

## Wylfa Newydd Project A5025 On-line Highway Improvements

### Protected and Legally Controlled Species Compliance Report



APPLICATION November 2017

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# 1 Introduction

## 1.1 Purpose of this document

1.1.1 The purpose of this document is to assess the likely risk(s) that construction of the A5025 On-line Highway Improvements (the Proposed Development) would contravene the following legislation:

- Conservation of Habitats and Species Regulations 2010 (as amended) [RD1];
- Wildlife and Countryside Act 1981 (as amended) [RD2];
- Protection of Badgers Act 1992 [RD3];
- The Eels (England and Wales) Regulations 2009 (as amended) [RD4];
- Salmon and Freshwater Fisheries Act 1975 (as amended) [RD5]; and
- Environmental Protection Act 1990 (in relation to the disposal of controlled plant species only) [RD6].

1.1.2 This document considers species that are protected or controlled according to the above legislation, but it does not constitute legal advice. It forms one of several reports that will be submitted as part of the planning application for the Proposed Development.

## 1.2 Background

1.2.1 Land adjacent to the Existing Power Station at Wylfa Head, west of Cemaes on the north coast of the Isle of Anglesey, is considered by the UK Government to be suitable for the construction of a new nuclear power station. Horizon Nuclear Power Wylfa Limited (Horizon) proposes to construct and operate a new nuclear power station, known as Wylfa Newydd, on this land. This power station would deliver approximately 2,700 megawatts of electricity, enough power for around five million homes.

## 1.3 Horizon Nuclear Power Wylfa Limited

1.3.1 Horizon is a UK energy company developing a new generation nuclear power station to help meet the country's need for stable and sustainable low carbon energy. Horizon's ultimate parent company is Hitachi Ltd., a Japanese corporation and the parent company of the multi-national Hitachi group of companies. .

## 1.4 The Wylfa Newydd Project

1.4.1 Horizon is proposing to construct and operate the Wylfa Newydd Project, which comprises the Wylfa Newydd DCO Project, the Licensable Marine Activities and the Enabling Works. Each of these elements is described further below. The Licensable Marine Activities will be consented under a Marine Licence and the Wylfa Newydd DCO Project under a DCO, however there is some overlap between the two; the Marine Works (see below) will be consented under both.

## ***Wylfa Newydd DCO Project***

1.4.2 The Wylfa Newydd DCO Project comprises those parts of the Wylfa Newydd Project which are to be consented by a DCO, namely:

- **Power Station:** the proposed new nuclear power station, including two UK Advanced Boiling Water Reactors (UK ABWRs) to be supplied by Hitachi-GE Nuclear Energy Ltd., supporting facilities, buildings, plant and structures, and radioactive waste and spent fuel storage buildings and apparatus to transfer electrical energy to the National Grid high voltage electricity transmission network;
- **Other on-site development:** including landscape works and planting, drainage, surface water management systems, public access works including temporary and permanent closures and diversions of public rights of way, new Power Station Access Road and internal site roads, car parking, construction works and activities including construction compounds and temporary parking areas, laydown areas, working areas and temporary works and structures, temporary construction viewing area, diversion of utilities, perimeter and construction fencing;
- **Marine Works** comprising:
  - Permanent Marine Works: the Cooling Water System ,Marine Off-Loading Facility, breakwater structures, shore protection works, surface water drainage outfalls, fish recovery and return system, fish deterrent system, navigation aids and Dredging;
  - Temporary Marine Works: temporary cofferdams, a temporary access ramp, temporary navigation aids, temporary outfalls and a temporary barge berth; ;
- **Off-Site Power Station Facilities:** comprising the Alternative Emergency Control Centre, Environmental Survey Laboratory and a Mobile Emergency Equipment Garage; and
- **Associated Development:** the Site Campus within the Wylfa Newydd Development Area; temporary Park and Ride facility at Dalar Hir for construction workers (Park and Ride); temporary Logistics Centre at Parc Cybi (Logistics Centre); and the A5025 Off-line Highway Improvements..

1.4.3 The following terms are used when describing the geographical areas related to the Wylfa Newydd DCO Project and the Licensable Marine Activities:

- **Power Station Site** - the indicative area of land and sea within which the majority of the permanent Power Station buildings, plant and structures would be located. This includes the two nuclear reactors, steam turbines, the Cooling Water System, breakwaters and the Marine Off-Loading Facility.
- **Wylfa Newydd Development Area** - the indicative areas of land and sea including the Power Station Site, and the surrounding areas that

would be used for construction and operation of the Power Station, Marine Works and other on-site development. It would also include the Site Campus. This area is representative of the maximum area that would be physically affected by construction activities related to the Power Station and used to form the setting and landscaping features of the operational Power Station.

### ***Licensable Marine Activities***

- 1.4.4 The Licensable Marine Activities comprise the Permanent Marine Works, the Temporary Marine Works, the disposal of dredged material at the Disposal Site, the drainage of surface water into the sea. During construction phase this includes the construction of a waste water treatment effluent outfall, and the drainage of treated sewage into the sea.

### ***Enabling Works***

- 1.4.5 The Enabling Works comprise the Site Preparation and Clearance Proposals (SPC Proposals) and the A5025 On-line Highway Improvements.
- 1.4.6 Horizon has submitted applications for planning permission for the Enabling Works under the Town and Country Planning Act 1990 to the Isle of Anglesey County Council (IACC).
- 1.4.7 In order to maintain flexibility in the consenting process for the Wylfa Newydd DCO Project, the SPC Proposals have also been included in the application for development consent. The A5025 On-line Highway Improvements are not part of the application for development consent.

## **1.5 The A5025 Highway Improvements**

- 1.5.1 Construction of the Power Station would require very substantial transport needs for materials, large components and staff. Studies undertaken by Horizon in 2010–2011 identified that the stretch of the A5025 between Valley and the proposed Power Station Access Road Junction has physical and operational constraints in relation to its width, alignment, overtaking opportunities and surfacing condition (see chapter 2).
- 1.5.2 As a result of these studies Horizon has committed to improve this section of the A5025 in order to mitigate the predicted impacts of increased traffic associated with construction activities that would be undertaken at the Wylfa Newydd Development Area, and from operational Power Station traffic, that would travel along this part of the highway network.
- 1.5.3 Horizon therefore intends to deliver a series of on-line and off-line improvements (collectively termed the A5025 Highway Improvements) between Valley and the proposed Power Station Access Road Junction as part of its wider transport strategy for the Project, the objectives being to:
- upgrade the route, both in terms of standard of construction and road geometry, such that it can support increased levels of traffic, and improve safety and accessibility;

- ensure that all relevant abnormal loads can pass along the full length of the A5025;
- reduce any potential increase in road accident risk;
- reduce any adverse impacts on local communities;
- reduce any adverse impacts on the environment; and
- seek opportunities where possible to achieve improvements for local communities and the environment through road design measures.

1.5.4 The 16.19km stretch of the A5025 identified for on-line improvement has been divided into eight sections (see figure 1-1 in volume 2).

- Section 1 – A5 east of Valley junction to north of Valley Junction (A5/A5025) – a length of 1.06km;
- Section 2 – north of Valley Junction (A5/A5025) to north of Llanynghenedl – a length of 2.46km;
- Section 3 – north of Llanynghenedl to north of Llanfachraeth – a length of 2.28km;
- Section 4 – north of Llanfachraeth to south of Llanfaethlu – a length of 2.7km;
- Section 5 – south of Llanfaethlu to north of Llanfaethlu – a length of 1.43km;
- Section 6 – north of Llanfaethlu to north of Llanrhuddlad – a length of 3.36km;
- Section 7 – north of Llanrhuddlad to north of Cefn Coch – a length of 1.3km; and
- Section 8 – north of Cefn Coch to the proposed Power Station Access Road Junction – a length of 1.6km.

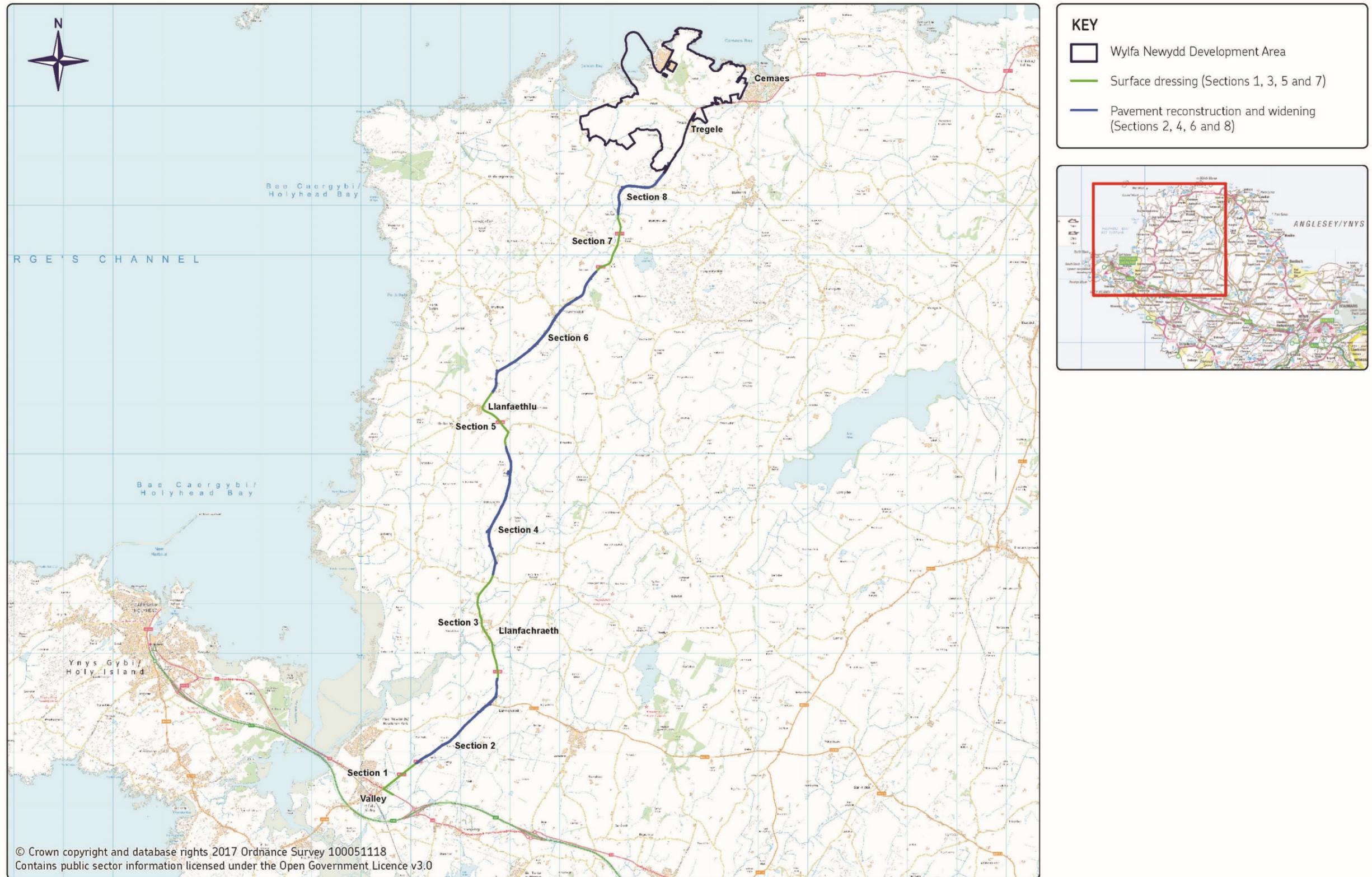
1.5.5 The Proposed Development involves the implementation of on-line improvements largely within the existing highway boundary of the A5025. In summary, these comprise:

- improvement of the existing pavement through the application of a surface dressing through Sections 1, 3, 5 and 7;
- reconstruction and localised widening of the existing pavement through Sections 2, 4, 6 and 8;
- modifications and improvements to existing signage and road markings through Sections 1–8; and
- the construction of a Temporary Construction Compound (incorporating a temporary pavement recycling facility) within Section 7, immediately adjacent to the A5025.

- 1.5.6 The A5025 Off-line Highway Improvements would involve the construction of bypasses to reduce the effects of future traffic on existing communities, the formation of new junction arrangements (including the provision of the proposed Power Station Access Road Junction), and localised improvements to existing bends.
- 1.5.7 The A5025 Off-line Highway Improvements form an integral component of the Wylfa Newydd DCO Project application, and do not form part of the planning application for the Proposed Development.
- 1.5.8 The potential offences considered in this report are only those that could occur as a result of the Proposed Development.

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Figure 1-1 Overview of the Proposed Development



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## 2 Scope

### 2.1 Scope of the report

- 2.1.1 The proposed construction works within Sections 1, 3, 5 and 7 (involving the application of surface dressing to the existing pavement) would not affect terrestrial or freshwater ecology, as presented within the A5025 On-line Highway Improvements Environmental Report. These works would be contained within the existing areas of hardstanding within the highway boundary, and are therefore considered to have no potential to result in offences under the relevant legislation discussed in this report.
- 2.1.2 The scope of this report is accordingly limited to the areas of permanent and temporary land take for Sections, 2, 4, 6 and 8, and the Temporary Construction Compound (located in Section 7). This is referred to as the Proposed Development extent.
- 2.1.3 The operational effects from the improved A5025 Sections, 2, 4, 6 and 8 would not result in any change when compared to the existing situation, therefore it is considered to have no potential to contravene regulation 51 of the Conservation of Habitats and Species Regulations 2010 (as amended) [RD1].
- 2.1.4 Offences relating to cruelty, possession, transport, sale and certain methods for capturing/taking and killing have not been considered in this report, as such activities do not form a defined part of the implementation of the Proposed Development. Therefore, any such offence committed would be the personal liability of the individual concerned.
- 2.1.5 The Hedgerow Regulations 1997 [RD7] provide a definition as to what constitutes important hedgerows, and local planning authorities must consider the impacts of the removal of such hedgerows where applications are made to do so. These regulations [RD7] are not applicable to this report as the Proposed Development would only be implemented on the grant of planning permission [RD8] by the IACC, meaning any hedgerow removal would be considered to be permitted work under Regulation 6(1)(e) [RD7].
- 2.1.6 In relation to the offence of introducing non-native species to the wild, the disposal of waste from control of species such as Japanese knotweed is covered by the Environmental Protection Act 1990 [RD6]. No other aspects of this legislation [RD6] are considered within this report as they are not considered relevant to the receptors present and potentially affected by the Proposed Development.
- 2.1.7 The relevant legislation and potential offences that could occur as a result of the Proposed Development are set out in table 2-1.

