

Wylfa Newydd Project

6.2.9 ES Volume B - Introduction to the environmental assessments B9 - Terrestrial and freshwater ecology

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Contents

9	Terrestrial and freshwater ecology.....	1
9.1	Introduction	1
9.2	Legislation, policy and guidance	1
	<i>Key legislation</i>	1
	<i>Key policy</i>	4
	<i>Key guidance</i>	7
9.3	Consultation.....	8
	<i>Planning Inspectorate Scoping Opinion</i>	8
	<i>Statutory consultation</i>	17
	<i>Non-statutory consultation</i>	37
9.4	Topic-specific methodologies and assessment criteria	55
	<i>Introduction</i>	55
	<i>Assessment of parameters</i>	55
	<i>Identification of study areas</i>	55
	<i>Identification of receptors</i>	56
	<i>Identification of baseline conditions</i>	56
	<i>Assessment of effects</i>	73
	<i>Limitations</i>	77
9.5	References	78

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9 Terrestrial and freshwater ecology

9.1 Introduction

9.1.1 This chapter provides an introduction to the technical basis for the terrestrial and freshwater ecology assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance; key points arising in consultation that have guided the terrestrial and freshwater ecology assessment; and assessment methodologies and criteria.

9.1.2 Ecology is the study of the distribution and abundance of organisms, the interaction between organisms, the interaction between organisms and their environment, and structure and function of ecosystems [RD1]. Ecological receptors (or features), including habitats and species, can be sensitive to environmental changes caused by development activities, including during the construction, operational and decommissioning stages. The terrestrial and freshwater ecology assessment identifies relevant ecological receptors that may be affected by the Wylfa Newydd Project and determines the significance of any change in order to inform an appropriate project design and/or avoidance, mitigation and compensation strategies.

9.1.3 The assessment of effects for terrestrial and freshwater ecology is included in the following chapters:

- D9 (Application Reference Number: 6.4.9) for the WNDA Development;
- E9 (Application Reference Number: 6.5.9) for the Off-Site Power Station Facilities;
- F9 (Application Reference Number: 6.6.9) for the Park and Ride;
- G9 (Application Reference Number: 6.7.9) for the A5025 Off-line Highway Improvements (Terrestrial and freshwater ecology);
- H9 (Application Reference Number: 6.8.9) for the Logistics Centre.

9.2 Legislation, policy and guidance

9.2.1 The following legislation, policy and guidance have been used to inform the scope and content of the terrestrial and freshwater ecology assessment; assist in the identification of potential effects and mitigation; and influence the design of the Wylfa Newydd Project to reduce the significance of effects.

Key legislation

9.2.2 The relevant legislation and how it relates to the terrestrial and freshwater ecology assessment are set out in table B9-1.

Table 9-1 Summary of key legislation

Legislation	Description
Salmon and Freshwater Fisheries Act 1975 (as amended)	The Act is aimed at the protection of freshwater fish, with a particularly strong focus on salmon and trout. It sets out activities that could constitute an offence including direct mortality, barriers to migration and degradation of habitats.
Wildlife and Countryside Act 1981 (as amended)	This Act allows for the designation of Sites of Special Scientific Interest (SSSIs) due to features of conservation interest related to flora, fauna, physiography or geology. The Act makes it an offence to kill, injure, take, possess or trade in many wild animal species and to pick, uproot, possess or trade in a number of wild plants. Measures are outlined to prevent the establishment of non-native species that could adversely affect native wildlife. This Act also implements certain provisions of Council Directive 2009/147/EC (the 'Birds Directive').
The Convention on Biological Diversity 1992	This Convention provides a legal framework for biodiversity conservation and has three main aims: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising from the use of genetic resources. The UK's delivery of the Convention and Strategic Plan is guided by the UK Post-2010 Biodiversity Framework.
Protection of Badgers Act 1992	The Act lists offences relating to activities affecting the animals themselves and their setts.
The Hedgerows Regulations 1997	The Regulations provide a definition as to what constitute important hedges. Planning authorities must consider the impacts of removal of hedges that fall under these Regulations where applications are made to do so.
The Town and Country Planning (Trees) Regulations 1999	The Regulations relate to the provision of protection given to individual trees or groups of trees in the form of preservation orders and subsequent requirement to obtain consent via application to complete work to trees subject to an order.
Countryside and Rights of Way Act 2000	This Act provides for public access on foot to certain areas of land and increases measures for the management and protection of SSSIs.
The Eels (England and Wales) Regulations 2009	These Regulations have granted powers to regulators to implement measures for the recovery of European eel stocks and have important

Legislation	Description
	implications for operators of abstractions and discharges.
The Environmental Permitting (England and Wales) Regulations 2010	These Regulations seek to ensure that authorised activities and their discharges do not endanger the environment or human health; Environmental Permits must be sought from Natural Resources Wales (NRW) and the Environment Agency. The regulations combine the requirements for an integrated waste management approach and for hazardous waste management. This provides a framework for regulation that enables NRW and the Environment Agency to assess permitting and compliance with a common approach.
The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015	These Regulations transpose Council Directive 2000/60/EC (the 'Water Framework Directive'), Council Directive 2008/105/EC (the 'Environmental Quality Standards Directive') and 'Priority Substances (Amendment) Directive' 2013 (Directive 2013/39/EU) into UK law. They set out a series of objectives for fluvial, lacustrine, groundwater, transitional and coastal water bodies. These include improving the water environment to achieve good/high status, maintaining existing good/high status and implementing mitigation to support the water environment at a catchment and water body scale.
Environment (Wales) Act 2016	This Act introduces a new approach to sustainable management of natural resources at a national and local level. It introduces a new, enhanced Biodiversity and Resilience of Ecosystem Duty on public bodies to ensure that biodiversity is an integral part of decision making. Public authorities will be required to report on the actions they are taking to improve biodiversity and promote ecosystem resilience.
The Conservation of Habitats and Species Regulations 2017	The provisions of Council Directive 92/43/EEC (the 'Habitats Directive') and Council Directive 2009/147/EC (the 'Birds Directive') are implemented through these Regulations. They provide for the designation and protection of European Designated sites and species and the adoption of planning and other controls for the protection of European Designated Sites. The Regulations allow for the licensing of activities affecting certain species that would otherwise be illegal.

Legislation	Description
	The Regulations require competent authorities to take measures to preserve, maintain and re-establish habitat for wild birds. The regulations also place a duty on competent authorities to use all reasonable endeavours to avoid any pollution or deterioration of these habitats.

Key policy

9.2.3 The relevant national and local plans and policies, and how these relate to the terrestrial and freshwater ecology assessment, are described in Table 9-2.

Table 9-2 Summary of key policy

Policy	Description
<i>Overarching National Policy Statement for Energy (EN-1) [RD2]</i>	This National Policy Statement, designated by the Secretary of State in July 2011, sets out the overarching national policy for delivery of major energy infrastructure projects. Paragraph 5.3.3 states that, where the development is subject to Environmental Impact Assessment (EIA), “ <i>the applicant should ensure that the Environmental Statement clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity</i> ”. It also requires applicants to show how projects take “ <i>advantage of opportunities to conserve and enhance biodiversity and geological conservation interests</i> ”.
<i>National Policy Statement for Nuclear Power Generation (EN-6) [RD3]</i>	The National Policy Statement designated by the Secretary of State in July 2011 that sets out national policy on new Nuclear Power Stations identified as potentially suitable for deployment by 2025. Paragraph 3.9.3 states that applicants “ <i>should consider the effects of the construction of a new Nuclear Power Station on the groundwater regime and its effects on terrestrial/coastal habitats</i> ”. Paragraph 3.9.4 states “ <i>at the project level, baseline studies on nationally and internationally important habitats and species that may be affected as a result of the development should be undertaken by the applicant to inform the assessment of the cumulative ecological effects</i> ”.

Policy	Description
<p><i>Planning Policy Wales (Edition 9) [RD4]</i></p>	<p>This Document sets out the land use planning policies of the Welsh Government, forming a strategic framework to guide development.</p> <p>Chapter 4: Planning for Sustainability is applicable, as the priorities for rural areas include reference to the importance of ecology and biodiversity. Specifically, the document states that:</p> <p><i>“The countryside is a dynamic and multi-purpose resource. In line with sustainability principles, it must be conserved and, where possible, enhanced for the sake of its ecological, geological, physiographic, historical, archaeological and agricultural value and for its landscape and natural resources, balancing the need to conserve these attributes against the economic, social and recreational needs of local communities and visitors.”</i></p>
	<p>Chapter 5: Conserving and Improving Natural Heritage and the Coast – This chapter sets out objectives to promote conservation of native wildlife and habitats, ensure statutory designated sites are properly protected and managed, and protected species safeguarded.</p>
	<p>Chapter 13: Minimising and Managing Environmental Risks and Pollution – This chapter outlines objectives to maximise environmental protection of natural resources, as well as minimising and managing risks posed by climate change.</p>
<p><i>New Nuclear Build at Wylfa: Supplementary Planning Guidance (Isle of Anglesey County Council) (IACC) [RD5]</i></p>	<p>The purpose of this Supplementary Guidance is to provide advice on important local matters relating to the proposed Wylfa Newydd Project and its Associated Developments and to set out the IACC's response to national and local policy and strategies in the context of the Wylfa Newydd Project.</p> <p>Section 4.10 relates to the natural environment and Guiding Principle 20 states that the Wylfa Newydd Project development should seek to ensure that the island's unique and distinctive natural environment is conserved and, where possible, enhanced. This includes consideration of, among other things:</p> <ul style="list-style-type: none"> • the integrity of statutory and non-statutory sites for nature conservation; • internationally and nationally protected habitats and species; and

Policy	Description
	<ul style="list-style-type: none"> ecological functionality and relationships within the wider landscape. <p>Guiding Principle 20 goes on to state that where adverse effects cannot be avoided, the County Council expects appropriate mitigation and/or compensation measures to be implemented. Possible mitigation and compensation measures may include:</p> <ul style="list-style-type: none"> the use of best practice throughout to minimise disturbance and avoid pollution; minimising the footprint of land required to facilitate construction; maximising the reuse of previously developed land; and the adoption of high quality design including habitat enhancement and restoration.
<i>Technical Advice Note 5: Nature Conservation and Planning [RD6]</i>	Covering nature conservation and planning, this Technical Advice Note is also relevant to terrestrial and freshwater ecology, providing guidance on the key principles of positive planning for nature conservation.
<i>Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026 - Written Statement (JLDP) [RD7]</i>	<p>The JLDP covers the local authorities of the IACC and Gwynedd Council and forms the basis for land use planning in these areas. The JLDP covers the period 2011 to 2026.</p> <p>Relevant to terrestrial and freshwater ecology is section 6.5, 'Natural and Built Environment: Conserving and Enhancing the Natural Environment'. This focuses on the effective protection of the natural environment by managing the type, design and location of development. The plan also recognises the important role that the planning system plays in meeting biodiversity objectives by promoting approaches to development that create new opportunities to enhance biodiversity, prevent biodiversity losses, or compensate for losses where damage is unavoidable.</p> <p>Policy PS19 (Conserving and where appropriate enhancing the natural environment) states that consideration (in determining planning applications) should be given to safeguarding internationally, nationally and locally designated sites and protected species, and the protection, retention or enhancement of trees, hedgerows or</p>

Policy	Description
	<p>woodland of visual, ecological, historic, cultural or amenity value.</p> <p>Policy AMG5 (Local Biodiversity Conservation) states that proposals must protect and, where appropriate, enhance biodiversity that has been identified as being important to the local area.</p>
<i>Working for the Wealth of Wildlife: Anglesey's Local Biodiversity Action Plan (LBAP) [RD8]</i>	<p>Local delivery of the Wales Biodiversity Framework is through the Anglesey LBAP, which seeks to conserve and enhance biodiversity of particular importance. The LBAP sets out habitats and species that are considered to require action within Anglesey to maintain and enhance their status (population size, distribution etc.) either locally or nationally. The LBAP also identifies threats, targets and actions which could be relevant to impact assessment and mitigation. The underlying principles revolve around biodiversity becoming an integral part of government policy and involving people and communities.</p>
<i>Woodlands for Wales 2009 [RD9]</i>	<p>This Strategy sets out certain desired outcomes, which include increases in woodland cover in Wales, compensatory planting where development results in removal of woodland and better protection for existing individual trees, particularly veteran trees.</p>
<i>Anglesey Hedgerow Woodland Tree, and Strategy [RD10]</i>	<p>The Strategy aims to guide the action of land managers to improve Anglesey's landscape, biodiversity and natural heritage as well as providing a sustainable resource for tourism, recreation and employment. The strategy provided guidance for the five-year period 2003 to 2008, but was intended to be a guiding document until 2023.</p>

Key guidance

9.2.4 The terrestrial and freshwater ecology assessment has been undertaken in line with a number of key technical guidance documents. These guidance documents are widely used across the UK and represent standard good practice for the assessment for the various consenting regimes. These are summarised in Table 9-3.

Table 9-3 Summary of key guidance

Guidance	Description
<i>Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial,</i>	<p>The purpose of these Guidelines is to promote good practice in Ecological Impact Assessment relating to terrestrial, freshwater and coastal environments to the mean low water mark in the</p>

Guidance	Description
<i>Freshwater and Coastal</i> [RD11]	UK and Ireland. The Guidelines also provide regulators, decision-makers and those submitting projects with an indication of the information needed to adequately consider projects in the light of biodiversity legislation and policy.
<i>Design Manual for Roads and Bridges</i> (DMRB) Volume 11, Section 3, Part 4 [RD12]	This guidance provides the standard for environmental assessment in relation to all trunk road projects. It sets the overall aims and objectives of the Environmental Impact Assessment process, including for nature conservation. The objectives for nature conservation are: 1) the maintenance of the diversity and character of the countryside, including its wildlife communities and important geological and physical features; and, 2) the maintenance of viable populations of wildlife species, throughout their traditional ranges, and the improvement of the status of rare and vulnerable species.
<i>Interim Advice Note (IAN) 130/10. Ecology and Nature Conservation: Criteria for Impact Assessment</i> [RD13]	This guidance note supplements DMRB Volume 11, Section 3, Part 4. The guidance specifically relates to the determination of the valuation of ecological receptors and the definition of the significance of impacts.

9.2.5 In addition to the above guidance that was used for the freshwater and ecology assessment, the baseline surveys and impact assessments for each receptor have followed relevant best practice guidance as described in section 9.4.

9.3 Consultation

9.3.1 This section provides a topic-specific account of scoping, statutory and non-statutory consultation undertaken to support the assessment. For a full overview of the environmental consultation activities undertaken for the Wylfa Newydd Project, refer to chapter A6 (EIA Scoping Report and Addendum) (Application Reference Number: 6.1.6), and chapter A7 (consultation with environmental stakeholders) (Application Reference Number: 6.1.7).

Planning Inspectorate Scoping Opinion

9.3.2 In March 2016, Horizon submitted an updated Wylfa Newydd Project EIA Scoping Report to the Planning Inspectorate. In May 2017, Horizon submitted an Addendum to the March 2016 Scoping Report. Following a period of consultation with stakeholders, a further Scoping Opinion was received from the Secretary of State (via the Planning Inspectorate) on 14 June 2017.

9.3.3 The Wylfa Newydd Project EIA Scoping Report, Addendum and the subsequent Scoping Opinions inform the approach to the assessment. Table

9-4 provides an account of how comments raised by stakeholders in the Scoping Opinion have been considered in the terrestrial and freshwater ecology assessment.

