creation of monoliths) to be in place prior to construction.</p> <p>No or limited night working to reduce disturbance.</p> <p>Any lighting during the Operational Stage to be directional and where possible.</p> <p>Linear features utilised by bats for foraging and commuting to be replaced following construction.</p> <p>Post construction monitoring as per the conditions of any EPSL.</p>			
Breeding birds	Minor adverse (Not Significant)	<p>De-vegetation works to be undertaken outside of the nesting bird season or following a nesting bird check by the ECoW to prevent disturbance/ destruction of nests.</p> <p>Suitable compensation nesting habitat (hedgerows, woodland, rural trees and scrub) to be replaced following construction as per the OEMP (Document Reference: PW 4.1).</p> <p>Bird boxes to be placed on suitable trees pre-construction outside of the construction boundary to provide alternative nesting opportunities during the construction period.</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)
Wintering birds	Minor adverse (Not significant)	<p>Habitat loss will be kept to a minimum.</p> <p>Where possible minimise noise and disturbance through movement in fields suitable for roosting and foraging wildfowl and wader species.</p> <p>Re-instatement of habitat following construction.</p>	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)
Badger	Moderate adverse (Not Significant)	<p>Pre-construction survey to be undertaken to provide up to date data on the locations and status of badger setts within the Survey Area.</p> <p>Where any badger setts requiring closure are located within the Red Line Boundary, a licence for closure will be sought from NRW.</p> <p>Any badger setts that are within the Padeswood Spur Pipeline Proposed Development but will not be directly impacted by</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)

Receptor	Pre-mitigation significance of effects	Mitigation and Enhancement measure	Residual effect		
			Construction	Operation	Decommissioning
		<p>the Padeswood Carbon Dioxide Spur Pipeline Proposed Development will be demarcated by the ECoW and works carried out under PWMS.</p> <p>Good practice relating to badger(s) present within the Site boundary including back filling of excavations, provision of escape ramps, use of exclusion fencing if and where required and nighttime work to be avoided.</p>			
Riparian mammals	Minor adverse (Not Significant)	<p>Pre-construction survey to be undertaken to provide up to date data on the use of watercourses by otter.</p> <p>Should any otter resting places (holts) be recorded within the Red Line Boundary a licence for closure will be sought from NRW.</p> <p>Any otter resting places that are within the Red Line Boundary but will not be directly impacted by the Padeswood Carbon Dioxide Spur Pipeline Proposed Development will be demarcated by the ECoW and works carried out under PWMS.</p> <p>Good practice relating to otter(s) present within the Site boundary including back filling of excavations, provision of escape ramps, use of exclusion fencing if and where required and nighttime work to be avoided.</p>	Minor adverse (Not significant)	Negligible (Not significant)	Negligible (Not significant)
Aquatic Habitats – Watercourses	Moderate adverse (Significant)	<p>The Construction Contractor will implement sediment and runoff management plans, including sediment traps and sufficient working width around watercourses.</p> <p>Where practicable, construction works will avoid works on watercourses during high flow events.</p> <p>Turbidity and oxygen monitoring to be undertaken.</p> <p>Regular water quality testing</p> <p>Reinstatement of riparian and in-channel habitat at watercourses, and vegetation clearance at watercourses kept to the minimum.</p>	Minor adverse significance (Not significant)	Negligible (Not Significant)	Negligible (Not Significant)
Fish	Major adverse (Significant)	<p>Noise and vibration management plan (relating to fish), and seasonal timings.</p> <p>Temporary culverts have to meet Fish Pass Standards (on main and ordinary watercourses, but not field ditches).</p> <p>Dewatering fish rescue plan, and 2mm screen fitted to pumps to minimise the risk of fish and eel entrainment.</p>	Minor adverse significance (Not significant)	Negligible (Not Significant)	Negligible (Not Significant)
Aquatic Macroinvertebrates	Minor adverse (Not significant)	<p>The Construction Contractor will implement sediment and runoff management plans, including sediment traps and sufficient working width around watercourses.</p> <p>Turbidity and oxygen monitoring to be undertaken.</p>	Negligible (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)

Receptor	Pre-mitigation significance of effects	Mitigation and Enhancement measure	Residual effect		
			Construction	Operation	Decommissioning
		Regular water quality testing Reinstatement of riparian and in-channel habitat at watercourses. Vegetation clearance at watercourses kept to the minimum.			
Macrophytes	Negligible (Not Significant)	The Construction Contractor will implement sediment and runoff management plans, including sediment traps and sufficient working width around watercourses. Turbidity and oxygen monitoring to be undertaken. Regular water quality testing Reinstatement of riparian and in-channel habitat at watercourses. Vegetation clearance at watercourses kept to the minimum.	Negligible (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)

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