### 2.2 Licences

- 2.2.1 Within the proposed strategy sections of this report (see chapters 5–13) licences have been referred to and, depending on the protected species in question, are defined as set out in the following paragraphs.

- 2.2.2 If an offence is considered likely under the Conservation of Habitats and Species Regulations 2010 (as amended) [RD1] (as listed in table 2-1) then it can be derogated via a European Protected Species (EPS) licence. Natural Resources Wales (NRW) issues licences under Regulation 53 [RD1] to allow the Proposed Development to be implemented within the law.
- 2.2.3 Offences under the Wildlife and Countryside Act 1981 (as amended) [RD2] (as listed in table 2-1) (also referred to as schedule 5 offences) are not licensable in the same way and the legal defences are as set out in s10(3)(c), s4(2A)(a) and s14(3) [RD2]. This means that a developer who has planning permission must make a reasonable effort to avoid committing an offence. Where offences relating to water vole require animals to be moved, NRW can issue a conservation licence to permit the translocation of the animals. However, steps should be made to avoid offences before resorting to animal translocation.
- 2.2.4 Offences under the Protection of Badgers Act 1992 [RD3] (as listed in table 2-1) are also licensable if it is necessary to interfere with a badger sett as a result of construction works. NRW issues licences for the purpose of any developments, as defined in section 55(1) of the Town and Country Planning Act 1990 (as amended) [RD9], to interfere with a sett.

Table 2-1 Potential offences under UK legislation

General Descriptor	<i>The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]</i>	<i>Wildlife and Countryside Act 1981 (as amended) [RD2]</i>	<i>Protection of Badgers Act 1992 [RD3]</i>	<i>The Eels (England and Wales) Regulations 2009 (as amended) [RD4]</i>	<i>Salmon and Freshwater Fisheries Act 1975 (as amended) [RD5]</i>
Capturing, killing, and injuring.	To deliberately capture, injure or kill any animal of an EPS. (Reg. 41(1)(a)).	To intentionally kill, injure or take any wild bird (s1(1)). To intentionally kill, injure or take any wild animal included in Schedule 5. (s9(1)).	To wilfully kill, injure or take, or attempt to kill, injure or take a badger. (s1(1)).	-	-
Disturbing (affecting ability to survive, breed or rear young).	To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)). Reg. 41(2)(a)(i). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	-	-	-
Disturbing (impairing ability to migrate or hibernate).	To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)). Reg. 41(2)(a)(ii). For the purposes of Reg. 41(1)(b), disturbance of	-	-	To construct, alter or maintain a dam or structure and fail to notify National Resources Wales (NRW) first. (Part 4, 12 (1), (2) (4)).	-

<b>General Descriptor</b>	<b><i>The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]</i></b>	<b><i>Wildlife and Countryside Act 1981 (as amended) [RD2]</i></b>	<b><i>Protection of Badgers Act 1992 [RD3]</i></b>	<b><i>The Eels (England and Wales) Regulations 2009 (as amended) [RD4]</i></b>	<b><i>Salmon and Freshwater Fisheries Act 1975 (as amended) [RD5]</i></b>
	<p>animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.</p>				
<p>Disturbing (affecting local distribution or abundance).</p>	<p>To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)).  Reg. 41(2)(b).  For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.</p>	-	-	-	-

General Descriptor	<i>The Conservation of Habitats and Species Regulations 2010 (as amended)</i> [RD1]	<i>Wildlife and Countryside Act 1981 (as amended)</i> [RD2]	<i>Protection of Badgers Act 1992</i> [RD3]	<i>The Eels (England and Wales) Regulations 2009 (as amended)</i> [RD4]	<i>Salmon and Freshwater Fisheries Act 1975 (as amended)</i> [RD5]
Disturbing (whilst occupying a structure or place used for shelter or protection).	-	To intentionally or recklessly disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird (s1 (5)). To intentionally or recklessly disturb any wild animal (as specified on Schedule 5) while it is occupying a structure or place which it uses for shelter or protection. (s9 (4)(b)).	To intentionally or recklessly disturb a badger when it is occupying a badger sett. (s3 (e)).	-	-
Taking eggs.	To deliberately take or destroy the eggs of such an EPS animal. (Reg. 41(1)(c)).	To intentionally take or destroy an egg of any wild bird. (s1 (1)(c)).	-	-	-
Obstructing access.	-	To intentionally or recklessly obstruct access to any structure or place which any Schedule 5 animal uses for shelter or protection. (s9 (4)(c)).	To intentionally or recklessly obstruct access to, or any entrance of, a badger sett. (s3(c)).	-	-

General Descriptor	<i>The Conservation of Habitats and Species Regulations 2010 (as amended)</i> [RD1]	<i>Wildlife and Countryside Act 1981 (as amended)</i> [RD2]	<i>Protection of Badgers Act 1992</i> [RD3]	<i>The Eels (England and Wales) Regulations 2009 (as amended)</i> [RD4]	<i>Salmon and Freshwater Fisheries Act 1975 (as amended)</i> [RD5]
Damage or destruction of a breeding site or resting place.	To damage or destroy a breeding site or resting place of a wild animal of an EPS. (Reg. 41(1)(d)).	To intentionally take, damage or destroy the nest of a wild bird included in Schedule ZA1 (s1 (1)(aa)). To intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built (s1 (1)(b)). To intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection. (S9 (4)(a)).	To intentionally or recklessly damage a badger sett or any part of it or to destroy a badger sett. (s3(a)(b)).	-	To knowingly permit to flow, or put or knowingly permit to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, (Part I, 4 (1)).
Introducing non-native species.	-	To plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9. (s14 (2)). Waste produced from management of some species would be 'controlled waste' and managed accordingly under the <i>Environmental Protection Act 1990</i> (s33 (1a) and (1b)) [RD6]. 33 Prohibition on unauthorised or harmful deposit, treatment or disposal etc. of waste.	-	-	-

General Descriptor	<i>The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]</i>	<i>Wildlife and Countryside Act 1981 (as amended) [RD2]</i>	<i>Protection of Badgers Act 1992 [RD3]</i>	<i>The Eels (England and Wales) Regulations 2009 (as amended) [RD4]</i>	<i>Salmon and Freshwater Fisheries Act 1975 (as amended) [RD5]</i>
		<p>(1) Subject to [subsections (1A), (1B), (2) and (3) below] and..... a person shall not—</p> <p>(a) deposit controlled waste [or extractive waste], or knowingly cause or knowingly permit controlled waste [or extractive waste] to be deposited in or on any land unless [an environmental permit] authorising the deposit is in force and the deposit is in accordance with the licence;</p> <p>(b) submit controlled waste, or knowingly cause or knowingly permit controlled waste to be submitted, to any listed operation (other than an operation within subsection (1)(a)) that—</p> <p>(i) is carried out in or on any land, or by means of any mobile plant, and</p> <p>(ii) is not carried out under and in accordance with an environmental permit.]</p>			

### 3 European Protected Species licence tests

3.1.1 An EPS licence can only be granted by NRW if the following three tests can be met:

- Test 1: the purpose of the work meets one of those listed (see below) in the Conservation of Habitats and Species Regulations 2010 [RD1];
- Test 2: that there is no satisfactory alternative; and
- Test 3: that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

3.1.2 Under Test 1 the specific set of purposes referred to [RD1] includes:

- “preserving public health or public safety or other imperative reasons of overriding public interest, including those of a social or economic nature, and beneficial consequences of primary importance for the environment;
- scientific and educational purposes;
- ringing or marking or examining any ring or mark on, wild animals;
- conserving wild animals or wild plants or introducing them to particular areas;
- protecting any zoological or botanical collection;
- preventing the spread of disease; or
- preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber or any other form of property or to fisheries.”.

3.1.3 A review of the Proposed Development against the three tests concluded the following.

- Test 1: the purpose of the Proposed Development is considered to be “preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment”.
- Test 2: there is no satisfactory alternative to the Proposed Development. The Proposed Development has been subjected to a staged optioneering process which has informed the identification and selection of a final, optimised design solution. Chapter 2 of the A5025 On-line Highway Improvements Environmental Report provides further information on the need for the Proposed Development, the alternatives considered and the design evolution.
- Test 3: this would be met via implementation of the proposed strategy relating to the EPS described in chapters 5, 6 and 7 of this report.

## 4 Methodology

- 4.1.1 The legislation under which species are protected or controlled (see table 2-1) has been reviewed to identify the potential for the Proposed Development to cause offences.
- 4.1.2 The review took the form of identifying whether or not a protected or controlled species was present within an area that would be affected by the construction of the Proposed Development. Generally this was only where construction would require land take beyond the existing highway boundary.
- 4.1.3 If a protected or controlled species was present, the potential for legislation to be contravened was based on the activities likely to occur. These are as outlined in section 1.4 above, and are set out in detail within the A5025 On-line Highway Improvements Environmental Report. In describing whether or not an offence may occur, the descriptors likely or unlikely were used.
- 4.1.4 Depending on the likely offences, a proposed strategy was described to indicate how these offences would be avoided or derogated (permitted to occur) via a licence where appropriate (see sections 2 and 3 below).
- 4.1.5 The relevant protected and controlled species have been determined through consideration of the ecological baseline information collated as part of the environmental assessment of the Proposed Development. Refer to the A5025 On-line Highway Improvements Environmental Report for further information.
- 4.1.6 The baseline information is based on a desk-based study which included consultation with North Wales Environmental Information Service (Cofnod) to obtain records for the period 2004 to 2014 and field survey work undertaken for the Proposed Development (see figure 11-1 and figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report). Records prior to 2004 were considered to be obsolete and discarded from the review.
- 4.1.7 Pre-construction survey work for great crested newt (GCN) (*Triturus cristatus*) and bats was completed in 2017. The survey reports are included in annex A and B of this report.
- 4.1.8 Baseline data collection has recorded evidence of the following species or species groups for which the legislation listed in table 2-1 applies. For the purpose of this report these have been divided into: protected species/groups, which are those for which legislation has been created to strictly protect them; and controlled species/groups, which are controlled rather than protected per se by legislation.
- Protected species/groups:
    - GCN;
    - bats;
    - otter (*Lutra lutra*);
    - water vole (*Arvicola amphibius*);
    - reptiles;

- breeding birds; and
  - badger (*Meles meles*).
  - Controlled species/groups:
    - giant rhubarb (*Gunnera tinctoria*);
    - Himalayan balsam (*Impatiens glandulifera*);
    - Japanese knotweed (*Fallopia japonica*);
    - Montbretia (*Crococsmia x crocosmiiflora*);
    - freshwater fish; and
    - European eel (*Anguilla anguilla*).
- 4.1.9 The study area adopted for the identification of Cofnod biodiversity records was 2km from the existing A5025 along the full length of the Proposed Development (i.e. Sections 1–8). The field surveys were carried out using the following study areas: 500m area was used for great crested newt (GCN) (*Triturus cristatus*) and otter (*Lutra lutra*); 250m for the Phase 1 habitat survey, and 100m for hedgerows.
- 4.1.10 The proposed strategies presented in this report to avoid offences are in addition to those outlined in the A5025 On-line Highway Improvements Environmental Report which seek to minimise likely effects on terrestrial and freshwater ecology, and which would be included within the contractual documentation associated with construction of the Proposed Development.
- 4.1.11 The following sections provide an assessment of the potential to cause an offence in relation to each species, as well as the approach to mitigation to avoid offences being committed, or that are required to secure an EPS licence.
- 4.1.12 Conclusions are presented for each protected and controlled species in relation to legislative compliance.

## 5 Amphibians: great crested newt

### 5.1 Relevant legislation

5.1.1 The following legislation is relevant to GCN:

- Wildlife and Countryside Act 1981 (as amended) [RD2] – Schedule 5 species; and
- The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1] – Schedule 2 species.

### 5.2 Baseline Information

5.2.1 Cofnod provided 17 records [RD10] for GCN within 2km of the Proposed Development. These records were all south and east of Valley, over 250m from the Proposed Development.

5.2.2 Field survey work [RD11, RD12] has been carried out on all waterbodies within 500m of the Proposed Development where land access was permitted. This has taken the form of visits to record Habitat Suitability Indices (HSI). A HSI is a numerical index, between 0 and 1. Values close to 0 indicate unsuitable habitat, 1 indicates optimal habitat.

5.2.3 Figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report illustrates the data collected to date and depicts waterbodies where GCN were confirmed as present.

5.2.4 In 2017, pre-construction surveys for GCN were completed on waterbodies within 250m of the Proposed Development that had a HSI score greater than 0.5. This has taken the form of population estimates (where GCN were recorded in the first four visits) as per the guidelines set out in the Great Crested Newt Conservation Handbook [RD13]. Where land access was not secured for the population estimates, an environmental (e)DNA survey was completed. The detailed methodologies and results are set out in Annex B. GCN were recorded as present in Ponds 11 and 12. No survey of Ditch 14 was possible in 2017 as no land access could be secured.

