

## **Wylfa Newydd Project**

**6.7.9 ES Volume G – A5025 Off-line Highway  
Improvements G9 – Terrestrial and  
freshwater ecology**

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PINS Reference Number: EN010007

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Application Reference Number: 6.7.9

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June 2018

Revision 1.0

Regulation Number: 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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## 9 Terrestrial and freshwater ecology

### 9.1 Introduction

- 9.1.1 This chapter describes the assessment of potential terrestrial and freshwater ecology effects resulting from the construction and operation of the A5025 Off-line Highway Improvements.
- 9.1.2 Please refer to chapter B9 (terrestrial and freshwater ecology) (Application Reference Number: 6.2.9) for the technical basis for the assessment including a summary of legislation, policy and guidance; key points arising in consultation that have guided the terrestrial and freshwater ecology assessment; and assessment methodologies and criteria.
- 9.1.3 As set out in chapter B9 (Application Reference Number: 6.2.9), unlike the other Environmental Statement volumes, this assessment uses the methodologies and criteria set out in the *Design Manual for Roads and Bridges* Volume 11, Section 3, Part 4 [RD1] and *Interim Advice Note 130/10 Ecology and Nature Conservation: Criteria for Impact Assessment* [RD2].
- 9.1.4 This chapter should be read in conjunction with appendix G9-10 (A5025 Off-line Highway Improvements Protected and Legally Controlled Species Report, Application Reference Number: 6.7.31) which discusses species protected and controlled by UK legislation (including breeding birds, Great crested newt (GCN) (*Triturus cristatus*), reptiles, bats, otter (*Lutra lutra*), water vole (*Arvicola amphibious*) and non-native invasive species of plant) and the legal implications of the proposed development on these species.

### 9.2 Study areas

- 9.2.1 This section describes the study areas relevant to the terrestrial and freshwater ecology assessment for the A5025 Off-line Highway Improvements.
- 9.2.2 The study area for each of the A5025 Off-line Highway Improvements sections has been based upon the areas of land that could be physically affected by the proposed improvements. These are shown on figures G9-1 to G9-15 (Application Reference Number: 6.7.48).
- 9.2.3 The study area for the desk study was a 2km radius from the proposed scheme footprint for legally protected species and designated nature conservation sites (statutory and non-statutory).
- 9.2.4 Within the desk study area, the areas subject to specific field surveys were defined by appropriate best practice guidelines and professional judgement based on the habitat preferences of the target species (see section 9.3). The field survey study areas generally included the proposed scheme footprint plus a 250m buffer, although this was increased at specific locations to 500m for GCN and riparian mammals where suitable habitat was encountered or desk study information suggested this to be appropriate.
- 9.2.5 The field survey study area and area subject to assessment was influenced by the results of the desk study. If potentially sensitive receptors were located

outside the initial 250m buffer, but professional judgement considered it likely that an effect may be experienced, that receptor would be 'scoped in' to the assessment.

9.2.6 The study area was also influenced by the study areas relevant to other disciplines such as air quality (chapter G5 (Application Reference Number: 6.7.5)), and surface water and groundwater (chapter G8 (Application Reference Number: 6.7.8)). If the assessment undertaken by other disciplines identified possible effects to ecological receptors located beyond the study areas outlined above, those receptors would also be scoped in to the terrestrial and freshwater ecology assessment.

### **9.3 Baseline environment**

9.3.1 This section provides a summary of the baseline conditions for terrestrial and freshwater ecology within the study areas described in section 9.2. The value of each receptor is attributed in line with the criteria presented in chapter B9 (Application Reference Number: 6.2.9).

9.3.2 Considerable levels of baseline data were gathered between 2012 and 2015 which were used to inform the Environmental Impact Assessment (EIA) Scoping Report [RD3] and this EIA. The baseline information collected to date is considered sufficiently robust to inform the EIA process.

9.3.3 The field survey work completed within each study area covered:

- Phase 1 habitat;
- hedgerows;
- amphibians;
- bat buildings, trees and activity transects;
- badger;
- otter;
- water vole;
- breeding birds;
- wintering birds;
- reptiles; and
- freshwater species and habitats.

9.3.4 The Phase 1 habitat survey work indicated that the study area predominantly comprised improved and semi-improved grassland, walls, species-poor intact and defunct hedgerows. The species lists compiled during the hedgerow survey concurred with the Phase 1 survey. No hedgerows crossed by the A5025 Off-line Highways Improvements were considered important in accordance with the Hedgerows Regulations 1997. It was therefore considered that the hedgerows within the study area were of negligible value and are not considered further in this assessment.

9.3.5 There was limited evidence of badgers and reptiles recorded in the desk study and during the field surveys. As a result, only low numbers are considered likely to be present within the study areas. It is therefore considered that the

study areas are of negligible value for these species/groups and they are not considered further in this assessment.

9.3.6 The species recorded during the breeding and wintering bird surveys were considered to be common and widespread. The breeding birds recorded were associated with the hedgerows and small areas of woodland habitats common along the A5025. No large flocks of wintering bird species were recorded. Overall, it is considered that the study areas are of negligible value for breeding and wintering birds and they are not considered further in this assessment.

9.3.7 The freshwater species surveys recorded no evidence of macroinvertebrate and macrophyte communities of nature conservation interest (see appendix G9-1 A5025 Freshwater Baseline Surveys 2014-2015, Application Reference Number: 6.7.22). The waterbodies within the study areas were generally ephemeral in nature and the study areas were considered to be of negligible value for freshwater species (other than fish) and they are not considered further in this assessment.

9.3.8 Potential receptors such as lower and higher plants, fungi and terrestrial invertebrates were not highlighted within the studies that supported the EIA Scoping Report [RD3] and they were considered extremely unlikely to be affected by the proposed development. As such they are not considered further in this assessment.

9.3.9 In view of the baseline conditions and the results of the EIA scoping assessment [RD3], the ecological receptors (or features) that could be significantly affected comprise:

- designated sites for nature conservation;
- GCN;
- bats;
- otter;
- water vole; and
- fish.

9.3.10 The baseline conditions for these ecological receptors are presented in the following paragraphs.

## **Section 1: Valley**

### **Statutory and non-statutory designated sites for nature conservation**

9.3.11 The following statutory designated sites were recorded within 2km of the proposed road alignment at Valley and are shown on figure G9-1 (Application Reference Number: 6.7.48).

- Llyn Dinam Special Area of Conservation (SAC): 36.72ha site, approximately 1.6km south-east of Section 1 at its closest point. The site is designated for its Annex I habitat of natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*.

- Anglesey Terns/Morwenoliaid Ynys Môn Special Protection Area (SPA): 101,931.08ha site, approximately 1.2km south-west of Section 1 at its closest point. The site is designated for breeding Annex I species Arctic tern (*Sterna paradisaea*), common tern (*Sterna hirundo*), roseate tern (*Sterna dougallii*) and Sandwich tern (*Sterna sandvicensis*).
- Beddmanarch-Cymyran Site of Special Scientific Interest (SSSI): 911.0ha site, approximately 1.2km south-west of Section 1 at its closest point. A coastal area of sandbank, mudflat and saltmarsh, as well as two stands of dune heath. All three species of eelgrass (*Zostera* spp.) recorded and it supports a variety of over-wintering bird species.
- Valley Lakes/Llynnau y Fali SSSI: 98ha site, approximately 1.6km south-east of Section 1 at its closest point. A mosaic of open water areas with associated mesotrophic marshland and damp grassland habitats supporting rare plant species such as marsh fern (*Thelypteris thelypteroides*) and cyperus sedge (*Carex pseudocyperus*).

9.3.12 In accordance with the criteria described in chapter B9 (Application Reference Number: 6.2.9) (*Design Manual for Roads and Bridges* assessment methodology for the A5025 Off-line Highways Improvements), the SAC, Candidate Special Area of Conservation (cSAC) and SPA sites are of international value.

9.3.13 In accordance with the criteria described in chapter B9 (Application Reference Number: 6.2.9), the SSSIs are of national value.

9.3.14 The following non-statutory designated sites were recorded within 2km of the proposed road alignment at Valley and are shown on figure G9-1 (Application Reference Number: 6.7.48).

- Gwely Cyrs Caergeiliog Wildlife Site (WS): 2.71ha site, approximately 0.5km south-east of Section 1 at its closest point. This site is a reed bed surrounded by a band of marshy grassland.
- Cae Barcdy WS: 2.67ha site, approximately 0.7km south-west of Section 1 at its closest point. The site is composed of a reed bed as well as areas of wet and dry scrub. There are also beds of lesser pond sedge (*Carex acutiformis*), bottle sedge (*Carex rostrata*) and a smaller area of herb-rich marshy grassland. Greater spearwort (*Ranunculus lingua*) and bladderwort (*Utricularia* sp.), both plants of few localities on Anglesey, are recorded here.
- Rhostir a Phwll Caergeiliog WS: 4.55ha site, approximately 0.9km south-east of Section 1 at its closest point. An area of wet heath and a basin mire which has grown over the site of a former pool.
- Tywyn Gwyn a Phenial Dowyn WS: 18.8ha site, approximately 1.8km north of Section 1 at its closest point. This site consists of two separate areas: a small area of semi-improved acid and marshy grassland in the south and a larger area of dune grassland to the north.

- Royal Society for the Protection of Birds (RSPB) Valley Wetlands reserve: 35.88ha site, approximately 1.6km south-east of Section 1 at its closest point. A wetland habitat mosaic supporting wading and over-wintering bird species.

9.3.15 In accordance with the criteria described in chapter B9 (Application Reference Number: 6.2.9), the WSs are considered to be of county value for nature conservation.

9.3.16 The RSPB Valley Wetlands reserve supports bird species and habitat types of local value for nature conservation.

### **Terrestrial habitats**

9.3.17 Phase 1 habitat survey results are shown on figure G9-11 (Application Reference Number: 6.7.48).

9.3.18 The habitats recorded within 250m of the proposed alignment at Valley were predominantly semi-improved grassland and improved grassland, with some areas of marshy grassland. The field boundaries were generally dry stone wall (or cloddiau), stock-proof fencing and species-poor hedgerows. Detailed habitat descriptions are set out in appendix G9-2 (A5025 Terrestrial Ecology Factual Report 2014-2016, Application Reference Number: 6.7.23) and appendix G9-3 (A5025 Route Improvement Contract: Preliminary Ecological Appraisal, Application Reference Number: 6.7.24).

9.3.19 The habitats recorded within the study area are not of biodiversity importance themselves but are potentially of value for any species they support. These habitats are therefore incorporated within the evaluation of any relevant species assessments (e.g. bats).

### **Freshwater habitats**

9.3.20 The majority of the fields within 250m of the proposed alignment at Valley were bordered by drainage ditches which appeared to have limited flow, soft silt substrate with exposed earth banks, some with high macrophyte cover and grass growing in the channel (see appendix G9-1, Application Reference Number: 6.7.22).

9.3.21 Many of the watercourses were recorded as over-deepened or realigned along field boundaries and silt substrate was prevalent in these, suggesting that they act as part of the field drainage systems.

9.3.22 The Cleifiog (D1 in appendix G9-1, figure 1-2 (Application Reference Number: 6.7.22)) is the main watercourse located within 250m of the proposed alignment at Valley and the habitat is described in detail in appendix G9-1 (Application Reference Number: 6.7.22).

9.3.23 The freshwater habitats recorded within the study area are not of biodiversity importance themselves but are of value for the species they support and are therefore incorporated within the evaluation of any relevant species (i.e. fish, otter, water vole and GCN).

## Species

### Great crested newts

9.3.24 Data from Cofnod, the North Wales Environmental Information Service produced 17 records (2005–2012) for GCN at eight distinct locations within 2km of the proposed road alignment at Valley. These records were all over 1km away, as shown on figure G9-6 (Application Reference Number: 6.7.48).

9.3.25 No evidence for GCN was recorded in field surveys within the study area (see appendix G9-2 (figure 3-1, Application Reference Number: 6.7.23) and appendix G9-5 (A5025 Route Improvement Contract EIA: Great Crested Newt Field Survey Results) (drawing MMD-320831-L-DR-XX-3388, Application Reference Number: 6.7.26)).

### Bats

9.3.26 Cofnod data returned a record of a pipistrelle (*Pipistrelle* sp.) which had been recorded in 2006 within 2km of the proposed road alignment at Valley (see figure G9-6, Application Reference Number: 6.7.48).

### Tree roosts

9.3.27 No trees with the potential to support roosting bats were recorded within 250m of the proposed road alignment at Valley, as shown in appendix G9-2 (Application Reference Number: 6.7.23).

### Building roosts

9.3.28 One building with 'moderate' potential for roosting bats and five buildings with 'low' potential for roosting bats were identified within 250m of the proposed road alignment at Valley, as shown in appendix G9-2 (Application Reference Number: 6.7.23). No confirmed roosts have been recorded in the study area.

### Bat activity surveys – walked transects and static recording surveys

9.3.29 Low levels of bat activity by widespread and common bat species were recorded during the activity surveys at Valley including common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); noctule (*Nyctalus noctula*) and *Myotis* species (*Myotis* sp.), as shown in appendix G9-2 (Application Reference Number: 6.7.23).

9.3.30 The species recorded during bat activity surveys of the proposed alignment at Valley are considered to be 'common' (i.e. pipistrelle species, and noctule) and 'locally common' (*Myotis* species) [RD4]. The activity surveys indicated that field boundaries are used by commuting and foraging bats, which is typical for agricultural landscapes similar to the study area. As such, the assemblage of bats in the study area is considered to be of local value.

### Otter and water vole

9.3.31 Cofnod provided no records of otter or water vole within 2km of the proposed road alignment at Valley within the last 10 years. The Wales Otter Report 2009–2010 [RD5] highlighted Anglesey as having an expanding otter population. The report shows otter distribution increasing from being present

at 18% of the sites surveyed in 2002 to being present at 67.5% of the sites surveyed in 2009, with new sites recorded to the west and north of the island.

9.3.32 Evidence of otter in Valley was confined to a single footprint on a ditch (D7), recorded during the field surveys, as shown in appendix G9-2 (Application Reference Number: 6.7.23). No confirmed holts or couches (otter resting places) were identified (see appendix G9-2, Application Reference Number: 6.7.23 and G9-7 A5025 Route Improvement Contract EIA: Otter & Water Vole Survey Results, Application Reference Number: 6.7.28). It is considered that the watercourses within the study area provide commuting routes linking coastal and inland habitats.

9.3.33 Otter is listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017, and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is listed as a species of principal importance under Section 7 of the Environment (Wales) Act 2016, and the Anglesey Local Biodiversity Action Plan (LBAP) [RD6].