Table 9-4 Key issues raised through Scoping

Key issue raised	Action taken
<p>“The Secretary of State (SoS) welcomes the consideration of the Water Framework Directive (WFD) within the ecological assessment and advises that appropriate cross reference is made to the WFD assessment.” (SoS)</p>	<p>We have consulted with NRW on the approach to WFD and have agreed that a standalone WFD Compliance Assessment (Application Reference Number: 8.26) is provided with this Environmental Statement.</p>
<p>“Effects upon European designated sites which are considered within the Habitats Regulations Assessment (HRA) should also be identified within the relevant chapters of the Environmental Statement. Particularly in the case of European designated sites, a consideration of effects is a requirement of separate legislation (the Habitats Directive and the EIA Regulations) and coverage within one should not remove the need for consideration within the other.” (the IACC)</p> <p>“NRW advise that the proposal also has the potential to affect terrestrial statutory protected sites outside this study area e.g. chough populations on site are considered to be linked to the Glannau Ynys Gybi Special Protection Area (SPA).” (NRW)</p>	<p>Effects of the Wylfa Newydd Project upon European Designated Sites (including those outside the study area) have been addressed by both the Environmental Statement - see chapters:</p> <p>D9 (Application Reference Number: 6.4.9);</p> <p>D13 (the marine environment) (Application Reference Number: 6.4.13);</p> <p>E9 (Application Reference Number: 6.5.9);</p> <p>F9 (Application Reference Number: 6.6.9);</p> <p>G9 (Application Reference Number: 6.7.9);</p> <p>H9 (Application Reference Number: 6.8.9);</p> <p>I4 (intra-project cumulative effects) (Application Reference Number: 6.9.4);</p> <p>I5 (inter-project cumulative effects) (Application Reference Number: 6.9.5);</p> <p>J1 (environmental commitments) (Application Reference Number: 6.10.1);</p> <p>J2 (summary of significant residual effects) (Application Reference Number: 6.10.2); and</p> <p>Shadow HRA Report (Application Reference Number: 5.2).</p>

Key issue raised	Action taken
	<p>The Shadow Habitats Regulations Report (Application Reference Number: 5.2) acts as the principal assessment with respect to these sites, with the respective Environmental Statement identifying all European Designated Sites taken forward from the Shadow HRA Report (Application Reference Number: 5.2) to Stage Two Appropriate Assessment (as these are the sites that may be subject to significant effects) and including an appropriate assessment of effects. The conclusions of the Environmental Statement and the HRA are compatible.</p>
<p>The potential effects of changes to air quality (including in relation to critical levels and loading at designated sites), fugitive dust deposition, noise and vibration and lighting on all ecological receptors during both construction and operation phases should be assessed fully within the Environmental Statement. Appropriate cross reference should be made to the relevant chapters of the Environmental Statement. It was noted that bats, a group of European Protected Species, are particularly sensitive to noise and vibration disturbance.</p> <p>Assessment of effects should be made during both construction and operational phases. (Issues raised by SoS; NRW; and the IACC).</p>	<p>An assessment of effects as a result of changes in air quality, noise and vibration, and lighting has been made to relevant receptors within chapter D9 (Application Reference Number: 6.4.9), making reference to chapter D5 (air quality - excluding emissions from traffic) (Application Reference Number: 6.4.5), chapter D6 (noise and vibration) (Application Reference Number: 6.4.6), and chapter D10 (landscape and visual) (Application Reference Number: 6.4.10).</p> <p>The assessment of air quality effects on designated sites has been informed through discussions with, and information provided by, NRW.</p> <p>Potential noise and vibration effects to bats, and all other relevant receptors, have been considered within chapter D9 (Application Reference Number: 6.4.9)</p> <p>Assessments have been made for both construction and operational phases.</p>

Key issue raised	Action taken
<p>“It’s the Local Planning Authorities understanding that Wylfa Head is designated as a Local Nature Reserve (LNR). There are also policies in relation to local nature reserves in the development plan and other material planning policies. The issue of whether there is an LNR at Wylfa Head has arisen in a number of pre-application meetings and Horizon has taken upon themselves to categorically confirm the position. Until the matter is satisfactorily resolved the local planning authority is not willing to scope out the matter from ES.” (SoS)</p>	<p>Wylfa Head ceased to be designated as a Local Nature Reserve when it was acquired by Horizon in 2010, as has been acknowledged by the IACC. Wylfa Head Wildlife Site is acknowledged as an ecological receptor within chapter D9 (Application Reference Number: 6.4.9).</p>
<p>“Both Tre'r Gof SSSI and Cae Gwyn SSSI have the potential to be impacted by changes in hydrology/hydrogeology and changes in water quality.” (SoS)</p> <p>Sufficient information should be provided within the Environmental Statement to demonstrate whether the proposal will affect the SSSIs, during both the construction and operational phases.</p> <p>The Environmental Statement should detail appropriate mitigation measures and, where damage cannot be avoided, possible compensation measures to offset any damage should also be detailed. (NRW)</p>	<p>Potential effects on both the Tre'r Gof SSSI and Cae Gwyn SSSI via changes in hydrology/hydrogeology are addressed in chapter D9 (Application Reference Number: 6.4.9) at both the construction and operational phases, with appropriate cross-reference to chapter D8 (surface water and groundwater) (Application Reference Number: 6.4.8). These potential effects are also considered in the WFD Compliance Assessment (Application Reference Number: 8.26).</p> <p>Hydroecological assessments for both Tre'r Gof SSSI (Application Reference Number: 6.4.30) and Cae Gwyn SSSI (Application Reference Number: 6.4.31) are appended to chapter D8 (Application Reference Number: 6.4.8) and used to support the assessment of effects on these sites.</p> <p>Embedded, good practice and additional mitigation is proposed to avoid and minimise any adverse effects on Tre'r Gof SSSI and Cae</p>

Key issue raised	Action taken
	Gwyn SSSI. A compensation strategy to address potential long-term deterioration of Tre'r Gof SSSI has been developed by Horizon, in discussion with NRW and the IACC as part of a Technical Advisory Group (see appendix D9-23, Application Reference Number: 6.4.56 and appendix D9-24, Application Reference Numbers: 6.4.56 and 6.4.57).
<p>“The Scoping Report identifies the Llyn Garreg-lwyd SSSI, approximately 700m north-west of the MEEG [Off-Site Power Station Facilities] site. The ES should demonstrate how potential impacts on [this site] have been considered.” (SoS)</p>	<p>Potential effects from the Off-Site Power Station Facilities to Llyn Garreg-lwyd SSSI are addressed in chapter E9 (Application Reference Number: 6.5.9) of the Environmental Statement.</p>
<p>The SoS recommends that the study area for the Wylfa Newydd Project is agreed with consultees including the IACC and NRW, and that this is justified within the Environmental Statement.</p> <p>Ecological surveys within the study area to inform the baseline should be in accordance with recognised best practice guidance.</p> <p>Within the methodology of the assessment it should be clearly set out how the value of ecological receptors has been determined, and that the sites, habitats, and species identified as key receptors should be agreed with NRW and the IACC. (SoS)</p>	<p>Discussions with NRW and the IACC over the study area, survey scope and methodology, baseline and key receptors have been ongoing since 2013 (table B9-10). The agreed study areas and/or approach to defining study areas are described in section 9.4 of this chapter.</p> <p>Baseline conditions have been reviewed to ensure the assessment is still robust (see section 9.4 of this chapter).</p> <p>Baseline information is provided within survey and technical summary reports appended to the terrestrial and freshwater ecology chapters in volumes D (Application Reference Numbers: 6.4.34 to 6.4.55), E (Application Reference Numbers: 6.5.17 to 6.5.18), F (Application Reference Numbers: 6.6.17 to 6.6.26), G (Application Reference Numbers: 6.7.22 to 6.7.32) and H (Application Reference Numbers: 6.8.17 to 6.8.20).</p>

Key issue raised	Action taken
	The value of ecological receptors has been determined as per the approach described in section 9.4 of this document.
The Council recognises the applicant's intention to include great crested newt within the scope of the Environmental Statement and to undertake surveys for red squirrel in 2016. Once complete, the Council suggests the information is shared so a conclusion can be agreed between parties and NRW as to the need to include both species within the assessment. (IACC)	Surveys have been completed and meetings with NRW and the IACC were held in October 2016 (table B9-10) to discuss findings, assessment and mitigation strategies. Details are included within survey reports for each species and within chapters D9 (Application Reference Number: 6.4.9), E9 (Application Reference Number: 6.5.9), F9 (Application Reference Number: 6.6.9), G9 (Application Reference Number: 6.7.9) and H9 (Application Reference Number: 6.8.9).
Where adverse effects on sites, habitats or species are identified, full details of mitigation, compensation or enhancement measures should be provided as part of the assessment. Where relevant, these mitigation strategies should ensure there is no detriment to the maintenance of the population of the species concerned at a favourable conservation status. (NRW; the IACC)	Embedded, good practice and additional mitigation is proposed to avoid and minimise adverse effects on all relevant ecological receptors. These are detailed within chapters D9 (Application Reference Number: 6.4.9), E9 (Application Reference Number: 6.5.9), F9 (Application Reference Number: 6.6.9), G9 (Application Reference Number: 6.7.9) and H9 (Application Reference Number: 6.8.9). Where effects which have the potential to contravene relevant wildlife legislation have been identified, and where possible, relevant licensing routes to derogate potential offences have been identified, these are appended to the Environmental Statement chapter B9 (Application Reference Numbers 6.4.52, 6.4.53, 6.4.54 and 6.7.3). These are relevant to bats, great crested newt and water vole. Discussions over the proposed mitigation strategies have been held with NRW and the IACC (table B9-9).

Key issue raised	Action taken
<p>“The Scoping Report notes the potential for positive opportunities for enhancement of terrestrial habitats and biodiversity gain. The Secretary of State would welcome the inclusion of any such measures and advises that these are detailed in the ES.” (SoS)</p>	<p>Where appropriate, positive effects to terrestrial and freshwater receptors have been identified within relevant chapters, notably chapter 9 in volumes D (Application Reference Number: 6.4) and G (Application Reference Number 6.7). The Landscape and Habitat Management Strategy (Application Reference Number: 8.16) aims to replace those habitats lost as a result of the Wylfa Newydd Project with habitats of equal or greater biodiversity value. Horizon is also engaging with a broad range of stakeholders to seek opportunities to support ecological enhancement measures which would provide a biodiversity legacy benefit (see table B9-10).</p>
<p>The proposed works have the potential to cause both the introduction and spread of Invasive Non-Native Species (INNS), and advise a Biosecurity Risk Assessment is produced and implemented during all phases of the proposal, including construction and operation. (NRW)</p>	<p>The risks of introducing and spreading INNS during the construction and operational phases have been assessed, and appropriate mitigation proposed within chapters D9 (Application Reference Number: 6.4.9), E9 (Application Reference Number: 6.5.9), F9 (Application Reference Number: 6.6.9), G9 (Application Reference Number: 6.7.9) and H9 (Application Reference Number: 6.8.9). A Biosecurity Risk Assessment and Method Statement (part of the Main Power Station Site sub-Code of Construction Practice (CoCP), Application Reference Number: 8.7) will support this mitigation and will be defined by industry standard guidelines.</p>
<p>The A5025 offline report indicates that where protected species interest is identified but not scoped into the EIA, it will still be dealt with but reported on separately - outside the full EIA. If there are sufficient impacts to warrant</p>	<p>It is possible to have no significant effect on a protected species but still be in breach of wildlife legislation. The protected species compliance report sets out if an offence is likely to be committed</p>

Key issue raised	Action taken
<p>the need for licensing and/or method statements to ensure that wildlife legislation is not breached, there is sufficient impact to make it a necessary component of the EIA process. NWWT [North Wales Wildlife Trust] strongly advise that all the identified ecological issues are encompassed within the one document. (NWWT)</p>	<p>and what the approach is to avoid or license. Wildlife legislation does not take account of significance of effect to determine an offence, but whether or not an offence is committed. It is therefore considered appropriate to keep these issues separate.</p>
<p>In relation to the A5025 off-line improvements, given that brown trout, river lamprey and European eel are present on Anglesey, it seems inconsistent that only four watercourses were surveyed for this group. This issue is also of relevance to the WFD objectives. An explanation and/or further survey work needs to be presented on this matter. (NWWT)</p>	<p>Fish communities have been assessed on the proposed A5025 off-line improvement watercourse crossings see chapter G9 (Application Reference Number: 6.7.9). Fish are also assessed at a catchment scale for the WFD Compliance Assessment (Application Reference Number: 8.26) and the Environmental Assessment.</p>
<p>“The A5025 off-line improvements report appears to have only considered a survey area of 500m (off-line) for signs of otter and water vole. Given the guidance in the Water vole Handbook (Strachan 2006) and the known large extents utilised by otter this survey boundary appears too small. An explanation and/or further survey work needs to be presented on this matter.” (NWWT)</p>	<p>Based on the survey and desk study results, otter and water vole are assumed to be present within the study area. As only a limited effect is anticipated to either species, the baseline information is considered to be sufficient see chapter G9 (Application Reference Number: 6.7.9).</p>
<p>COFNOD - North Wales Environmental Information Service data has only been requested for the last 10 years for Schedule 1 birds, is this time limit also applicable to the other data presented? (NWWT)</p>	<p>Only data from the most recent 10 years have been presented. This is a standard approach as data collected prior to this period are considered to have been superseded by subsequent species records.</p>
<p>“...surveys to inform the baseline at the Park and Ride, the Logistics Centre and the A5025 Off-line Highway Improvements were undertaken in 2014.” “The Applicant should ensure that all survey information is relevant, up-to-date and</p>	<p>Presentation of the baseline information for all sites was given to NRW and the IACC during a meeting on 19/07/17 with the specific aim of ensuring its robustness and identifying additional survey effort required</p>

Key issue raised	Action taken
<p>is advised to agree any needs for updates to surveys with NRW and the IACC ecologist. Details of the surveys should be provided within the ES, for example within appendices.” (SoS)</p>	<p>(see table B9-10). It was agreed that the baseline for these sites was sufficiently robust to support chapters F9 (Application Reference Number: 6.6.9), G9 (Application Reference Number 6.7.9), and H9 (Application Reference Number: 6.8.9) of the Environmental Statement. Full details of all baseline surveys are provided as appendices to chapter 9 in volume D (Application Reference Numbers: 6.4.34 to 6.4.55) E (Application Reference Numbers: 6.5.17 to 6.5.18), F (Application Reference Numbers: 6.6.17 to 6.6.26), G (Application Reference Numbers: 6.7.22 to 6.7.32) and H (Application Reference Numbers: 6.8.17 to 6.8.20).</p>
<p>The potential presence of great crested newt (GCN) and European eel in, or in the vicinity of the Park and Ride has been identified. Habitat which may support breeding birds has also been identified, as has Llyn Traffwll SSSI, which lies downstream of the Park and Ride. These receptors should be considered within the Environmental Statement. (SoS)</p>	<p>These receptors have been identified and considered within chapter F9 (Application Reference Number: 6.6.9) of the Environmental Statement.</p>
<p>“Effects on birds, badgers, reptiles and aquatic species other than amphibians and fish at the A5025 off-line highway improvements are also proposed to be scoped out...On the basis of the information provided, the SoS does not agree [these receptors] can be scoped out at this stage.” (SoS)</p>	<p>These receptors have been identified and considered within chapter G9 (Application Reference Number: 6.7.9) of the Environmental Statement.</p>
<p>The accommodation campus would be located close to the Tre'r Gof SSSI. The Scoping Report includes limited detail regarding the potential impacts on this site. [The Applicant will] need to ensure that potential impacts on the site are assessed within the ES.” (SoS)</p>	<p>Chapters D5 (Application Reference Number: 6.4.5), D8 (Application Reference Number: 6.4.8) and D9 (Application Reference Number: 6.4.9) assess the potential effects from the Site Campus on Tre'r Gof SSSI. Appropriate mitigation and compensatory measures have</p>

Key issue raised	Action taken
	been identified to address such effects.

Statutory consultation

Pre-Application Consultation Stage One

9.3.4 The aim of the Pre-Application Consultation Stage One, undertaken in late 2014, was to share information available at the time with Horizon's key consultees and stakeholders, in order to consider feedback in ongoing design development. Table 9-5 outlines how key issues raised during Pre-Application Consultation Stage One have been considered in the assessment.