### 5.3 Potential to commit an offence

5.3.1 A 250m buffer around all of the waterbodies where GCN were confirmed through historic records, and those with HSI scores greater than 0.5, was created. The 250m buffer was provided by NRW (*M. Ellis personal comm.*) as they considered this to be the area of terrestrial habitat used most by GCN. Where the buffer intersected with land take associated with the Proposed Development, such locations were identified as areas of risk in terms of contravening the legislation set out in paragraph 5.1.1. Table 5-1 lists the areas of risk and provides an assessment of the likelihood of an offence resulting.

**Table 5-1 Great crested newt – potential for an offence**

Areas where GCN and the Proposed Development are coincident	<i>The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]</i>					<i>Wildlife and Countryside Act 1981 (as amended) [RD2]</i>	
	Offence Ref. A	Offence Ref. B	Offence Ref. C	Offence Ref. D	Offence Ref. E	Offence Ref. F	Offence Ref. G
Section 2 – hedgerow removed (approximately 150m) within 250m of waterbodies (ditch 14) with HSI score greater than 0.5.	Yes – during site clearance phase if GCN found to be present in ditch 14.	No offence likely – the limited nature of the works would not be considered to disturb at this scale.	No offence likely – the limited nature of the works would not be considered to disturb at this scale.	No offence likely – the limited nature of the works would not be considered to disturb at this scale.	Yes – during site clearance phase if GCN found to be present in ditch 14.	Yes – during site clearance phase if GCN found to be present in ditch 14.	No offence likely – the limited nature of the works would not be considered to obstruct access for GCN, given the wide range of habitats they occupy.
Section 4 – Ponds 11 and 12 have small GGN populations. Hedgerow removal (totalling approximately 180m) within 250m of these ponds.	Yes – during site clearance phase.	No offence likely – the limited nature of the works would not be considered to disturb at this scale.	No offence likely – the limited nature of the works would not be considered to disturb at this scale.	No offence likely – the limited nature of the works would not be considered to disturb at this scale.	Yes – during site clearance phase.	Yes – during site clearance phase.	No offence likely – the limited nature of the works would not be considered to obstruct access for GCN, given the wide range of habitats they occupy.
Section 6: Pond 21 has GCN present. The Proposed Development would involve widening	No risk of offence predicted as ponds are within habitat that is separated from the Proposed Development extent by the existing highway which forms a barrier to GCN dispersal.						

Areas where GCN and the Proposed Development are coincident	<i>The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]</i>					<i>Wildlife and Countryside Act 1981 (as amended) [RD2]</i>	
	Offence Ref. A	Offence Ref. B	Offence Ref. C	Offence Ref. D	Offence Ref. E	Offence Ref. F	Offence Ref. G
to the east of the existing highway boundary, which is considered to mark the extent of terrestrial habitat for this pond.							
Section 8: Cae Gwyn SSSI. GCN recorded in terrestrial habitat and three ponds. Loss of walls on east side of the existing highway, which is considered to mark terrestrial habitat extent for the ponds in this area.	No risk of offence predicted as ponds are within habitat that is separated from the Proposed Development extent by the existing highway which forms a barrier to GCN dispersal.						

- Offence Ref. A: To deliberately capture, injure or kill any wild animal of an EPS. (Reg. 41(1)(a)) [RD1].
- Offence Ref. B: To deliberately disturb wild animals of an EPS [note wherever they are occurring]. Reg. 41(1)(b); Reg. 41(2)(a)(i) [RD1]. For the purposes of Reg. 41(1)(b) [RD1], disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.
- Offence Ref. C: To deliberately disturb wild animals of an EPS [note wherever they are occurring]. Reg. 41(1)(b); Reg. 41(2)(a)(ii) [RD1]. For the purposes of Reg. 41(1)(b) [RD1], disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.

- Offence Ref. D: To deliberately disturb wild animals of an EPS [note wherever they are occurring]. Reg. 41(1)(b); Reg. 41(2)(b) [RD1]. For the purposes of Reg. 41(1)(b) [RD1], disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.
- Offence Ref. E: To damage or destroy a breeding site or resting place of a wild animal of an EPS. (Reg. 41(1)(d)) [RD1].
- Offence Ref. F: To intentionally or recklessly disturb any wild Schedule 5 animal while it is occupying a structure or place which it uses for shelter or protection. (s9(4)(b)) [RD2].
- Offence Ref. G: To intentionally or recklessly obstruct access to any structure or place which any Schedule 5 animal uses for shelter or protection. (s9(4)(c)) [RD2].

## 5.4 Proposed strategy

5.4.1 In summary, the following steps would be taken prior to construction to ensure legislation protecting GCN would not be contravened:

- pre-construction surveys;
- application for an EPS licence (if necessary); and
- the provision of mitigation measures including minimising habitat loss, the trapping and translocation of individual animals and the creation and management of suitable compensation habitat. These measures would form part of the application for an EPS licence (if necessary).

### *Pre-construction surveys*

5.4.2 Pre-construction surveys were completed in 2017. No land access was secured for Ditch 14, therefore pre-construction surveys will be required in 2018.

5.4.3 In the recommended survey season (April – June) prior to construction of the Proposed Development, GCN surveys would be carried out at Ditch 14 where a risk has been identified in table 5-1, to confirm GCN presence and determine population size (should presence be confirmed).

5.4.4 The methods used would include bottle trapping, egg searching, netting and torching, as per the guidelines set out in the Great Crested Newt Conservation Handbook [RD13] during four visits. This would allow the full assessment of presence or absence of the species and, if presence is confirmed, allow a population-size class assessment to be carried out during a further two visits within the specified timeframe.

### *EPS licence*

5.4.5 An EPS licence from NRW would be required prior to the construction of Section 4 of the Proposed Development.

5.4.6 If GCN are recorded in Ditch 14, then an EPS licence from NRW would be required prior to the construction of Section 2 of the Proposed Development.

5.4.7 The method statement accompanying the licence application would be likely to include measures to avoid killing and injuring GCN, minimise damage to terrestrial habitat, and avoid disturbance of individual GCN. Examples of the types of measure that are likely to form part of this method statement are set out in the following paragraphs.

5.4.8 An EPS licence return, documenting the implementation of the licensable works, would be submitted to NRW following completion of the works, and would include results of any monitoring.

## ***Avoiding killing or injury of GCN***

### **Supervision of hedgerow/wall removal, soil stripping and provision of amphibian exclusion fencing**

- 5.4.9 An on-site ecologist or Environmental Clerk of Works (ECoW) would be present during vegetation clearance and soil stripping works, as well as the deployment of amphibian exclusion fencing, if required.
- 5.4.10 Any area proposed for exclusion fencing would be finger-tip searched and cleared of GCN by a licensed ecologist. All fence installation works would also be supervised. Should trapping and translocation be required, this would follow the approach described in industry best practice guidance [RD13]. The duration of the trapping period would be determined by the estimated population size class. Should any animals be trapped during this process they would be released into adjacent retained hedgerows or walls.
- 5.4.11 Prior to the start of main site clearance works, all habitats which could act as sites of shelter/refuge for GCN would be finger-tip searched by the ECoW and any animals found would be translocated to adjacent suitable habitat.

### **Construction site management**

- 5.4.12 A construction method statement, which would form part of the Construction Environmental Management Plan (CEMP), would be produced and implemented by the contractor and would include measures, such as those listed below, to reduce the risk of killing or injuring GCN within the construction site.
- No equipment or soil would be stored/stockpiled within 250m of any waterbody known to be used by GCN, unless inside an area encompassed by GCN exclusion fencing and cleared of GCN through a trapping and translocation exercise.
  - Clear demarcation of construction and retained habitats.

## ***Minimising and compensating for habitat damage***

### **Protection of retained habitats and replacement boundary features**

- 5.4.13 Areas of habitat importance for GCN would be clearly demarcated to ensure no accidental incursion by construction works. GCN exclusion fencing would be installed between the Proposed Development extent and the adjacent retained habitat to prevent GCN straying into the Proposed Development extent.
- 5.4.14 Hedgerows, stone walls and cloddiau removed as part of the site clearance phase would be replaced along the realigned highway boundary, as described and illustrated in the A5025 On-line Highway Improvements Design Approach and Landscape Strategy.

### **Habitat management and monitoring**

- 5.4.15 Replaced highway boundary features would be managed by a responsible organisation. A monitoring scheme would be devised as part of the licence application (if required) to scrutinise the development of the replacement habitat with the aim of informing management practices. Such a scheme may include regular surveillance of the new planting to record establishment.

### ***Avoiding Schedule 5 offences***

- 5.4.16 The measures set out in the preceding paragraphs would also result in a Schedule 5 offence of disturbance being avoided.

## **5.5 Conclusion**

- 5.5.1 The Proposed Development would result in the contravention of the legislation with respect to GCN. There is a risk that the offences of: killing or injuring GCN; damaging or destroying a resting place; and disturbance whilst in a place of shelter/protection may occur as a result of the Proposed Development. The strategy as set out would result in these offences being avoided or derogated under licence.

## 6 Bats

### 6.1 Relevant legislation

6.1.1 The following legislation is relevant to bats:

- Wildlife and Countryside Act 1981 (as amended) [RD2] – Schedule 5 species; and
- The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1] – Schedule 2 species.

### 6.2 Baseline information

6.2.1 Cofnod data [RD10] showed that pipistrelle (*Pipistrellus*) bat species, noctule (*Nyctalus noctula*) and Natterer's bat (*Myotis nattereri*) have been previously recorded within 2km of the Proposed Development and that records were distributed throughout the area.

6.2.2 The results of field survey work undertaken to date [RD12] indicate low bat activity by widespread and common bat species in the locality which included common pipistrelle bat (*Pipistrellus pipistrellus*); soprano pipistrelle bat (*Pipistrellus pygmaeus*); brown long-eared bat (*Plecotus auritus*); noctule bat; and Myotis bat species.

6.2.3 Pre-construction surveys of the trees to be felled as part of the Proposed Development and the bridges crossed by the Proposed Development were carried out in September 2017. The survey methodology and results are set out in Annex A. No potential roosting features were recorded in the trees or bridges surveyed.

### 6.3 Potential to commit an offence

6.3.1 The following numbers of trees would require felling as part of site clearance works:

- Section 2: 1 tree (see drawing WN02.05-ACM-S2-02-DRG-003 P5).
- Section 4: 8 trees (see drawing WN02.05-ACM-S4-02-DRG-001 P5 and WN02.05-ACM-S4-02-DRG-002 P5)
- Section 6: 9 trees (see drawing WN02.05-ACM-S6-02-DRG-002 P5).
- Section 8: 2 trees (see drawing WN02.05-ACM-S8-02-DRG-001 P5).

6.3.2 Table 6-1 sets out the likely risks of contravening the legislation set out in paragraph 6.1.1, the areas of the Proposed Development where this could occur and the associated reasoning.

**Table 6-1 Bats – potential for an offence**

<b>The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]</b>	<b>Wildlife and Countryside Act 1981 (as amended) [RD2]</b>	<b>Offence likely in absence of proposed strategy</b>
To deliberately capture, injure or kill any wild animal of an EPS. (Reg. 41(1)(a)).	-	No offence likely – no potential roosting features recorded during pre-construction surveys.
To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)); Reg. 41(2)(a)(i). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	No offence likely – no potential roosting features recorded during pre-construction surveys.
To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)) Reg. 41(2)(a)(ii). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.	-	No offence likely - no confirmed hibernation sites in the study area. The type of work proposed is unlikely to disturb hibernating bats even if present within existing bridge structures.
To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)) Reg. 41(2)(b). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.	-	No offence likely - although construction activity could increase noise in comparison to current levels, this is highly unlikely to be enough to generate a significant response at the population level (as stipulated by legislation), particularly as any roosts adjacent to the existing highway would be habituated to a relatively noisy environment.
To damage or destroy a breeding site or resting place of a wild animal of an EPS (Reg 41(1)(d)).		No offence likely – no potential roosting features recorded during pre-construction surveys.
-	To intentionally or recklessly disturb any wild Schedule 5 animal while it is occupying a structure or	No offence likely - although construction activity could increase noise in comparison to current levels, this is highly

The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]	Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed strategy
	place which it uses for shelter or protection. (s9 (4)(b)).	unlikely to be enough to generate an avoidance or abandonment response, particularly as any roosts adjacent to the existing highway would be habituated to a relatively noisy environment.
-	To intentionally or recklessly obstruct access to any structure or place which any Schedule 5 animal uses for shelter or protection. (s9 (4)(c)).	No offence likely - no obstruction likely to occur. Hedgerow links would be maintained around known roosts and construction lighting minimised to avoid spill out of the Proposed Development extent.

## 6.4 Proposed strategy

- 6.4.1 No offences are considered likely as a result of the Proposed Development. No further consideration is required.

## 6.5 Conclusion

- 6.5.1 The Proposed Development would not result in the contravention of the legislation set out in paragraph 6.1.1.

## 7 Otter

### 7.1 Relevant legislation

7.1.1 The following legislation is relevant to otter:

- Wildlife and Countryside Act 1981 (as amended) [RD2] – Schedule 5 species; and
- The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1] – Schedule 2 species.

### 7.2 Baseline information

7.2.1 Cofnod provided no records of otter within 2km of the Proposed Development within the last 10 years. Historic records of otter near Cemlyn Bay, located over 2km north of the Proposed Development, were provided.

7.2.2 Field survey work [RD11, RD12] has been carried out on all waterbodies within 500m of the Proposed Development where access was permitted.

7.2.3 No otter holts or couches were identified during the baseline surveys. However, positive evidence of otter presence was found on five watercourses (see figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report).

### 7.3 Potential to commit an offence

7.3.1 Table 7-1 sets out the likely risks of contravening the legislation set out in paragraph 7.1.1. Otters use a number of watercourses crossed by, and in proximity to, the Proposed Development. There is a risk that a breeding site or resting place could be created within the Proposed Development extent, prior to the commencement of construction, constituting an offence if it were damaged or destroyed during the works.