9.3.34 The watercourses of the study area are considered to be of county value for otter.

9.3.35 Live sightings of water voles as well as burrows, latrines, droppings and feeding stations/lawns were recorded west of the existing A5025 on ditch 5, and south of the A5 on ditch 2, as shown in appendix G9-2 (Application Reference Number: 6.7.23).

9.3.36 Water vole is in major decline at the national scale [RD7] but populations appear to be fairly stable in Anglesey, albeit in low numbers, possibly due to the efforts to prevent American mink (*Neovison vison*) colonisation. Water vole is listed on Schedule 5 of the Wildlife and Countryside Act 1981. It is also listed as a species of principal importance under Section 7 of the Environment (Wales) Act 2016 and on the Anglesey LBAP [RD6].

9.3.37 The study area is considered to be of county value for water vole.

### ***Fish***

9.3.38 Cofnod provided no records of aquatic species within 2km of the proposed alignment at Valley within the last 10 years.

9.3.39 European eel (*Anguilla anguilla*) and three-spined stickleback (*Gasterosteus aculeatus*) were recorded within the Cleiflog (appendix G9-1, Application Reference Number: 6.7.22)). Some fish species (such as European eel) may be considered to be of international or national importance if the population present contributed a significant proportion to the Welsh resource. However, the field data suggests that small populations are present. The study area is therefore considered to be of county value for fish receptors.

### **Section 3: Llanfachraeth**

#### **Statutory and non-statutory designated sites**

9.3.40 The following statutory site was recorded within 2km of the proposed road alignment at Llanfachraeth and are shown on figure G9-2 (Application Reference Number: 6.7.48).

- Beddmanarch-Cymyran SSSI: 911.0ha site, approximately 0.15km west of Section 3 at its closest point. A coastal area of sandbank, mudflat and saltmarsh, as well as two stands of dune heath. The site supports all three species of eelgrass and over-wintering bird species.

9.3.41 The Beddmanarch-Cymyran SSSI is of national value.

9.3.42 The following non-statutory designated sites were recorded within 2km of the proposed alignment at Llanfachraeth and are shown on figure G9-2 (Application Reference Number: 6.7.48).

- Tywyn Gwyn a Phenial Dowyn WS: 18.88ha site, approximately 1.5km west of Section 3 at its closest point. This site consists of two separate areas: a small area of semi-improved acid and marshy grassland in the south and a larger area of dune grassland to the north.
- 26040 Ancient semi-natural woodland (ASNW): 0.68ha site approximately 1km south-east of Section 3 at its closest point.
- 48997 ancient woodland site of unknown category (AWSU): 0.63ha site approximately 1km east of Section 3 at its closest point.
- 26046 ASNW: 0.52ha site approximately 1.7km north-east of Section 3 at its closest point.
- 26047 ASNW (3.9ha), 26048 ASNW (0.5ha) and 26070 Restored Ancient Woodland Site (RAWS) (1.3ha) are grouped together approximately 1.94km north-east of Section 3 at its closest point.

9.3.43 The WS is considered to be of county value.

9.3.44 Ancient woodland in Anglesey is considered to be of national value due to its restricted range and highly limited potential for substitution.

#### **Terrestrial habitats**

9.3.45 Phase 1 habitat survey results are shown on figure G9-12 (Application Reference Number: 6.7.48).

9.3.46 The habitats within 250m of the proposed road alignment at Llanfachraeth were predominantly improved grassland with some isolated areas of arable, semi-improved and marshy grassland. The field boundaries were generally a mixture of dry stone wall (or cloddiau), stock-proof fencing and species poor hedgerows. Detailed habitat descriptions are set out in appendix G9-2 (Application Reference Number: 6.7.23) and appendix G9-3 (Application Reference Number: 6.7.24).

9.3.47 The habitats recorded within the study area are not of biodiversity importance themselves but are potentially of value for the species that they support. These habitats are therefore incorporated within the evaluation of the relevant species assessments (i.e. GCN and bats).

### **Freshwater habitats**

9.3.48 The Afon Alaw (D18 and D20) is the main watercourse crossed by the proposed road alignment at Llanfachraeth. Appendix G9-1 (Application Reference Number: 6.7.22) provides a detailed habitat description. The source of the Alaw is located to the north-east of Llannerch-y-medd, where it flows in a northerly then westerly direction into the Llyn Alaw reservoir before continuing south and west to Llanfachraeth.

9.3.49 The Tan-yr-allt (D28 and D30) is located approximately 300m north of the proposed alignment and the habitat is described in appendix G9-1 (Application Reference Number: 6.7.22). The source of the Tan-yr-allt is located to the west of Mynydd Mechell, where it flows south to its confluence with the Alaw Estuary. It is crossed by the existing A5025, several smaller roads and access tracks. The Tan-yr-allt has a sinuous planform with some sections where the channel appeared to have been straightened. It is predominantly bordered by agricultural land, with both semi-improved grassland and tilled arable fields present.

9.3.50 A number of minor tributaries, field drains, wetland areas and a small number of natural ponds were identified within the study area, some of which would be crossed by the proposed road alignment.

9.3.51 The freshwater habitats recorded within the study area are not of biodiversity importance themselves but are potentially of value for the species they support. They are therefore incorporated within the evaluation of the assessment for these species, as necessary.

### **Species**

#### ***Great crested newts***

9.3.52 Cofnod provided no records of GCN within 2km of the proposed alignment at Llanfachraeth within the last 10 years.

9.3.53 Habitat Suitability Index assessments were undertaken on waterbodies within 500m of the proposed alignment at Llanfachraeth. Subsequent field surveys recorded the presence of GCN in ponds 10 and 129 and ditch 25 as shown in table G9-1. The locations of these waterbodies are shown in appendix G9-2 (figure 3.2, Application Reference Number: 6.7.23) and appendix G9-5 (drawing MMD-320831-L-DR-XX-3389, Application Reference Number: 6.7.26).

9.3.54 Appendix G9-2 (Application Reference Number: 6.7.23) and appendix G9-5 (Application Reference Number: 6.7.26) provide the results of all survey work undertaken.

**Table G9-1 GCN survey results summary**

Waterbody reference	Location in relation to the proposed alignment	Peak adult count (over four survey visits)	Eggs present
Pond 10 (P10)	50m east	29	Yes
Pond 129 (P129)	300m east	1	No
Ditch 25 (D25)	0m (crossed by proposed alignment)	1	No

9.3.55 GCN are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017, and Schedule 5 of the Wildlife and Countryside Act 1981. They are also listed as a species of principal importance under Section 7 of the Environment (Wales) Act 2016 and the Anglesey LBAP [RD6].

9.3.56 Four survey visits were undertaken; two additional survey visits on ponds where GCN were detected which are normally undertaken to provide a population size class assessment were not completed as part of the baseline survey. The peak adult counts recorded during the four survey visits were used to provide the assessment of a medium population size class (peak count of between 11 and 100 individuals). Given the peak counts recorded (see table G9-1) it is not considered that a fifth and sixth survey visit would have affected these figures sufficiently to change the population size class assessment.

9.3.57 The populations within the study area are unlikely to contribute significantly to the wider Welsh population, as amphibians on Anglesey are confined to the island by nature of their natural ecology. The number of ponds within the metapopulation is low and they are relatively isolated, the population size class is medium and the adjacent habitats are of low suitability. It is therefore considered unlikely that the metapopulation makes a significant contribution to favourable conservation status at a county level [RD8].

9.3.58 Section 3 is considered to be of local value for GCN.

### ***Bats***

9.3.59 Cofnod data recorded a bat roost of an unconfirmed species approximately 650m west of the proposed alignment at Llanfachraeth; see figure G9-7 (Application Reference Number: 6.7.48).

### ***Tree roosts***

9.3.60 The tree roost ground assessment identified a total of six trees with the potential to provide suitable habitat for roosting bats within 250m of the proposed alignment at Llanfachraeth. The location of the trees and detailed results can be found in appendix G9-2 (figure 4.2, Application Reference Number: 6.7.23).

9.3.61 No bats or evidence of bat activity was identified during the subsequent climbing surveys of the trees.

### **Building roosts**

9.3.62 The majority of buildings within the 250m survey area around the proposed road alignment at Llanfachraeth had low potential for bat roosts to be present. The locations of these buildings are shown in appendix G9-2 (figure 5.2) with detailed survey results set out in appendix G9-2 (Application Reference Number: 6.7.23).

9.3.63 Two buildings (679 and 682) located approximately 80m west of the proposed road alignment (see appendix G9-2 (figure 5.2.6, Application Reference Number: 6.7.23)) were confirmed as bat roosts and the species recorded are detailed in table G9-2.

**Table G9-2 Confirmed bat building roosts - Llanfachraeth**

Building reference	Date and time of survey	Bat species identified	Total number emerged/ re-entered building
Pen-yr-orsedd - 679	Dawn – 22/07/14	Common pipistrelle	1
		Brown long-eared	1
		<i>Myotis</i> species	1
Pen-yr-orsedd - 682	Dusk – 22/07/14	Soprano pipistrelle	1

### **Bat activity surveys – walked transects and static recording surveys**

9.3.64 During the walked activity transects, low levels of bat activity were recorded across the survey area by bat species that are widespread and common. Bats recorded included common pipistrelles, soprano pipistrelles and *Myotis*. The location of the walked activity transects and results are set out in appendix G9-2 (figures 6.2, 6.6, 6.10, 6.14 and 6.18, Application Reference Number: 6.7.23).

9.3.65 Species that were recorded during static monitoring surveys comprised common pipistrelle, soprano pipistrelle, *Myotis* species, Daubenton's (*Myotis daubentonii*), Natterer's (*Myotis nattereri*), whiskered (*Myotis mystacinus*) and noctule. The locations of the static monitoring surveys are shown in appendix G9-2 (figure 6.22, Application Reference Number: 6.7.23).

9.3.66 The species recorded during bat surveys of the study area are considered to be common (pipistrelle species, brown long-eared bat and noctule) or locally common (*Myotis* species) [RD4]. The activity surveys also show that field boundaries in this area are used by commuting and foraging bats, which is typical for agricultural landscapes similar to the study area.

9.3.67 Bat species are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 and Schedule 5 of the Wildlife and Countryside Act 1981. Bats are also listed as a species of principal importance under Section 7 of the Environment (Wales) Act 2016, and are listed on the Anglesey LBAP [RD6].

9.3.68 The number of individuals recorded at each of the surveys detailed above would suggest that none of the roosts are important maternity roosts or likely to contribute significant numbers to the local populations.

9.3.69 Given the species recorded were common, level of activity was low and the roosts were small the assemblage of bats in the study area is considered to be of local value.

#### ***Otter and water vole***

9.3.70 Cofnod provided no records of otter or water vole within 2km of the proposed alignment at Llanfachraeth within the last 10 years.

9.3.71 The field surveys recorded evidence of otter on:

- Afon Alaw (D18, D19 and D20) in the form of spraints, footprint and numerous access points to the river; and
- Tan-yr-allt (D26, D28 and D30), where otter footprints and spraints were recorded.

9.3.72 The locations of otter signs are shown in appendix G9-2 (figure 7.2, Application Reference Number: 6.7.23) and appendix G9-7 (drawing MMD-320831-L-DR-XX-3416, Application Reference Number: 6.7.28). It is considered that the watercourses potentially provide important commuting routes linking coastal and inland habitats.

9.3.73 The watercourses of the study area are considered to be of county value for otter.

9.3.74 Water vole burrows, latrines, feeding stations and runs were recorded on tributaries of the Afon Alaw and Tan-yr-allt at Llanfachraeth (including anecdotal evidence of the presence of water vole recorded by Jacobs ecologists during other species surveys at D25). The locations of the water vole signs recorded are shown in appendix G9-7 (drawing MMD-320831-L-DR-XX-3416, Application Reference Number: 6.7.28).

9.3.75 The study area is considered to be of county value for water vole.

#### ***Fish***

9.3.76 Cofnod provided no records of aquatic species within 2km of the proposed alignment at Llanfachraeth within the last 10 years.

9.3.77 Appendix G-1 (Application Reference Number: 6.7.22) sets out the detailed survey results. River lamprey (*Lampetra fluviatilis*) was confirmed on the Afon Alaw and juvenile lamprey were observed on Tan-yr-allt and the upper Afon Alaw site. The juvenile lamprey were expected to be brook (*Lampetra planeri*) or river lamprey; given the close proximity of the Afon Alaw and Tan-yr-allt site there is a high likelihood of unidentified lamprey being river lamprey.

9.3.78 Flounder (*Platichthys flesus*) and common goby (*Pomatoschistus microps*) were reported within Afon Alaw indicating a saline influence. Connectivity with the head of the estuary may increase the likelihood of other estuarine species moving into the study area.

9.3.79 Fish species (including river lamprey) that are listed in Annex II of the Habitats Directive could be considered of national or international value if the population at present were considered to be part of a SAC or contributed a significant proportion to the Wales resource. However, the field data suggests small populations that do not contribute a significant proportion.

9.3.80 The study area is considered to be of county value for fish receptors.

## **Section 5: Llanfaethlu**

### **Statutory and non-statutory designated sites**

9.3.81 The following statutory designated site for nature conservation was recorded within 2km of the proposed road alignment at Llanfaethlu and is shown on figure G9-3 (Application Reference Number: 6.7.48).

- Llyn Garreg-lwyd SSSI: 17.7ha site, approximately 0.8km north of Section 5 at its closest point. The site is notable for tall fen dominated by common reed (*Phragmites australis*) with ornithological interest including warbler species and bittern (*Botaurus stellaris*) (historically).

9.3.82 The Llyn Garreg-lwyd SSSI is considered to be of national value.

9.3.83 The following non-statutory designated sites were recorded within 2km of the proposed road alignment at Llanfaethlu and are shown on figure G9-3 (Application Reference Number: 6.7.48).

- Coed Carreglwyd WS: 12.28ha site, approximately 0.7km north-west of Section 5 at its closest point. This site consists of broadleaved woodland dominated by sycamore (*Acer pseudoplatanus*) with abundant wych elm (*Ulmus glabra*), scattered sessile oak (*Quercus petraea*) and ash (*Fraxinus excelsior*). This is the largest area of broadleaved woodland in the north-west corner of Anglesey.
- Clwch Dernog WS: 5.25ha site, approximately 1.94km east of Section 5 at its closest point. A basin mire with associated grassland and scattered willow scrub. Locally dominant mire species include bottle sedge, bogbean (*Menyanthes trifoliata*), soft rush (*Juncus effusus*), yellow flag (*Iris pseudacorus*), common cotton-grass (*Eriophorum angustifolium*), water horsetail (*Equisetum fluviatile*) and abundant bog moss (*Sphagnum* sp.).
- A group (co-located with Coed Carreglwyd) of ASNW and RAWS is recorded approximately 0.7km north-west of Section 5 at its closest point. It includes ASNW sites 26022, 26023, 26025, 26030 and 26049, and RAWSs 26027, 26028 and 26071.
- 26046 ASNW: 0.52ha site approximately 1.3km south-east of Section 5 at its closest point.
- 26047 ASNW (3.9ha), 26048 ASNW (0.5ha) and 26070 RAWS (1.3ha) are grouped together approximately 1.7km south-east of Section 5 at its closest point.