Table 9-5 Key issues raised during Pre-Application Consultation Stage One

Key issue raised	Action taken
Consideration of scope of surveys and receptors to be included in the assessment.	<p>The extents of the following surveys were revised as a result of the Pre-Application Consultation Stage One process to include a buffer zone of 500m around the Wylfa Newydd Development Area:</p> <ul style="list-style-type: none"> great crested newt (<i>GCN</i>) <i>Triturus cristatus</i>; over-wintering and passage birds; and water vole <i>Arvicola amphibius</i>. <p>The scope of surveys and receptors to be included in the assessment is described in section 9.4 of this document.</p>
Consideration over the most appropriate locations for alternative habitats provided for displaced species.	Compensation habitats for reptiles and notable species (e.g. those listed in accordance with the requirements of Section 7 Environment (Wales) Act 2016, such as common toad, brown hare, hedgehog, polecat, birds and invertebrates) are outlined in chapter D9 (Application Reference Number: 6.4.9)).
Respondents were concerned as to the potential adverse effects on statutory protected sites. In particular, Tre'r Gof SSSI was highlighted.	Effects on statutory designated sites are considered in full in the relevant chapters of the Environmental Statement: D9 (Application Reference Number: 6.4.9);

Key issue raised	Action taken
	<p>D13 (Application Reference Number: 6.4.13); E9 (Application Reference Number: 6.5.9); F9 (Application Reference Number: 6.6.9); G9 (Application Reference Number: 6.7.9); H9 (Application Reference Number: 6.8.9); I4 (Application Reference Number: 6.9.4); I5 (Application Reference Number: 6.9.5); J1 (Application Reference Number: 6.10.1); J2 (Application Reference Number: 6.10.2). Where necessary, appropriate embedded, good practice and additional mitigation has been included to avoid or reduce adverse effects. Compensation measures have also been developed to address specific concerns relating to long-term site deterioration.</p>

Pre-Application Consultation Stage Two

9.3.5 In September 2016, Horizon shared a Preliminary Environmental Information Report as part of the Pre-Application Consultation Stage Two. This presented preliminary details of the predicted environmental effects and mitigation measures for any adverse effects identified. Table 9-6 outlines how key issues raised during Pre-Application Consultation Stage Two have been considered in the assessment.

Table 9-6 Key issues raised during Pre-Application Consultation Stage Two

Key issue raised	Action taken
<p>The key issues raised by the IACC related to the limited information provided on the baseline (e.g. no mapping of species finds / records / survey data) and the absence of details on the proposed mitigation strategy and how this will integrate with</p>	<p>Full baseline information is provided in all Environmental Statement chapters (listed below), detailing the results of all surveys completed to inform the baseline. D9 (Application Reference Number: 6.4.9);</p>

Key issue raised	Action taken
the Site Preparation and Clearance (SPC) works.	<p>E9 (Application Reference Number: 6.5.9); F9 (Application Reference Number: 6.6.9); G9 (Application Reference Number: 6.7.9); H9 (Application Reference Number: 6.8.9); I4 (Application Reference Number: 6.9.4); I5 (Application Reference Number: 6.9.5); J1 (Application Reference Number: 6.10.1); J2 (Application Reference Number: 6.10.2).</p> <p>It is considered that the baseline which is presented for all receptors is sufficiently detailed to allow accurate determination of effects and appropriate mitigation measures, where necessary. Within each volume of the Environmental Statement, the identification of effects has also been made clear as to the phase of the Wylfa Newydd Project in which they would occur e.g. SPC. The chronology and potential for effects to act in combination has also been described in full.</p>
The information provided in the Landscape and Environment Management Plan (LEMP) does not provide a great deal of information on the mitigation / enhancement / offsetting which might support its efficacy. (The IACC)	<p>This detail is presented in the Landscape and Habitat Management Strategy (Application Reference Number: 8.16), describing how effects would be reduced by maximising the benefit to biodiversity of the area of habitat within the Wylfa Newydd Development Area not lost to the footprint of the Power Station. This would therefore offset the loss of total area overall.</p>
With respect to reptile surveys and mitigation: "There is no estimate of	<p>The reptile technical summary report identifies a small population</p>

Key issue raised	Action taken
<p>[reptile] population size and therefore no analysis of what area might be required ...This needs to be available for the Town & Country Planning Act application to enabling works. NWWT has highlighted verbally and during meetings (starting June 2016) that one of the areas proposed as a reception site (Mynydd-lthel) also holds high quality species rich semi-improved/unimproved grassland, which limits what can be achieved in terms of habitat alteration to increase carrying capacity for reptiles." (NWWT)</p>	<p>of adder and common lizard on site and concludes they are likely to be present in suitable habitat on site, see appendix D9-10 (Reptile Technical Summary Report) (Application Reference Number: 6.4.43). A reptile mitigation strategy has been included as part of any relevant consent application see the Main Power Station Site sub-CoCP) (Application Reference Number: 8.7); appendix E9-2 (Off-Site Power Station Facilities Protected and Legally Controlled Species Compliance Report) (Application Reference Number: 6.5.18); appendix G9-10 (A5025 Off-line Highway Improvements Protected and Legally Controlled Species Report) (Application Reference Number: 6.7.31); and appendix H9-2 (Logistics Centre Protected and Legally Controlled Species Compliance Report) (Application Reference Number: 6.8.18). The receptor site at Mynydd-lthel would be managed to ensure the quality of the habitats present is maintained, and features to enhance the site's carrying capacity for reptiles would be created prior to any translocation work taking place. Such measures would include creation of hibernacula and refuge features, and enhancement of boundary features see the Main Power Station Site sub-CoCP document (Application Reference Number: 8.7).</p>
<p>"NWWT advises that there is scope to buffer and recreate habitats or manage complementary habitats/water regimes to support & hydrologically buffer fen habitats on adjacent statutorily designated sites (e.g. Cors</p>	<p>Horizon has developed a package of compensation for the Tre'r Gof SSSI as it has not been possible to rule out residual significant effects to the site due to the inherent uncertainty relating to the mitigation proposals and because the results of long-term monitoring</p>

Key issue raised	Action taken
Goch or Cors Erddreiniog or other Anglesey Fen SAC/SSSIs)." (NWWT)	would be required before such a conclusion could be reached. The compensation package includes both the creation of, and improvements to, existing fen habitat within Anglesey, and has the potential to link areas designated as Anglesey Fen SAC, and fen SSSI (Caeau Talwrn SSSI and Cors Bodeilio SSSI).
<p>It is NWWT's firm opinion that chough as a qualifying feature of the Holy Island SPA and Annex I species should be considered within the HRA and additionally the EIA should consider the necessary provisions of Article 3 of the Birds Directive (Directive on the Conservation of Wild Birds 79/409/EEC).</p> <p>There is no indication that additional bespoke mitigation will be designed for breeding, feeding or foraging chough.... In NWWT's view this is a serious and substantive omission. (NWWT)</p>	<p>Additional survey work to identify use of the study area by wintering chough was undertaken in 2017. An updated desk study has also been undertaken relating to the use of the study area by wintering and foraging chough, and possible links that these individual birds might have to relevant SPAs within the feasible chough foraging/dispersal range, see appendix D9-14 (Chough Baseline Report). (Application Reference Number: 6.4.47).</p> <p>The Environmental Statement chapter D9 (Application Reference Number: 6.4.9) and Shadow HRA Report (Application Reference Number: 5.2) detail whether significant effects to national or European Designated Sites would arise, and concludes there would be no adverse effects on the integrity of any European Designated Sites. Where appropriate, embedded, good practice and additional mitigation have been provided.</p>
The on-site temporary workers accommodation appears to be large (500) considering it is deemed to be only for essential personal. It is to be located in a prominent position along the northern coastline and on a key chough foraging area and Wylfa Head - Porth Wylfa biodiversity 'hotspot'. (NWWT)	The on-site Temporary Workers' Accommodation (now referred to as the Site Campus) has now increased in scope, see chapter D1 (Proposed development) (Application Reference Number: 6.4.1). The effects of this on terrestrial and freshwater ecology have been assessed and described

Key issue raised	Action taken
	in chapter D9 (Application Reference Number: 6.4.9) with mitigation proposed where significant effects have been identified.
<p>“NWWT believe that fungi should not be scoped out of the assessment as the fungi survey was “<i>too brief</i>” and that “<i>the survey data for some sites on the Wylfa Newydd Development Area is comparative with the level of detail from the very initial survey data for the Eithinog Nature Reserve, which has subsequently been designated as a SSSI for its CHEG fungi assemblage. This receptor should be resurveyed</i>”.” (NWWT)</p>	<p>Woodland and scrub habitats were assessed as supporting common fungi species, see appendix D9-1 (Fungi Technical Summary Report) (Application Reference Number: 6.4.34). Key areas for members of the genera <i>Hygrocybe</i> (Waxcaps) and <i>Entoloma</i> (Pinkgills) and the families Claviariaceae (Fairy Clubs) and Geoglossaceae (Earth Tongues) fungi were identified as the shallower coastal grasslands, the majority of which would be retained during the construction phase of the Wylfa Newydd Project, with the Landscape and Habitat Management Strategy (Application Reference Number: 8.16) designed to re-establish similar habitats during the operational phase. Potential effects on fungi were not considered to be significant as a result of the Wylfa Newydd Project but would be mitigated through avoidance and the recreation of areas of habitat temporarily affected by the Wylfa Newydd Project.</p>
<p>“Assemblages & Biodiversity Hotspots - Whilst the PEIR [Preliminary Environmental Information Report] seeks to identify intra-development effects ... however, there is no attempt to consider the evaluation of any given location within the Wylfa Newydd Development Area as an ecologically functioning habitat unit, which supports a large number of ecological receptors. The congregation of suites of habitats and species results in habitats of greater value than that of each individual component part and</p>	<p>The terrestrial and freshwater ecology chapters of the Environmental Statement; D9 (Application Reference Number: 6.4.9); E9 (Application Reference Number: 6.5.9); F9 (Application Reference Number: 6.6.9); G9 (Application Reference Number: 6.7.9); H9 (Application Reference Number: 6.8.9); identify sensitive receptors in the form of designated sites (both statutory and non-statutory), habitats and species.</p>

Key issue raised	Action taken
<p>therefore, the impacts or losses on such areas has a consequently larger effect. This intra-receptor approach, which is fundamental to ecologically functioning & coherent landscapes, is not considered at all and as a result avoidance and mitigation is not considered in this manner." (NWWT)</p>	<p>This approach follows best practice guidance as detailed in table B9-3. It is considered that this approach to Ecological Impact Assessment robustly identifies potential effects from the Wylfa Newydd Project on all relevant receptors, and enables the design of appropriate and proportionate mitigation and compensation measures to offset these effects.</p> <p>It is acknowledged that certain areas of the Wylfa Newydd Development Area support a greater concentration of sensitive receptors than other areas, but this has been taken into consideration as part of the assessment of effects and the mitigation design. The design of the Landscape and Habitat Management Strategy (Application Reference Number: 8.16) also accounts for these areas and receptors.</p>
<p>Royal Society for the Protection of Birds (RSPB) comments relating to chough:</p> <p>"Further work needs to be undertaken in terms of ongoing survey work and addressing outstanding issues regarding...the local chough population. Unless the adverse impacts on nationally and internationally important statutorily designated sites for nature conservation are removed, the RSPB is likely to lodge and maintain objections to them.</p> <p>Consideration and coverage of chough in Pre-Application Consultation Stage Two is very limited. We are concerned that the Glannau Ynys Gybi/Holy Island Coast SPA has been screened out at a strategic-level HRA ...We consider that further consideration is made to the relationship between the study area and the SPA...Further desk</p>	<p>Survey work to identify use of the study area by wintering chough and black-headed gull was undertaken in 2017 which informs the assessment on the relationship between the Glannau Ynys Gybi/Holy Island Coast SPA chough and those individuals potentially affected by the Wylfa Newydd Project. This has been presented in the Environmental Statement (see chapter D9, Application Reference Number: 6.4.9, D13, Application Reference Number: 6.4.13), appendix D9-14 (Application Reference Number: 6.4.47), and Shadow HRA Report (Application Reference Number: 5.2), and includes the Joint Nature Conservation Committee review of the SPA network. Primarily this applies to the use of habitats by the Anglesey population as a whole,</p>

Key issue raised	Action taken
<p>study work is required to source additional chough foraging data and relevant scientific papers need to be referenced.</p> <p>The ES should provide sufficient information, including appropriate mitigation to demonstrate how impacts to chough can be avoided.”</p>	<p>with a view to understanding further the context of the Wylfa Head pairs. This new survey information, in addition to the five years' worth of breeding and over-wintering bird surveys undertaken and background data from Cofnod (the North Wales Environmental Information Service), provide a comprehensive and stable baseline on which to base an assessment of likely effects on chough. A site meeting was held to discuss data sharing and assessment of affects relating to chough with RSPB and members of the Welsh Chough Project (table B9-9).</p> <p>A full description of the baseline information and an assessment of the relationship between the Wylfa Head chough and SPAs with chough as a qualifying feature has been provided in a technical report as an appendix to the Environmental Statement, see chapter D9 (Application Reference Number: 6.4.9) and appendix D9-14 (Application Reference Number: 6.4.47). This technical report also informs the Shadow HRA (Application Reference Number: 5.2).</p> <p>The Environmental Statement (chapters D9, Application Reference Number 6.4.9 and J1, Application Reference Number: 6.10.1), and Shadow HRA Report (Application Reference Number: 5.2) provide full details of mitigation to minimise any possible adverse effects to chough, as necessary.</p>

Pre-Application Consultation Stage Three

9.3.6 Table 9-7 outlines how key issues raised during Pre-Application Consultation Stage Three have been considered in the assessment.

Table 9-7 Key issues raised during Pre-Application Consultation Stage Three

Key issue raised	Action taken
<p>Lack of any progress since Pre-Application Consultation Stage Two on the development of compensation site/sites for impacts to Tre'r Gof SSSI (Pre-Application Consultation Stage Three table 5-6 pg 107); its/their location, management, resourcing or mechanism to secure this through the Development Consent Order planning process. (NWWT)</p>	<p>To offset potential effects to the Tre'r Gof SSSI, three compensation sites have been identified. Habitat creation and management plans/schemes for each site have been produced (see appendix D9-23 SSSI Compensation Strategy - Volume I, Application Reference Number: 6.4.56), drawing on advice from the Technical Advisory Group. These will inform the detailed design for the works required to create new rich fen habitat. The management and monitoring of these wetland sites would continue throughout the operation phase. Botanical monitoring of the SSSI would also be undertaken throughout the construction period to assess the condition of the SSSI and to support the results of air quality and hydrological monitoring programmes. This compensation would be delivered through the Landscape and Habitat Management Strategy (Application Reference Number: 8.16).</p>
<p>It is noted within table 7-2 that an Ecology Management Plan will be prepared, no further information or discussion is provided in Pre-Application Consultation Stage Three other than the statement 'Horizon will implement an ecological management plan to mitigate and enhance biodiversity interests on Anglesey'. National Trust would note the current questions raised in the Ecological Options paper (jointly prepared by NT/NWWT/RSPB) which raises wider spatial ecological issues. We would also note that a proposed Ecology Management Plan will bring forward issues for the LEMP which remain unresolved. (National Trust)</p>	<p>The overarching Wylfa Newydd CoCP (Application Reference Number: 8.6) and sub-CoCP documents relating to individual developments within the Wylfa Newydd Project will secure the measures proposed to mitigate adverse effects of the Wylfa Newydd Project on biodiversity:</p> <p>Wylfa Newydd CoCP (Application Reference Number: 8.6);</p> <p>Main Power Station Site sub-CoCP (Application Reference Number: 8.7);</p> <p>Off-Site Power Station Facilities sub-CoCP (Application Reference Number: 8.9);</p>

Key issue raised	Action taken
	<p>Park and Ride sub-CoCP (Application Reference Number: 8.10);</p> <p>Logistics Centre sub-CoCP (Application Reference Number: 8.11); and,</p> <p>A5025 Off-line Highway Improvements sub-CoCP (Application Reference Number: 8.12).</p> <p>The Landscape and Habitat Management Strategy (Application Reference Number: 8.16) includes site-specific information for areas such as Tre'r Gof SSSI, details the management requirements of all landscape areas under Horizon control at the Wylfa Newydd Development Area, and how they will maximise biodiversity potential.</p>
<p>Ecology is not identified as a receptor in tables 6-6 and 6-7 and there is no reference to any changes in ecological effects. There are protected species on and near to the site that need to be considered, the layout of the scheme has changed and an ecological protection zone is being proposed. Further clarification is required as to whether ecological effects are likely to be the same or different as a consequence of the changes proposed. (The IACC)</p>	<p>The purpose of table 6-6 and 6-7 was to highlight where changes to the design since Pre-Application Consultation Stage Two are likely to affect receptors belonging to the various environmental impact assessment disciplines. Whilst the layout has changed, it is not considered that the likely effects of the Park and Ride on ecological receptors would significantly change from those previously identified during Pre-Application Consultation Stage Two. All relevant effects are assessed in relevant chapters of the Environmental Statement for the application for development consent.</p>
<p>The potential effects of a concentration of up to 4,000 residents on local ecological receptors, particularly through urbanisation or visitor pressure effects on nearby designated sites, is not identified as a potential effect. Whilst effects may be limited due to</p>	<p>Increases in visitor numbers and changes in their use of public rights of way, beaches and open spaces is addressed in chapter D4 (public access and recreation) (Application Reference Number: 6.4.4). This has been considered</p>