**Table 7-1 Otter – potential for an offence**

The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]	Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed strategy
To deliberately capture, injure or kill any wild animal of an EPS. (Reg. 41(1)(a)).	-	No offence likely – mobile species would avoid construction works.
To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)). Reg. 41(2)(a)(i). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	No offence likely – no holts recorded and the limited nature of the works would not be considered to disturb at this scale.

The Conservation of Habitats and Species Regulations 2010 (as amended) [RD1]	Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed strategy
<p>To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)).</p> <p>Reg. 41(2)(a)(ii). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.</p>	-	No offence likely – no holts recorded and the limited nature of the works would not be considered to disturb at this scale.
<p>To deliberately disturb wild animals of an EPS [note wherever they are occurring]. (Reg. 41(1)(b)).</p> <p>Reg. 41(2)(b). For the purposes of Reg. 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.</p>	-	No offence likely – no holts recorded and the limited nature of the works would not be considered to disturb at this scale.extent
<p>To damage or destroy a breeding site or resting place of a wild animal of an EPS (Reg. 41(1)(d)).</p>	-	No offence likely - no holts or resting places have been recorded within the Proposed Development extent.
-	<p>To intentionally or recklessly disturb any wild animal specified in Schedule 5 while it is occupying a structure or place which it uses for shelter or . (s9(4)(b)).</p>	No offence likely - no holts or resting places have been recorded within the Proposed Development extent.
-	<p>To intentionally or recklessly obstruct access to any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection. (s9(4)(c)).</p>	No offence likely - no holts or resting places have been recorded within the Proposed Development extent.

## 7.4 Proposed Strategy

7.4.1 No offences are considered likely to occur as no otter holts or resting places have been recorded within the Proposed Development extent. However, widespread records of this species were recorded during the field survey and there is a minor risk that otters could create a holt in the intervening period before construction commences. The following steps would be carried out to manage the risk of contravening the legislation set out in paragraph 7.1.1:

- pre-construction surveys; and
- provision and implementation of a construction method statement, to be prepared by the contractor as part of a CEMP.

### ***Pre-construction surveys***

- 7.4.2 Otter surveys would be carried out in advance of any site clearance works to determine if any lying up or holt sites had become established within the construction working area of the Proposed Development. If any were recorded, they would be assessed to consider whether an EPS licence would be required from NRW.

### ***Provision and implementation of a construction method statements***

- 7.4.3 A construction method statement, to be prepared by the contractor as part of a CEMP, would be developed by the contractor to manage the risks of contravening legislation set out in paragraph 7.1.1, which would also incorporate more general measures to maintain connectivity along and adjacent to watercourses for otter.
- 7.4.4 If otter lying up or holt sites are encountered within the Proposed Development extent during construction, works in the area would be temporarily halted and an EPS licence would be secured from NRW if required.

## **7.5 Conclusion**

- 7.5.1 Although otters are present on many of the watercourses crossed by the Proposed Development, it is considered that there is currently a low risk that the legislation set out in paragraph 7.1.1 would be contravened. The proposed strategy provides measures to ensure that the risks are managed through construction.

## 8 Water vole

### 8.1 Relevant legislation

8.1.1 The following legislation is relevant to water vole:

- Wildlife and Countryside Act 1981 (as amended) [RD2] – Schedule 5 species.

### 8.2 Baseline information

8.2.1 No records were provided by Cofnod of water vole within the last 10 years and within 2km of the Proposed Development. A single historic record was provided approximately 1.1km to the west of the Proposed Development near Llanfachraeth.

8.2.2 Field survey work [RD11, RD12] has been carried out on all waterbodies within 500m of the Proposed Development where access was permitted.

8.2.3 The following waterbodies had positive evidence of water vole recorded (see figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report):

- Section 4 (Tan R'Allt watercourse - D28/D30); and
- Section 8 (D57/D59).

### 8.3 Potential to commit an offence

8.3.1 The greatest risk of an offence being committed would be in the unlikely event water vole burrows occur within the Proposed Development extent. The field survey data collected to date have not indicated any areas where this risk is likely to occur. However, being a mobile species, water vole may have moved in to these areas since the field survey work was completed. If water vole burrows were to be present, the potential offences are detailed in table 8-1.

**Table 8-1 Water vole – potential for an offence**

Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed steps
To intentionally kill, injure or take any wild animal included in Schedule 5. (s9(1)).	Yes – if water vole are present within the Proposed Development extent.
To intentionally or recklessly disturb any wild animal specified in Schedule 5 while it is occupying a structure or place which it uses for shelter or protection. (s9(4)(b)).	Yes – if water vole are present within the Proposed Development extent.
To intentionally or recklessly obstruct access to any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection. (s9(4)(c)).	Yes – if water vole are present within the Proposed Development extent.

Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed steps
To intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection. (S9(4)(a)).	Yes – if water vole are present within the Proposed Development extent.

## 8.4 Proposed strategy

8.4.1 In summary, the following steps would be taken prior to construction to ensure legislation protecting water vole would not be contravened:

- pre-construction survey to determine exact extents of water vole activity;
- if water vole burrows are recorded it would need to be determined if construction can avoid damage/destruction, obstruction or disturbance. If avoidance was not possible, the steps below would be carried out to translocate water vole under a NRW conservation licence (if necessary); and
- provision and implementation of a construction method statement, to be prepared by the contractor as part of a CEMP.

### *Pre-construction surveys*

8.4.2 Water vole surveys would be carried out at all watercourses and any other suitable habitat crossed by the Proposed Development prior to site clearance.

### *Measures to avoid an offence*

8.4.3 The type of measures that could be implemented via a construction method statement could include the following:

- bank protection measures;
- machinery/plant exclusion zones;
- no equipment stored within 10m of any watercourse so as to reduce the risk of stored equipment or plant crushing burrows or individuals; and/or
- the design of any works to avoid the removal of bank material.

### *Translocation*

8.4.4 Any translocation of water vole, if required, would need to be carried out under a NRW conservation licence. The licence would be issued for the purpose of conservation; therefore, the Proposed Development would need to deliver a conservation benefit for water vole e.g. improved habitat management to provide enhancement.

- 8.4.5 The main technique used to avoid the incidental mortality of water voles during site clearance or construction are relocation by trapping. Detailed protocols, which would be followed in the event they were required, are covered in The Water Vole Mitigation Handbook [RD14].
- 8.4.6 Water vole should not be relocated by trapping from small areas of affected habitat (up to 50m of watercourse) where there is suitable adjacent habitat, without the use of exclusion fencing.
- 8.4.7 If required, relocation of water vole by trapping would be undertaken between 1 March and 15 April and/or 15 September to 30 November. Intermittent dates are when water vole would have dependent young and should not be disturbed. The receptor site must be well established before translocation. Trapping can be assumed to be complete when there have been five clear days of no captures or evidence of water vole in the excluded area.

### ***Monitoring and reporting***

- 8.4.8 A conservation licence return, which provides details of the actions taken under the licence and any associated monitoring results, would be submitted to NRW following completion of the works.

## **8.5 Conclusion**

- 8.5.1 Based on the results of the desk study and field survey, and the limited areas of work outside the highway boundary coinciding with water courses where water vole are known to be present (up or downstream), the risk of water vole being recorded within the area required for construction is low, and the actions and commitments described above would ensure no offence is committed under the legislation set out in paragraph 8.1.1.

## 9 Reptiles

### 9.1 Relevant legislation

9.1.1 The following legislation is relevant to reptiles:

- Wildlife and Countryside Act 1981 (as amended) [RD2] – Schedule 5 species (protection from killing/injury only s9 (1)).

### 9.2 Baseline information

9.2.1 Cofnod provided records for the period 2004 to 2014, of adder (*Vipera berus*) and common lizard (*Zootoca vivipara*) mainly associated with Cemlyn to the far north of the study area, 1km - 2km from the Proposed Development at its most northern extent.

9.2.2 No specific field survey has been undertaken but it is likely, based on the Phase 1 habitat survey (see figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report) that all four common species of reptile (adder, common lizard, grass snake (*Natrix natrix*), and slow worm (*Anguis fragilis*)) could be present within suitable habitat throughout the Proposed Development extent, where they extend beyond the existing highway boundary.

### 9.3 Potential to commit an offence

9.3.1 The site clearance phase presents the greatest risk of contravening the legislation set out in 9.1.1 and the risk is generally confined to areas where the habitat is considered most suitable. The areas within the Proposed Development where reptiles are most likely to occur are the areas of scrub, rough grassland and boundary features (stone walls and hedgerows) (see figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report).

**Table 9-1 Reptiles – potential for an offence**

Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed strategy
To intentionally kill, injure or take any wild animal included in Schedule 5 (s9(1)).	Yes – during site clearance phase in areas of suitable habitat.

### 9.4 Proposed strategy

9.4.1 Steps would be taken prior to construction to ensure legislation set out in paragraph 9.1.1 would not be contravened. Measures would be undertaken to avoid killing and injuring by:

- provision and implementation of a construction method statement, to be prepared by the contractor as part of a CEMP;
- habitat manipulation to encourage dispersal off-site; and
- trapping and translocation of individuals.

## ***Avoiding killing or injury of reptiles***

### **Habitat manipulation**

- 9.4.2 The primary approach to reptile mitigation would be displacement, other than in areas where GCN were also present – see section 5.4 above. Habitat manipulation would be utilised to encourage reptiles to move away from an area to be subject to clearance into an adjacent undisturbed area in order to avoid reptile mortality. This would be achieved by cutting and clearance of vegetation in stages towards the direction of retained habitats such as hedgerows, woodland edge, tussocky grassland and scrub in accordance with a construction method statement.
- 9.4.3 Groundworks and vegetation clearance in areas suitable for reptile hibernation (excluding short grassland & arable land) should be undertaken when the species are active, prior to the first frosts (typically in early October) or after evening temperatures have risen in spring to over 5°C (typically in early March).
- 9.4.4 Vegetation to be cleared would first be cut with hand tools (e.g. strimmers/brush cutters and chain saws) down to a height of approximately 150mm, with cut material removed from the site. After a rest period of between two and seven days (to allow any reptiles present to relocate naturally) the remaining habitat would be cleared with machinery to ground level. The construction method statement would define the specific start and end dates when these activities are possible and would be temperature dependent.
- 9.4.5 In areas where vegetation clearance could not be undertaken during the habitat manipulation phase, a destructive search could commence in spring onwards but must be completed before the end of autumn, due to winter hibernation when disturbance would be likely to result in mortality. The destructive search would occur during the final stage of vegetation clearance, when potential refuges such as tree stumps, concrete waste and other debris on-site would be removed. The ECoW would undertake a finger-tip search of these features before the contractors remove them. All reptiles found would be removed and relocated to adjacent suitable habitat.

### **Trapping, translocation and exclusion**

- 9.4.6 For those areas of terrestrial habitat to be cleared where GCN are also present, reptiles would be translocated using the same methodology as detailed in paragraph 5.4.3. This would be undertaken prior to site clearance and under supervision of the ECoW in accordance with a construction method statement.

## **9.5 Conclusion**

- 9.5.1 The Proposed Development could result in the contravention of the legislation set out in paragraph 9.1.1. There is a risk that the offence of killing or injuring reptiles would occur as a result of the Proposed Development. The strategy set out would result in this offence being avoided.

## 10 Birds

### 10.1 Relevant legislation

10.1.1 The following legislation is relevant to birds:

- Wildlife and Countryside Act 1981 (as amended) [RD2].

### 10.2 Baseline information

10.2.1 Cofnod provided numerous records for the period 2004 to 2014 for over 100 bird species within 2km of the Proposed Development. These included Schedule 1 [RD2] species: kingfisher (*Alcedo atthis*); peregrine falcon (*Falco peregrinus*), merlin (*Falco columbarius*), barn owl (*Tyto alba*) and chough (*Pyrrhocorax pyrrhocorax*).

10.2.2 The majority of the species records are centred on the Cemlyn Bay area, approximately 1.7km north of the Proposed Development and the Alaw estuary, approximately 700m west of the Proposed Development.

10.2.3 A breeding bird survey undertaken in 2013 [RD15] identified evidence of breeding for 39 species with higher intensity use of woodland, hedgerows, wet and dry scrub, and mature trees within 250m of the existing A5025 (see figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report).

### 10.3 Potential to commit an offence

10.3.1 The vegetation clearance phase of the Proposed Development could result in an offence [RD2] in relation to breeding birds. Details are provided in table 10-1.

**Table 10-1 Birds – potential for an offence**

Wildlife and Countryside Act 1981 (as amended) [RD2]	Offence likely in absence of proposed strategy
To intentionally kill, injure or take any wild bird. (s1(1)).	Yes – to unfledged chicks during vegetation clearance.
To intentionally or recklessly disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird. (s1(5)(a)(b)).	No offence likely - birds listed in Schedule 1 have not been recorded breeding within the areas where vegetation clearance is required.
To take or destroy an egg of any wild bird. (s1(1)(c)).	Yes – during vegetation clearance.
To intentionally take, damage or destroy the nest of a wild bird included in Schedule ZA1 (s1(1)(aa)).	No offence likely - species on this schedule are considered highly unlikely to be nesting in the vicinity of the Proposed Development extent.
To intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built (s1(1)(b)).	Yes – during vegetation clearance.

## 10.4 Proposed strategy

10.4.1 In summary, the following step would be taken prior to construction to ensure legislation set out in paragraph 10.1.1 would not be contravened:

- Provision and implementation of a construction method statement, to be prepared by the contractor as part of a CEMP, which would include measures such as protection of habitats and features, and ecological supervision of works.

### ***Provision and implementation of a construction method statement***

10.4.2 A construction method statement would be produced. This would set out the protocols to ensure that damage or disturbance to bird nests would be avoided, as set out below.