- 9.3.84 The WSs are considered to be of county value.
- 9.3.85 The ancient woodland sites are considered to be of national value.

### **Terrestrial habitats**

- 9.3.86 Phase 1 habitat survey results are shown on figure G9-13 (Application Reference Number: 6.7.48).
- 9.3.87 The habitats within 250m of the proposed road alignment at Llanfaethlu were predominantly improved grassland with some examples of arable and semi-improved grassland. The field boundaries were generally a mixture of dry stone walls (or cloddiau), stock-proof fencing and species-poor hedgerows. Detailed habitat descriptions are set out in appendix G9-2 (Application Reference Number: 6.7.23) and appendix G9-3 (Application Reference Number: 6.7.24).
- 9.3.88 The habitats recorded within the study area are not of biodiversity importance themselves but are potentially of value for the species they support and so are considered within the assessments of those species, where necessary.

### **Freshwater habitats**

- 9.3.89 A number of minor unnamed tributaries, field drains and a small number of natural ponds were identified within 250m of the proposed road alignment at Llanfaethlu. The majority of the ditches had a silt substrate and low flows. One stream (D43) was recorded in the north of the study area. More detailed descriptions are set out in appendix G9-2 (Application Reference Number: 6.7.23).
- 9.3.90 The freshwater habitats recorded within the study area are not of biodiversity importance themselves but are of potential value for the species that they support. These habitats are therefore incorporated within the assessments of those species, where necessary.

### **Species**

#### ***Great crested newts***

- 9.3.91 Cofnod provided no records of GCN within 2km of the proposed road alignment at Llanfaethlu within the last 10 years.
- 9.3.92 Habitat Suitability Index assessments were undertaken on waterbodies within 500m of the proposed road alignment at Llanfaethlu. Subsequent field surveys recorded the presence of GCN in ponds 13 and 21, as shown in table G9-3. The locations of these waterbodies are shown in appendix G9-2 (figure 3.3, Application Reference Number: 6.7.23) and appendix G9-5 (drawing MMD-320831-L-DR-XX-3390, Application Reference Number: 6.7.26).
- 9.3.93 Appendix G9-2 (Application Reference Number: 6.7.23) and appendix G9-5 (Application Reference Number: 6.7.26) provide results of all survey work undertaken.

**Table G9-3 GCN survey results summary**

Waterbody reference	Location in relation to the proposed alignment	Peak adult count (over four survey visits)	Eggs present
Pond 13 (P13)	75m west	21	No
Pond 21 (P21)	150m north	4	No

9.3.94 Four survey visits were undertaken; two additional survey visits on ponds where GCN were detected which are normally undertaken to provide a population size class assessment were not completed as part of the baseline survey. The peak adult counts recorded during the four survey visits are used to provide the assessment of a medium population size class (peak count of between 11 and 100 individuals). Given the peak counts recorded (see table G9-3) it is not considered that a fifth and sixth survey visit would have affected these figures sufficiently to change the population size class assessment.

9.3.95 The number of ponds within the population is low and they are relatively isolated, the population size class is medium and the adjacent habitats are of low suitability. It is therefore considered unlikely that the metapopulation makes a significant contribution to favourable conservation status at a county level [RD8]. Section 5 is considered to be of local value for GCN.

### **Bats**

9.3.96 Cofnod data returned records of brown long-eared bat (*Plecotus auritus*), Daubenton's and soprano pipistrelle within the 2km study area of the proposed alignment at Llanfaethlu; see figure G9-8 (Application Reference Number: 6.7.48).

### **Tree roosts**

9.3.97 The tree roost ground assessment identified a total of 22 trees with the potential to provide suitable habitat for roosting bats within 250m of the proposed alignment at Llanfaethlu (see appendix G9-2, Application Reference Number: 6.7.23). A total of 20 of these trees were then further assessed during tree climbing surveys, see table G9-4. The survey teams used endoscopes to further inspect potential roost features during the ground and climbing assessment work. The location of the trees can be found in appendix G9-2 (figure 4.3, Application Reference Number: 6.7.23).

**Table G9-4 Summary of tree roost surveys**

Roost Category	Survey Type	Number of trees recorded
Grade 1* (high value)	Ground assessment only	1
	Tree climbing survey	4
Grade 1 (moderate value)	Ground assessment only	1
	Tree climbing survey	3
Grade 2 (low value)	Tree climbing survey	6

Roost Category	Survey Type	Number of trees recorded
Grade 3 (negligible value)	Tree climbing survey	7

9.3.98 No bats or evidence of bat activity was identified during the tree ground and climbing assessment work.

#### Building roosts

9.3.99 The majority of buildings within the study area were considered to have low potential to contain bat roosts. The locations of all the buildings and full survey results are provided in appendix G9-2 (Application Reference Number: 6.7.23).

9.3.100 Six buildings were confirmed as bat roosts, as detailed in table G9-5. The locations of the roosts are shown in appendix G9-2 (figure 5.3, Application Reference Number: 6.7.23). The roosts were located at the following distance from the proposed alignment of Section 5:

- Fadog Frech approximately 50m north-east;
- Bryn Maethlu approximately 230m north; and
- Cae'r-bryniau approximately 150m north-east.

**Table G9-5 Confirmed bat building roosts – Llanfaethlu**

Building reference	Date and time of survey	Bat species identified	Total number emerged/re-entered building
Fadog Frech – 626	Dusk – 14/07/14	Soprano pipistrelle	1
	Dawn – 14/08/14	Soprano pipistrelle	1
Fadog Frech – 625	Dusk – 14/07/14	Soprano pipistrelle	1
Fadog Frech – 638	Dawn – 15/07/14	Brown long-eared	2
	Dusk – 13/08/14	Myotis species	2
Fadog Frech – 636	Dusk – 15/07/14	Soprano pipistrelle	1
Bryn Maethlu – 748	Dusk – 12/08/14	Brown long-eared	1
		Noctule	1
Cae'r-bryniau – 602	Dusk – 16/07/14	Common pipistrelle	2
	Dawn – 12/08/14	Common pipistrelle	2

#### Hibernation roosts

9.3.101 Two lime kilns with the potential to support hibernating bats were identified during the building roost assessments in Llanfaethlu see appendix G9-2

(figure 5.3, Application Reference Number: 6.7.23). Lime kiln 793 was found to have low suitability for roosting bats and it had collapsed in late autumn 2014. Lime kiln 728 was found to be highly suitable for roosting bats as described in appendix G9-2 (Application Reference Number: 6.7.23). No bat activity was recorded by the automated bat detectors that were present within the lime kiln between 24 November and 1 December 2014. No evidence of bats was found during the detailed inspection of the lime kiln on 17 March 2015.

#### **Bat activity surveys – walked transects and static recording surveys**

9.3.102 Low levels of bat activity by widespread and common bat species, including common and soprano pipistrelle, were recorded during the walked activity transects. The location of the walked activity transects and full results are set out in appendix G9-2 (figures 6.3, 6.7, 6.11, 6.15 and 6.19, Application Reference Number: 6.7.23).

9.3.103 Species that were recorded by static monitoring surveys included common pipistrelle, soprano pipistrelle, *Myotis* species, Daubenton's, Natterer's, and noctule. The locations of the static monitoring surveys are shown in appendix G9-2 (figure 6.23, Application Reference Number: 6.7.23).

9.3.104 The species recorded during bat surveys are common (pipistrelle species, brown long-eared bat and noctule) and locally common (*Myotis* species) [RD4]. The field boundaries within the study area are used by these species for commuting and foraging. The number of individuals recorded during the emergence/re-entry surveys would suggest that none of the roosts are important maternity roosts or contribute significant numbers to the local bat populations.

9.3.105 The assemblage of bats in the study area is considered to be of local value.

#### **Otter and water vole**

9.3.106 Cofnod provided a single record of otter and water vole within 2km of the study area within the last 10 years.

9.3.107 No evidence of otter or water vole was recorded near Llanfaethlu during field surveys (see appendix G9-2, Application Reference Number: 6.7.23) and appendix G9-7 (Application Reference Number: 6.7.28) therefore they are considered to be of negligible value.

#### **Fish**

9.3.108 Conditions within the watercourses in the study area did not allow fish surveys to be completed. The minor field drains and tributaries in this section are considered to provide sub-optimal habitat for fish populations, with seasonal variation in flow and vegetation reducing the potential for fish. Therefore, fish are considered to be of negligible value.

## Section 7: Cefn Coch

### Statutory and non-statutory designated sites

9.3.109 The following statutory sites were recorded within 2km of the proposed alignment at Cefn Coch and are shown on figure G9-4 (Application Reference Number: 6.7.48).

- Cae Gwyn SSSI: 10ha site, approximately 0.76km north-east of Section 7 at its closest point. A wetland area distinguished by an abundance of royal fern (*Osmunda regalis*).
- Llyn Llygeirian SSSI: 29.8ha site, approximately 0.3km east of Section 7 at its closest point. A moderately base-rich lake supporting a range of aquatic macrophyte species.

9.3.110 The SSSI sites are of national value.

9.3.111 The following non-statutory designated sites were recorded within 2km of the proposed alignment at Cefn Coch and are shown on figure G9-4 (Application Reference Number: 6.7.48).

- Rhostir Mynydd Mechell WS: 36.92ha site, approximately 0.9km south-east of Section 7 at its closest point. Five separate blocks of heathland with associated areas of marshy grassland which represent the most intact part of a once much larger area of acid dry heath.
- Llyn Cors Coch WS: 0.73ha site, approximately 1.5km south-east of Section 7 at its closest point. The site supports a small basin mire surrounded by marshy grassland with a species-rich meadow to the east. This site is good for both amphibians and reptiles.
- Llyn Bwch WS: 11.57ha site, approximately 1.8km south-east of Section 7 at its closest point. The site comprises a lake with a margin of extensive beds of bottle sedge merging into tall fen vegetation and marshy grassland at the edges. There is heath-grassland mosaic on the surrounding rock outcrops.
- Cors Cromlech WS: 7.63ha site, approximately 1.8km north-east of Section 7 at its closest point. A basic mire with fen and marshy grassland.
- Cors Bonw WS: 3.97ha site, approximately 1.8km south-west of Section 7 at its closest point. A fen, with some bog vegetation also present, and willow carr invading from the edges. Parts are dominated by blunt-flowered rush (*Juncus subnodulosus*) with frequent slender sedges, marsh cinquefoil (*Potentilla palustris*), bogbean and marsh pennywort (*Hydrocotyle vulgaris*).
- 26051 ASNW: 0.29ha, immediately adjacent to the east of Section 7.
- 26052 ASNW: 2.01ha, approximately 1.4km west of Section 7 at its closest point.
- 26054 ASNW: 0.81ha approximately 2km north-west of Section 7 at its closest point.

9.3.112 The WS are considered to be of county value.

9.3.113 The ancient woodland sites are considered to be of national value.

### **Terrestrial habitats**

9.3.114 Phase 1 habitat survey results are shown on figure G9-14 (Application Reference Number: 6.7.48).

9.3.115 The habitats within 250m of the proposed road alignment at Cefn Coch were predominantly semi-improved grassland and improved grassland bounded generally by dry stone wall (or cloddiau) and stock-proof fencing. Broadleaved, coniferous and mixed trees were recorded bordering some field margins and along some lanes and pathways. More detailed habitat descriptions are set out in appendix G9-2 (Application Reference Number: 6.7.23) and appendix G9-3 (Application Reference Number: 6.7.24).

9.3.116 The habitats recorded within the study area are not of biodiversity importance themselves but are potentially of value for the species they support. These habitats are therefore considered within the evaluation of the relevant individual species.

### **Freshwater habitats**

9.3.117 A small unnamed channel (D56) flowing west from Llyn Llygeirian into the Afon Cafnan and then north to Porth-y-pistyll is crossed by the proposed road alignment at Cefn Coch. The channel has a relatively straight planform and forms the boundary of several fields. Detailed habitat descriptions are set out in appendix G9-1 (Application Reference Number: 6.7.22).

9.3.118 The freshwater habitats recorded within the study area are not of biodiversity importance themselves but are of potential value for the species they support. These habitats are therefore considered within the evaluation of the relevant individual species.

### **Species**

#### ***Great crested newts***

9.3.119 Cofnod provided two records of GCN within 2km of the proposed road alignment at Cefn Coch within the last 10 years.

9.3.120 No evidence for GCN was recorded within 250m of the proposed road alignment at Cefn Coch. Appendix G9-2 (Application Reference Number: 6.7.23) and appendix G9-5 (Application Reference Number: 6.7.26) provide results of all survey work undertaken. Section 7 is considered to be of negligible value for GCN.

#### ***Bats***

9.3.121 Cofnod data showed records of common pipistrelle, soprano pipistrelle, brown long-eared bat and Natterer's that had been recorded previously within 2km of the proposed road alignment at Cefn Coch (figure G9-9, Application Reference Number: 6.7.48).

### Tree roosts

9.3.122 The tree roost ground assessment identified a total of 26 trees with the potential to provide suitable habitat for roosting bats within 250m of the proposed road alignment at Cefn Coch (see appendix G9-2, Application Reference Number: 6.7.23). A total of 18 of these trees were then further assessed during tree climbing surveys and a summary of the results is set out in table G9-6. The survey teams used endoscopes to further inspect potential roost features during the ground and climbing assessment work. The location of the trees can be found in appendix G9-2 (figure 4.4, Application Reference Number: 6.7.23).

**Table G9-6 Summary of tree roost surveys**

Grade	Number of trees recorded	Survey type
Grade 1* (high value)	1	Ground assessment only
	2	Tree climbing survey
Grade 1 (moderate value)	5	Ground assessment only
	4	Tree climbing survey
Grade 2 (low value)	2	Ground assessment only
	6	Tree climbing survey
Grade 3 (negligible value)	6	Tree climbing survey

9.3.123 No bats or evidence of bat activity was identified during the tree ground and climbing assessment survey work. No evening emergence or dawn swarming surveys were undertaken but it is not considered that this presents a limitation to the valuation of the receptor given the baseline information available.

### Building roosts

9.3.124 Two buildings with high potential and three buildings with moderate potential to support bat roosts were identified within the 250m survey area around the proposed alignment at Cefn Coch (see appendix G9-2, Application Reference Number: 6.7.23). The locations of these buildings are shown in appendix G9-2 (figure 5.4.1 and 5.4.2, Application Reference Number: 6.7.23).