Key issue raised	Action taken
<p>various mitigation measures (e.g. provision of local leisure facilities) or mitigating factors (e.g. easy walking access to Cemlyn Bay from the accommodation campus is unlikely to be available due to the presence of the construction site), the potential effects of increased visitor pressure on ecological receptors, particularly designated sites, should be considered within the EIA and (for the European sites) in the HRA. (The IACC)</p>	<p>as part of the assessment of potential effects on ecological receptors and it was concluded that the baseline visitor pressure on ecological receptors would not significantly change as a result of the Wylfa Newydd Project.</p>
<p>With regards to Tre'r Gof SSSI, there is a disconnect between the assessment of effects in the 'ground water and surface water' sections of table 5-6 (moderate adverse effect) and the ecology section, where the assessment scenario notes that "<i>the proposals could result in long-term loss of the SSSI</i>". This difference is present within the Pre-Application Consultation Stage Two documents also, and it is not clear how the substantial increase in the size of the workers' accommodation is being reflected in the assessments. The loss of the SSSI would obviously be a substantial and significant effect that would be difficult to offset or compensate, and there must be more clarity on this aspect. (The IACC)</p> <p>Concerned at the immediately local effects of 4,000 workers being encamped between Tre'r Gof and Wylfa Head. This is a question of hydrological management but also of collateral damage to these sensitive areas. (The IACC)</p> <p>Construction of large buildings close to the SSSI has the potential to impact on water quality and water flow down slope into the site. During construction and decommissioning of the Site Campus, Horizon Nuclear Power will also need to avoid damage to the culvert which carries the outflow from</p>	<p>The assessment of potential effects to Tre'r Gof SSSI due to hydrological changes has been considered by chapters D8 (Application Reference Number: 6.4.8) and D9 (Application Reference Number: 6.4.9) of the Environmental Statement. Chapter D8 assesses effects on the water environment (e.g. water quality, resources, flood risk, fluvial geomorphology, groundwater interactions) whilst chapter D9 assesses the effects that various changes, including those to the water environment, could have on the SSSI.</p> <p>The ecological assessment in chapter D9 (Application Reference Number: 6.4.9) is based on the predicted hydrological changes detailed in chapter D8 (Application Reference Number: 6.4.8) of the Environmental Statement. The environmental effects reported in these chapters are representative of a worst case taking into consideration the parameters described in chapter D1 (Application Reference Number: 6.4.1). As such, the two assessments are mutually compatible.</p> <p>Where potential adverse effects to Tre'r Gof SSSI have been</p>

Key issue raised	Action taken
<p>Tre'r Gof and is critical to the functioning of the SSSI. There is a need to replicate flow patterns as well as volumes i.e. if flow was previously seepage through surface sediments it should not be replaced by a point source discharge. Any drainage mitigation should be designed to mimic existing inputs to the SSSI as far as possible – Sustainable Drainage Systems (SuDS) may be part of the solution, but must be site specific. The Environmental Statement will need to fully consider the impacts of the Wylfa Newydd Project on the SSSI and identify any mitigation that is required. (NRW)</p>	<p>identified and are unavoidable, Horizon has committed to appropriate mitigation, monitoring and compensation to reduce the potential magnitude of effects. This information will be provided in chapters D8 (Application Reference Number: 6.4.8) and D9 (Application Reference Number 6.4.9) of the Environmental Statement, the Landscape and Habitat Management Strategy (Application Reference Number: 8.16), as well as within the Main Power Station Site sub-CoCP (Application Reference Number: 8.7). A compensation strategy for potential long-term effects on Tre'r Gof SSSI has been developed by Horizon, in discussion with NRW and the IACC as part of a Technical Advisory Group. Details of this are provided within appendix D9-23 (Application Reference Number: 6.4.56) and D9-24 SSSI Compensation Strategy - Volume II (Application Reference Number: 6.4.57).</p>
<p>In view of the potential for damage to designated site features, we note that Horizon Nuclear Power propose delivering a compensation strategy to offset the damage to the SSSI. This compensation strategy should include detailed information on the habitat creation measures proposed as well as long-term management plans and site security (e.g. land ownership/control and funding for management in perpetuity) to demonstrate that appropriate habitat creation will be delivered. Horizon Nuclear Power should seek to avoid adverse effects on Tre'r Gof SSSI during both the construction and operational phase of the Wylfa Newydd Project and demonstrate how alternative sites with less damaging impacts have been</p>	<p>The potential effects of the Wylfa Newydd Project (construction and operational) on Tre'r Gof SSSI have been identified and assessed within chapters D5 (Application Reference Number: 6.4.5), D8 (Application Reference Number: 6.4.8), and D9 (Application Reference Number: 6.4.9) of the Environmental Statement for the application for development consent.</p> <p>Where potential adverse effects have been identified and are unavoidable, Horizon has committed to appropriate mitigation, monitoring and compensation to reduce the potential magnitude of effects. A</p>

Key issue raised	Action taken
<p>considered. Where effects cannot be avoided, Horizon Nuclear Power will need to demonstrate that the damage has been adequately mitigated. Compensation for the harm should be considered as a last resort. (NRW)</p>	<p>compensation strategy to address potential long-term deterioration of Tre'r Gof SSSI has been developed by Horizon, in discussion with NRW and IACC as part of a Technical Advisory Group (see appendix D9-23, Application Reference Number: 6.4.56 and D9-24, Application Reference Number: 6.4.57).</p> <p>The consideration of alternatives to the proposed Wylfa Newydd Project will be discussed in chapter D2 (alternatives and design evolution) (Application Reference Number: 6.4.2).</p>
<p>Table 5-6 refers to the potential effects on chough. NRW consider that the location of the Site Campus may affect chough through disturbance during the nesting period, during both the construction and operation (including recreational pressure) of the accommodation. The Environmental Statement will need to fully consider impacts on chough due to the construction and operation of the Site Campus. (NRW)</p> <p>We note the new proposals in Pre-Application Consultation Stage Three to locate a consolidated Site Campus (with the capacity to accommodate 4,000 construction workers) within the main development site, which has further potential ecological implications, especially in relation to chough. The new Site Campus is located within coastal grassland between Wylfa Head and Porth y Wylfa which is known to support foraging chough, with recent observations including foraging of recently fledged young. Indeed, the area was previously identified in Pre-Application Consultation Stage Two as a material storage area, incorporating rock crushing and screening, which the</p>	<p>The effects on chough of the Wylfa Newydd Project are assessed within chapter D9 (Application Reference Number: 6.4.9). This is supported by data provided in a baseline report appended to chapter D9 (appendix D9-14, Application Reference Number: 6.4.47).</p>

Key issue raised	Action taken
RSPB raised concerns about due to loss of this important wildlife habitat. (RSPB)	
<p>North Wales Wildlife Trust (NWWT) conclusions from Pre-Application Consultation Stage Three are in summary:</p> <ul style="list-style-type: none"> - Objection to location and scale of the Site Campus due to its impacts on Tre'r Gof SSSI and other substantive biological receptors. - Inadequate demonstration of the consideration of the alternatives as guided by PINS advice and potentially the newly enacted EIA legislation. (NWWT) 	<p>The potential effect of the Site Campus on all relevant ecological receptors are assessed within chapter D9 (Application Reference Number: 6.4.9), with appropriate cross reference made to other relevant discipline chapters such as surface and groundwater, see chapter D8 (Application Reference Number: 6.4.8).</p> <p>Consideration of alternatives are addressed within the alternatives and design evolution chapters D2 (Application Reference Number: 6.4.2), E2 (Application Reference Number: 6.5.2), F2 (Application Reference Number: 6.6.2), G2 (Application Reference Number: 6.7.2) and H2 (Application Reference Number: 6.8.2) of each volume of the Environmental Statement.</p>
The Woodland Trust objects to the proposed development on the basis of damage and loss to ancient woodland.	Changes in scheme design have avoided the loss of the unnamed area of ancient semi-natural woodland (grid ref: SH356938). Surveys of the three areas of ancient semi-natural woodland located within the Wylfa Newydd Development Area did not find any evidence in the species composition or structure to suggest that they have been continually wooded since AD 1600. This evidence is presented in an appendix to chapter D9 (Application Reference Number: 6.4.9). Despite this evidence, the designation of these sites is fully recognised and effects on ancient woodland fully assessed. A strategy is proposed to offset this loss, including translocation of native tree stools (not the dominant

Key issue raised	Action taken
	non-native species present) and soil. This is set out within the Landscape and Habitat Management Strategy (Application Reference Number: 8.16). Whilst it is recognised that ancient woodland cannot be recreated, this approach would lead towards the ecological value and functioning of these habitats being recreated.
NRW advise that the Environmental Statement should clearly set out effects on protected species based on the up to date proposal (including the changes consulted on in Pre-Application Consultation Stage Three). Where potential for adverse effects are identified, the Environmental Statement should propose and deliver appropriate mitigation and/or compensation schemes to ensure the Favourable Conservation Status of the affected species is maintained. NRW advise Horizon Nuclear Power to consult NRW on the proposed mitigation and/or compensation measures in advance of Development Consent Order submission, and allow sufficient time for NRW to advise Horizon Nuclear Power appropriately.	The potential effects of the Wylfa Newydd Project to protected species have been identified and assessed within chapter D9 (Application Reference Number: 6.4.9). Where appropriate, Horizon has committed to delivering mitigation and/or compensation measures to ensure legal compliance and the favourable conservation status of the affected species at the local scale. For mitigation requiring protected species licences (i.e. water vole; bats; and GCN), the application for development consent is supported by draft protected species licence applications appended to the Environmental Statement (see appendix D9-19 Draft Water Vole Conservation Licence, Application Reference Number: 6.4.52; D9-20 Draft Bat Mitigation Licence, Application Reference Number: 6.4.53; and D9-21 Draft Great Crested Newt Mitigation Licence, Application Reference Number: 6.4.54).
No further progress has been made since the earlier Pre-Application Consultation Stage Two relating to the detail or adequacy of embedded mitigation, bespoke mitigation, off-set or compensation (Tre'r Gof SSSI). The scheme currently does not represent no net loss of biodiversity and there	Since Pre-Application Consultation Stage Two, Horizon has identified and committed to embedded, good practice and additional mitigation measures to reduce the significance of potential effects to ecological receptors, including Tre'r Gof SSSI.

Key issue raised	Action taken
<p>currently appears to be little prospect of any meaningful environmental legacy. To date, the delivery of any structured documented design features, avoidance, mitigation, off-set and where necessary compensation measures have not been presented for consideration or agreement. (NWW)</p> <p>Section 2.9.3 refers to the aims of the LEMP to retain woodland, scrub, hedgerows and grassland. Please note that fen / marshy grassland within Tre'r Gof will also need to be retained. In addition, as part of SSSI management, Horizon Nuclear Power is reducing scrub cover through cutting, use of herbicides and then grazing on the SSSI - the LEMP should incorporate SSSI management. We also advise that return of land to agricultural use should also consider the possibility of restoring land to low intensity conservation/grazing use within the catchment of protected sites. Section 5.5.22 refers to 'soft landscaping' in the vicinity of the Site Campus. Further details should be provided in the Environmental Statement on the proposed landscaping. It is important that the planting schemes do not include plants such as <i>Rosa rugosa</i> and sea buckthorn, both of which are invasive on Anglesey and can damage protected sites. (NRW)</p>	<p>A compensation strategy to address potential long-term deterioration of Tre'r Gof SSSI has been developed by Horizon, in discussion with NRW and the IACC as part of a Technical Advisory Group (see appendix D9-23, Application Reference Number: 6.4.56 and appendix D9-24, Application Reference Numbers: 6.4.56 and 6.4.57).</p> <p>A Landscape and Habitat Management Strategy (Application Reference Number: 8.16), has been designed that seeks to achieve a biodiversity gain through the provision of habitats of higher value than those that would be affected by the Wylfa Newydd Project. These habitats would also be managed by Horizon to maximise their biodiversity potential.</p> <p>Relevant information relating to avoidance, mitigation and compensation measures is provided in the Environmental Statement for the application for development consent (e.g. chapters D5 (Application Reference Number: 6.4.5), D8 (Application Reference Number: 6.4.8) and D9 (Application Reference Number: 6.4.9), Landscape and Habitat Management Strategy (Application Reference Number: 8.16), as well as within the Main Power Station Site sub-CoCP (Application Reference Number: 8.7), which includes the Air Quality Management Strategy and Water Management Strategy.</p>
<p>An integrated land management project which delivers more than area for area land, managed in perpetuity in a manner sympathetic to breeding</p>	<p>The potential effects of the Wylfa Newydd Project to chough are identified and assessed within chapter D9 (Application Reference</p>

Key issue raised	Action taken
<p>chough, in the general vicinity of the development site [is recommended]. This could be part of a larger vision for the bird interest of the north coast of Anglesey which should also incorporate measures safeguarding the gull and tern colony at Cemlyn Lagoon. (RSPB)</p>	<p>Number: 6.4.9) in the Environmental Statement. The Environmental Statement proposes additional mitigation in the form of habitat enhancement and management at Wylfa Head, and the restoration, enhancement or creation of species-rich short-sward grassland within the core foraging range of chough breeding at Wylfa Head. The Environmental Statement also describes habitat restoration, creation or enhancement measures that would benefit assemblages of breeding and wintering birds in general.</p> <p>The potential effects of the Wylfa Newydd Project to the gull and tern colony at Cemlyn Lagoon have been identified and assessed within chapter D13 (Application Reference Number: 6.4.13), and within the Shadow Habitat Regulations Assessment report (Application Reference Number: 5.2). The Environmental Statement proposes a number of embedded and additional mitigation measures to reduce potential significant effects to this receptor.</p> <p>Mitigation measures would be secured and delivered through relevant management strategies contained within the Landscape and Habitat Management Strategy (Application Reference Number: 8.16), and Main Power Station Site sub-CoCP (Application Reference Number: 8.7).</p>
<p>In view of the identified potential adverse effects, we call on Horizon to consider whether modifications to the proposals can be made that would reduce the industrialisation of the coast and to incorporate beneficial features into the plans, such as a breakwater</p>	<p>Horizon has committed to various embedded, good practice and additional mitigation measures where the Environmental Statement has identified the potential for adverse effects to ecological receptors. Relevant</p>

Key issue raised	Action taken
<p>design that offers additional nesting space for birds. We fully support the NWWFT, RSPB and National Trust proposals for a range of mitigating measures and compensatory mechanisms, including:</p> <ul style="list-style-type: none"> - Continuous detailed monitoring of impacts, including with respect to the tern colony, shingle ridge/beach, lagoon water chemistry, nutrients and heavy metals. - Creation of a ring-fenced fund to support measures to maintain productivity and breeding success of the tern colony, through either specific individual actions or support of existing work streams. - Creation of 'remediation and restoration bonds' to release funds for emergency action in the event of colony collapse or catastrophic impacts on the SAC and SPA. - Creation of a fund to enhance resilience of the wider coastal habitat. - Incorporation into the landform of sustainable drainage systems and reedbeds. <p>Introduction of a weir to regulate storm water flows and assist with lagoon management.</p> <p>(Friends of the Earth)</p>	<p>details are provided in chapters D9 (Application Reference Number: 6.4.9) and D13 (Application Reference Number: 6.4.13) (, the Landscape and Habitat Management Strategy (Application Reference Number: 8.16), and the Wylfa Newydd CoCP (Application Reference Number: 8.6) and Main Power Station Site sub-CoCP (Document Reference 8.7) which contain specific management strategies (e.g. Air Quality Management Strategy, Water Management Strategy), through which mitigation would be secured and delivered.</p> <p>Horizon has committed to a Landscape and Habitat Management Strategy that would deliver biodiversity benefit within the Wylfa Newydd Development Area through the restoration, enhancement, creation and management of habitats of greater biodiversity value than those currently present. The proposed enhancements are detailed in chapter D9 (Application Reference Number: 6.4.9) of the Environmental Statement and would be secured and delivered through the provisions of the Landscape and Habitat Management Strategy (Application Reference Number: 8.16).</p> <p>Horizon has proposed environmental monitoring within the Main Power Station Site sub-CoCP (Application Reference Number: 8.7).</p> <p>Horizon has entered early discussions with local wildlife groups on their suggestions for supporting measures to neighbouring environmental receptors (including the tern colony) and agrees that input into</p>

Key issue raised	Action taken
	<p>management of water levels in Cemlyn Bay Lagoon may be useful. The mechanism to achieve this is still in consideration.</p> <p>The final landform beyond the power station site will be returned to agricultural use and will incorporate 'passive' SuDS type features. During construction and establishment of the landform it will probably be necessary to support this system with 'active' de-siltation equipment.</p> <p>The following additional mitigation has been agreed: Implement a programme of monitoring beach profile and water level changes within Cemlyn Bay (to determine changes to Esgair Gemlyn). The details of which would be finalised through a Statement of Common Ground to be agreed with the relevant stakeholders</p>

Consultation on Additional Land

9.3.7 In February 2018, Horizon undertook consultation on additional land that had not been consulted on previously. The additional land was required to:

- accommodate proposals to create or enhance wetland sites across Anglesey as Ecological Compensation Sites;
- create two new ecological mitigation areas, and minor changes to the connection to the national grid at the Wylfa Newydd Development Area; and
- update the order limits for the A5025 Off-Line Highway Improvements, and minor refinements to the boundaries of the Off-Site Power Station Facilities and Logistics Centre.