### ***Avoiding damage or destruction of eggs and nests***

#### **Timing of vegetation clearance**

10.4.3 Where possible, vegetation suitable to support breeding birds would not be cleared during the bird breeding season (March-August, inclusive).

#### **Supervision of vegetation clearance**

10.4.4 Pre site clearance checks would be carried out within all areas of vegetation clearance to determine the presence of active bird nests.

10.4.5 The areas of vegetation and structures to be cleared each day would be walked by a suitably qualified and experienced ecologist or ECoW prior to the arrival on-site of clearance contractors, to avoid the risk of disturbance to birds from excessive movement of vehicles/people or through the noise of the hand tools used during the clearance works. This would also include times outside the main breeding season (March–August, inclusive) in habitats that support species that can breed before and/or after this period, such as barn owls, corvids and pigeons.

10.4.6 Should a nest be identified during vegetation clearance, works within its vicinity would stop and the ECoW present would determine a suitable buffer zone around the nest within which no further clearance or other works would occur. This would be dependent on the type and density of vegetation surrounding the nest and the species present. A minimum buffer zone would be 5m from a nest but may be extended on advice from the ECoW. The buffer zone would be clearly marked using demarcation tape or fencing to ensure no works take place within that area. These would also be marked on an environmental constraints map and displayed in the site office as well as being issued to all contractors on-site.

- 10.4.7 The ECoW would monitor activity at each nest to determine when it is no longer active so that works could continue. Should there be no sign of birds nesting in an area, the contractor would undertake vegetation clearance. The ECoW would be available on-site should any further input or assistance be required.

#### **Protection of retained vegetation**

- 10.4.8 Areas of retained vegetation within construction working areas would be clearly demarcated to ensure no accidental incursion of construction work.

### **10.5 Conclusion**

- 10.5.1 The Proposed Development could result in the contravention of the legislation set out in paragraph 10.1.1. There is a risk of offences of destroying eggs and damaging or destroying nests as a result of the Proposed Development. The strategy set out would result in these offences being avoided.

## 11 Badger

### 11.1 Relevant legislation

11.1.1 The following legislation is relevant to badgers:

- Protection of Badgers Act 1992 [RD3].

### 11.2 Baseline information

11.2.1 No records were provided by Cofnod, during the period 2004 to 2014, of badger within 2km of the Proposed Development [RD10]. Records of badger on the Isle of Anglesey are rare and the species was thought to be extinct on the island until their reintroduction in the 1970s.

11.2.2 No badger setts were recorded during the survey of areas within 250m of the existing A5025 [RD12]; however, a live badger was seen during a dusk bat activity survey in the Cefn Coch locality.

### 11.3 Potential to commit an offence

11.3.1 Latest field survey information suggests that no badger setts would be lost, damaged or disturbed. Badger activity has been identified near Cefn Coch suggesting that it is a possibility that new setts could be dug in the Proposed Development extent, outside the existing highway boundary before works commence in those areas.

11.3.2 The majority of the Proposed Development would be contained within the existing highway boundary, and is therefore considered to present a low risk to contravening legislation [RD3]. Accordingly, this has not been considered further. Areas where the Proposed Development requires the highway boundary to be removed, and work outside the highway boundary, present a higher risk of the work resulting in an offence as this is where badger setts may occur.

11.3.3 A review of the potential for the Proposed Development to result in an offence is detailed in table 11-1.

**Table 11-1 Badger – potential for an offence**

Protection of Badgers Act 1992 [RD3]	Offence likely in absence of proposed strategy
To wilfully kill, injure or take, or attempt to kill, injure or take a badger. (s1 (1)).	Yes – only if an active sett is present in 'close proximity' [RD16] to the Proposed Development extent.
To intentionally or recklessly disturb a badger when it is occupying a badger sett. (s3 (e)).	Yes – only if an active sett is present in 'close proximity' [RD16] to the Proposed Development extent.
To intentionally or recklessly obstruct access to, or any entrance of, a badger sett. (s3 (c)).	Yes – only if an active sett is present in 'close proximity' [RD16] to the Proposed Development extent.

Protection of Badgers Act 1992 [RD3]	Offence likely in absence of proposed strategy
To intentionally or recklessly damage a badger sett or any part of it or to destroy a badger sett. (s3 (a)(b)).	Yes – only if an active sett is present in ‘close proximity’ [RD16] to the Proposed Development extent.

## 11.4 Proposed strategy

11.4.1 In summary, the following steps would be taken prior to construction to ensure legislation set out in paragraph 11.1.1 would not be contravened:

- pre-construction surveys;
- avoiding disturbance / damage (should badgers be confirmed present and affected by the works); and
- sett closure, under licence (should the sett be confirmed as active and affected by the works).

### *Pre-construction surveys*

11.4.2 A pre-construction survey within 50m of any existing boundaries that need to be removed would be carried out prior to the start of site clearance, in order to identify whether any badger setts are present. The survey timing would be such that, if a badger sett is recorded, sufficient time would be available to allow for an application and sett closure to be completed before site clearance is scheduled to commence. Badger sett closure is permitted in the months of July to November only, with licences generally taking 8-10 weeks to secure.

### *Licensing*

11.4.3 If an active badger sett is discovered in close proximity to an area that is required for construction during the pre-construction survey or the construction period, work would cease in that area until a licence was obtained from NRW.

11.4.4 The most common form of mitigation associated with a licence, if required, is sett exclusion. Badger licences are normally only granted for sett exclusions between July and November, which would be incorporated into the work schedule. However, depending on the nature of the work, its proximity to a sett and the type of sett, it may be possible to alter working methods to minimise disturbance to badgers or avoid damage to a sett.

11.4.5 An example methodology for both avoiding damage/disturbance and sett exclusion is set out in the following paragraphs.

### *Avoiding disturbance and damage*

11.4.6 If an active sett is recorded in close proximity to the construction works and does not need to be destroyed, it may be possible to alter working methods in that location, such as by reducing machinery sizes or working with hand tools, to ensure that disturbance and damage is minimised or avoided.

### ***Sett exclusion***

- 11.4.7 The following provides an example of methods that could be used if a badger sett required exclusion under licence.
- All active sett entrances would be fitted with badger gates, using the designs shown in HA 52/92: Mitigating Against Effects on Badgers [RD17].
  - The gates would be set to one way to effect exclusion and be subsequently monitored for 21 days. Once it had been confirmed that badgers were no longer using the sett, it would be excavated under the supervision of a licenced ecologist.
- 11.4.8 The excavation would be conducted to avoid collapsing any chambers within the sett because of the possibility of badgers remaining undetected. If any badgers were disturbed, all work would cease and they would be allowed to leave the area without interference.
- 11.4.9 Any active sett identified would be monitored throughout the exclusion process and considered empty only when the one way gates are in place and there have been no indications of badger activity within the sett for two weeks.
- 11.4.10 Given that the risk of a main sett needing to be closed is extremely low, a replacement sett is unlikely to be required. If a replacement sett is required, sufficient land is considered to be available to allow an appropriate location to be found.

## **11.5 Conclusion**

- 11.5.1 There is a low risk that the Proposed Development would result in any contravention of legislation set out in paragraph 11.1.1. This is primarily because of the limited evidence of badger presence in the area. However, in the unlikely event of an active sett being identified during the Proposed Development works, the proposed strategy would be to first avoid an offence then, if this was not possible, to exclude badgers and close the sett under licence.

## 12 Schedule 9 Invasive Species

### 12.1 Relevant legislation

12.1.1 The following legislation is relevant to Schedule 9 invasive species:

- Wildlife and Countryside Act 1981 (as amended) [RD2] – Schedule 9 species; and
- Environmental Protection Act 1990 [RD6].

### 12.2 Baseline information

12.2.1 No records of Schedule 9 species were listed within the Cofnod data search.

12.2.2 Schedule 9 species: Japanese knotweed, Himalayan balsam, giant rhubarb and Montbretia were recorded during Phase 1 habitat surveys [RD10, RD12] and are shown on figure 11-2a-e within volume 2 of the A5025 On-line Highway Improvements Environmental Report.

### 12.3 Potential to commit an offence

12.3.1 The greatest risk of contravening the legislation relating to Schedule 9 species is during the vegetation clearance phase of the works, particularly where construction is required outside the existing highway boundary.

12.3.2 In relation to the offence of introducing non-native species to the wild, the disposal of waste from control of species such as Japanese knotweed comes under the Environmental Protection Act 1990 [RD6]. No other aspects of this legislation are considered. These are summarised in table 12-1 below.

**Table 12-1 Invasive species – potential for an offence**

Wildlife and Countryside Act 1981 (as amended) [RD2]	Environmental Protection Act 1990 [RD6]	Offence likely in absence of proposed strategy
To plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9. (s14 (2)).	-	Yes – by spread of existing plants within Proposed Development extents importation of plants from outside the Proposed Development.
-	Section 33 (1a) and (1b) set out offences dealing with the deposit, treating, keeping or disposing of controlled waste without a permit. Section 33 (1)(c) makes it an offence to keep, treat or dispose of controlled waste in a manner likely to cause pollution of the environment.	Yes – by management and disposal of existing plants cleared from site.

## 12.4 Proposed strategy

12.4.1 In summary, the following steps would be taken prior to construction to ensure legislation set out in paragraph 12.1.1 would not be contravened:

- pre-construction surveys;
- provision and implementation of a construction method statement to be prepared by the contractor as part of a CEMP;
- environmental permit from NRW, if required; and
- monitoring and reporting.

### ***Pre-construction surveys***

12.4.2 Pre-construction surveys would be undertaken to record the location and extent of Schedule 9 species within all construction areas. An assessment of control measures required, including waste disposal, would then be made and incorporated in a construction method statement.

### ***Provision and implementation of a construction method statement***

12.4.3 A construction method statement detailing control and, if necessary, eradication methods for the invasive species present would be produced, using best practice guidance publications [RD18, RD19]. Other measures to avoid accidental incursion into invasive species areas could include the following.

- Fencing and/or clear demarcation with hazard warning tape. In the case of Japanese knotweed, this would be to a width of at least 7m from the outermost plant and no tracked excavators would enter the 7m exclusion zone.
- Clear demarcation of haulage routes in areas of invasive species. If haulage routes are required to pass through exclusion zones, appropriate methods to prevent contact with the soil would be implemented.
- Implementation of biosecurity measures to include: prevention of introduction or transfer of invasive non-native species across construction working areas by machinery or personnel and the suitable procurement; and screening of planting stock to prevent accidental introduction of invasive species.

### ***Environmental permit***

12.4.4 An environmental permit from NRW would need to be secured to remove any soil contaminated with Japanese knotweed. Disposal of the soil would only be permitted at landfill sites that are licensed to receive hazardous waste of this type, or it could be buried on-site under a method statement agreed with NRW.

### ***Monitoring and reporting***

- 12.4.5 An ECoW would be employed to ensure that the implementation of the appropriate control measures would be undertaken during construction. Post construction monitoring would be undertaken to confirm that non-native invasive species had not spread as a result of the Proposed Development.
- 12.4.6 A report would be produced annually by the contractor during construction, and for a specified period post construction, in order to provide a review of the monitoring results and recommendations for remedial action if required.

## **12.5 Conclusions**

- 12.5.1 The approach outlined provides actions and commitments which would minimise the risk that an offence was committed under the legislation set out in paragraph 12.1.1.

## 13 Fish

### 13.1 Relevant legislation

13.1.1 The following legislation is relevant to fish:

- The Eels (England and Wales) Regulations 2009 (as amended) [RD4]; and
- Salmon and Freshwater Fisheries Act 1975 (as amended) [RD5].

### 13.2 Baseline information

13.2.1 Consultation data was provided by Cofnod for a 2km area centred on the Proposed Development. No fish data were listed as part of this data request [RD20].

13.2.2 The following eight species of fish were recorded from nine field survey sites [RD20]:

- European eel (*Anguilla anguilla*);
- three spined stickleback (*Gasterosteus aculeatus*);
- nine spined stickleback (*Pungitius pungitius*);
- brown trout (*Salmo trutta*);
- river lamprey, (*Lampetra fluviatilis*);
- perch (*Perca* sp);
- flounder (*Platichthys flesus*); and
- common goby (*Pomatoschistus microps*).

13.2.3 A number of watercourses, field drains and wetland areas were identified which would be crossed by, or be within the locality of, the Proposed Development.

### 13.3 Potential to commit an offence

13.3.1 Release of solids and liquids into waters could cause an offence in relation to water quality (see table 13-1), though this would be mitigated through the following embedded and good practice mitigation measures that form part of the Proposed Development:

- widening within the existing highway boundary wherever possible and, where this is not achievable, minimising the area of new hardstanding introduced;
- the incorporation of existing infrastructure and regimes into the overall drainage design, to reduce the requirement to install new drainage components; and
- demarcation of protective 10m buffer areas around watercourses.

**Table 13-1 Freshwater fish – potential for an offence**

<b>Eels (England and Wales) Regulations 2009 (as amended) [RD4]</b>	<b>Salmon and Freshwater Fisheries Act 1975 (as amended) [RD5]</b>	<b>Offence likely in absence of proposed strategy</b>
To construct, alter or maintain a dam or structure and failing to notify the NRW first will be guilty of an offence. (Part 4, 12 (1), (2),(4).)	-	No offence likely - there are no new culverts/structures proposed. NRW would be informed of the proposed extension of culverts.
-	To cause or knowingly permit to flow, or put or knowingly permit to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, shall be guilty of an offence. (Part I, 4 (1)).	No offence likely - the Proposed Development would be constructed using good practice mitigation measures, as set out in the A5025 On-line Highway Improvements Code of Construction Practice, in relation to pollution prevention, therefore avoiding/minimising the risks of this offence.