9.3.125 One building at Cefn Coch (796) was confirmed as a roost within the survey. The roost at Cefn Coch (796) was located approximately 50m east of the proposed alignment and the survey results are set out in table G9-7.

**Table G9-7 Confirmed bat building roosts – Cefn Coch**

Building reference	Date and time of survey	Bat species identified	Total number emerged/ re-entered building
Cefn Coch – 796	Dawn – 19/08/14	Soprano pipistrelle	1

### Bat activity surveys – walked transects and static recording surveys

9.3.126 Low bat activity by common and soprano pipistrelles was recorded during the walked activity transects. The location of the walked activity transects and detailed results are set out in appendix G9-2 (figures 6.4, 6.8, 6.12, 6.16 and 6.20, Application Reference Number: 6.7.23).

9.3.127 Species that were recorded by the static monitoring surveys included common pipistrelle, soprano pipistrelle, *Myotis* species, Daubenton's, Brandt's/whiskered, Natterer's and noctule. The locations of the static monitoring surveys are shown in appendix G9-2 (figure 6.24, Application Reference Number: 6.7.23).

9.3.128 The species recorded during bat surveys of the survey area are common (pipistrelle species, brown long-eared bat and noctule) and locally common (*Myotis* species) [RD4]. The field boundaries within the study area are used by these species for commuting and foraging. The number of individuals recorded during the surveys would suggest that the identified roost is not an important maternity roost and does not contribute significant numbers to the local populations.

9.3.129 The assemblage of bats in the study area is considered to be of local value.

#### ***Otter and water vole***

9.3.130 Cofnod provided two records of otter and no records of water vole within 2km of the proposed road alignment at Cefn Coch within the last 10 years.

9.3.131 Tributaries of the watercourses linked to Cemlyn Bay (D99, D101, D102, D105 and D125), north of Cefn Coch, recorded relatively higher numbers of otter spraints and footprints than the other survey areas, as shown in appendix G9-7 (Application Reference Number: 6.7.28). It is considered that the watercourses provide potentially important commuting routes linking coastal and inland habitats.

9.3.132 The watercourses of the study area are considered to be of county value for otter.

9.3.133 Evidence of water vole was recorded during field surveys on one ditch within the study area (D57) as shown in appendix G9-7 (Application Reference Number: 6.7.28).

9.3.134 The study area is considered to be of county value for water vole.

#### ***Fish***

9.3.135 Surveys undertaken in 2016 (see appendix D9-16, Wylfa Freshwater Baseline Surveys 2011 to 2015, Application Reference Number: 6.4.49) indicated both three- and nine-spined stickleback (*Gasterosteus aculeatus* and *Pungitius pungitius* respectively) present within the Afon Cafnan close to the existing A5025 crossing. Neither species is considered to be of conservation interest.

9.3.136 Fish abundance was low within the upper reaches of the Afon Cafnan, as a result of very shallow water levels and dense macrophyte growth reducing the potential for optimal fish habitat.

9.3.137 The study area is therefore considered to be of negligible value for fish receptors.

## **Power Station Access Road Junction**

### **Statutory and non-statutory designated sites**

9.3.138 The following statutory sites were recorded within 2km of the proposed road alignment at the Power Station Access Road Junction and are shown on figure G9-5 (Application Reference Number: 6.7.48).

- Cemlyn Bay/Bae Cemlyn SAC and SSSI: a 44.5ha site, approximately 2km north-west of the Power Station Access Road Junction at its closest point. The site is designated for Annex I habitats coastal lagoons and perennial vegetation of stony banks.
- The North Anglesey Marine/Gogledd Môn Forol cSAC: approximately 2km north-west of the Power Station Access Road Junction at its closest point. The site is proposed for designation for Annex II species harbour porpoise (*Phocoena phocoena*).
- Anglesey Terns/Morwenoliaid Ynys Môn SPA: a 101,931.08ha site approximately 2km north-west of the Power Station Access Road Junction at its closest point. The site is designated for breeding Annex I species of tern.
- Cae Gwyn SSSI: 10ha site, approximately 0.3km west of the Power Station Access Road Junction at its closest point. A wetland area distinguished by an abundance of royal fern (*Osmunda regalis*).
- Tre'r Gof SSSI: 10.1ha site, approximately 1.5km north-east of the Power Station Access Road Junction at its closest point. Representative example of rich-fen habitat in north-west Wales.
- Llyn Llygeirian SSSI: 29.8ha site, approximately 1.7km south of the Power Station Access Road Junction at its closest point. The site is selected for its biological interest as an example of a moderately base-rich lake in west Gwynedd.

9.3.139 The SAC, cSAC and SPA sites are of international value.

9.3.140 The SSSI sites are of national value.

9.3.141 The following non-statutory designated sites were recorded within 2km of the proposed road alignment at the Power Station Site Access Road Junction and are shown on figure G9-5 (Application Reference Number: 6.7.48).

- Cors Cromlech WS: 7.6ha site approximately 0.75km east of the Power Station Access Road Junction at its closest point. A basic mire with fen and marshy grassland.
- Rhostir Mynydd Mechell WS: 36.92ha site, approximately 1.5km south of the Power Station Access Road Junction at its closest point. This site consists of five separate blocks of heathland with associated areas of marshy grassland which are included in the designation because of their size and because they represent the most intact part of a fragmented but once much larger area of acid dry heath.

- Arfordir Mynydd y Wylfa - Trwyn Penrhyn Wildlife Site: 21.0ha site approximately 1.8km to the north of the Power Station Access Road Junction at its closest point. A mixture of coastal grassland with areas of bracken (*Pteridium aquilinum*) and heather (*Calluna vulgaris*). The site is notable for chough which breed on the cliffs, a colony of gulls which nest near Porth Wnal, and harbour porpoise that frequent the waters around the headland.
- Trwyn Pencarreg WS: 10.21ha site approximately 2km north-west of the Power Station Access Road Junction at its closest point. A large area of coastal heath grading to inland heath with coastal grassland and some marshy grassland.
- 26051 ASNW: 0.29ha site, approximately 1.4km south-west of the Power Station Access Road Junction at its closest point.
- 26075 RAW site: 0.5ha site, approximately 1km north of the Power Station Access Road Junction at its closest point.
- 26059 ASNW: 0.3ha site, approximately 1.3km north of the Power Station Access Road Junction at its closest point.
- 26060 ASNW: 0.3ha site, approximately 1.8km north of the Power Station Access Road Junction at its closest point.

9.3.142 The WSs are considered to be of county value.

9.3.143 The ancient woodland sites are considered to be of national value.

### **Terrestrial habitats**

9.3.144 Phase 1 habitat survey results are shown on figure G9-15 (Application Reference Number: 6.7.48).

9.3.145 The habitats within the study area were predominantly improved grassland with some examples of arable fields. Large areas of scrub were also recorded, along with isolated areas of marshy grassland. The field boundaries were generally a mixture of dry stone wall (or cloddiau), stock-proof fencing and species poor hedgerows. Detailed habitat descriptions are set out in appendix D9-7 (Phase 1 Habitat Survey Technical Summary Report) (Application Reference Number: 6.4.40).

9.3.146 The habitats recorded within the study area are not of biodiversity importance themselves but are of potential value for the species they support. These habitats are therefore incorporated within the evaluation of the relevant species, as necessary.

### **Freshwater habitats**

9.3.147 Appendix D9-16 (Application Reference Number: 6.4.49) provides the detailed habitat descriptions of the waterbodies within the study area. There were two watercourses within the study area: ditch 125 (D125, also referred to as Groes-fechan) and ditch 63 (D63 also referred to as Foel Fawr). These are part of the Cafnan and Cemaes catchments respectively.

9.3.148 The Groes-fechan has evidence of channel realignment along much of the reach surveyed and it was recorded as either heavily shaded by bankside vegetation or choked with aquatic vegetation, including water forget-me-not (*Myosotis scorpioides*) and fool's-water-cress (*Apium nodiflorum*).

9.3.149 The Foel Fawr was a narrow stream which also had evidence of realignment. Much of the channel surveyed was heavily shaded by bankside vegetation.

9.3.150 The freshwater habitats recorded within the study area are not of biodiversity importance themselves but are of potential value for the species they support and are therefore incorporated within the evaluation of the individual species, as necessary.

## Species

### **Great crested newts**

9.3.151 Cofnod provided no records of GCN within the study area.

9.3.152 An initial assessment of ponds within 500m of the proposed road alignment found four ponds with potential to support GCN. A combination of presence/absence and environmental DNA (eDNA) surveys found GCN to be present in Pond 11a, Pond 11b and Cae Gwyn SSSI as shown in table G9-8. Full details of the survey can be found in appendix D9-9 (Great Crested Newt Technical Summary Report, Application Reference Number: 6.4.42).

**Table G9-8 GCN survey results summary**

Waterbody reference	Location in relation to the proposed alignment	Peak adult count	Eggs present
Pond 11a	500m west	7 (six survey visits)	Yes
Pond 11b	500m west	No GCN recorded during four survey visits but eDNA confirmed presence	Unknown
Pond 12	500m west	1 (six survey visits)	No

9.3.153 As the number of ponds within the metapopulation is low, the size of the metapopulation is small and the adjacent habitat is of low suitability, it is considered unlikely that this metapopulation makes a significant contribution to favourable conservation status at a county level [RD8].

9.3.154 The study area is therefore considered to be of local value for GCN.

### **Bats**

9.3.155 Cofnod data contained a single record of an unknown bat in the period 2007–2017 (see figure G9-10, Application Reference Number: 6.7.48).

### **Tree roosts**

9.3.156 A line of trees was recorded west of Groes-fechan farm (see figure G9-15, Application Reference Number: 6.7.48) that may have potential to support bats.

### **Building roosts**

9.3.157 The buildings within 250m were Groes-fechan farm buildings and a ruined barn (see appendix D9-5 Bat Technical Summary Report, Application Reference Number: 6.4.38). Groes-fechan farm buildings were found to potentially support a small roost (*Pipistrelle* sp. and/or *Myotis* sp.). No evidence of bats was recorded in the ruined barn. More detail of the surveys completed is set out in appendix D9-5 (Application Reference Number: 6.4.38).

### **Bat activity surveys – walked transects and static recording surveys**

9.3.158 Low levels of bat activity by widespread and common bat species were recorded during the activity surveys in the study area. Species recorded comprised common pipistrelle, soprano pipistrelle and noctule. Full results are set out in appendix D9-5 (Application Reference Number: 6.4.38).

9.3.159 The species recorded during bat surveys of the survey area are all common [RD4]. The field boundaries including the watercourses, walls and cloddiau are used by bats for commuting and foraging. The numbers of individuals recorded suggests no large maternity roosts in the study area and are unlikely to contribute significant numbers to the local populations.

9.3.160 As such, the assemblage of bats in the study area is considered to be of local value.

### **Otter and water vole**

9.3.161 Historic records of otter near Cemlyn Bay (in the north), approximately 2km from the proposed Power Station Site Access Road Junction, were provided by Cofnod (see figure G9-10, Application Reference Number: 6.7.48).

9.3.162 No signs of otter were recorded within the study area during field surveys. Otter have been recorded in the downstream sections of the catchments within the field study area (see appendix D9-6, Otter and Water Vole Technical Summary Report, Application Reference Number: 6.4.39). The study area is considered to be of negligible value for otter.

9.3.163 Cofnod provided no records of water vole in the study area within the last 10 years.

9.3.164 Water vole latrines and optimal habitat were recorded on ditch 15 during surveys in 2013. The locations of these records are shown in appendix D9-6 (figure 6.3, Application Reference Number: 6.4.39). As such the study area is considered to be of county value for water vole.

### **Fish**

9.3.165 Ditch 125 (Groes-fechan), north-west of the proposed alignment, recorded no fish during the field survey work. The Groes-fechan site is upstream of Caerdegog Isaf, and demonstrates very low base flow which does not support a permanent population of fish. It is possible that this upstream section of the catchment as a whole does not support a viable fish population. Further details of the surveys are set out in appendix D9-16 (Application Reference

Number: 6.4.49). The Power Station Access Road Junction study area is considered to be negligible value for fish.

### ***Summary***

9.3.166 In accordance with chapter B9 (Application Reference Number: 6.2.9), only those receptors considered to be present that are of at least local value and potentially affected by the development have been taken forward to assessment and are summarised in table G9-9.

**Table G9-9 Value of receptors taken forward to assessment in each A5025 Off-line Highway Improvements sections**

Receptor	Section 1: Valley	Section 3: Llanfachraeth	Section 5: Llanfaethlu	Section 7: Cefn Coch	Power Station Access Road Junction	Overall value of receptor
Statutory designated sites – SAC & SPA	International				International	International
Statutory designated sites – SSSI	National	National	National	National	National	National
Non-statutory designated sites – IACC WS	County	County	County	County	County	County
Non-statutory designated sites – ancient woodland sites		County	County	County	County	County
Non-statutory designated sites – RSPB Reserve	Local				Local	Local
GCN		Local	Local		Local	Local
Bats	Local	Local	Local	Local	Local	Local
Otter	County	County		County		County
Water vole	County	County		County	County	County
Fish	County	County				County

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### ***Evolution of the baseline***

9.3.167 The dominant land use in the study area was low-quality agricultural habitats of arable, improved grassland or poor semi-improved grassland. In the absence of the A5025 Off-line Highway Improvements, this is considered unlikely to change significantly over time. The only factors which are likely to change the predominant landscape are considered to relate to changes in the long-term economics of farming (which could be driven by changes in climate but are more likely to be influenced by farming policy), resulting in a change of land use.

## **9.4 Design basis and activities**

9.4.1 This section sets out the design basis for this assessment of effects. It sets out where any assumptions have been made to enable the assessment to be carried out at this stage in the evolution of the design. This section also identifies the embedded and good practice mitigation that would be adopted to reduce adverse effects as inherent design features or by implementation of standard industry good working practice.

9.4.2 As described in chapter G1 (proposed development) (Application Reference Number: 6.7.1), the application for development consent for the A5025 Off-line Highway Improvements is based on the designs shown on the Works Plans (Application Reference Number: 2.3) within the limits of deviation specified. This chapter has assessed a worst case scenario from a terrestrial and freshwater ecology perspective, taking into account the flexibility afforded by the Works Plans (Application Reference Number: 2.3) and limits of deviation described in chapter G1 (Application Reference Number: 6.7.1).