9.3.8 Feedback from the consultation has been reviewed. The IACC, NRW and NWWT responded with advice, potential concerns and requests for further information in relation to a number of issues regarding the wetland creation sites. These included:

- further information on how the sites have been selected;
- implementation timescales, including detail such as phasing of topsoil strip;

- requirement for detailed information on local hydrology, hydrogeology and drainage of the sites;
- proposed modifications to drainage and ongoing adaptive management;
- need for detailed soil investigations to determine nutrient profiles and appropriate extent of topsoil strip across each site;
- detailed proposals for topsoil storage and/or removal from each site for beneficial reuse;
- potential traffic related effects from topsoil export, including air quality effects on designated sites;
- measures for control of the spread of invasive non-native plant species;
- proposed long-term management of the sites following creation of fen habitat.

9.3.1 Information on the above is provided within this Environmental Statement, primarily within appendix D1-2 (Ecological Compensation Sites: Assessment of Environmental Effects) (Application Reference Number: 6.4.18), and appendices D9-23 and D9-24 (SSSI Compensation Strategy, Volumes I and II respectively; Application Reference Number: 6.4.56).

9.3.2 In this latest round of consultation, NRW and NWWF also reiterated their previous comments on Tre'r Gof SSSI as presented in tables 9-4 to 9-7 above. The creation or enhancement of wetland sites across Anglesey comprises a compensation strategy to address potential long-term deterioration of Tre'r Gof SSSI and has been developed by Horizon, in discussion with NRW and the IACC as part of a Technical Advisory Group (TAG). The TAG has been meeting since August 2015 and will continue to meet to advise on the compensation proposals throughout the DCO process.

9.3.3 The ecological compensation proposal is not an alternative to appropriate mitigation, but rather a precaution in case the mitigation is not effective, which is based on good practice application of the precautionary principle. First and foremost, Horizon will try to mitigate impacts on Tre'r Gof SSSI. However, due to the complexity of the hydrological/hydrogeological regime on which Tre'r Gof SSSI is dependent, there is an inherent degree of uncertainty regarding how effective the proposed mitigation will be.

9.3.4 In accordance with advice received from NRW through the TAG, Horizon has focussed on the following factors in the development of the compensation proposal: the quantity of proposed compensation (extent), the quality of proposed compensation (wetland type), distance from the affected SSSI, the potential connectivity with existing wetland areas, and the likelihood/feasibility of successful habitat creation.

9.3.5 It is considered that the 13.8ha of proposed rich-fen creation and further 20ha of proposed mire enhancement, with associated improvements in habitat connectivity between sites forming part of the Anglesey Fens SAC, is proportionate compensation for the potential loss of Tre'r Gof SSSI, which occupies an area of 10ha, only part of which comprises rich-fen.

9.3.6 It is acknowledged that the creation of quality rich-fen habitat is not a simple process and one that can only be achieved where the hydrological and hydrogeological regime, substrate and management are appropriate. This is why a thorough site selection process has been undertaken, which benefited from the advice of the TAG, as described in Appendix D9-23 (Application Document Reference: 6.4.9).

9.3.7 Appendix D9-24 (Application Document Reference: 6.4.9) comprises outline habitat creation, enhancement and management proposals. Further detailed design of the scheme, including management and monitoring proposals will be prepared for NRW approval and secured by a DCO Requirement. These will comply with principles set out in the Landscape and Habitat Management Strategy (Application Document Reference: 8.16). Horizon also intends to engage with NWWT to explore opportunities for forming a partnership for development and implementation of the compensation proposals. Horizon is committed to providing long-term management of these Ecological Compensation Sites.

9.3.8 The IACC, NRW and NWWT also noted the importance of long term management of the proposed ecological mitigation areas. Horizon has secured the leases on these sites for 15 years to allow sufficient time for establishment of landscaping on the completed landform surrounding the proposed Power Station Site. The leases commenced mid-2017 and will terminate mid-2032, several years after the programme date for completion of main construction. The lease periods are therefore considered to be sufficient for the ecological mitigation sites to serve their purposes, particularly given that much of the landform creation and landscaping would be completed years in advance of completion of construction.

Non-statutory consultation

Environmental Impact Assessment Progress Report

9.3.9 An EIA Progress Report was provided to the IACC and NRW in 2016 with updated information on the design development and associated environmental assessment. Table 9-8 outlines how key issues raised in feedback from these stakeholders have been considered in the assessment.

Table 9-8 Key issues raised in response to the EIA Progress Report

Key issue raised	Action taken
“Table 20.5 - The EIA PR refers to 10 years as a definitive between temporary and permanent/long term. But for some species 10 years would actually cover a number of life cycles and over that time there could be potential for permanent loss of some receptors - Horizon Nuclear Power should seek further advice on defining 'temporary'. Table 20.5 refers to medium term affects as those effecting for the duration of the project	In the Environmental Statement the approach has been refined for the definition of these terms which are used to define periods of construction and operation of the Wylfa Newydd Project: short-term would cover a period of up to two years; medium term would cover the period of Main Construction; and long-term

Key issue raised	Action taken
(construction /operation /decommissioning) - this equates to 70+ years in this case which is difficult to see how effects over 70+years could be considered as medium term." (NRW)	would be an effect lasting beyond the end of Main Construction.
"20.72 - Chough breed within the study area, and are present on site throughout the year. Chough populations are mobile and are considered to be linked to the Glannau Ynys Gybi SPA. The proposed works has the potential for adverse impacts on the chough population through disturbance (during breeding and while foraging) and loss of foraging habitat. Please note buffer zone will not necessarily provide mitigation for chough, which prefer short swards and open areas for feeding." (NRW)	<p>In relation to chough, temporary effects are predicted on the resident chough population through disturbance and habitat loss during construction although the Landscape and Habitat Management Strategy provisions (Application Reference Number: 8.16) would address habitat loss effects during operation. Disturbance during operation is not considered significant given chough currently nest within the Existing Power Station and based on the proposed location of the Spent Fuel Storage Facility (see chapter D9, Application Reference Number: 6.4.9). The potential impacts to the Glannau Ynys Gybi SPA chough population are covered in both the Environmental Statement in chapter D9 (Application Reference Number: 6.4.9) and appendix D-14 (Application Reference Number: 6.4.47). and the Shadow HRA Report (Application Reference Number: 5.2).</p> <p>Mitigation in the form of enhancements to retained habitats within the Wylfa Newydd Development Area is proposed, to provide suitable foraging habitat (see chapter D9, Application Reference Number: 6.4.9) and the Landscape and Habitat Management Strategy, Application Reference Number 6.4.9).</p>
"QD - Chapter 20 – The lack of assessment given to effects specifically	Effects of the Wylfa Newydd Project upon European

Key issue raised	Action taken
<p>upon the SAC and SPA causes the Council concern. The Council considers that the potential for GCN is underplayed. For both GCN and reptiles, the intended locations of areas for translocations require identification. Further detailed comment is provided in the master issues tracker.” (The IACC)</p>	<p>Designated Sites has been addressed by both the Environmental Statement and Shadow HRA Report (Application Reference Number: 5.2). The relevant chapters are D9 (Application Reference Number: 6.4.9); D13 (Application Reference Number: 6.4.13); E9 (Application Reference Number: 6.5.9); F9 (Application Reference Number: 6.6.9); G9 (Application Reference Number: 6.7.9); H9 (Application Reference Number: 6.8.9); I4 (Application Reference Number: 6.9.9); I5 (Application Reference Number: 6.9.12); J1 (Application Reference Number: 6.10.1) and J2 (Application Reference Number: 6.10.2).</p> <p>The Shadow HRA Report (Application Reference Number: 5.2) acts as the principal assessment with respect to these sites, with the Environmental Statement identifying all European Designated Sites taken forward by the HRA to Stage Two Appropriate Assessment (as these are the sites that may be subject to significant effects) and including an appropriate impact assessment. The conclusions of the Environmental Statement and the HRA are compatible in that there would be no adverse effects on the integrity of any European Designated Sites.</p>

Key issue raised	Action taken
	Potential effects on GCN and reptiles are covered in detail in chapter D9 (Application Reference Number: 6.4.9) of the Environmental Statement with additional details provided subsequent to the EIA Progress Report. Mitigation is proposed for both groups and figures are included to demonstrate the location of compensation habitats (see the Main Power Station Site sub-CoCP (Application Reference Number: 8.7). A draft European Protected Species mitigation licence application is appended to the Environmental Statement (see appendix D9-21, Application Reference Number: 6.4.54).
The proposed works have the potential to cause both the introduction and spread of INNS. We therefore advise that the provisions of the Environmental Statement include a Biosecurity Risk Assessment, which will be implemented during all phases of the proposal including construction and operation of the facility. This information will also be required to inform the HRA. (NRW)	A Biosecurity Method Statement has been provided and will be implemented throughout the Wylfa Newydd Project via the Wylfa Newydd CoCP (Application Reference Number: 8.6) and the Wylfa Newydd Code of Operational Practice (CoOP) (Application Reference Number: and 8.13)

Draft Environmental Statement

9.3.10 During September 2017, draft Environmental Statement chapters were provided to statutory and key non-statutory stakeholders. Table B9-9 outlines key issues raised and how these have been addressed within the Environmental Statement.

Table 9-9 Key issues raised in response to the Draft Environmental Statement

Key issue raised	Action taken
Note that overland flow is not the main mechanism of water delivery to Tre'r Gof. App D8.05 suggest that much of the rainfall supplies the shallow groundwater,	Comment noted. This is recognised in the proposed drainage design (see appendix D8-8 summary of preliminary design for construction surface water drainage, Application

Key issue raised	Action taken
picking up local chemistry, before entering the SSSI. (NRW)	Reference Number: 6.4.33) whereby changes in the chemistry of shallow groundwater supplying Tre'r Gof SSSI will be minimised.
It is not clear whether the complex irrigation structures associated with Mound A are also expected to operate without maintenance in the long term. (NRW)	Horizon is committed to the maintenance and management of all mitigation measures to ensure it delivers the required results.
While there may be some transmission of Nitrogen through the site [Tre'r Gof SSSI] in the drains, this does not hold true in winter when the site floods more generally, though it is true that the N is more diluted and less utilised at that time. However, in summer a greater proportion of runoff from the mounds will enter the groundwater and be delivered to the site via seepage. And this is additional to the additional NOx pollution during construction. (NRW)	The assessment takes into account all routes by which nitrogen can be transported into and affect Tre'r Gof SSSI.
[With regard to air quality effects on ecological receptors] We note that alkaline fens are not represented in Caporn's study and that bog is the nearest available alternative, however they are quite different ecologically and although effects of increased N are likely to be similar, we recommend this difference is acknowledged in this paragraph. Please note that changes may take time to emerge, but can reflect shorter term events; a lag effect. It is also important to recognise that the differing effects between concentration and deposition are unclear and high pollutant concentrations, even in the short-term, may be damaging, especially for lower plants. (NRW)	Text within chapter D9 (Application Reference Number: 6.4.9) has been amended to highlight that the assessment relies on a representative habitat type rather than the rich-fen present at Tre'r Gof SSSI. The potential for a lag effect in terms of effects being observable is also considered.
NRW commented that the reduction of species diversity within designated sites is likely to affect the more sensitivity botanical species which contribute significantly to the sites' value. The use of a percentage decrease in species diversity could therefore miss this key sensitivity.	The text within chapter D9 (Application Reference Number: 6.4.9) has been revised to ensure this sensitivity is appropriately addressed.

Key issue raised	Action taken
NRW is concerned that there appears to be no commitment to eradication of INNS on site before commencement of works.	The removal of INNS forms one of the good practice mitigation measures Horizon have committed to in the Biosecurity Risk Assessment and Method Statement (part of the Main Power Station Site sub-CoCP, Application Reference Number: 8.7), which would be followed on commencement of works.
NRW raised a number of concerns relating to the hydrology of Cae Gwyn SSSI in terms of the number of basins identified within its boundary and how they function.	All text relating to the assessment of effects to Cae Gwyn SSSI has been reviewed and is in line with the assessment of hydrological change to that site presented in chapter D8 (Application Reference Number: 6.4.8).
NRW advise further discussion in relation to the sensitivity of Llyn Llygeirian SSSI	Horizon will engage with NRW on this matter.
<p>NRW made a number of comments relating to the need for long-term species monitoring and surveillance, data management and Ecological Compliance Auditing.</p> <p>These comments also relate to additional information within the draft European Protected Species (EPS) mitigation licence with respect to GCN (appendix D9-21, Application Reference Number: 6.4.54). Key Performance Indicators (KPIs), and biosecurity area also proposed for inclusion.</p> <p>Similar comments were also made with respect to the draft EPS licence with respect to bats (appendix D9-20, Application Reference Number: 6.4.53).</p>	<p>Horizon will ensure ecological monitoring follows best practice guidance for all relevant receptors. Monitoring reports will be produced and provided to relevant stakeholders such as NRW and the IACC. Monitoring requirements will be detailed within the relevant sub-CoCPs (Application Reference Numbers: 8.7 to 8.12).</p> <p>The draft EPS mitigation licences for GCN (appendix D9-21, Application Reference Number: 6.4.54) and bats (appendix D9-20, Application Reference Number: 6.4.53), have been updated to incorporate these requirements.</p>
GIS layer to be provided that identifies ecology areas during and post construction. Ecology areas in this case includes retained, mitigation, compensation and offsetting areas. (NRW)	This information is provided within the Landscape and Habitat Management Strategy (Application Reference Number: 8.16)

Key issue raised	Action taken
NRW advise that the Environmental Statement should consider impacts on bats due to blasting.	A review of the potential effects of blasting on bats is included within chapter D9 (Application Reference Number: 6.4.9).
It is an offence to disturb a Schedule 1 bird such as chough when nesting. This is not made clear in the Environmental Statement. Paragraph 9.5.214 states that landscape mounding will help reduce the effects of noise. It is unclear (particularly in the absence of the sequence of activities proposed) how mounding will provide this mitigation as the majority of the noisy activities may have been completed by the time the mounding is finalised. Where there is the potential to disturb a Schedule 1 bird, a licence should be secured. (NRW)	Although any noise attenuation by landscape mounds may help mitigate disturbance to chough, the critical mitigation strategy is provided by good practice mitigation, enforced by the Ecological Clerk of Works, which seeks to ensure that construction noises would not be started at the critical nest establishment stage and would be at levels that chough have habituated to from other sources, see chapter D9 (Application Reference Number: 6.4.9).
[NRW] note that 0.3ha of potential GCN habitat will be affected during the construction phase. NRW advise that alternative GCN habitat is provided (either within the Wylfa Newydd Development Area, or within adjacent land). The Habitat Management Strategy should set out measures to mitigate and enhance GCN breeding/foraging habitat within the WNDA. The Environmental Statement should clearly set out the losses and gains to GCN habitat through both the construction and operational phases.	Mitigation proposals and habitat loss and gain information for GCN is included in chapter D9 (Application Reference Number: 6.4.9), the draft EPS mitigation licence with respect to GCN (appendix D9-21, Application Reference Number: 6.4.54), and the Landscape and Habitat Management Strategy (Application Reference Number: 8.16).
NRW advise that the breeding birds section in D9 should demonstrate how Annex 1 (Birds Directive) birds have been considered.	The Birds Directive has influenced the calculation of the valuation of the species assemblage that the Study Area supports.
NWWT questioned whether disturbance from marine works could lead to increased flight lengths and energy expenditure for terns provisioning food for chicks.	Chapter D13 (Application Reference Number: 6.4.13) assesses the extra energetic cost of minor tern flight deviations around at-sea infrastructure as negligible. The Shadow HRA Report (Application Reference Number:

Key issue raised	Action taken
	5.2) estimates the extra distance flown by terns assuming total avoidance of the noise zone of influence as minor when compared to typical foraging distances flown. The likelihood of terns not delivering food to chicks as a result of increased energetic cost due to disturbance in the marine environment is negligible.
NWWT questioned whether recreational disturbance from workers had been considered as a potential impact on chough nest sites.	Horizon has revised chapter D9 (Application Reference Number: 6.4.9) to provide clarity and additional information on potential disturbance to chough from worker pressure. The Workforce Management Strategy (Application Reference Number: 8.5) has also been updated to strengthen its provision regarding effects to Wylfa Head and resident chough.
NRW raised a series of technical issues relating to the chough baseline report (appendix D9-14. Application Reference Number: 6.4.47). These include advice on the clarification of text and the inclusion of additional data to update the existing baseline. NRW also made comment regarding the resident Wylfa Head population and links with wider chough populations, including the dispersal of juvenile birds. Evidence tests relating to establishing a functional link between populations was proposed.	The chough baseline report has been updated in light of NRW's technical comments. This has included revising text, reworking figures and adding baseline information.