## 13.4 Proposed Strategy

13.4.1 The proposed strategy to avoid contravening legislation [RD5] includes the following.

- There would be appropriate environmental management of construction working areas and the Temporary Construction Compound.
- The contractor would use best practice industry standards during construction such as set out within CIRIA guidance documents [RD21] to prevent pollution of watercourses.

## 13.5 Conclusion

13.5.1 The implementation of embedded and good practice mitigation measures set out above means that no offences would be likely with regard to the legislation set out in paragraph 13.1.1.

## 14 References

ID	Reference
RD1	The Conservation of Habitats and Species Regulations 2010. SI 2010/490. [Online] Available at: <a href="http://www.legislation.gov.uk/ukxi/2010/490/contents/made">http://www.legislation.gov.uk/ukxi/2010/490/contents/made</a> [Accessed 14 Sept 2016]
RD2	Wildlife and Countryside Act 1981. c.69. [Online] Available at: <a href="http://www.legislation.gov.uk/ukpga/1981/69/contents">http://www.legislation.gov.uk/ukpga/1981/69/contents</a> [Accessed 7 Sept 2016].
RD3	Protection of Badgers Act 1992. c.51. [Online] Available at: <a href="http://www.legislation.gov.uk/ukpga/1992/51/contents">http://www.legislation.gov.uk/ukpga/1992/51/contents</a> [Accessed 14 Sept 2016].
RD4	The Eels (England and Wales) Regulations 2009. No. 3344. [Online] Available at: <a href="http://www.legislation.gov.uk/ukxi/2009/3344/contents/made">http://www.legislation.gov.uk/ukxi/2009/3344/contents/made</a> [Accessed 21 Sept 2016].
RD5	Salmon and Freshwater Fisheries Act 1975. c. 51. [Online] Available at: <a href="http://www.legislation.gov.uk/ukpga/1975/51/contents">http://www.legislation.gov.uk/ukpga/1975/51/contents</a> [Accessed 21 Sept 2016].
RD6	Environmental Protection Act 1990. c. 43. [Online] Available at: <a href="http://www.legislation.gov.uk/ukpga/1990/43/contents">http://www.legislation.gov.uk/ukpga/1990/43/contents</a> [Accessed 16 Sept 2016].
RD7	The Hedgerow Regulations 1997. SI 1997/1160. [Online] Available at: <a href="http://www.legislation.gov.uk/ukxi/1997/1160/contents/made">http://www.legislation.gov.uk/ukxi/1997/1160/contents/made</a> [Accessed 30 Aug 2016].
RD8	Planning Act 2008. [Online] [Accessed June 2017] Available at: <a href="http://www.legislation.gov.uk/ukpga/2008/29/part/11">http://www.legislation.gov.uk/ukpga/2008/29/part/11</a>
RD9	Town and Country Planning Act 1990. [Online] [Accessed June 2017] Available at: <a href="http://www.legislation.gov.uk/ukpga/1990/8/part/III/crossheading/secretary-of-states-powers-as-respects-planning-applications-and-decisions">http://www.legislation.gov.uk/ukpga/1990/8/part/III/crossheading/secretary-of-states-powers-as-respects-planning-applications-and-decisions</a>
RD10	Mott MacDonald 2014. A5025 Route Improvement Contract. Preliminary Ecological Appraisal, s.l.: Unpublished report on behalf of Horizon Nuclear Power.
RD11	Mott MacDonald 2014. A5025 Route Improvement Contract EIA. Great Crested Newt Field Survey Results, s.l.: Unpublished report on behalf of Horizon Nuclear Power.
RD12	Jacobs UK Ltd 2016. Wylfa Newydd Project. Consultancy Report: A5025 Terrestrial Ecology Factual Report, s.l.: Unpublished report on behalf of Horizon Nuclear Power.
RD13	Langton, T. E., Beckett, C. L. & Foster, J. P. 2001. Great Crested Newt Conservation Handbook. Halesworth: Froglife.
RD14	Dean, M., Strachan, R., Gow, D. & Andrews, R. 2016. The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series), s.l.: Eds Fiona Mathews and Paul Chanin The Mammal Society, London.
RD15	Mott MacDonald, 2014. A5025 Route Improvement Contract EIA Breeding Bird Survey Report. s.l.: Unpublished report on behalf of Horizon Nuclear Power.
RD16	Natural Resources Wales 2016. Badger Licences issued by Natural Resources Wales and the Welsh Government. [Online] Available at:

ID	Reference
	<a href="http://naturalresources.wales/apply-for-a-permit/protected-species-licensing/uk-protected-species-licensing/badger-licences-issued-by-natural-resources-wales-and-the-welsh-government/?lang=en">http://naturalresources.wales/apply-for-a-permit/protected-species-licensing/uk-protected-species-licensing/badger-licences-issued-by-natural-resources-wales-and-the-welsh-government/?lang=en</a> [Accessed 07 April 2016].
RD17	Highways Agency 1997. Design Manual for Roads and Bridges, Volume 10, Section 4, HA 59/92 Mitigating Against Effects on Badgers. [Online] Available at: <a href="http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol10/section4/ha5992.pdf">http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol10/section4/ha5992.pdf</a> [Accessed 7 April 2016].
RD18	Natural England, Department for Environment, Food & Rural Affairs and Environment Agency 2014. Prevent harmful weeds and invasive non-native plants spreading. [Online] [Accessed June 2017] Available at: <a href="https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants">https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants</a> .
RD19	Environment Agency 2010. Managing Invasive Non-native Plants: managing invasive non-native plants in or near freshwater. Bristol: Environment Agency.
RD20	Jacobs UK Ltd 2015. Wylfa Newydd Project Consultancy Report: A5025 Freshwater Baseline Surveys 2014, s.l.: Unpublished report on behalf of Horizon Nuclear Power.
RD21	Charles, P. & Edwards, P. 2015. Environmental good practice on-site guide (C741D). 4th ed. s.l.:CIRIA.

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## Annex A Preliminary Bat, Tree and Structures Survey

### A.1 Introduction

A.1.1 Jacobs UK Ltd has been commissioned by Horizon Nuclear Power Ltd to undertake a ground-level bat roost assessment of the trees to be felled as part of the proposed A5025 On-line Highway Improvements, and an inspection of two existing bridges over the Afon Alaw and Tan-yr-alt which lie along the route. The work was undertaken on 11 September 2017.

### A.2 Methodology

#### *Ground-level bat roost assessment: trees*

A.2.1 The areas of land associated with site clearance activities are illustrated on the A5025 On-line Highway Improvements Proposed Site Clearance drawings (WN02.05-ACM-S2-02-DRG-001-003, WN02.05-ACM-S4-02-DRG-001-003, WN02.05-ACM-S6-02-DRG-001-004, WN02.05-ACM-S8-02-DRG-001-002) which form part of the submitted planning application documentation.

A.2.2 Individual trees within those areas were surveyed with the use of binoculars and a high powered torch to search for signs of use by bats including droppings, urine stains and scratch marks. Potential roost features (PRF), if present, were also noted (e.g. knot holes, woodpecker holes, lifting bark, cracks and desiccation fissures). Trees with PRFs are categorised as Low/Medium/High potential for bats, which informs further survey (dusk emergence/dawn re-entry) if necessary. If no suitable features were recorded then they were categorised as having Negligible potential. The approach to this assessment follows that detailed within the Bat Conservation Trust good practice guidelines<sup>1</sup>.

#### *Inspection of bridges*

A.2.3 Surveyors undertook an initial visual assessment of two bridges for signs of bat roosts and/or suitable locations for roosting bats. This comprised inspecting the bridge from the adjacent land and noting down any cracks, holes or crevices that could be used by roosting bats.

#### *Limitations*

A.2.4 In places where land access was not granted or the location of the tree was not in a safe location for ground assessment, a drive-by inspection was conducted and for the trees were of a size and type that it is unlikely any potential roosting features would have been missed.

A.2.5 No land access was granted for the areas immediately adjacent to the Tan yr Alt bridge and the inspection had to be conducted from the side road approximately 70 metres north east of the bridge. This may have resulted in

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<sup>1</sup> Collins, J. (ed.) (2016). *Bat surveys for professional ecologists: good practice guidelines* (3<sup>rd</sup> edn). The Bat Conservation Trust, London.

some potential roosting features on this structure being missed, however it is considered unlikely that these would be large enough to support more than one or two bats.

## A.3 Results

- A.3.1 All of the trees highlighted as to be removed on the Site Clearance drawings and two structures were surveyed. All trees flagged for inspection showed no signs of bat use, nor had any features suitable for roosting. Table A3-1 sets out the results of the tree inspections. Appendix A provides location maps of all trees surveyed, together with the two bridges, and includes photos where relevant.
- A.3.2 The two bridges assessed during the surveys were of a similar construction, consisting of a concrete slab with concrete abutments. Table A3-2 summarises the results. Tan yr Alt (Appendix A.6.1) was a three span bridge with concrete piers. No joints or voids appeared to be present at the top of each pier. Due to land access restrictions only the eastern aspect of Tan Yr Alt could be assessed; however, this appeared to be in good condition and with no suitable features for bats.
- A.3.3 The bridge over the Afon Alaw was a single span structure with a concrete slab and abutments (Appendix A.7.1). The structure was accessible from public rights of way and could be fully surveyed. The bridge, deck, abutments and parapets did not have any features suitable for bats. Some small voids were, however, present in the stone walls (Appendix A.7.2) abutting it from the south and, due to this, the bridge is considered to have low potential for bats.

**Table A3-1 Tree Survey Results (\*Subject to drive by survey as no access)**

Tree ID/Structure ID	Section Reference	Grid Reference	Nearest Postcode	Appendix Ref/Photo Ref	Species	Height	Bat Roost Potential
T1-T2	Section 8	SH 34293 91371	LL68 0UD	A.5/A.5.1	Sycamore	4m	Negligible
T3-T11	Section 6	SH 32544 88220	LL65 4HL	A.4/A.4.1	Conifer	2m	Negligible
T12-T20*	Section 4	SH 31607 84533	LL65 4NH	A.3/A.3.1	Hawthorne	1-1.5m	Negligible
T21*	Section 2	SH 31682 81106	LL65 3DF	A.2/A.2.1	Sycamore	2m	Negligible

**Table A3-2 Bridge Survey Results**

Structure ID	Grid Reference	Nearest Postcode	Appendix Ref/Photo Ref	Bat Roost Potential
Tan yr Alt - Bridge	SH 31690 83903	LL65 4NF	A.6/A.6.1	Negligible
Afon Alaw - Bridge	SH 31641 82141	LL65 4UE	A.7/A.7.1 – A.7.3	Low

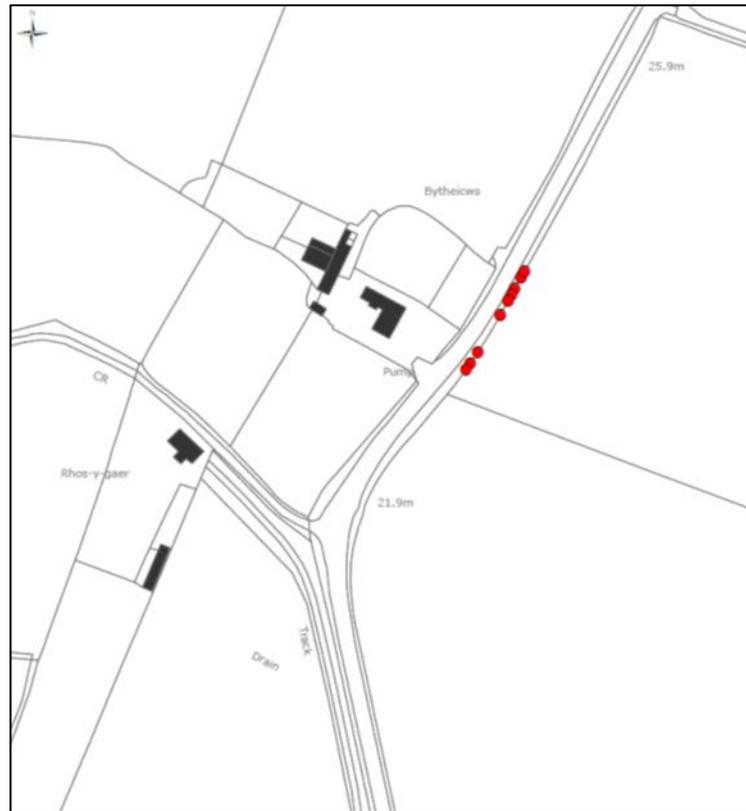
## **A.4 Conclusions**

- A.4.1 The 21 trees surveyed as part of the ground assessment were considered to be of negligible bat roost potential and no further surveys are recommended.
- A.4.2 The eastern aspect of Tan yr Alt (Appendix A.6.1) did not have any potential for bat roosts; however, as a full assessment was unable to be completed, a precautionary investigation of the western aspect should be undertaken prior to works.
- A.4.3 The bridge over the Afon Alaw had no features suitable for bats. The stone walls leading to the structure had a number of small voids that could be opportunistic day roosts for single bats (Appendix A.7.2). Resurfacing work only is proposed in this area and that would not affect the use of the walls by bats and any effect on the local population is considered to be negligible.