### ***Construction***

#### ***Basis of assessment and assumptions***

9.4.3 It is important to note that the proposed scheme as designed (see the Design and Access Statement, volume 3 (Associated Developments and Off-Site Power Station Facilities) (Application Reference Number: 8.2.3)) has already incorporated mitigation as part of the EIA iterative process in the form of design changes that have been made to reduce ecological (and other environmental) impacts as set out in chapters G1 (Application Reference Number: 6.7.1) and G2 (alternatives and design evolution) (Application Reference Number: 6.7.2). Route optioneering has avoided statutory and non-statutory sites designated for nature conservation (see chapter G2, Application Reference Number: 6.7.2). Sensitive habitats have been avoided where practicable.

9.4.4 The key elements of the design and construction activities that are most relevant to the terrestrial and freshwater ecology assessment are outlined below.

- Tree felling, vegetation clearance and dry stone wall dismantling and storage in line with the site clearance information on figures G1-2a to G1-2j (Application Reference Number: 6.7.48).

- Topsoil clearance and storage within the construction compounds and at intervals along the construction footprint.
- Construction of haul roads along the construction footprint.
- Construction compounds at Section 1 Valley, Section 3 Llanfachraeth, Section 5 Llanfaethlu, Section 7 Cefn Coch and the Power Station Access Road Junction.
- Temporary construction lighting, at the construction compounds and in working areas, would only be used at night when very occasional night working is undertaken, at the start and end of the working day in winter, or in periods of low light.
- Presence of staff and machinery within areas under construction.
- Construction of Section 1 at Valley including drainage ditches, embankments and a new roundabout at the A5.
- Construction of Section 3 at Llanfachraeth including three attenuation ponds, a new viaduct structure over the Afon Alaw, a new overbridge to allow the local road east of Llanfachraeth to cross Section 3 and a farm access bridge. The alignment includes both embankments and cuttings. Two tracked mobile lifting cranes would be used during the construction of the viaduct structure, one at the side of each watercourse.
- Construction of Section 5 at Llanfaethlu including three attenuation ponds, a cutting at the northern end, embankments and a farm access bridge at the southern end.
- Construction of Section 7 near Cefn Coch Farm including three attenuation ponds, a cutting at the northern end, embankments and two farm access bridges.
- Construction of the Power Station Access Road Junction near Tregele including a new roundabout with the A5025 and embankments.

### Embedded mitigation

9.4.5 Some measures to address the potential effects on terrestrial and freshwater ecology have already been incorporated into the design of the A5025 Off-line Highway Improvements and are set out in the Design and Access Statement, volume 3 (Application Reference Number: 8.2.3). These are known as embedded mitigation measures and have been taken into account in the assessment sections. These mitigation measures are summarised below.

- The detailed design for watercourse culverts will incorporate either mammal ledges or secondary mammal access pipes.
- The development of a landscape planting strategy to visually screen and contain roadside features, improve landscape integration and reinstate field boundaries using hard and soft landscaping, wherever practicable.

- Existing features such as walls and hedgerows along the existing A5025 and minor roads at junctions would be retained where possible, and not constrained by highway safety.

9.4.6 Embedded mitigation measures highlighted in other topic chapters have also been used in this assessment and, where these have been relied upon, have been highlighted in section 9.5.

### Good practice mitigation

9.4.7 The following paragraphs set out the good practice mitigation that would be included within the Ecology and Landscape Management Strategy contained within the Wylfa Newydd Code of Construction Practice (CoCP) (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12). Good practice mitigation measures discussed in other topic chapters have also been used in this assessment and where these have been relied upon have been identified within the assessment of effects section. Good practice mitigation specific to terrestrial and freshwater ecology comprises the following.

- Specific work tasks would be timed appropriately to avoid ecological impacts including avoidance of vegetation clearance in the bird breeding season (March to August, inclusive), unless supervised by an Ecological Clerk of Works.
- An Ecological Clerk of Works would be present on site throughout the construction period and would oversee and supervise all aspects of the construction work to mitigate any potential detriment to the ecological receptors present.
- The proposed strategies set out in the A5025 Off-line Highway Improvements Protected and Legally Controlled Species Report (appendix G9-10, Application Reference Number: 6.7.31) and A5025 Draft Great Crested Newt Mitigation Licence (appendix G9-11, Application Reference Number: 6.7.32) would ensure that no contravention of relevant legislation occurs.
- Standard construction lighting protocols would be used to limit light spill of any night-time artificial lighting, as detailed in the document Light and lighting – Lighting of work places [RD9] and recommendations provided by the Institution of Lighting Professionals [RD10].
- In order to avoid/reduce the effects of local compaction of ground within the root protection zones of retained trees and hedgerows, or other accidental damage, appropriate tree protection measures would be implemented in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* [RD11].
- Horizon will maintain an 8m buffer zone adjacent to the Afon Alaw and a 15m buffer zone for all other watercourses, where the banks would be kept free of construction equipment to allow passage of otter.

## ***Operation***

### **Basis of assessment and assumptions**

9.4.8 The main elements of the operational A5025 Off-line Highway Improvements listed below are considered relevant to the assessment of effects on terrestrial and freshwater ecology:

- the movement of traffic along all A5025 Off-line Highway Improvements; and
- permanent lighting at Section 1 Valley around the new roundabout and on the approach over a distance of 105m.

### **Embedded mitigation**

9.4.9 There are no specific embedded mitigation measures over and above those included for construction. The key measures that have been included in the construction embedded mitigation that also apply to operation are as follows:

- the detailed design for watercourse culverts will incorporate either mammal ledges or secondary mammal access pipes; and
- the drainage design (see chapters G1 (Application Reference Number: 6.7.1) and G8 (Application Reference Number: 6.7.8)) collects the rainwater runoff from the paved areas and attenuates it prior to discharge.

9.4.10 Embedded mitigation measures highlighted in other topic chapters have also been used in this assessment and have been identified within the assessment where of specific relevance to ecology.

### **Good practice mitigation**

9.4.11 Good practice mitigation measures highlighted in other topic chapters have also been used in this assessment and are identified in section 9.5 where of specific relevance to the assessment of potential operational effects.

## **9.5 Assessment of effects**

9.5.1 This section presents the findings of the assessment of potential impact pathways associated with the construction and operation of the A5025 Off-line Highway Improvement.

9.5.2 The assessment of potential impact pathways has been divided into those that are relevant to all of the A5025 Off-line Highway Improvements and those specific to each of the off-line sections. Table G9-10 and table G9-11 provide a summary of these potential impact pathways.

**Table G9-10 Summary of potential impact pathways for ecological receptors – construction**

Potential impact pathway	Area in which ecological receptors may be affected	Ecological receptors potentially affected	A5025 Off-line Highway Improvement Section where effect relevant
Land take	All areas of land required (temporarily or permanently) to construct the A5025 Off-line Highway Improvement Section resulting in habitat loss.	Statutory or non-statutory sites	All
		GCN	Section 3 Llanfachraeth Section 5 Llanfaethlu Power Station Access Road Junction
		Bats - commuting and foraging	All
		Bats – tree roosts	Section 7 Cefn Coch
		Fish	Section 3 Llanfachraeth
		Otter	Section 1 Valley Section 3 Llanfachraeth Section 7 Cefn Coch
		Water vole	Section 1 Valley Section 3 Llanfachraeth Section 7 Cefn Coch Power Station Access Road Junction
Changes in noise and vibration	Areas within 600m of the proposed construction area as set out in chapter G6 (Application Reference Number: 6.7.6). However, this area may be extended based on the results of the desk study and if professional judgement	Statutory or non-statutory sites	All
		Bats – building and tree roosts	All
		Otter	Section 1 Valley Section 3 Llanfachraeth Section 7 Cefn Coch

Potential impact pathway	Area in which ecological receptors may be affected	Ecological receptors potentially affected	A5025 Off-line Highway Improvement Section where effect relevant
	<p>considers that sensitive receptors may be affected.</p> <p>Species affected that are sensitive to change could be disturbed and avoid using the area.</p> <p>GCN and water vole [RD12] are not considered sensitive to this type of change.</p>	Fish	Section 3 Llanfachraeth
Changes in visual stimuli	<p>Areas that have visibility of the construction area and operational alignment.</p> <p>Considered to be confined to sensitive bird species (i.e. those associated with designated sites) that are disturbed by the presence of people/vehicles. This is limited to areas where the construction area is visible. This has been limited to areas within 300m of the A5025 Off-line Highway Improvements based on the work carried out by Cutts <i>et al.</i> [RD13] and using professional judgement.</p>	No species or designated sites supporting those species sensitive to this effect have been recorded within 300m of any of the A5025 Off-line Highway Improvements sections.	None
Changes in lighting	Areas adjacent to proposed construction areas where lighting is required and that are used by sensitive species.	Bats – tree and building roosts and commuting/foraging.	All
		Otters	Section 3 Llanfachraeth Section 7 Cefn Coch
		Fish	Section 3 Llanfachraeth

Potential impact pathway	Area in which ecological receptors may be affected	Ecological receptors potentially affected	A5025 Off-line Highway Improvement Section where effect relevant
Changes in air quality	Dust emissions – Areas within 50m of the construction site, and within 50m of the access roads up to 500m from each section's site entrance (as set out in chapter G5 (Application Reference Number: 6.7.5)).	Statutory or non-statutory sites	All
	Emissions from plant and machinery (i.e. non-road mobile machinery) (as set out in chapter G5 (Application Reference Number: 6.7.5)). Potential for habitat loss or degradation in areas affected.		
	Emissions from traffic are considered over an Anglesey-wide study area as reported in chapter C5 (Application Reference Number: 6.3.5). The effects on sensitive ecological receptors within 200m of affected roads are considered. Potential for habitat loss or degradation in areas affected.	The predicted effects on sensitive ecological receptors are discussed in chapter C5 (Application Reference Number: 6.3.5).	
Changes in water quality	Areas crossed by or downstream of construction site. Habitats and species potentially affected by changes in water quality, in particular sedimentation.	Statutory or non-statutory sites Fish Otter Water vole	All

**Table G9-11 Summary of potential impact pathways for ecological receptors – operation**

Potential impact pathway	Area in which ecological receptors may be affected.	Ecological receptors potentially affected	A5025 Off-line Highway Improvement Section where effect relevant
Presence of traffic on new road	Where the A5025 is on a new alignment. Potential for vehicular collision with species crossing the new road.	Bats	All
		Otter	Section 1 Valley Section 3 Llanfachraeth Section 7 Cefn Coch
		GCN	Section 3 Llanfachraeth
Changes in noise and vibration	Noise and vibration from traffic are considered over an Anglesey-wide study area as reported in chapter C5 (Application Reference Number: 6.3.5). The changes have been calculated on areas within 600m of operational scheme.  Species that are sensitive to change could be disturbed and avoid using the area affected.	Statutory or non-statutory sites	All
		Bats – roosts in trees and buildings	Section 7 Cefn Coch Power Station Access Road Junction
Changes in lighting	Lighting columns only present at Valley roundabout as set out in chapter G1 (Application Reference Number: 6.7.1). Species that are sensitive to change could be disturbed and avoid using the area affected	Bats – foraging and commuting	Section 1 Valley
Changes in air quality	Emissions from traffic are considered over an Anglesey-wide study area as reported in chapter C4 (Application	The predicted effects on sensitive ecological receptors are discussed in chapter C4 (Application Reference Number: 6.3.4).	

Potential impact pathway	Area in which ecological receptors may be affected.	Ecological receptors potentially affected	A5025 Off-line Highway Improvement Section where effect relevant
	Reference Number: 6.3.4). The effects on sensitive ecological receptors are considered within 200m of affected roads. Potential for habitat loss and degradation in area affected by emissions.		
Changes in water quality	<p>Areas crossed by the proposed road and/or adjacent to/downstream of construction areas.</p> <p>Habitats and species potentially affected by changes in water quality, in particular sedimentation.</p>	<p>Statutory or non-statutory sites</p> <p>Fish</p> <p>Otter</p> <p>Water vole</p>	All

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## ***All A5025 Off-line Highway Improvements sections***

### **Construction**

#### ***Changes in lighting***

9.5.3 The receptors recorded in the study area that could be sensitive to changes in lighting during some parts of their life cycle include otter, bats and fish. No evidence was recorded of holts or roosts within the areas likely to be illuminated. Furthermore, the good practice measures set out in the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) and the Wylfa Newydd Code of Construction Practice (CoCP) (Application Reference Number: 8.6) designed to reduce light spill onto adjacent areas are considered to be sufficient to avoid any effects on the ecological receptors using the area. Therefore, a neutral effect is predicted.

#### ***Changes in air quality***

9.5.4 Dust emissions during construction would be avoided through the implementation of good practice mitigation, such as dampening down haul routes and covering stock piles, as set out in the Wylfa Newydd CoCP (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12); therefore, a neutral effect on terrestrial and freshwater ecology is predicted.

9.5.5 The emissions from plant and machinery during the construction phase have been assessed in chapter G5 (Application Reference Number: 6.7.5), which states that given the phased construction programme, and the low numbers and sizes of plant and machinery, no detailed assessment is required and a neutral effect on human and ecological receptors is predicted.

#### ***Changes in water quality***

9.5.6 The embedded and good practice mitigation measures set out in the Wylfa Newydd CoCP (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12), designed to avoid pollution of watercourses, are such that a neutral effect on receiving water courses is predicted; therefore, a neutral effect on terrestrial and freshwater ecology is considered likely.

### **Operation**

#### ***Changes in air quality***

9.5.7 Changes in air quality as a result of traffic emissions have been assessed in chapter C4 (Application Reference Number: 6.3.4) and the effects on ecological receptors are also considered in that volume.

#### ***Changes in water quality***

9.5.8 The drainage design described in chapter G1 (Application Reference Number: 6.7.1) and Design and Access Statement - Volume 3 - Associated Developments and Off-Site Power Station Facilities (Application Reference

Number: 8.2.3) and the embedded and good practice mitigation measures set out in the Wylfa Newydd Code of Operational Practice (CoOP) (Application Reference Number: 8.13), designed to avoid pollution of watercourses, are such that a neutral effect on receiving water courses is predicted; therefore, a neutral effect on terrestrial and freshwater ecology is predicted.

## **Section 1: Valley**

### **Construction**

#### **Land take**

9.5.9 Approximately 7.9ha of land would be taken temporarily to facilitate construction of the A5025 Off-line Highway Improvements at Section 1. Approximately 3.0ha of land would be taken permanently to accommodate the bypass.

9.5.10 The construction of Section 1 Valley would result in the loss of the habitats set out in table G9-12.

**Table G9-12 Areas of habitat loss**

<b>Phase 1 Habitat type</b>	<b>Approximate area lost (ha) or length lost (m)</b>
Semi-improved grassland	0.25ha
Poor semi-improved grassland	3.50ha
Marshy grassland	0.5ha
Improved grassland	6.40ha
Intact species-poor hedgerow	500m
Dry stone walls/cloddiau	1030m

#### **Statutory and non-statutory designated sites**

9.5.11 None of the statutory or non-statutory designated sites within the study area are within the area of land required to construct Section 1 Valley.