Topic-specific stakeholder engagement

9.3.11 In addition to the three formal stages of consultation outlined above, topic-specific consultation has been undertaken with relevant stakeholders. Table B9-10 summarises the details of the consultation that has taken place with respect to the terrestrial and freshwater ecology assessment.

Table 9-10 Summary of topic-specific consultation

Date	Stakeholder	Title and format	Issues Arising	Action taken
12/09/13	NRW and the IACC	Meeting	Provision of an update on the freshwater ecology EIA survey programme and discussion on proposed survey approach for 2014.	Baseline surveys during 2014 followed approach discussed during this meeting.
19/11/13	NRW	Meeting	Licensing, consenting and permitting. Visit to existing mitigation structures: bat barn and wildlife tower.	No specific action taken although efficacy of mitigation noted as positive.
27/11/13	The IACC, Environment Agency (EA) and NRW	Statutory working group meeting	General progress update for statutory consultee.	No specific action taken.
23/01/14	Cadw (Welsh Heritage), Gwynedd Archaeological Planning Service, Gwynedd Council, the IACC, Joint Planning Policy Unit, Marine Management Organisation, NRW and Welsh Government ¹ .	Statutory working group meeting	General progress update for statutory consultees and key stakeholders.	No specific action taken.
20/03/14	Cadw, Gwynedd Archaeological Planning Service, Gwynedd Council, the IACC, Joint Planning Policy Unit, Marine Management	Progress meeting	General progress meeting to provide update on ecological baseline and approach to assessment.	Baseline data collection scope and methodology, and approach to assessment proceeded as proposed.

¹ The Welsh Government was known as the Welsh Assembly Government until December 2014.

Date	Stakeholder	Title and format	Issues Arising	Action taken
	Organisation, NRW, and Welsh Government.			
22/05/14	EA and NRW	Statutory working group meeting	General progress update for statutory consultee.	No specific action taken.
24/07/14	EA and NRW	Statutory working group meeting	General progress update for statutory consultee.	No specific action taken.
25/09/14	The IACC, EA and NRW	Statutory working group meeting	General progress update for statutory consultee.	No specific action taken.
29/09/14	The IACC and NRW	SSSI mitigation meeting	General progress update for statutory consultees.	No specific action taken.
30/09/14	NRW and Anglesey Grazing Animals Partnership	Tre'r Gof SSSI management site meeting	Discussions around the approach to site management.	Approach to management of site – grazing and fencing agreed.
27/11/14	Gwynedd Archaeological Planning Service, the IACC, Joint Planning Policy Unit, Marine Management Organisation, Office for Nuclear Regulation (ONR) and Welsh Government.	Statutory working group meeting	General progress update for statutory consultee.	No specific action taken.
23/01/15	The IACC and NRW	Terrestrial/fresh water ecology and ecology	Presentation on, and discussions around, mitigation strategies.	Mitigation strategy developed in line with approach presented.

Date	Stakeholder	Title and format	Issues Arising		Action taken
		mitigation strategy meeting			
29/01/15	The IACC, NRW and ONR	Statutory working group meeting	General progress update for statutory consultee.		No specific action taken.
26/03/15	The IACC, NRW and ONR	Statutory working group meeting	General progress update for statutory consultee.		No specific action taken.
03/07/15	The IACC and NRW	Terrestrial ecology mitigation meeting	Presentation on, and discussions around, mitigation strategies.		Mitigation strategy developed in line with approach presented.
23/07/15	The IACC and NRW and ONR	Statutory working group meeting	General progress update for statutory consultees.		No specific action taken.
03/08/15	The IACC and NRW	SSSI Compensation Technical Advisory Group meeting	Discussions around site and survey protocol.		Approach to site identification and survey agreed.
21/09/15	National Trust, North Wales Wildlife Trust and RSPB	Progress meeting	Discussion on approaches for mitigation of impacts on ecological receptors.		Baseline surveys, initial assessment and development of mitigation design continued in line with that presented during the meeting.

Date	Stakeholder	Title and format	Issues Arising	Action taken
11/11/15	The IACC and NRW	SSSI Compensation Technical Advisory Group meeting	General update over site survey findings.	It was agreed that further sites were required to be identified for survey.
12/02/16	NRW	Submission of scoping opinion for site preparation and clearance proposals	Response from NRW regarding approach to assessment of effects.	Approach to assessment of effects continued as proposed.
12/02/16	The IACC and NRW	SSSI compensation Technical Advisory Group meeting	Progress discussion around sites surveyed and suitability as part of compensation strategy.	Addition to site selection approach included further sites for survey.
27/04/16	The IACC and NRW	Teleconference	Discussion around terrestrial ecology mitigation and survey scope for 2016.	Reptile and notable mammal receptor sites proposed and their design progressed. Approach to red squirrel mitigation developed.
07/06/16	The IACC and NRW	SPC workshop	Workshop to present assessment for site preparation and clearance proposals.	Justification for size of reptile receptor site was developed together with identification of alternative locations if required. Further assessment of potential noise disturbance effects to

Date	Stakeholder	Title and format	Issues Arising	Action taken
				existing bat mitigation structure at Tyn-y-Maes.
08/06/16	NRW, National Trust, NWWFT and RSPB	Progress meeting	Development Consent Order progress meeting to discuss initial assessment and mitigation strategy for the Wylfa Newydd Project.	An assessment of the management proposed at the reptile receptor site to retain its botanical interest was made.
18/07/16	The IACC and NRW	SSSI Compensation Technical Advisory Group meeting	Presentation of progress	Presentation of initial survey findings was favourably received and scope for ongoing surveys supported.
19/07/16	The IACC and NRW	Tre'r Gof SSSI meeting	Tre'r Gof SSSI hydrological discussion.	General support for the hydrological functioning of Tre'r Gof SSSI but further work required to develop drainage design which mitigated potential effects to the site.
02/09/16	NRW, National Trust, NWWFT and RSPB	Progress meeting	Presentation and discussion on potential effects to chough and black-headed gull.	Further survey and assessment to strengthen baseline and assessment for these species.
19/10/16	NRW and the IACC	Protected species and SSSI meeting	Presentation of GCN mitigation strategy for the Wylfa Newydd Project. Progress update also provided to the SSSI Compensation Technical Advisory Group.	GCN mitigation strategy supported by NRW so its design was progressed. Site identification advanced for SSSI work.

Date	Stakeholder	Title and format	Issues Arising	Action taken
16/03/17	NRW	Freshwater meeting	Technical fish meeting. Presentation of freshwater baseline and scoping of migratory fish species	Presentation of baseline information was favourably received and scope for migratory species supported.
16/03/17	Welsh Chough Project and RSPB	Progress meeting	Meeting to discuss data sharing and assessment of affects relating to chough.	Approach to baseline surveys agreed and discussion over mitigation requirements and the assessment on chough sensitivity to disturbance advanced.
19/06/17	NRW and the IACC	Development consent order baseline, assessment and mitigation presentation	Questions were asked of NRW and the IACC about whether the baseline for each development was robust, whether they had concerns about the assessment (as it stood at the time of the meeting), and the efficacy of mitigation being proposed.	The baseline was considered as robust for the assessment. Advice was given regarding protected species mitigation and monitoring which was reviewed as part of the assessment process.
20/06/17	Welsh Chough Project and RSPB	Chough effects and mitigation proposals	RSPB raised concerns about the location and site of the Site Campus. Mitigation in the form of improving the management at Wylfa Head and the coastal grassland strip running to the north of the Site Campus was discussed. Off-site mitigation	Horizon to include management of habitats around Wylfa Head and the coastal strip adjacent to the Site Campus to enhance its suitability as chough foraging habitat. This would be detailed within the Main Power Station Site sub-CoCP (Application Reference Number: 8.7).

Date	Stakeholder	Title and format	Issues Arising	Action taken
			was also discussed but was felt unlikely to be effective.	
21/06/17	NRW, NWWT, RSPB, National Trust	Ecology update and enhancement opportunities	Stakeholders were invited to propose opportunities for ecological enhancement around Anglesey to Horizon for consideration of support.	Stakeholder to provide proposals for projects; initiatives; opportunities that would enhance both the Wylfa Newydd Development Area and the wider environment for ecology.
11/09/17	The IACC and NRW	SSSI Compensation Technical Advisory Group meeting.	The potential areas for fen habitat creation / enhancement / management were discussed, along with the requirement for hydrological monitoring.	Horizon developed an outline design for habitat creation and management within the sites and drafted a hydrological monitoring proposal.
03/10/17	NRW, NWWT, RSPB, National Trust, IACC	WNNHEF 2 Habitat Management Strategy	The Habitat Management Strategy was introduced to the group and an overview provided for how the principles would secure ecological mitigation.	Stakeholders invited to provided comments on the Landscape and Habitat Management Strategy (Application Reference Number: 8.16).
23/10/17	NWWT, RSPB, National Trust	Visit to the Ecological Receptor Sites	A visit to the Ecological Receptor, and Notable Wildlife Sites being created as part of the SPC mitigation was undertaken to discuss the management proposals at the two sites.	None.
10/11/17	RSPB	Visit to Wylfa Head to discuss	A visit to Wylfa Head was undertaken to obtain advice	Chough foraging habitat management principles and

Date	Stakeholder	Title and format	Issues Arising	Action taken
		chough management	from RSPB's chough expert on how to practically manage the site for maximum chough foraging benefit.	capital works suggestions to be incorporated into detailed management plan for Wylfa Head.
22/11/17	The IACC and NRW	SSSI Compensation Technical Advisory Group meeting and site visit	The meeting involved a presentation of outline habitat proposals followed by a site visit in driving rain. Discussions on site allowed habitat creation and management designs and the hydrological monitoring proposal to be refined.	Refinement of outline habitat creation and management designs and the hydrological monitoring proposal.
12/12/17	NRW, NWWT, RSPB, National Trust, IACC	Ecological Effects Technical Workshop	Stakeholders were provided the opportunity to challenge and ask Horizon's technical specialists relevant questions about the ecological assessments, proposals, effects, and mitigation.	A number of issues were identified which were reviewed within the Environmental Statement, with clarification provided where appropriate.
13/12/17	The IACC and NRW	SSSI Compensation Technical Advisory Group meeting.	Presentation of refined habitat creation and management designs and the hydrological monitoring proposal, together with a discussion regarding the assessment of these proposals and their inclusion within the Environmental Statement and Shadow HRA Report	Further refinement of design to reconsider the total areas of potential habitat creation within the sites, plus progressing the assessment of these proposals as part of the EIA and HRA process.

Date	Stakeholder	Title and format	Issues Arising	Action taken
			(Application Reference Number: 5.2).	
18/12/17	NRW	SSSI Compensation Technical Advisory Group meeting.	A site meeting at Cae Gwyn, Cors Erddreiniog LIFE project with NRW technical specialists to cover lessons learnt from fen creation at this site and how they could be incorporated into the design of the SSSI compensation proposals.	Refinement of design to incorporate NRW lessons learnt.

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9.4 Topic-specific methodologies and assessment criteria

Introduction

9.4.2 The overarching approach to the EIA, including the approach to the assessment of cumulative effects, is provided in chapter B1 (introduction to the assessment process) (Application Reference Number: 6.2.1). This section outlines the specific methodology used to assess the effects of the Wylfa Newydd Project on terrestrial and freshwater ecology. It outlines the methods and criteria used to:

- define the study area and identify topic receptors;
- establish the environmental baseline for topic receptors; and
- determine the value/sensitivity of receptors, the magnitude of change and significance of effect.

Assessment of parameters

9.4.3 As outlined in chapter B1 (Application Reference number: 6.2.1), the approach adopted for the design of the WNDA Development, Off-Site Power Station Facilities and Associated Development is to set parameters, where necessary, for the extent of the development and key aspects of that development. The final design and construction methodology would be limited to these parameters and limits of deviation. As these parameters and limits of deviation vary between the various developments in the Wylfa Newydd Project they are considered on a site specific basis in chapter 9 within volumes D (Application Reference Number: 6.4.9), E (Application Reference Number: 6.5.9), F (Application Reference Number: 6.6.9), G (Application Reference Number: 6.7.9) and H (Application Reference Number: 6.8.9).

Identification of study areas

9.4.4 The various study areas for terrestrial and freshwater ecology have been agreed with NRW and the IACC following consultation as part of the Scoping Opinion and Pre-Application Consultation processes.

9.4.5 The study area for terrestrial and freshwater ecology includes the Wylfa Newydd Development Area and Associated Development Order Limits plus a 500m buffer. The 500m buffer was influenced by the results of the desk study, good practice guidelines, and professional judgement and is considered to be an appropriate distance beyond which most development related impacts would not extend. The study area has been assessed to determine the terrestrial and freshwater ecology baseline. Where the 500m buffer bisects any designated site, the designated site as a whole has been included within the assessment.

9.4.6 The assessment also takes into account the zones of influence relevant to other disciplines. The effects of changes to air quality are assessed based on best practice study areas described in chapter B5 (air quality) (Application

Reference Number: 6.2.5), (e.g. 50m for the effects of dust; 200m for the effects of traffic emissions; and 2km for emissions from construction plant, machinery and marine vessels (increased to 15km for European Designated Sites)). The effects of changes to surface and ground water are assessed based on an identification of all sensitive receptors with hydrological connectivity to an affected waterbody (see chapter B8 Surface water and groundwater, Application Reference Number: 6.2.8).

9.4.7 The zone of influence for noise varies based on the activity being undertaken and the sensitivity of the individual receptor. For the purposes of this assessment and based on the guidance used in chapter D6 (Application Reference Number: 6.4.6), disturbance significance thresholds for ecological receptors were set at the same level as for human receptors, unless otherwise stated within the assessment. This was set at a precautionary low level of 55dB, whereby all noise effects below 55dB are predicted to be negligible [RD14].

9.4.8 Within the study areas, specific surveys and assessments were defined by appropriate best practice guidelines, consultation responses and professional judgement (e.g. based on the habitat preferences of the target species). This was then presented to and discussed with NRW and the IACC following consultation as part of the Scoping Opinion and Pre-Application Consultation processes. Details of study areas for specific receptors and specific developments are provided in technical reports for each receptor, provided as appendices to relevant chapters, see chapters D9 (Application Reference Number: 6.4.9), E9 (Application Reference Number: 6.5.9), F9 (Application Reference Number 6.6.9), G9 (Application Reference Number 6.7.9) and H9 (Application Reference Number 6.8.9).