### A.3 Location of trees to be felled in Section 4



#### A.3.1 Photograph of trees T12-T20 to be felled in section 4



## A.4 Location of trees to be felled in Section 6



A.4.1 Photograph of trees T3-T11 to be felled in section 6



\*At time of survey the trees pictured had been heavily reduced to 1/3 their current standing height

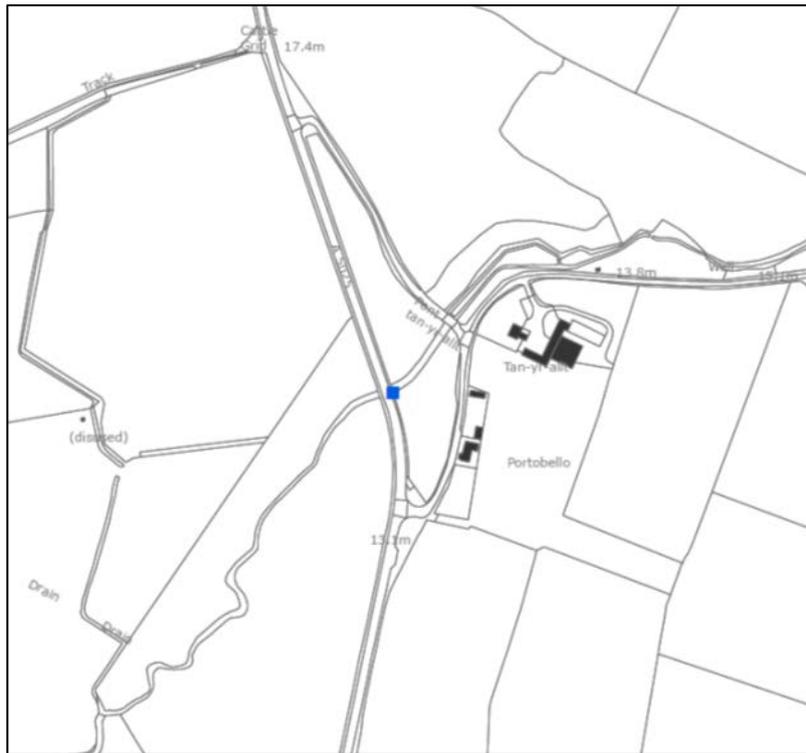
## A.5 Location of trees to be felled in Section 8



A.5.1 Photograph of trees T1 & T2 to be felled in section 8 (junction of A5025/Nanner Road)



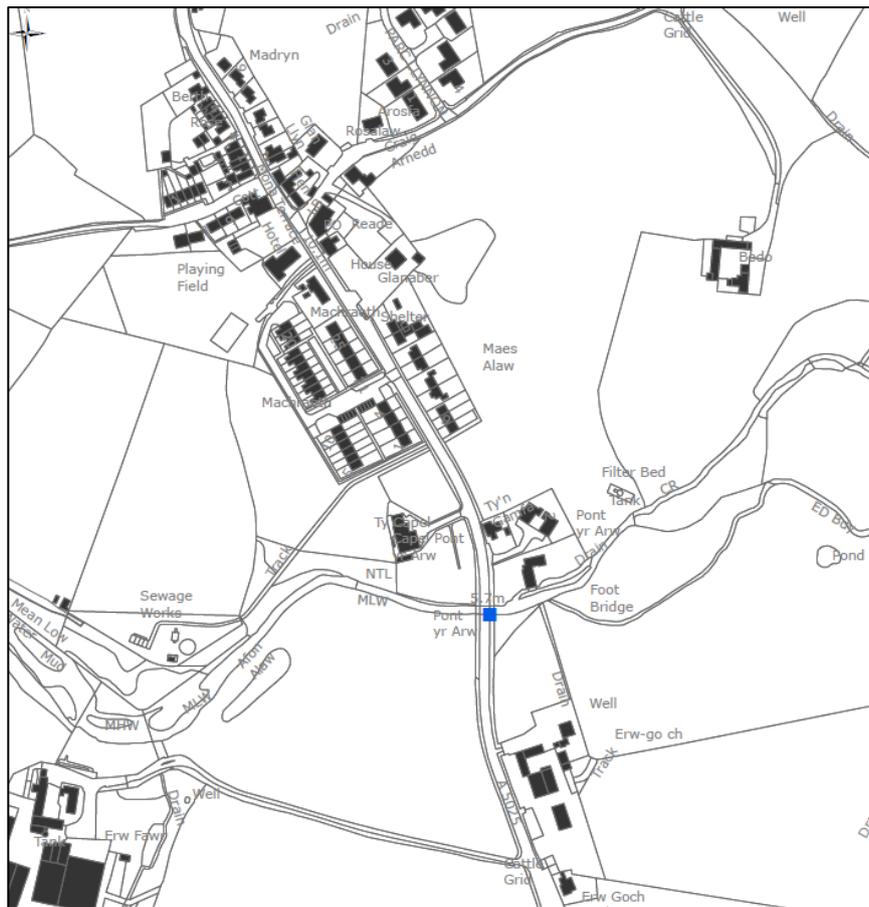
## A.6 Location of bridge inspected at Tan yr Alt



A.6.1 Photograph of Tan yr Alt bridge eastern aspect



## A.7 Location of bridge inspected at Afon Alaw



### A.7.1 Photograph of bridge at Afon Alaw



A.7.2 Photograph of voids present in stone wall leading to Afon Alaw bridge



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## Annex B Great Crested Newt 2017 Pre-construction Survey Report

### B.1 Executive Summary

- B.1.1 Horizon Nuclear Power Wylfa Ltd. (Horizon) is applying to the Secretary of State for a Development Consent Order (DCO) under the Planning Act 2008, to construct, operate and maintain a new Nuclear Power Station on land west of Cemaes on the Isle of Anglesey. The Wylfa Newydd Project (the Project) comprises the Wylfa Newydd DCO Project and the Enabling Works.
- B.1.2 Horizon will prepare planning applications under the Town and Country Planning Act 1990 (as amended) (the 'TCPA') for the Enabling Works, to be submitted to the Isle of Anglesey County Council (IACC) as the determining local planning authority. The Enabling Works comprise the A5025 On-line Highway Improvements TCPA works and the Site Preparation and Clearance TCPA works.
- B.1.3 The TCPA application for the A5025 On-line Highway Improvements is supported by various reports including a Protected and Legally Controlled Species Compliance Report (Horizon, 2017) [RD3]. This considers the likely risk(s) that construction of the A5025 On-line Highway Improvements would contravene relevant wildlife legislation. Informed by this, a great crested newt *Triturus cristatus* (GCN) pre-construction survey was carried out in spring 2017 on those water bodies that could be affected by the construction of the A5025 On-line Highway Improvements.
- B.1.4 The water bodies where land access was permitted were subject to environmental (e)DNA sampling and, where appropriate, population estimate surveys which took place in May and June 2017.
- B.1.5 Surveys undertaken confirmed that ponds 11 and 12 supported a small population of GCN. No GCN were recorded in pond 22 or ditch 59 and no land access was available for ditch 14.

### B.2 Introduction

#### *Overview*

- B.2.1 Horizon Nuclear Power Wylfa Ltd. (Horizon) is applying to the Secretary of State for a Development Consent Order (DCO) under the *Planning Act 2008*, to construct, operate and maintain a new Nuclear Power Station on land west of Cemaes on the Isle of Anglesey.
- B.2.2 The **Wylfa Newydd Project (the Project)** comprises the **Wylfa Newydd DCO Project** and the **Enabling Works**.
- The **Wylfa Newydd DCO Project** is defined as those parts of the Project which are to be consented by the DCO, comprising: the Power Station; other on-site development; the Marine Works; the Off-Site Power Station Facilities; and the Associated Development:

- **Power Station:** the proposed new Nuclear Power Station, including two UK Advanced Boiling Water Reactors to be supplied by Hitachi-GE Nuclear Energy Ltd., supporting facilities, buildings, plant and structures, and radioactive waste and spent fuel storage buildings;
  - **Other on-site development:** including landscape works and planting, drainage, surface water management systems, public access works including temporary and permanent closures and diversions of Public Rights of Way, new Power Station Access Road and internal site roads, car parking, construction compounds and temporary parking areas, laydown areas, working areas and temporary works and structures, temporary construction viewing area, diversion of utilities, perimeter and construction fencing;
  - **Marine Works:** comprising a Cooling Water System intake and outfall, Marine Off-Loading Facility and breakwater structures;
  - **Off-Site Power Station Facilities:** comprising the Alternative Emergency Control Centre, Environmental Survey Laboratory and a Mobile Emergency Equipment Garage; and
  - **Associated Development:** comprising works included in the DCO which facilitate the delivery of the Nationally Significant Infrastructure Project, and which principally include: a Site Campus providing accommodation for construction workers; a temporary Park and Ride facility at Dalar Hir for construction workers; a temporary Logistics Centre at Parc Cybi; A5025 Off-line Highway Improvements; and an electrical connection to the National Grid substation.
- B.2.3 Horizon has prepared planning applications under the *Town and Country Planning Act 1990* (as amended) (the 'TCPA') for the Enabling Works, which have been submitted to the Isle of Anglesey County Council (IACC) as the determining local planning authority.
- B.2.4 The **Enabling Works** comprise the A5025 On-line Highway Improvements TCPA works and the Site Preparation and Clearance TCPA works.
- B.2.5 The TCPA application for the A5025 On-line Highway Improvements is supported by various reports including a Protected and Legally Controlled Species Compliance Report (Horizon, 2017) [RD3]. This considers the likely risk(s) that construction of the A5025 On-line Highway Improvements would contravene wildlife legislation.
- B.2.6 As a result of the findings of the A5025 On-line Highway Improvements Protected and Controlled Species Compliance Report, a GCN *Triturus cristatus* pre-construction survey was carried out in spring 2017 on those water bodies which were considered to provide suitable GCN habitat and therefore where there was a risk of contravening legislation in constructing the A5025 On-line Highway Improvements.

### ***Purpose of this report***

- B.2.7 This report details the results of the GCN pre-construction survey for the A5025 On-line Highway Improvements. No assessment of potential impacts upon identified protected species is made in this report.

## **B.3 Methodology**

### ***Presence/absence surveys***

- B.3.1 Presence/absence surveys were undertaken between April and June 2017 on the following water bodies (Figure A1-1 in Appendix A):

- Section 2 - ditch 14
- Section 4 - Pond 11 and Pond 12
- Section 6 - Pond 22
- Section 8 - ditch 59

- B.3.2 The surveys were undertaken following good practice guidelines as set out in the GCN Mitigation Guidelines (English Nature, 2001) [RD2]. Surveys were conducted using a combination of the following survey techniques:

- bottle trapping: placing bottle traps in the margins of the ponds/ditches and leaving them overnight to trap newts for identification and release the following morning;
- torching: visually searching for GCN using high powered torches around the edge of the ponds/ditches;
- egg searching: physically searching aquatic vegetation to look for eggs of newts that can be identified as GCN; and
- netting: using a net to sweep through vegetation and turbid water in the pond margin to capture and identify newt species.

- B.3.3 Each water body was visited on four occasions, noting details of weather conditions, survey methods employed and results. The surveys were led by surveyors who either hold licences or who were accredited agents on licences granted by Natural Resources Wales (NRW) to survey for the species. Surveys were carried out in suitable weather conditions; when there was little wind, no rain and temperatures were above 5°C.

- B.3.4 The surveys were completed at the correct time of year for GCN surveys i.e. between March and June, with at least two surveys of each pond being completed between mid-April and mid-May to coincide with the peak of newt breeding activity.

### ***Population size class***

- B.3.5 Where GCN were recorded, the number of survey visits was increased to six in order to provide a population size class estimate. Based in the GCN Mitigation Guidelines (English Nature, 2001) [RD2] these visits must occur between mid-March and mid-June, with at least three visits during the period mid-April to mid-May.

B.3.6 Using Natural England's population size class assessment figures (English Nature, 2001) [RD2], the population of GCN found can be classified by the following:

- 'Small' for maximum counts up to 10 individuals during any one survey;
- 'Medium' for maximum counts between 11 and 100 individuals during any one survey; and,
- 'Large' for maximum counts over 100 individuals during any one survey.

***Habitat Suitability Index assessment***

B.3.7 A Habitat Suitability Index (HSI) assessment was completed at Pond 22 as no previous information had been gathered. The HSI assessment followed the method developed by Oldham *et al.* (Oldham, *et al.*, 2000). The assessment protocol uses ten suitability indices that are each given a score. All of the indices are factors thought to affect the suitability of a water body for breeding GCN. The ten indices are then converted and combined to give a suitability index of between 0.01 and 1. The ten factors are:

- geographical location;
- pond area;
- pond permanence;
- water quality;
- shade;
- waterfowl;
- fish;
- the presence of ponds within 1 km of the pond being surveyed;
- terrestrial habitat nearby; and
- macrophyte cover.

B.3.8 A low HSI score would mean that the water body was less likely to be suitable for breeding GCN, whereas a higher score would indicate a greater likelihood of suitability. There are five categories into which suitability is divided, as shown in Table B3-1.

**Table B3-1 HSI Scores**

HSI Score	Predicted Presence Class
0.00 - 0.49	Poor
0.50 - 0.59	Below average
0.60 - 0.69	Average
0.70 - 0.79	Good
0.80 - 1.00	Excellent

- B.3.9 A low score does not necessarily mean that GCN would be absent from any given pond, nor does a high score indicate that GCN would be present. The score is useful as a monitoring tool as there are strong correlations between high scores and higher numbers of newts, and the reverse for lower-scoring ponds. The information from HSI analysis is also a requirement of a European Protected Species Licence application with respect to GCN.
- B.3.10 The use of HSI assessment is inappropriate for ditches even though they appear to be suitable for GCN. The suitability in ditches was therefore established by more qualitative means using the experience of the survey team. The main factor in limiting the suitability of a ditch for GCN is the presence of flowing water. A full explanation is given over which ditches were included for survey.

### ***Environmental DNA (eDNA) sampling***

- B.3.11 Environmental (e)DNA sampling involves the collection of water samples from the pond being surveyed, which are subject to laboratory analysis for the presence of GCN DNA using survey methods stated in Biggs et al. (Biggs, *et al.*, 2014) [RD1].

### ***Limitations***

- B.3.12 Limitations specific to each water body are set out in Table B3-2.