#### **Bats**

9.5.12 The loss of habitats, notably hedge lines and walls, could adversely affect the use of the area by bats for foraging and commuting. However, a combination of the embedded mitigation measures to reinstate the hedgerows and stone walls, the types of bat recorded (common and widespread), and the presence of alternative boundary features means that any effect on bats would be unlikely to occur. The potential effect is considered to be temporary in duration and extremely unlikely to affect the population status of any of the species recorded. Therefore, any effect is considered to be negligible and a neutral effect on bats is predicted as a result of the land take required to construct Section 1 Valley.

### **Otter and water vole**

9.5.13 No evidence of otter or water vole has been recorded in the area of land required to construct Section 1 Valley and no watercourses are crossed. Therefore, these receptors would not be affected and a neutral effect is predicted.

### **Changes in noise and vibration**

9.5.14 The predicted changes in noise during construction of Section 1 are shown on figure G6-4 (Application Reference Number: 6.7.48). The area over which the noise level would be greater than 65dB  $L_{Aeq\ T}$  (levels of less than 65dB  $L_{Aeq\ T}$  are considered in the noise assessment as being negligible) is predicted to be limited to areas within the extent of land take for Section 1 Valley.

9.5.15 There are no statutory or non-statutory designated sites within this area, therefore, a neutral effect is predicted.

9.5.16 The receptors recorded in the study area that could be sensitive to noise during some parts of their life cycle include otter and bats. No evidence was recorded of holts or roosts within the areas that are likely to experience changes in noise levels of greater than 65dB  $L_{Aeq\ T}$ . Furthermore, the good practice measures set out in the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) and the Wylfa Newydd CoCP (Application Reference Number: 8.6) designed to reduce noise during construction for human receptors are considered to be sufficient to avoid any effects on the ecological receptors using the area. Therefore, a neutral effect is predicted.

## **Operation**

### **Changes in traffic**

9.5.17 The predicted changes in traffic have been assessed in volume C (traffic and transport) (Application Reference Number: 6.3). There is potential for any changes in traffic use of Section 1 Valley to result in a greater incidence of vehicle collision for receptors such as otter and bats. The new alignment does not cross any watercourses, and the proposed reinstatement of field boundaries (hedgerows and stone walls) as part of construction would mean potential habitat fragmentation issues for bats were avoided. It is therefore considered that the risk of mortality as a result of vehicle collision is unlikely to increase, and a neutral effect is predicted.

### **Changes in noise and vibration**

9.5.18 The predicted changes in noise during operation have been assessed in chapter C5 (Application Reference Number: 6.3.5). The changes in noise during operation have the potential to disturb sensitive species within the extents of the land take at Section 1 Valley (see figure C5-10, Application Reference Number: 6.3.32). None of the statutory or non-statutory designated sites within the study area are within the area likely to experience a change in noise during operation.

9.5.19 The receptors recorded in the study area that could be sensitive to noise during some parts of their life cycle were considered to be bats and otter. No bat roosts or otter holts were recorded during the baseline surveys. Furthermore, the changes in noise as a result of operational traffic are considered in chapter C5 (Application Reference Number: 6.3.5) and a decrease in noise has been predicted at this location. A neutral effect on bats and otter is therefore predicted.

### ***Changes in lighting***

9.5.20 The receptors recorded in the study area that could be sensitive to changes in lighting during some parts of their life cycle comprise bats. No evidence was recorded of roosts within the area likely to be affected by the new lighting columns on the roundabout and its approaches. Furthermore, the good practice measures set out in Wylfa Newydd CoOP (Application Reference Number: 8.13) designed to reduce light spill onto adjacent areas are considered to be sufficient to avoid any effects on the ecological receptors using the area. Therefore, a neutral effect on bats is predicted.

## ***Section 3: Llanfachraeth***

### **Construction**

#### ***Land take***

9.5.21 Approximately 5.4ha of land would be taken temporarily to facilitate construction of the A5025 Off-line Highway Improvements within Section 3. Approximately 13.9ha of land would be taken permanently to accommodate the bypass.

9.5.22 The construction of Section 3 Llanfachraeth would result in the loss of the habitats set out in table G9-13.

**Table G9-13 Areas of habitat loss**

Phase 1 Habitat type	Approximate area lost (ha) or length lost (m)
Poor semi-improved grassland	0.65ha
Improved grassland	13.6ha
Arable	0.04ha
Ditches (dry)	650m
Intact species-poor hedgerow	1,196m
Defunct species-poor hedgerow	680m
Dry stone walls/cloddiau	1900m
Earth bank/cloddiau	342m

### **Statutory and non-statutory designated sites**

9.5.23 None of the statutory or non-statutory designated sites within the study area are within the area of land required to construct Section 3 Llanfachraeth.

### **Great crested newts**

9.5.24 Construction of Section 3 Llanfachraeth would result in the loss of terrestrial habitats used by GCN from pond 10 and ditch 25. No ponds or any standing water would be permanently lost; however, ditch 25 would be culverted.

9.5.25 The terrestrial habitats within 250m of ponds with confirmed GCN presence are considered important for GCN in their terrestrial phase. The loss of habitat within this 250m area required to construct Section 3 Llanfachraeth is approximately 3.5ha comprising improved grassland, hedgerows and walls.

9.5.26 The areas of terrestrial habitat lost are considered small when compared to the wide expanse of retained habitat adjacent to the proposed road alignment at Llanfachraeth (see figure G9-12, Application Reference Number: 6.7.48). However, the fragmented nature of GCN populations on Anglesey means that there is a risk that the populations using pond 10 and ditch 25 could be adversely affected. This is coupled with the work to culvert on ditch 25 where GCN would be temporarily unable to use that part of the ditch. This is considered to be a temporary adverse effect during the construction period, as the new earthworks slopes would provide similar terrestrial habitat, but this has the potential to disrupt the use of the area by newts during that time. The loss of terrestrial habitat and ditch habitat is considered to have a slight adverse effect on GCN.

9.5.27 The good practice measures for otters by allowing permeability of the construction site, where watercourses are crossed, would also allow GCN to move through the construction site and no habitat fragmentation or severance impact is predicted as a result of the land take required to construct Section 3 Llanfachraeth.

9.5.28 A proposed strategy to ensure compliance with protected species legislation is provided in the Protected and Controlled Species Compliance Report (appendix G9-10, Application Reference Number: 6.7.31) and the draft GCN mitigation licence (appendix G9-11, Application Reference Number: 6.7.32) and would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### **Bats**

9.5.29 No buildings are proposed for demolition to allow construction of Section 3 Llanfachraeth. No trees with potential to support bat roosts were recorded within the area of land take required for construction.

9.5.30 The loss of hedge lines and walls could adversely affect the use of the area by bats for foraging and commuting. However, a combination of the embedded mitigation measures to reinstate the hedgerows and stone walls, the types of bat recorded (common and widespread), and the presence of alternative boundary features means that any effect on bats would be unlikely to occur. Any effect is considered to be temporary in duration and extremely unlikely to affect the population status of any of the species recorded. Therefore, any effect resulting from land take is considered to be negligible and a neutral effect on bats is predicted.

### **Otter**

9.5.31 No loss of holts or resting places would be anticipated during construction of Section 3 Llanfachraeth. Temporary loss of a section of watercourse at each waterbody crossing (D16, D20, D23, D25) at Llanfachraeth, during culverting processes would be mitigated through the good practice mitigation measures to maintain otter passage through the construction site. As a result, a neutral effect due to habitat loss or severance of commuting routes is expected.

9.5.32 Measures to ensure compliance with protected species legislation is detailed in the Protected and Controlled Species Compliance Report (appendix G9-10, Application Reference Number: 6.7.31) and would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### **Water vole**

9.5.33 No evidence of water vole has been recorded in the areas required to construct Section 3 Llanfachraeth; therefore, neutral effects on water vole are predicted as a result of land take.

9.5.34 Measures to ensure compliance with protected species legislation is detailed in the Protected and Controlled Species Compliance report (appendix G9-10, Application Reference Number: 6.7.31) and would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### **Fish**

9.5.35 The provision of a viaduct over the Afon Alaw would not result in any habitat loss; therefore, no effect is predicted on the fish receptor recorded in this watercourse.

9.5.36 The construction of culverts, to cross a number of ditches, would result in freshwater habitat loss. Bed substrates could also be removed resulting in the removal of aquatic habitat for the length of culverts plus approximately 5m at each end. The loss of natural channel morphology could affect fish utilisation of construction areas.

9.5.37 There is no evidence of fish using the ditches that would be culverted. The embedded and good practice mitigation set out in the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6) would reduce the amount of in-channel working, and the use of good practice when designing and constructing the culverts would allow passage and mimic natural habitat with reinstatement of the bank and bed features. It is predicted that this would result in a neutral effect on fish.

### ***Changes in noise and vibration***

9.5.38 The predicted changes in noise during construction of Section 3 are shown on figure G6-5 (Application Reference Number: 6.7.48). The area over which the noise level would be greater than 65dB LAeq T (levels of less than 65dB LAeq T are considered in the noise assessment as being negligible) is predicted to be limited to areas within the extents of the land take for Section 3 Llanfachraeth.

### **Statutory and non-statutory designated sites**

9.5.39 None of the statutory or non-statutory designated sites within the study area are within the area likely where the noise level will be greater than 65dB LAeq T during construction. A neutral effect is therefore predicted.

### **Bats**

9.5.40 Noise and vibration caused by construction activities in the areas adjacent to bat roosts (locations identified in table G9-2) could potentially disturb bats causing them to abandon their roosts. Disturbance at night could also disorientate and reduce efficiency of echolocation during foraging [RD14]. The existing A5025 is considered likely to be the largest contributor of noise in the vicinity of these roosts.

9.5.41 For the roost potentially affected at Pen-yr-orsedd, the existing A5025 is located between the farm buildings and the areas where construction would occur (approximately 130m east). As such, it would be reasonable to assume that roosting bats at this roost are moderately tolerant of noise. Furthermore, the roost was only recorded as being used by single individuals; therefore, any effects could not be considered significant for the local population. Therefore, a neutral effect on bats as a result of changes in noise is predicted.

### **Otter**

9.5.42 Noise caused by construction activities adjacent to watercourses could disturb otter and cause them to abandon their resting places, and could also disorientate and reduce efficacy of foraging. A potential couch was identified on the Afon Alaw approximately 300m downstream of the proposed viaduct (see appendix G9-2, Application Reference Number: 6.7.23). Otter are known to habituate to disturbance quickly, tolerating construction noise, vibration and lighting during road schemes. This has been documented by Jacobs ecologists during the A470 Cwmbach to Newbridge-on-Wye road scheme in mid-Wales where otters were recorded using the river as a new road bridge was being built over it.

9.5.43 Furthermore, the embedded and good practice mitigation measures set out in the Wylfa Newydd CoCP (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) would also reduce or avoid any changes in noise and vibration affecting otter during construction. A neutral effect on otter as a result of changes in noise and vibration is therefore predicted.

### **Water vole**

9.5.44 Water voles are known to be very resilient and capable of tolerating quite high levels of disturbance [RD12] and there is a lack of evidence of water vole burrows within the construction area. These factors, in combination with the embedded mitigation (such as the buffer strips described in the Wylfa Newydd CoCP (Application Reference Number: 8.6), and good practice mitigation (such as the commitments to reduce noise described in the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) and Wylfa Newydd CoCP (Application Reference Number: 8.6)), would therefore result in a neutral effect on water vole being predicted.

### **Fish**

9.5.45 During construction, activities carried out in the vicinity of a riverbank (e.g. earthworks, culvert construction, drilling, excavation and piling activities), would generate ground-borne vibrations that may propagate into the water column. No evidence of sensitive fish species in the watercourses crossed by Section 3 Llanfachraeth has been recorded during the surveys. However, the embedded and good practice mitigation measures set out in the Wylfa Newydd CoCP (Application Reference Number: 8.6) have been designed to protect the watercourse and will reduce potential effects on fish. A neutral effect on fish as a result of changes in noise and vibration is predicted.

## **Operation**

### ***Changes in traffic***

9.5.46 The predicted changes in traffic have been assessed in volume C (Application Reference Number: 6.3). There is potential that any changes in traffic use of Section 3 Llanfachraeth could result in a greater incidence of vehicle collision affecting sensitive species. The embedded measures, described in the Wylfa Newydd CoOP (Application Reference Number: 8.13) and section 9.4 above, would provide safe passage under the road for mobile species including GCN, bats, and otter. The risk of mortality of these species/groups as a result of vehicle collision is therefore considered unlikely to increase and so a neutral effect is predicted.

### ***Changes in noise and vibration***

9.5.47 The predicted changes in noise during operation have been assessed in chapter C5 (Application Reference Number: 6.3.5). The changes have the potential to disturb sensitive species adjacent to Section 3 Llanfachraeth (see figure C5-10, Application Reference Number: 6.3.32). A number of embedded mitigation measures to reduce the effects of noise on human receptors, including a noise attenuation fence along the Afon Alaw crossing, as described in Wylfa Newydd CoOP (Application Reference Number: 8.13), would also reduce effects on ecological receptors.

9.5.48 None of the statutory or non-statutory designated sites within the study area are within the area likely to experience an increase in noise during operation.

## Section 5: Llanfaethlu

### Construction

#### Land take

9.5.49 Approximately 3.1ha of land would be taken temporarily to facilitate construction of the A5025 Off-line Highway Improvements within Section 5. Approximately 7.2ha of land would be taken permanently to accommodate the bypass.

9.5.50 The construction of Section 5 Llanfaethlu would result in the loss of the habitats set out in table G9-14.

**Table G9-14 Areas of habitat loss**

Phase 1 Habitat type	Approximate area lost (ha) or length lost (m)
Semi-improved grassland	0.65ha
Poor semi-improved grassland	0.47ha
Marshy grassland	0.11ha
Improved grassland	4.57ha
Arable	1.46ha
Intact species-poor hedgerow	940m
Defunct species-poor hedgerow	590m
Dry stone walls/cloddiau	2000m

#### Statutory and non-statutory designated sites

9.5.51 None of the statutory or non-statutory designated sites within the study area are within the area of land required to construct Section 5 Llanfaethlu.

#### Great crested newts

9.5.52 Construction of Section 5 Llanfaethlu would result in the loss of terrestrial habitats used by GCN from pond 13. No ponds or any standing water would be permanently lost or culverted.

9.5.53 The terrestrial habitats within 250m of ponds with confirmed GCN presence are considered important for GCN in their terrestrial phase. The loss of habitat within this 250m area required to construct Section 5 Llanfaethlu is approximately 1.8ha comprising arable, improved grassland, marshy grassland, hedgerow and walls.