Identification of receptors

9.4.9 The identification of receptors has been informed by a combination of desk study, field surveys and consultation.

9.4.10 The receptors were selected based on an understanding of the potential for direct or indirect effects from construction, operation or decommissioning. The groups of receptors are as follows:

- statutory and non-statutory designated sites for nature conservation;
- terrestrial habitats and species; and
- freshwater habitats and species.

9.4.11 Not included in this chapter are marine receptors that are features of designated sites, as these are discussed in chapter D13 (Application Reference Number: 6.4.13), the marine environment, i.e. Bae Cemlyn/Cemlyn Bay SAC (lagoon habitat), Anglesey Terns SPA (terns).

Identification of baseline conditions

9.4.12 The identification of baseline conditions has been informed by a combination of desk study, field surveys and consultation.

- 9.4.13 Background data searches comprised biological records provided by Cofnod within a 2km radius from the Wylfa Newydd Development Area and Associated Development Order Limits. A search of all previous survey information for the study areas was also completed. This informed the likelihood of the presence of ecological receptors and the required scope of surveys.
- 9.4.14 A background data search included a search for all statutory and non-statutory designated sites with the potential to be significantly affected by the Wylfa Newydd Project, and was completed in conjunction with the Shadow HRA Report (Application Reference Number: 5.2). Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website was used to identify and define boundaries of statutory designated sites for nature conservation.
- 9.4.15 Relevant surveys within the study areas have been undertaken, with refinements in survey scope as the understanding of the baseline conditions has developed, and in consultation with regulators and stakeholders. Discussions over the robustness of the baseline were held with NRW and the IACC (see table 9-10). For all surveys, best practice survey techniques were employed using referenced guidance where available. A summary of all survey work undertaken to date is provided in table B9-11. Detailed methodologies, desk studies, survey results and baseline evaluation of receptors are contained within appendices to this chapter.
- 9.4.16 The results of surveys enabled some receptors to be scoped out of further work once it was determined that they were absent from the study areas. Other surveys, such as those for reptiles, focused on areas of optimal habitat for that group and therefore avoided the need to survey the entire study areas. A similar approach of targeting the highest quality, or most appropriate, habitats for other species/groups was also adopted for groups such as fungi, lichen and bryophytes.
- 9.4.17 For certain species, desk-study information and incidental records were considered sufficient to determine their likely status within the study areas and so these were not surveyed. Using this approach, badger (*Meles meles*) and pine marten (*Martes martes*) are considered to be absent from the Wylfa Newydd Development Area despite species-specific surveys having not been undertaken.

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Table 9-11 Baseline characterisation

Receptor	Baseline study method	Project subject to survey	Date
Statutory and non-statutory designated sites for nature conservation	Designated sites have not been surveyed specifically to assess their condition, but their qualifying features have been surveyed in the course of determining the overall ecological baseline.	Wylfa Newydd Development Area	These sites were surveyed during Phase 1 Habitat Surveys and National Vegetation Classification (NVC) surveys (see below).
Habitats	Classification of broad habitat types according to Phase 1 Habitat Survey methodology [RD15]. Hedgerows, as per the ecological criteria for being considered important under the Hedgerows Regulations 1997. Refer to appendices: D9-7 (Phase 1 Habitat Survey Technical Summary Report) (Application Reference Number: 6.4.40); E9-1 (Terrestrial ecology survey at proposed MEEG site, Llanfaethlu (Application Reference Number: 6.5.17); F9-1 (Dalar Hir Extended Phase 1 Habitat Survey and HSI [Habitat Suitability Index] Survey) (Application Reference Number: 6.6.17); F9-2 (Dalar Hir Buffer Extended Phase 1 Report) (Application Reference Number: 6.6.18);	Wylfa Newydd Development Area	Parts of the study area were surveyed between 2009 and 2012, with a full site audit undertaken in 2013. Validation surveys across all Wylfa Newydd Development Area sites were undertaken in 2017.
	Off-Site Power Station Facilities: Alternative Emergency Control Centre (AECC), Environmental Survey Laboratory (ESL) and Mobile Emergency Equipment Garage (MEEG) (combined site)	2016	
	Park and Ride	2013 and 2014	
	A5025 Off-line Highway Improvements	Surveys undertaken in 2013, 2014, 2015 and 2016.	
	Logistics Centre	2015	

Receptor	Baseline study method	Project subject to survey	Date
	<p>G9-2 (A5025 Terrestrial Ecology Factual Report 2014-2016) (Application Reference Number: 6.7.23);</p> <p>G9-3 (A5025 Route Improvement Contract: Preliminary Ecological Appraisal) (Application Reference Number: 6.7.24);</p> <p>G9-6 (A5025 Route Improvement Contract EIA: Hedgerow Survey Results) (Application Reference Number: 6.7.27); and,</p> <p>H9-1 (Parc Cybi - Phase 1 Habitat Survey) (Application Reference Number: 6.8.17).</p>		
Flora	<p>NVC of plant communities according to the assemblages of plant species present, with the aim of determining potentially rare plant communities of importance to the biodiversity and landscape character of the area, using methods taken from Rodwell (2006) [RD16]. Also see appendices D9-8 (National Vegetation Classification Technical Summary Report) (Application Reference Number: 6.4.41) and D9-18 (Ancient Woodland Survey Report) (Application Reference Number: 6.4.51).</p>	<p>Wylfa Newydd Development Area</p>	<p>Recording of rare and notable species of plant has taken place between 2009 and 2015.</p> <p>NVC surveys in targeted locations were undertaken in 2010, and each year between 2012 and 2015.</p>
Fungi	<p>Areas of coastal scrub and grassland, heathland, amenity areas and woodland were surveyed for fungi, as these habitats</p>	<p>Wylfa Newydd Development Area</p>	<p>Scoping surveys were completed in 2012 with targeted surveys carried out in 2013.</p>

Receptor	Baseline study method	Project subject to survey	Date
	are considered to be most likely to support rare and potentially diverse communities. Refer to appendix D9-1 (Application Reference Number: 6.4.34).		Incidental recording was undertaken during 2016.
Lichen	Surveys for lichen within the study area focused on those areas with the potential to support the highest number of species, or where it was most likely that notable species would be found. Refer to appendix D9-2 (Lichen Technical Summary Report) (Application Reference Number: 6.4.35).	Wylfa Newydd Development Area	Scoping surveys were completed in 2012 with targeted surveys carried out in 2013.
Bryophytes	Surveys for bryophytes were completed within the study area in areas thought most likely to support more diverse communities or rare species, and included bare earth on banks of water bodies, the bark of trees, instream rocks, stone walls, outcrops, upper shore rocks and the coastal grassland/littoral zone interface. Refer to appendix D9-3 (Bryophyte Technical Summary Report) (Application Reference Number: 6.4.36).	Wylfa Newydd Development Area	Scoping surveys were completed in 2012 with targeted surveys carried out in 2013.
INNS and protected plant species	Plant species were recorded during Phase 1 Habitat Surveys and NVC surveys. Invasive non-native species of plant were also recorded incidentally during all ecological surveys completed in the	Wylfa Newydd Development Area	Recording of INNS has taken place since 2009.
		Off-Site Power Station Facilities: AECC, ESL	2016

Receptor	Baseline study method	Project subject to survey	Date
	<p>respective study areas. Refer to appendices:</p> <p>D9-7 (Application Reference Number: 6.4.34);</p> <p>E9-1 (Application Reference Number: 6.5.17);</p> <p>F9-1 (Application Reference Number: 6.6.17);</p> <p>F9-2 (Application Reference Number: 6.6.18);</p> <p>G9-2 (Application Reference Number: 6.7.23);</p> <p>H9-1 (Application Reference Number: 6.8.17).</p>	<p>and MEEG (combined site)</p> <p>Park and Ride</p> <p>A5025 Off-line Highway Improvements</p> <p>Logistics Centre</p>	<p>2013 and 2014</p> <p>Surveys undertaken in 2013, 2014, 2015 and 2016.</p> <p>2015</p>
Terrestrial invertebrates	<p>Terrestrial invertebrate surveys have been completed at 17 sites within the Wylfa Newydd Development Area. The sites were chosen based on their potential to support the richest diversity of invertebrates and in areas representative of some of the most common and extensive habitats. Methods used included hand searching, pitfall trapping, pooter (a hand-held device used to collect insects), suction sampling, sweep netting and yellow-bowl trapping. Refer to appendix D9-4 (Terrestrial Invertebrate Technical Summary Report) (Application Reference Number: 6.4.37).</p>	<p>Wylfa Newydd Development Area</p>	<p>Surveys in targeted locations using a combination of methods were completed each year between 2011 and 2014.</p>

Receptor	Baseline study method	Project subject to survey	Date
Amphibians	<p>HSI assessments of all ponds within the study area identified for each site were completed using methods detailed in [RD17]. The HSI scores were used to support assessments of the suitability of ponds to support breeding GCN.</p> <p>All suitable ponds were then surveyed by bottle trapping, torching, egg searching and netting, using methods detailed in [RD18]. These methods are designed to determine the presence of GCN, but are also suitable for recording all other amphibian species.</p> <p>Additional surveys in the form of GCN environmental DNA surveys were also undertaken using methods devised for Natural England [RD19]. Refer to appendices:</p> <p>D9-9 (Great Crested Newt Technical Summary Report) (Application Reference Number: 6.4.42);</p> <p>D9-22 (Great Crested Newt Technical Summary Report 2017) (Application Reference Number: 6.4.55);</p> <p>F9-6 (Dalar Hir Great Crested Newt Report) (Application Reference Number: 6.6.22);</p> <p>G9-2 (Application Reference Number: 6.7.23);</p>	Wylfa Newydd Development Area	<p>A combination of HSI surveys and presence or likely absence surveys took place each year between 2010 and 2014. In 2016, ponds within and around Cae Gwyn SSSI were also surveyed using HSI surveys and presence or likely absence surveys. An area to the east of the study area was resurveyed as part of the baseline data-gathering for determining ecological effects of the improvements to the northern leg of the A5025 during which time the environmental DNA (eDNA) surveys were undertaken.</p> <p>Presence/absence surveys were also completed in 2017.</p>
	Park and Ride	<p>HSI in 2013.</p> <p>Presence/absence surveys in 2014 and 2017.</p>	
	A5025 Off-line Highway Improvements	<p>Presence/absence surveys in 2013 and 2014.</p> <p>eDNA surveys of the northern leg in 2016.</p>	
	Logistics Centre	<p>eDNA surveys undertaken in 2016</p>	

Receptor	Baseline study method	Project subject to survey	Date
	G9-3 (Application Reference Number: 6.7.24); H9-1 (Application Reference Number: 6.8.17).		
Reptiles	Surveys of targeted locations of suitable habitat across the study area using artificial refuge methods taken from the [RD20] and [RD21]. Refer to appendices: D9-10 (Application Reference Number: 6.4.43); E9-1 (Application Reference Number: 6.5.17); F9-7 (Dalar Hir Reptiles Report) (Application Reference Number: 6.6.23); G9-2 (Application Reference Number: 6.7.23); G9-8 (A5025 Route Improvement Contract EIA: Reptile Survey Results) (Application Reference Number: 6.7.29); H9-1 (Application Reference Number: 6.8.17).	Wylfa Newydd Development Area Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site) Park and Ride A5025 Off-line Highway Improvements Logistics Centre	Surveys completed each year between 2010 and 2014. An assessment of habitat suitability was undertaken in 2016. A habitat suitability assessment was undertaken as part of the Extended Phase 1 Habitat Survey in 2016. 2014 2013 A habitat suitability assessment was undertaken as part of the Extended Phase 1 Habitat Survey in 2015.
Breeding birds	Transect surveys and species-specific vantage point surveys took place using methods taken from [RD22]. Building inspections and vantage point surveys for barn owls were also completed according to [RD23] and guidance from [RD24]. Refer to appendices:	Wylfa Newydd Development Area Park and Ride	Surveys completed each year between 2010 and 2015. Barn owl roost assessment of buildings in 2014.

Receptor	Baseline study method	Project subject to survey	Date
	<p>D9-11 (Breeding Bird Technical Summary Report) (Application Reference Number: 6.4.44);</p> <p>D9-12 (Barn Owl Technical Summary Report) (Application Reference Number: 6.4.45);</p> <p>F9-1 (Application Reference Number: 6.6.17);</p> <p>F9-3 (Dalar Hir Bats and Barn Owl Report) (Application Reference Number: 6.6.19);</p> <p>G9-2 (Application Reference Number: 6.7.23);</p> <p>G9-4 A5025 Route Improvement Contract EIA: Breeding Bird Survey Report (Application Reference Number: 6.7.25).</p>	A5025 Off-line Highway Improvements	Breeding bird transect surveys and a barn owl desk study were completed in 2013.
Over-wintering and passage birds	<p>Transect surveys were undertaken using methods adapted from [RD22]. Refer to appendices:</p>	Wylfa Newydd Development Area	Surveys completed during each of the following winter survey seasons: 2009/2010; 2010/2011; 2012/2013; 2013/2014; 2014/2015; and 2016/2017.
	<p>D9-13 (Over-wintering and Passage Bird Technical Summary Report) (Application Reference Number: 6.4.46);</p> <p>F9-3 (Application Reference Number: 6.6.19);</p> <p>G9-9 (A5025 Route Improvement Contract EIA: Winter Bird Survey Results - Winter 2013/2014) (Application Reference Number: 6.7.30).</p>	A5025 Off-line Highway Improvements	2013/2014

Receptor	Baseline study method	Project subject to survey	Date
Chough	Data on chough were gathered during breeding and over-wintering bird surveys together with information supplied by the North Wales chough recorder Adrienne Stratford. Refer to appendix D9-14 (Application Reference Number: 6.4.47).	Wylfa Newydd Development Area	Historic data are available for breeding seasons between 2007 and 2015. Surveys were undertaken each year between 2009 and 2015. Winter surveys were undertaken during 2016/17.
Bats	Surveys have included roost-potential assessments of buildings and trees, hibernation site checks, dusk emergence and dawn re-entry surveys, walked transects and automated static monitoring. All methodologies are taken from the [RD25] and [RD26]. Refer to appendices: D9-5 (Bat Technical Summary Report) (Application Reference Number: 6.4.38); E9-1 (Application Reference Number: 6.5.17); F9-3 (Application Reference Number: 6.6.19); F9-8 (Dalar Hir: Building 12 Bat Survey 2016) (Application Reference Number: 6.6.24); G9-2 (Application Reference Number: 6.7.23); H9-1 (Application Reference Number: 6.8.17).	Wylfa Newydd Development Area	Surveys using a combination of methods were completed each year between 2009 and 2015 in targeted locations.
		Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)	Preliminary roost assessments of trees and buildings in 2016. Emergence/re-entry surveys of buildings at the MEEG site in 2016.
		Park and Ride	Preliminary roost assessment of buildings in 2014. Emergence/re-entry surveys of Building 12 in 2016.
		A5025 Off-line Highway Improvements	Emergence/re-entry survey of buildings in 2014. Hibernation surveys in 2015. Preliminary roost potential surveys of the northern leg in 2016.
		Logistics Centre	Preliminary roost potential surveys in 2015.
Otter	Surveys for otter have been completed in all watercourses within the study areas,	Wylfa Newydd Development Area	Surveys were undertaken each year between 2010 and 2014.