**Table B3-2 Summary of Limitations**

Water body ID	Previous Survey Undertaken (Mott MacDonald, 2014) [RD4]	Surveys Undertaken in 2017	Limitation
Ditch 14	HSI assessment - 0.64	None	No land access granted during survey period. This ditch will require survey in the 2018 survey season.
Pond 11	HSI assessment - 0.7	Population estimate; and population size class assessment	Vegetation cover increased after the third visit as the pond dried out. Fewer bottle traps were used on subsequent visits as some parts of the pond were too shallow for their use.
Pond 12	HSI assessment - 0.5	Population estimate; and population size class assessment	Vegetation cover over 80% was recorded during all six visits; dominated by duckweed ( <i>Lemna sp.</i> ) and emergent vegetation. Scrub vegetation border on the northern side prevented access for torching and bottle trapping. Turbidity increased as the pond dried out, although wet weather

Water body ID	Previous Survey Undertaken (Mott MacDonald, 2014) [RD4]	Surveys Undertaken in 2017	Limitation
			<p>resulted in increased water level and lower turbidity by the fifth visit. Amphibians could still be observed where there were gaps in the vegetation. Netting was used during the third visit as the vegetation cover was too high for torching to be used as a valid method.</p>
Pond 22	None	HSI assessment; and eDNA sampling	<p>Pond 22 was actually two ornamental garden ponds containing fish. One pond had a stone block cement wall around most of it. It was difficult to take samples due to wire fencing and netting around both ponds protecting the fish.</p> <p>Access was not granted early enough in the GCN survey season to provide limitation-free results using traditional survey techniques (see Section Methodology, Presence/absence surveys). eDNA sampling was therefore used to determine presence/absence.</p>
Ditch 59	None	None	<p>Ditch was found to be dry and therefore unsuitable. No further surveys were undertaken.</p>

## B.4 Results

### *Presence/absence surveys*

- B.4.1 GCN were found to be present in Pond 11 and Pond 12 in Section 4. GCN eggs were recorded in both Pond 11 and Pond 12, confirming them as breeding ponds. GCN larvae were also recorded in Pond 11.
- B.4.2 The results are summarised in Table B3-3 and locations are shown in Figure A1-1, Appendix A. Full survey data and results are given in Appendix A and Appendix C.

### ***Population size class***

- B.4.3 The population size class assessment for Ponds 11 and 12 is shown in Table B3-3. Populations at both ponds are considered 'small' with peak counts fewer than 10 individuals.

**Table B3-3 Summary of survey results and population size class assessment**

Water body ID	Number of visits	GCN recorded	Population Size Class (Peak count per pond)	Other Species Recorded	Breeding recorded
Pond 11	Six visits	Yes	Small (two individuals)	Palmate newt ( <i>Lissotriton helveticus</i> ) Common frog ( <i>Bufo bufo</i> )	Yes – eggs recorded
Pond 12	Six visits	Yes	Small (three individuals)	Palmate newt	Yes – eggs recorded

### HSI Assessment

B.4.4 Pond 22 had a HSI score of 0.35. This falls into the range corresponding to 'Poor' suitability for GCN. Full HSI data are given in Table B3-4.

**Table B3-4 HSI Data for Pond 22**

Pond Number	Pond Description	OS Grid Reference	SI <sub>1</sub> Location	SI <sub>2</sub> Pond area (m <sup>2</sup> )	SI <sub>3</sub> Pond drying	SI <sub>4</sub> Water quality	SI <sub>5</sub> Shade	SI <sub>6</sub> Waterfowl	SI <sub>7</sub> Fish	SI <sub>8</sub> Pond count	SI <sub>9</sub> Terrestrial habitat	SI <sub>10</sub> Macrophytes (%)	HSI Score	Suitability
22	P22 comprised two ornamental fish ponds with wire mesh fencing at the border and netting over the top.	SH31697 87301	B	19.63	Never	Good	10	Absent	Major	7	Poor	15	0.35	Poor

## eDNA Survey

- B.4.5 The laboratory report confirmed that GCN eDNA was absent from the water samples taken from Pond 22 and it is therefore assumed GCN were absent from the water body.

## B.5 Summary

- B.5.1 Surveys undertaken during the 2017 season confirmed that Ponds 11 and 12 supported a small population of GCN.
- B.5.2 Environmental DNA sampling of Pond 22 confirmed GCN as likely to be absent, potentially due to poor habitat suitability and the presence of fish within this pond.
- B.5.3 Ditch 59 was deemed to be unsuitable for breeding GCN as it did not contain water. No access was available to complete any survey work on ditch 14.
- B.5.4 The implications of these results are discussed within the Protected and Legally Controlled Species Compliance Report for the A5025 On-line Highway Improvements [RD3].

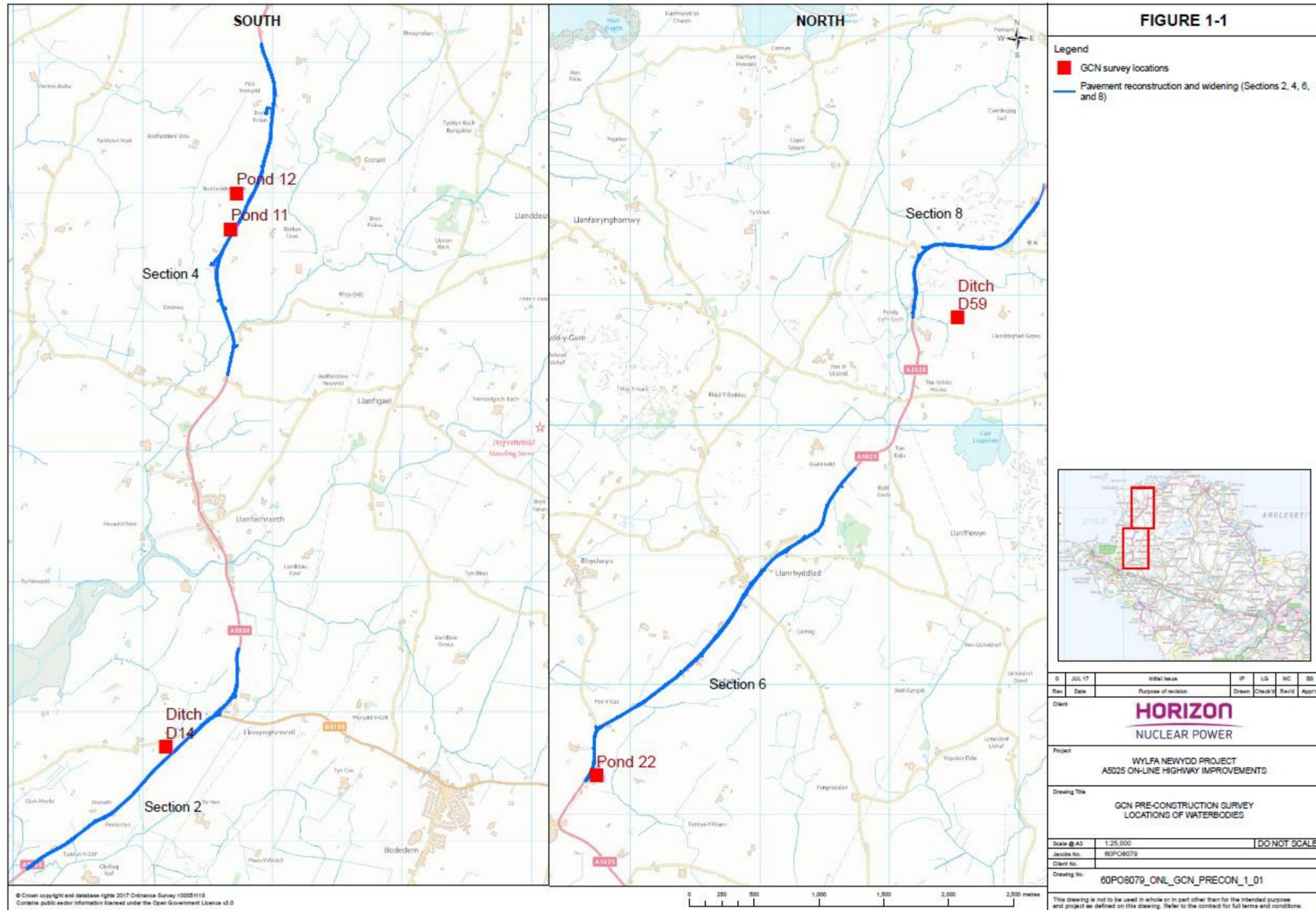
## B.6 References

ID	Reference
RD1	Biggs, J. et al., 2014. <i>Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.</i> , Oxford: Freshwater Habitats Trust.
RD2	English Nature, 2001. <i>Great Crested Newt Mitigation Guidelines.</i> Peterborough: English Nature.
RD3	Horizon, 2017. <i>A5025 On-line Highway Improvements Protected and Legally Controlled Species Compliance Report</i> , s.l.: Horizon.
RD4	Mott MacDonald, 2014. <i>A5025 Route Improvement Contract EIA. Great Crested Newt Field Survey Results</i> , s.l.: Unpublished Consultancy report to Horizon Nuclear Power.
RD5	Oldham, R. S., Keeble, J., Swan, M. J. & Jeffcote, M., 2000. Evaluating the suitability of habitat for the great crested newt ( <i>Triturus cristatus</i> ). <i>Herpetological Journal</i> , pp. 10(4) 135-155.

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## Appendix A Figures

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## Appendix B Water Bodies

Water body ID	Photograph and description
Pond 11	<p>Fenced area in southern corner of field. The water body was surrounded by gorse (<i>Ulex europaeus</i>) and there was a small area of water with reeds and rush (<i>Juncus spp.</i>), bordered by bramble (<i>Rubus agg.</i>) and willow (<i>Salix spp.</i>). Small pool of water along fence line; able to access one side of water body behind fence. High bulrush (<i>Typha latifolia</i>) density, traps paired to make easily visible.</p> 

Water body ID	Photograph and description
Pond 12	<p data-bbox="555 316 2011 424">Small pond, steep sided/fenced on three sides and very shallow. Gravel/hard standing to part of pond. Very high duckweed (<i>Lemna</i> spp.) cover at the northern end, limited emergent vegetation suitable for egg laying but some present. Very muddy and shallow water.</p> 

Water body ID	Photograph and description
Pond 22	<p>P22 is actually 2 ponds. There was wire fencing and netting around both ponds protecting the goldfish offering few gaps for GCN to enter. Landowner had found “common newts” previously when clearing pond out. Ponds within well-maintained garden/rockery areas. Grass there is kept short and has patio slabs and gravel around it. Aquatic vegetation includes pondweed (<i>Potamogeton</i> sp.) and ornamental species of iris (<i>Iris</i> sp.) and water lily (<i>Nymphaeaceae</i> sp.).</p> 

Water body ID	Photograph and description
Ditch 59	<p data-bbox="551 316 1238 347">Dry and heavily vegetated ditch along stone wall</p>  A photograph showing a narrow, dry ditch filled with dense green vegetation, including tall grasses and leafy plants. The ditch runs parallel to a low, rustic stone wall. The background features a rolling green field under a clear sky, with some trees and a building visible in the distance.

## Appendix C Surveys – Raw Survey Data

### C1 Population surveys

Survey	Date	Weather Conditions	Pond Number	Turbidity Score (1-5)	Vegetation Cover	Air Temperature (°c)	GCN Present	Eggs Present	No. of GCN adults									Other Amphibians Present	Comments and limitations		
									Bottle Trap			Torching			Netting					TOTAL	
									Male	Female	Immature	Male	Female	Immature	Male	Female	Immature				
1	26-27 April 2017	Dry, light breeze, dry ground conditions.	11	2	3	8/6	Y	N	1	1	0	0	0	0	0	0	0	0	2	Palmate newt.	16 traps set.
			12	3	4	8/6	Y	N	1	0	0	0	0	0	0	0	0	0	0	1	Palmate newt.
2	4-5 May 2017	Dry, light breeze, dry ground conditions.	11	2	3	9	Y	N	0	1	0	0	0	0	0	0	0	0	1	Palmate newt.	Water level had decreased. 16 traps set.
			12	4	4	9	Y	Y	2	1	9	0	0	0	0	0	0	0	0	3	Palmate newt.
3	10–11 May 2017	Dry, light breeze, dry ground conditions.	11	1	4	10	N	Y	0	0	0	0	0	0	0	0	0	0	0	None.	Too shallow in parts for traps due to decreasing water level. 14 traps set.
			12	4	4	10	Y	N	0	1	0	0	0	0	0	0	0	0	1	Palmate newt.	Netting used instead of torching due to high vegetation



## C2 eDNA Survey Result



Report: 17115\_JAC25BLG-1

### Great Crested Newt eDNA Results

**Company:** Jacobs UK Ltd  
**Address:** Churchill House, Churchill Way, Glamorgan, Cardiff, CF10 2HH  
**Contact:** Laura Gore  
**Project No:** A5025  
**Date of Report:** 27 June 2017  
**Number of samples:** 1

Thank you for sending your sample for analysis by NatureMetrics. Your sample has been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN absence in your sample. No degradation or inhibition was detected, and all controls performed as expected. Conclusive results are therefore presented.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Date arrived	GCN status	eDNA Score	Inhibition	Degradation
GCN17-1013	'P22'	20-Jun-2017	Negative	0	No	No

End of report

**Report issued by:** Dr. Cuong Tang  
**Date:** 27 June 2017  
**Email:** ct@naturemetrics.co.uk  
**Phone Number:** 0203 876 7350

#### Understanding your results

- Positive:** GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12)
- Negative:** No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.
- Inconclusive:** No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.

NatureMetrics Ltd, Unit 2 Littleton House, Littleton Road, Ashford, Surrey, TW15 1UU

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CONTACT US:

If you have any questions or feedback regarding the Wylfa Newydd Project you can contact us on our dedicated Wylfa Newydd freephone hotline and email address, by calling on **0800 954 9516** or emailing **wylfaenquiries@horizonnuclearpower.com**

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