9.5.54 The areas of terrestrial habitat lost are considered small when compared to the wide expanse of retained habitat adjacent to the proposed alignment at Llanfaethlu (see figure G9-13, Application Reference Number: 6.7.48). However, the fragmented nature of GCN populations on Anglesey means that there is a risk that the population using pond 13 would be adversely affected. This is considered to be a temporary adverse effect during the construction period, as the new earthworks slopes will provide similar terrestrial habitat, but

has the potential to disrupt the use of the area during that time resulting in the potential for a slight adverse effect on the GCN population.

9.5.55 None of the ponds with confirmed GCN presence at Llanfaethlu are located in land between the existing road and the proposed location of Section 5. As such, no habitat fragmentation or severance impact is predicted in this location.

9.5.56 Measures to ensure compliance with protected species legislation is provided in the Protected and Controlled Species Compliance Report (appendix G9-10, Application Reference Number: 6.7.31) and draft GCN mitigation licence (appendix G9-11, Application Reference Number: 6.7.32) and would be implemented in accordance with the Ecology and Landscape Management Strategy contained within section 11 of the Wylfa Newydd Code of Construction Practice (CoCP) (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### **Bats**

9.5.57 No buildings are proposed for demolition to allow construction of Section 5 Llanfaethlu. No trees with potential to support bat roosts were recorded within the land take required for construction.

9.5.58 The loss of habitats, notably hedge lines and walls, could adversely affect the use of the area by bats for foraging and commuting. However, a combination of the embedded mitigation measures to reinstate the hedgerows and stone walls, the types of bat recorded (common and widespread), and the presence of alternative boundary features means that no significant effect on bats would be likely to occur. Any effect is considered to be temporary in duration and extremely unlikely to affect the population status of any of the species recorded. Therefore, any effect resulting from land take is considered to be negligible and a neutral effect on bats is predicted.

### ***Changes in noise and vibration***

9.5.59 The predicted changes in noise during construction of Section 3 are shown on figure G6-4 (Application Reference Number: 6.7.48). The area over which the noise level will be greater than 65dB  $L_{Aeq\ T}$  is predicted to be broadly limited to areas within the extent of land take for Section 5 Llanfaethlu.

### **Statutory and non-statutory designated sites**

9.5.60 None of the statutory or non-statutory designated sites within the study area are within the area where the noise level is predicted to be greater than 65dB  $L_{Aeq\ T}$  during construction. Therefore, a neutral effect is predicted.

### **Bats**

9.5.61 Noise and vibration caused by construction activities in the areas adjacent to bat roosts (locations identified in table G9-5) could disturb bats, potentially causing them to abandon their roosts. Disturbance at night could also disorientate and reduce efficiency of echolocation during foraging [RD14]. The existing A5025 is considered likely to be the largest contributor of noise

in the vicinity of the identified roosts; therefore, bats at these roosts are likely to be habituated to a level of noise in the environment similar to that likely to be caused by the proposed construction activity.

9.5.62 The roosts recorded (Fadog Frech, Cae'r-bryniau and Bryn Maethlu) within the survey area for Section 5 Llanfaethlu, supported low numbers (one or two individuals) of common species of bat, and so any effects would not be significant to the local population. The change in noise level predicted to be experienced during construction at these properties is considered to be negligible. Furthermore, the good practice measures designed to reduce the effects of noise and vibration on the human receptors in these buildings would also reduce the effects on bats. Therefore, a neutral effect on bats as a result of changes in noise is predicted.

## Operation

### ***Changes in traffic***

9.5.63 The predicted changes in traffic have been assessed in chapter C2 (Application Reference Number: 6.3.2). There is potential that any changes in traffic use of Section 5 Llanfaethlu could result in a greater incidence of vehicle collision affecting mobile species such as bats. The embedded measures, described in the Wylfa Newydd CoOP (Application Reference Number: 8.13) and section 9.4, would provide safe passage under the road. The risk of mortality of these species as a result of vehicle collision is therefore considered unlikely to increase and so a neutral effect is predicted.

### ***Changes in noise and vibration***

9.5.64 The predicted changes in noise during operation have been assessed in chapter C5 (Application Reference Number: 6.3.5). The predicted changes in noise during operation have the potential to disturb sensitive species immediately adjacent Section 5 Llanfaethlu (see figure C5-10, Application Reference Number: 6.3.32). A number of embedded mitigation measures to reduce effects of noise on human receptors, such as the use of the Park and Ride and the Logistics Centre to reduce the amount of traffic towards the Wylfa Newydd Development Area (as described in Wylfa Newydd CoOP (Application Reference Number: 8.13)), would also reduce effects on ecological receptors. None of the statutory or non-statutory designated sites within the study area are within the area likely to experience an increase in noise during operation.

9.5.65 The receptors recorded in the study area that could be sensitive to noise during some parts of their life cycle were considered to be limited to bats. No bat roosts were recorded during the baseline surveys. Furthermore, the changes in noise as a result of operational traffic are considered in chapter C5 (Application Reference Number: 6.3.5) and a decrease in noise has been predicted at this location. A neutral effect on bats is therefore predicted.

## Section 7: Cefn Coch

### Construction

#### Land take

9.5.66 Approximately 2.7ha of land would be taken temporarily to facilitate construction of the A5025 Off-line Highway Improvements within Section 7. Approximately 6.6ha of land would be taken permanently to accommodate the bypass.

9.5.67 The construction of Section 7 Cefn Coch would result in the loss of the habitats set out in table G9-15.

**Table G9-15 Areas of habitat loss**

Phase 1 Habitat type	Approximate area lost (ha) or length lost (m)
Semi-improved grassland	6.82ha
Poor semi-improved grassland	1.36ha
Marshy grassland	0.04ha
Scrub/woodland	0.1ha
Intact species-poor hedgerow	520m
Defunct species-poor hedgerow	170m
Dry stone walls/cloddiau	940m
Earth bank/cloddiau	230m

#### Statutory and non-statutory designated sites

9.5.68 None of the statutory or non-statutory designated sites within the study area are within the area of land required to construct Section 7 Cefn Coch.

#### Bats

9.5.69 No buildings are proposed for demolition to allow construction of Section 7 Cefn Coch.

9.5.70 Thirteen trees would require felling to enable construction of Section 7 Cefn Coch. Eight of these have the potential to support roosting bats but no roosts were confirmed during survey work. It is considered likely that these trees would be used by the types of common widespread bats recorded during the activity surveys (see section 9.3). Given the limited numbers of mature trees noted in the study area the loss of these potential roosts could be significant to the bats within that locality and is considered to be a slight adverse effect.

9.5.71 Measures to ensure compliance with protected species legislation are provided in the Protected and Controlled Species Compliance Report (appendix G9-10, Application reference Number: 6.7.31) and would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (CoCP) (Application

Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

9.5.72 The loss of habitats, notably the hedge lines and walls, could adversely affect the use of the area by bats for foraging and commuting. However, a combination of the embedded mitigation measures to reinstate the hedgerows and stone walls, the types of bat recorded (common and widespread), and the presence of alternative boundary features means that any effect on bats would be unlikely to occur. Any effect is considered to be temporary in duration and extremely unlikely to affect the population status of any of the species recorded. Therefore, any effect resulting from land take is considered to be not significant and a neutral effect on bats is predicted.

#### **Otter**

9.5.73 No loss of holts or resting places would be anticipated during construction of the proposed scheme. Temporary loss of watercourse at each waterbody crossing during culverting processes would be mitigated through the good practice mitigation measures to maintain otter passage through the construction site. A neutral effect due to habitat loss or severance of commuting routes is expected due to good practice mitigation measures.

9.5.74 Measures to ensure compliance with protected species legislation are detailed in the Protected and Controlled Species Compliance Report (appendix G9-10, Application Reference Number: 6.7.31) and would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (CoCP) (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

#### **Water vole**

9.5.75 No evidence of water vole has been recorded in the areas required to construct Section 7 Cefn Coch; therefore, a neutral effect on water vole is predicted as a result of land take.

9.5.76 Measures to ensure compliance with protected species legislation are detailed in the Protected and Controlled Species Compliance Report (appendix G9-10, Application Reference Number: 6.7.31) and would be implemented via the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (CoCP) (Application Reference Number: 8.6) and A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

#### **Changes in noise and vibration**

9.5.77 The predicted changes in noise during construction of Section 5 are shown on figure G6-6 (Application Reference Number: 6.3.32). The area over which the noise level will be greater than 65dB  $L_{Aeq\ T}$  (levels of less than 65dB  $L_{Aeq\ T}$  are considered in the noise assessment as being negligible) is predicted to be limited to areas within the extents of land take for Section 7: Cefn Coch.

### **Statutory and non-statutory designated sites**

9.5.78 The 26051 ASNW site is within 10m of the existing A5025 and is predicted to experience noise levels of up to approximately 70dB  $L_{Aeq\ T}$ . This site is designated as ancient woodland and is not considered sensitive to changes in noise. None of the other statutory or non-statutory designated sites within the study area are within the area likely where the noise level will be greater than 65dB  $L_{Aeq\ T}$  during construction. Therefore, a neutral effect is predicted.

### **Bats**

9.5.79 Noise and vibration caused by construction activities in the areas adjacent to bat roosts (locations identified in table G9-5) could disturb bats, potentially causing them to abandon their roosts. Disturbance at night could also disorientate and reduce efficiency of echolocation during foraging [RD14]. The existing A5025 is considered likely to be the largest contributor of noise in the vicinity of the identified roost; therefore, bats at this roost are likely to be habituated to a level of noise in the environment similar to that likely to be caused by the proposed construction activity.

9.5.80 The known roost at Cefn Coch was only recorded as being used by one individual; therefore, any effects would not be significant to the local population. The predicted noise level at the roost during construction was up to approximately 55dB  $L_{Aeq\ T}$ . Furthermore, the good practice measures (as set out in the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) and the Wylfa Newydd Code of Construction Practice (Application Reference Number: 8.6)) designed to reduce the effects of noise and vibration on the human receptors in these buildings would also reduce the effects on bats. A neutral effect on bats is therefore predicted.

### **Otter**

9.5.81 Noise caused by construction activities adjacent to watercourses could disturb otter and cause them to abandon their resting places, and could also disorientate and reduce efficacy of foraging. No holts or resting places were recorded. Otter are known to habituate to disturbance quickly, tolerating construction noise, vibration and lighting during road schemes. Furthermore, the embedded and good practice mitigation measures set out in the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) and the Wylfa Newydd CoCP (Application Reference Number: 8.6) would also reduce or avoid any changes in noise and vibration affecting otter during construction. A neutral effect on otter as a result of changes in noise and vibration is therefore predicted.

## **Operation**

### **Changes in traffic**

9.5.82 The predicted changes in traffic have been assessed in chapter C2 (Application Reference Number: 6.3.2). There is potential that any changes in traffic use of Section 7 Cefn Coch could result in a greater incidence of vehicle collision. The embedded measures described in the Wylfa Newydd Code of Operational Practice (Application Reference Number: 8.13), provide safe

passage under the road for bats and otter. The risk of increased mortality of these species/groups as a result of vehicle collision is considered unlikely, therefore, a neutral effect is predicted.

### ***Changes in noise and vibration***

9.5.83 The predicted changes in noise during operation have been assessed in chapter C5 (Application Reference Number: 6.3.5). The predicted changes in noise during operation have the potential to disturb sensitive species immediately adjacent to Section 7 Cefn Coch (see figure C5-10, Application Reference Number: 6.3.32). A number of embedded measures to reduce effects of noise on human receptors as described in Wylfa Newydd Code of Operational Practice (Application Reference Number: 8.13) would also reduce effects on ecological receptors.

9.5.84 None of the statutory or non-statutory designated sites within the study area are within the area likely to experience an increase in noise during operation.

9.5.85 The receptors recorded in the study area that could be sensitive to noise during some parts of their life cycle is limited to bats. The roost at Cefn Coch was only used by one individual and it is considered that it is likely to be habituated to the traffic noise from the existing A5025. Furthermore, the changes in noise as a result of operational traffic are considered in chapter C5 (Application Reference Number: 6.3.5) and a decrease in noise has been predicted at this location. Therefore, a neutral effect on bats is predicted.

## ***Power Station Access Road Junction***

### ***Construction***

#### ***Land take***

9.5.86 Approximately 2.7ha of land would be taken temporarily to facilitate construction of the Power Station Access Road Junction. Approximately 0.9ha of land would be taken permanently to accommodate the junction.

9.5.87 The construction of the Power Station Access Road Junction would result in the loss of the habitats set out in table G9-16.

**Table G9-16      Areas of habitat loss**

<b>Phase 1 Habitat type</b>	<b>Approximate area lost (ha) or length lost (m)</b>
Improved grassland	3.71ha
Intact species-poor hedgerow	120m
Dry stone walls/cloddiau	530m

### ***Statutory and non-statutory designated sites***

9.5.88 None of the statutory or non-statutory designated sites within the study area are within the area of land required to construct the Power Station Access Road Junction.

### **Great crested newts**

9.5.89 GCN were recorded over 250m away from the area of land required to construct the Power Station Access Road Junction. No terrestrial habitat used by this population would be affected (GCN are considered to rely primarily on habitat within 250m of the waterbodies they use) and a neutral effect on GCN is predicted.

### **Bats**

9.5.90 The loss of habitats, notably hedge lines and walls, could adversely affect the use of the area by bats for foraging and commuting. However, a combination of the embedded mitigation measure to reinstate the hedgerows and stone walls, the types of bat recorded (common and widespread), and the presence of alternative boundary features means that any effect on bats would be unlikely to occur. The effect is considered to be temporary in duration and extremely unlikely to affect the population status of any of the species recorded. Any effect is considered to be not significant and a neutral effect on bats is predicted as a result of the land take required to construct the Power Station Access Road Junction.

### **Water vole**

9.5.91 No evidence of water vole has been recorded in the area of land required to construct the Power Station Access Road Junction and no watercourses are crossed, so this receptor would not be affected. A neutral effect is predicted.

### **Changes in noise and vibration**

9.5.92 The predicted changes in noise during construction of the Power Station Access Road Junction are shown on figure G6-6 (Application Reference Number: 6.3.32). The area over which the noise level will be greater than 65dB  $L_{Aeq,T}$  is predicted to be limited to areas broadly within the extents of the land take for the Power Station Access Road Junction.

### **Statutory and non-statutory designated sites**

9.5.93 None of the statutory or non-statutory designated sites within the study area are within the area likely where the noise level will be greater than 65dB  $L_{Aeq,T}$  during construction. A neutral effect is predicted.

### **Bats**

9.5.94 Noise and vibration caused by construction activities in the areas adjacent to bat roosts (buildings and trees at Groes-fechan) could disturb bats, potentially causing them to abandon their roosts. Disturbance at night could also disorientate and reduce efficiency of echolocation during foraging [RD14]. The existing A5025 is considered likely to be the largest contributor of noise in the vicinity of the identified roosts; therefore, bats at these roosts are likely to be habituated to a level of noise in the environment similar to that likely to be caused by the proposed construction activity.

9.5.95 The building roost at Groes-fechan was recorded as likely to be used by only a small number of individuals; therefore, any effects could not be considered

significant for the local population. The noise levels during construction are predicted to be up to 70dB L<sub>AeqT</sub> at Groes-fechan. However, the good practice measures (as set out in the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12) and the Wylfa Newydd CoCP (Application Reference Number: 8.6) designed to reduce the effects of noise and vibration on the human receptors in these buildings would also reduce the effects on bats. Therefore, a neutral effect on bats as a result of changes in noise is predicted.

## Operation

### ***Changes in traffic***

9.5.96 The predicted changes in traffic have been assessed in chapter C2 (Application Reference Number: 6.3.2). There is potential for any changes in traffic use of the Power Station Access Road Junction to result in a greater incidence of vehicle collision. The risk in this area is limited to bats; however, embedded measures set out in the Wylfa Newydd CoOP (Application Reference Number: 8.13) and section 9.4 that commit to replacing the boundary features mean that the bats' use of the area is unlikely to change from the existing use. Furthermore, although there is predicted to be an increase in traffic the junction means that vehicles speeds will be lower than the current situation so it is reasonable to assume that there is a decreased likelihood of bat vehicle collision. A neutral effect on bats is predicted.

### ***Changes in noise and vibration***

9.5.97 The predicted changes in noise during operation have been assessed in chapter C5 (Application Reference Number: 6.3.5). The predicted changes in noise during operation have the potential to disturb sensitive species immediately adjacent to the Power Station Access Road Junction. A number of embedded measures to reduce effects of noise on human receptors as described in the Wylfa Newydd CoOP (Application Reference Number: 8.13) would also reduce effects on ecological receptors.

9.5.98 None of the statutory or non-statutory designated sites within the study area are within the area likely to experience a change in noise during operation.

9.5.99 The receptors recorded in the study area that could be sensitive to noise during some parts of their life cycle were limited to bats. The roosts recorded were limited to one or two individuals which are likely to be habituated to the traffic noise from the existing A5025. Furthermore, the changes in noise as a result of operational traffic are considered in chapter C5 (Application Reference Number: 6.3.5) and a decrease in noise has been predicted at this location. Therefore, a neutral effect on bats is predicted.

## **9.6 Additional mitigation**

9.6.1 In accordance with chapter B1 (introduction to the assessment process) (Application Reference Number: 6.2.1), embedded and good practice mitigation measures relevant to terrestrial and freshwater ecology were taken

into account when determining the ‘pre-mitigation’ significance of effects. These are detailed in the design basis and activities section of this chapter.

9.6.2 Additional mitigation measures would be implemented to address potential significant effects identified in the assessment of effects section. These additional mitigation measures are described in detail below and summarised in table G9-17 for construction. No additional mitigation measures were identified for operation.

## **Construction**

### **Section 1: Valley**

9.6.3 There were no predicted effects on terrestrial or freshwater ecological receptors; therefore, no additional mitigation is required.

### **Section 3: Llanfachraeth**

9.6.4 It is considered that there is the potential for a slight adverse effect on the GCN population of pond 10 and ditch 25 as a result of the loss of terrestrial habitat within 250m of the waterbodies and temporary loss of part of ditch 25 while it is being culverted.

9.6.5 Approximately 3.5ha of additional land has been acquired around pond 10 and ditch 25, as shown on the Landscape Scheme appendix G10-9 (Application Reference Number: 6.7.41), to mitigate for the habitat lost. This additional land would be enhanced, by planting, creating log piles and implementing an appropriate management regime, using the advice and guidelines set out in the *Great Crested Newt Conservation Handbook* [RD15].

9.6.6 At Llanfachraeth, a new pond and terrestrial habitat will also be created (approximately 3.5 ha). Mitigation at both locations will also consist of planting shrubs and wet woodland species, and creating hibernacula (log piles). Horizon will follow the advice and guidelines set out in the Great Crested Newt Conservation Handbook [RD15].

9.6.7 The measures identified above will be further defined within the GCN mitigation licence application and implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### **Section 5: Llanfaethlu**

9.6.8 It is considered that there is the potential for a slight adverse effect on the GCN population of pond 13 as a result of the loss of terrestrial habitat within 250m of the pond.

9.6.9 Approximately 1.8ha of additional land has been acquired around pond 13, as shown on the Landscape Scheme appendix G10-9 (Application Reference Number: 6.7.41), to mitigate for the terrestrial habitat lost. This additional land would be enhanced, by planting, creating log piles and implementing an appropriate management regime, using the advice and guidelines set out in the *Great Crested Newt Conservation Handbook* [RD15].

9.6.10 At Llanfaethlu, a new pond will be created within the area of habitat creation described above. The new pond, as shown on the Landscape Scheme appendix G10-9 (Application Reference Number: 6.7.41), would be created with marginal planting, to provide an alternative breeding location which would support the maintenance of the population of GCN in this locality. The design of this pond would also use the advice and guidelines set out in the *Great Crested Newt Conservation Handbook* [RD15].

9.6.11 The measures identified above will be further defined within the GCN mitigation licence application and implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### Section 7: Cefn Coch

9.6.12 The loss of potential tree roosts is considered to have the potential to be a slight adverse effect on the bat populations within the locality.

9.6.13 Prior to felling these trees, bat boxes would be provided on the retained trees within this section to mitigate for the loss of potential roost features. A minimum of three bat boxes would be provided for every 'high' or 'moderate' category tree to be lost. Boxes would cover a range of designs including maternity boxes, hibernation boxes and boxes designed for crevice-dwelling species.

9.6.14 The measures above will be implemented in accordance with the Ecology and Landscape Management Strategy contained within the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).

### Power Station Access Road junction

9.6.15 There were no predicted effects on terrestrial or freshwater ecological receptors; therefore, no additional mitigation is required.

**Table G9-17 Additional mitigation measures – construction**

Additional mitigation measures	Objective	Achievement criteria and reporting requirements
<b>Llanfachraeth:</b> GCN – Creation of areas of terrestrial habitat and two new ponds to the west and east of the proposed scheme	To provide replacement terrestrial habitat and an alternative breeding location for amphibians located west and east of the proposed scheme	Post-construction monitoring would be undertaken of the new ponds created, pond 10 and ditch 25, for GCN and fish. This would indicate the level of use of the new ponds compared to the existing (pond 10 and ditch 25) and allow measures to remove fish to be implemented if required.  These requirements would be defined in detail within the draft GCN mitigation licence application (see appendix G9-11, Application

Additional mitigation measures	Objective	Achievement criteria and reporting requirements
		Reference Number: 6.7.32) for the draft) and implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).
<b>Llanfaethlu:</b> GCN – Creation of areas of terrestrial habitat and a new pond with marginal planting to the west of the proposed scheme	To provide replacement terrestrial habitat and an alternative breeding location for amphibians located west of the proposed scheme	<p>Post-construction monitoring would be undertaken of the new pond created and pond 13, for GCN and fish. This would indicate the level of use of the new pond compared to the existing (pond 13) and allow measures to remove fish to be implemented if required.</p> <p>These requirements would be defined in detail within the draft GCN mitigation licence application (see appendix G9-11, Application Reference Number: 6.7.32) for the draft) and implemented in accordance with the Ecology and Landscape Management Strategy contained within the</p> <p>Wylfa Newydd Code CoCP (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).</p>
<b>Cefn Coch:</b> Bats – Provision of bat boxes	To provide replacement roosting habitat	<p>Post-construction monitoring would be undertaken to determine if any boxes have been used.</p> <p>The requirements for that monitoring may change if a bat mitigation licence application is required (see appendix G9-10, Application Reference Number: 6.7.31).</p>

### ***Operation***

9.6.16 There were no predicted effects on terrestrial or freshwater ecological receptors in any of the A5025 Off-line Improvements Sections; therefore, no additional mitigation is required.

## **9.7 Residual effects**

9.7.1 No significant adverse effects were identified for terrestrial and freshwater ecology.

9.7.2 Slight effects identified in the assessment of effects section are summarised in appendix I3-1 (master residual effects table) (Application Reference Number: 6.9.8).

9.7.3 The provision of additional mitigation at Llanfachraeth and Llanfaethlu to mitigate for the slight adverse effect on GCN is considered to have the potential to benefit the GCN populations in these localities. This mitigation would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the Wylfa Newydd CoCP (Application Reference Number: 8.6) and the A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12). The habitats (terrestrial and aquatic) provided are considered to be of a higher quality than those lost. In addition, the additional land would be managed (in accordance with any mitigation licence (see appendix G9-11, Application Reference Number: 6.7.32) in perpetuity by a third party agreed with Natural Resources Wales (NRW). This provides greater certainty that the improved habitat conditions available to these populations will create conditions to support the achievement of favourable conservation status of the Anglesey GCN population. Therefore, the residual effect on GCN is considered to be slight positive.

9.7.4 The provision of bat boxes as replacement roosting habitat would mitigate for the slight adverse effect on the bat species using the area at Cefn Coch. There is evidence from the Welsh Government A470 Cwmbach to Newbridge-on-Wye scheme that showed that bat boxes put up prior to felling as mitigation for the loss of potential roosts on that scheme were 39.5% occupied within 12 months and 74.1% occupied within five years. There are limited tree roosting opportunities within the locality and the provision of bat boxes is considered to provide greater, more reliable roosting opportunities for bats. Therefore, the resulting effect on bats is considered to be a slight positive effect.

### ***Enhancements***

9.7.5 In developing the design of the A5025 Off-line Highway Improvements, it has been possible to highlight areas where ecological enhancements would be delivered. These are between the new Section 1 alignment and the existing A5025 at Valley and up and downstream of the new Afon Alaw viaduct in Section 3 Llanfachraeth. These measures would be implemented in accordance with the Ecology and Landscape Management Strategy contained within the A5025 Off-line Highway Improvements sub-CoCP (Application

Reference Number: 8.12). Further detail is provided in the following paragraphs.

### **Section 1: Valley**

9.7.6 As shown on the Landscape Scheme appendix G10-9 (Application Reference Number: 6.7.41), the area to the north-west of the new alignment would be enhanced for biodiversity gain. The species/groups that this would benefit include water vole, GCN, birds and invertebrates. A new ditch would be created through the area using the advice and guidelines set out within publications such as *Creating Ponds for Water Voles* [RD16]. The new ditch would be profiled in such a way as to enable marginal planting at the ditch edge, shrub planting within 1m to 2m of water's edge (but avoiding shading) and the provision of GCN refugia/hibernacula. The total proposed enhancement area at Valley will be approximately 2.0ha.

### **Section 3: Llanfachraeth**

9.7.7 As shown on the Landscape Scheme appendix G10-9 (Application Reference Number: 6.7.41), the area between the Afon Alaw and its southern side channel where the new viaduct crosses it would be enhanced for biodiversity gain. The species/groups that this would benefit include water vole, otter, GCN, birds and invertebrates. The habitat would be enhanced to open up and diversify the marginal habitat. Shrubs and wet woodland species would be included with the planting and further channels or ponds would be created [RD16] to increase opportunity for water vole. GCN refugia/hibernacula would also be created within these areas in accordance with the advice set out in the *Great Crested Newt Conservation Handbook* [RD15]. The total proposed enhancement area at Llanfachraeth will be approximately 0.5ha.

## 9.8 References

Table G9-18 Schedule of references

ID	Reference
RD1	Highways Agency. 1993. <i>Design Manual for Roads and Bridges</i> . Volume 11, Section 3, Part 4. Ecology & Nature Conservation. The Stationery Office: London.
RD2	Highways Agency. 2010. Interim Advice Note 130/10. Ecology and Nature Conservation: Criteria for Impact Assessment. The Stationery Office: London.
RD3	Horizon Nuclear Power. 2017. <i>Wylfa Newydd Project Addendum to the Environmental Impact Assessment Scoping Report</i> . s.l. : Horizon Nuclear Power Wylfa Limited, 2017.
RD4	Bat Conservation Trust. 2015a. <i>Bats In Wales</i> . [Online]. Available from: <a href="http://www.bats.org.uk/pages/bats_of_wales.html">http://www.bats.org.uk/pages/bats_of_wales.html</a> .
RD5	Strachan, R. 2010. <i>Wales Otter Report 2009-10</i> . s.l. : NRW.
RD6	Isle of Anglesey County Council (IACC). <i>Working for the wealth of wildlife: Anglesey's local biodiversity action plan (LBAP) – B2 Habitat Action Plans (HAPs) and Species Action Plans (SAPs)</i> .
RD7	Peoples Trust for Endangered Species. 2017. <i>Water Vole</i> . [Online]. [Accessed: 14 June 2017]. Available from: <a href="https://ptes.org/get-informed/facts-figures/water-vole/">https://ptes.org/get-informed/facts-figures/water-vole/</a> .
RD8	Russell, L. Starnes, T. and Wilkinson, J. 2017. Spatial Action Plan for Great Crested Newts in Anglesey, A Manual for Achieving Favourable Conservation Status. <i>NRW Science Report Series</i> . 76, pp. 69.
RD9	British Standards Institute. 2014. <i>BS 12464-2:2014 Light and Lighting – Lighting of work places. Part 2: Outdoor work places</i>
RD10	Institution of Lighting Professionals. 2011. <i>Guidance Notes for the Reduction of Obtrusive Light GN01:2011</i> .
RD11	British Standards Institute. 2012. <i>BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations</i> . s.l.
RD12	Arnott, D.A. 2001. <i>Water Vole Mitigation Techniques A Questionnaire Research Project</i> . s.l. : English Nature Research Reports No 415.
RD13	Cutts, N. Phelps, A. and Burdon, D. 2009. <i>Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA</i> . s.l. : Institute of Estuarine and Coastal Studies University of Hull.
RD14	Luo, J. Siemers, B M. and Koselj, K. 2015. How anthropogenic noise affects foraging. <i>Global Change Biology</i> . 21, pp. 3278-89.
RD15	Langton, T E S. Beckett, C L. and Foster, J P. 2001. <i>Great Crested Newt Conservation Handbook</i> . Halesworth : Froglife.
RD16	Pond Conservation. 2010. <i>Creating ponds for Water Voles</i> . [Online]. [Accessed: 18 June 2017]. Available from: <a href="http://www.freshwaterhabitats.org.uk/wp-content/uploads/2013/09/watervole-dossier.pdf">http://www.freshwaterhabitats.org.uk/wp-content/uploads/2013/09/watervole-dossier.pdf</a> .

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