Receptor	Baseline study method	Project subject to survey	Date
	<p>including coastal habitats. The walkover survey methodology was taken from [RD27] and [RD28]. Refer to appendices: D9-6 (Otter and Water Vole Technical Summary Report) (Application Reference Number: 6.4.39); E9-1 (Application Reference Number: 6.5.17); F9-1 (Application Reference Number: 6.6.17); G9-2 (Application Reference Number: 6.7.23); G9-7 (A5025 Route Improvement Contract EIA: Otter & Water Vole Survey Results) (Application Reference Number: 6.7.28); H9-1 (Application Reference Number: 6.8.17).</p>	Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)	Evidence of otter was recorded in 2016 during an Extended Phase 1 Habitat Survey at the AECC and ESL site.
		A5025 Off-line Highway Improvements	2013 and 2014
		Logistics Centre	Undertaken during the Extended Phase 1 Habitat Survey in 2015.
Water vole	<p>Walkover surveys were undertaken for all watercourses within the study areas using the methods outlined by [RD29] and [RD30]. Refer to appendices: D9-6 (Application Reference Number: 6.4.39); E9-1 (Application Reference Number: 6.5.17); F9-5 (Dalar Hir Water Vole Report) (Application Reference Number: 6.6.21);</p>	<p>Wylfa Newydd Development Area</p> <p>Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)</p> <p>Park and Ride</p> <p>A5025 Off-line Highway Improvements</p>	<p>Surveys were undertaken each year between 2009 and 2014.</p> <p>No evidence was recorded in 2016 during an Extended Phase 1 Habitat Survey at the AECC and ESL site. There is limited habitat suitability.</p> <p>2014</p> <p>2013 and 2014</p>

Receptor	Baseline study method	Project subject to survey	Date
	G9-2 (Application Reference Number: 6.7.23); G9-7 (Application Reference Number: 6.7.28); H9-1 (Application Reference Number: 6.8.17).	Logistics Centre	Undertaken during the Extended Phase 1 Habitat Survey in 2015.
Badger	Walkover surveys to assess the presence or absence of badgers within the Order Limits plus a buffer of 30m. Any setts found were classified according to [RD31]. Refer to appendices: E9-1 (Application Reference Number: 6.5.17); F9-1 (Application Reference Number: 6.6.16); G9-2 (Application Reference Number: 6.7.23); and H9-1 (Application Reference Number: 6.8.17).	Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)	Undertaken as part of the Extended Phase 1 Habitat Survey in 2016.
		A5025 Off-line Highway Improvements	2014
		Park and Ride	2014
		Logistics Centre	Undertaken during the Extended Phase 1 Habitat Survey in 2015.
Red squirrel	Transect surveys were completed according to the methods described by [RD32] whereby animals, feeding signs and dreys were recorded. Refer to appendix D9-17 (Red Squirrel Survey Report) (Application Reference Number: 6.4.50).	Wylfa Newydd Development Area	2016.
Brown hare	Walked transect surveys were undertaken twice each season during daylight (autumn	Wylfa Newydd Development Area	2010, 2011 and 2012.

Receptor	Baseline study method	Project subject to survey	Date
	and winter) and dusk using a spotlight (spring and summer). Habitat suitability and quality assessments were also undertaken. Refer to appendix D9-15 (Notable Mammals Technical Summary Report) (Application Reference Number: 6.4.48).		
Harvest mouse	Searches for harvest mouse nests in suitable habitat for the species were undertaken in the autumn. Refer to appendix D9-15 (Application Reference Number: 6.4.48).	Wylfa Newydd Development Area	2010.
Hedgehog	Walked transects, spotlight surveys and footprint tunnel surveys were undertaken. The footprint tunnel surveys were completed as part of a pilot study by The Mammal Society and Nottingham Trent University. Refer to appendix D9-15 (Application Reference Number: 6.4.48).	Wylfa Newydd Development Area	2011.
Polecat	Live trapping surveys and use of passive integrated transponder tags to monitor individual animals within the study area. Refer to appendix D9-15 (Application Reference Number: 6.4.48).	Wylfa Newydd Development Area	Surveys were undertaken each year between 2011 and 2013.
Freshwater habitats	Mapping and recording of watercourses and habitats within the study areas. Assessment of principal habitats of	Wylfa Newydd Development Area	Surveys undertaken between 2011 and 2015.

Receptor	Baseline study method	Project subject to survey	Date
	<p>interest, including flow and substrate form and distribution, bank structure, riparian habitat and surrounding land use. Pond habitat assessments were carried out using Predictive System for Multimetrics [RD33].</p> <p>Refer to appendices</p> <p>D9-16 (Wylfa Freshwater Baseline Surveys 2011 to 2015) (Application Reference Number: 6.4.49);</p> <p>E9-1 (Application Reference Number: 6.5.17);</p> <p>G9-1 (Application Reference Number: 6.7.22).</p>	Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)	2015 and 2016 (excluding pond habitat assessments as no ponds were present)
		Park and Ride	2014
		A5025 Off-line Highway Improvements	2014 and 2015
Diatoms (phytobenthos)	<p>Sampling of biofilm on cobbles and/or plant material. River assessment methods: Phytobenthos – Diatom Assessment for River Ecological Status [RD34]. Refer to appendices:</p> <p>D9-16 (Application Reference Number: 6.4.49);</p> <p>G9-1 (Application Reference Number: 6.7.22).</p>	<p>Wylfa Newydd Development Area</p> <p>A5025 Off-line Highway Improvements</p> <p>Park and Ride</p>	<p>Seasonal surveys undertaken between 2011 and 2015.</p> <p>2014 and 2016</p> <p>2014</p>
Macrophytes	<p>Species cover assessment over a 100m section within all watercourses across the study areas. River assessment methods: Macrophytes [RD35]. Refer to appendices:</p>	<p>Wylfa Newydd Development Area</p> <p>Off-Site Power Station Facilities: AECC, ESL</p>	<p>Surveys in summer between 2012 and 2015.</p> <p>2015 and 2016</p>

Receptor	Baseline study method	Project subject to survey	Date
	D9-16 (Application Reference Number: 6.4.49); G9-1 (A5025 Freshwater Baseline Surveys 2014-2015) (Application Reference Number: 6.7.22).	and MEEG (combined site)	
		Park and Ride	2014
		A5025 Off-line Highway Improvements	2014 and 2016
Macroinvertebrates	Benthic invertebrate fauna were sampled using Water Framework Directive compliant kick sweep sampling [RD36; [RD37] in 2014-2105. Refer to appendices: D9-16 (Application Reference Number: 6.4.49); G9-1 (Application Reference Number: 6.7.22).	Wylfa Newydd Development Area	Seasonal surveys completed each year between 2011 and 2015.
		Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)	2015 and 2016
		Park and Ride	2014
		A5025 Off-line Highway Improvements	2014 and 2015
Fish	One-hundred metre quantitative catch depletion electric fishing or semi-quantitative spot check sampling (areas of low flow or poor stream access). River Assessment Methods: Fish Fauna [RD38] and British Standard BS EN 14011:2003 (2003) [RD39]. Refer to appendices: D9-16 (Application Reference Number: 6.4.49); and G9-1 (Application Reference Number: 6.7.22).	Wylfa Newydd Development Area	Seasonal surveys undertaken between 2011 and 2015.
		Off-Site Power Station Facilities: AECC, ESL and MEEG (combined site)	2015 and 2016
		Park and Ride	2014
		A5025 Off-line Highway Improvements	2014 and 2015

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Assessment of effects

9.4.18 The impact assessment for the Wylfa Newydd Project follows the methodology described in chapter B1 (Application Reference Number: 6.2.1). For terrestrial and freshwater ecology, the assessment was informed by the Guidelines for Ecological Impact Assessment in the United Kingdom [RD11] (henceforth described as the 'CIEEM Guidelines'). It should be noted that, in this assessment, the term 'ecological receptor' is used in preference to 'ecological feature' as is used in the CIEEM Guidelines. This is to provide consistency in terminology between different discipline chapters.

9.4.19 For the A5025 Off-line Highways Improvements, guidance contained within the DMRB Volume 11, Section 3, Part 4 [RD12] and IAN 130/10 [RD13] was also considered.

Value of receptors

9.4.20 The starting point for any assessment of effects is to determine which receptors require assessment, and includes the identification of all potential environmental changes that could affect them. The CIEEM Guidelines recommend, as a minimum, that ecological receptors requiring assessment should meet the following criteria:

- be of sufficient value such that effects upon them may be significant; and
- be potentially vulnerable to significant effects arising from the development.

9.4.21 The topic criteria for determining value are shown in table B9-12. These criteria are adapted from the CIEEM Guidelines, and take into account the following factors: naturalness; rarity; ecosystem function; habitat diversity; connectivity and/or synergistic associations; habitat and species in decline; rich assemblages of plants and animals; and population size and natural range.

9.4.22 It should be noted that, in this assessment, the term 'value' is used in preference to 'importance' as is used in the CIEEM Guidelines. This is to provide consistency in terminology between different discipline chapters.

9.4.23 An assessment of effects was carried out on those receptors determined to be of 'low' value or greater and which were considered to have the potential to be significantly affected by the Wylfa Newydd Project.

Table 9-12 Criteria for determining the value/sensitivity of topic receptors

Value/sensitivity	Topic-specific criteria
High (national/international)	International: European Designated Sites, including SPAs; potential SPAs (pSPAs); SACs; candidate or possible SACs (cSACs or pSACs); and Wetlands of International Importance (Ramsar sites). National: statutory designated sites, including SSSIs; Marine Protected Areas including Marine Conservation Zones; National Nature Reserves; and Local Nature Reserves.

Value/sensitivity	Topic-specific criteria
	<p>National: areas of ancient woodland listed within the Ancient Woodland Inventory [RD40]. Species recorded as 'critically endangered' under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species [RD41].</p> <p>Resident or regularly occurring populations of species which may be considered at an international or national level where either of the following criteria is met:</p> <ul style="list-style-type: none"> • the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale; or • the population forms a critical part of a wider population at this scale.
Medium (county/regional)	<p>Non-statutory designated sites, i.e. Local Wildlife Sites (including proposed candidate Wildlife Sites) designated in the county/regional area context.</p> <p>Areas of key/priority habitats identified in the LBAP.</p> <p>Species or habitats listed in accordance with the requirements of Section 7 of the Environment (Wales) Act 2016.</p> <p>Resident or regularly occurring populations of species which may be considered at a regional or county level where either of the following criteria is met:</p> <ul style="list-style-type: none"> • the loss of these populations would adversely affect the conservation status or distribution of the species at this scale; or • the population forms a critical part of a wider population at this scale.
Low (local)	<p>Receptor is relatively common and widespread but has elevated conservation status, e.g. it is listed in accordance with the requirements of Section 7 of the Environment (Wales) Act 2016, LBAP, Birds of Conservation Concern Red or Amber listed [RD42], Red Data Book listed and/or is legally protected.</p>
Negligible (site)	<p>Receptor is abundant and widespread.</p> <p>Receptor receives no legal protection and is not of elevated conservation concern status.</p>

Magnitude of change

9.4.24 When describing effects on a given receptor, the term 'magnitude of change' is applied and, in accordance with the CIEEM Guidelines, is determined

making reference to the following characteristics, where relevant, to each effect:

- positive or adverse nature of an effect;
- spatial extent over which an effect may occur;
- duration of effect;
- timing in relation to whether an effect occurs at a critical life-stage or season e.g. hibernation;
- frequency that an activity or effect may occur; and
- reversibility: whether recovery is possible within a reasonable timescale.

9.4.25 To provide consistency across chapters, the magnitude of change is divided into four separate categories: large, medium, small and negligible, as per chapter B1 (Application Reference Number: 6.2.1). Table B9-13 provides descriptions of how the above parameters have been used to determine the magnitude of change for each effect.

Table 9-13 Criteria for determining the magnitude of change for topic receptors

Magnitude of change	Topic-specific criteria
Large	The loss of receptor, reduction in quality and integrity of receptor coverage or population; severe damage to key characteristics, features or elements of the receptor; or large-scale or major improvement of receptor quality; extensive restoration or enhancement of the receptor; major improvement of receptor quality.
Medium	The partial loss of receptor, but not adversely affecting its integrity; partial loss of/damage to key characteristics, features or elements of the receptor; or benefit to, or addition of, key characteristics, features or elements; or improvements of receptor quality.
Small	Some measurable change in attributes, quality or vulnerability to the receptor; minor loss of, or alteration to, one (or maybe more) key characteristic, feature or element of the receptor; or minor benefit to, or addition of, one (or maybe more) key characteristic, feature or element of the receptor; some beneficial effect on the receptor or a reduced risk of negative effect occurring.
Negligible	Very minor loss of, or detrimental alteration to, one (or maybe more) characteristic, feature or element of the receptor; or very minor benefit to, or positive addition of, one (or maybe more) characteristic, feature or element of the receptor.

Assessment of significance

- 9.4.26 In accordance with the CIEEM Guidelines, a significant effect is one that either supports or undermines biodiversity and/or conservation objectives for valuable ecological receptors².
- 9.4.27 The assessed degree of significance of effect is a function of a receptor's value and the potential magnitude of change caused by a given effect. In order to determine this, the guidance given in chapter B1 (Application Reference Number: 6.2.1), including the Guide to significance scale (Figure B1-2 in chapter B1), has been used, together with professional judgement³. Only those effects assessed as 'moderate' and 'major' are considered as significant; those assessed as 'negligible' and 'minor' are considered as non-significant effects.
- 9.4.28 In accordance with chapter B1 (Application Reference Number: 6.2.1), the significance of effect is determined with the inclusion of embedded mitigation and good practice mitigation. Embedded mitigation comprises measures that are integral to and are already incorporated within the current design. Good practice mitigation comprises actions that would be undertaken to meet existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.
- 9.4.29 Where the assessment identifies that there are likely to be significant effects, the potential for additional mitigation measures to reduce effects is identified.
- 9.4.30 Any effects identified to be significant following implementation of embedded, good practice, and additional mitigation are referred to as 'residual effects'.

DMRB assessment methodology for the A5025 Highway Improvements

- 9.4.31 The main aspects of the development and design of major highway projects are governed by guidance set out in the DMRB. Guidance on EIA for highway projects is given in Volume 11 of DMRB, with guidance on environmental design and mitigation in Volume 10. In addition, Highways England (formerly the Highways Agency) issues IANs when new guidance emerges which is yet to be incorporated in the DMRB. For some subjects, the guidance within the DMRB has become outdated. In those cases, reference would be made to more up-to-date methodologies that are considered industry best practice.

² Note that terminology has been adapted to comply with the agreed methodology in chapter B1 (Application Reference Number: 6.2.1).

³ CIEEM Guidelines state: "*Whilst these Guidelines look to promote a scientifically rigorous approach, it is important to recognise that Ecological Impact Assessment relies on ecologists using their professional judgement. Judgements should be made on the basis of an objective assessment of the best information available. Good communication between ecologists and other professionals involved in the assessment process, together with proponents and relevant specialists will reduce the risk associated with making such judgements. Where limitations are identified, these should be clearly stated and their implications considered.*"

- 9.4.32 The assessment method for terrestrial and freshwater ecology is broadly based on the approach described in the DMRB Volume 11, Section 3, Part 4 [RD12] and IAN 130/10 [RD13], aligned with the CIEEM Guidelines [RD11].
- 9.4.33 Criteria presented within IAN 130/10 [RD13] have been used in the assessment to establish receptor value, characterise the type of impact, and determine the significance of effect.
- 9.4.34 Receptor value has been assessed at the international, national, regional, county and local level. By way of example, a receptor of international value could be represented by a SAC or SPA. Conversely, a receptor of value at the local level could be represented by a tree protected by a Tree Preservation Order.
- 9.4.35 Impact on receptors have been characterised by describing the probability of occurrence; complexity; extent; size; reversibility; duration; timing; and frequency. In accordance with IAN 130/10 [RD13], impacts have not been ascribed a magnitude rating in this assessment.
- 9.4.36 Significance of effect (either adverse or beneficial) has been rated on a five-point scale of very large–large–moderate–slight–neutral. Evaluation has been based on professional judgement, referencing the value of receptors and the type of impact predicted to occur, and taking into account embedded and good practice mitigation measures.
- 9.4.37 To align this assessment of significance with that described in chapter B1 (Application Reference Number: 6.2.1), only those effects assessed as being ‘moderate’, ‘large’ or ‘very large’ are considered significant. Those assessed as ‘slight’ or ‘neutral’ are considered non-significant effects.
- 9.4.38 The duration of effect applied in the assessment has been defined as being either temporary or permanent, in accordance with IAN130/10 guidance [RD13].

Limitations

- 9.4.39 Any survey of flora and fauna will be unavoidably constrained in a number of respects. In an effort to mitigate those constraints, nationally recognised standard survey methodologies have been used to reduce these limitations for ecological evaluation and assessment.
- 9.4.40 Specific limitations relevant to each survey are detailed in the relevant technical reports (see appendices to chapters: D9, Application Reference Number: 6.4.9; E9, Application Reference Number: 6.5.9; F9, Application Reference Number: 6.6.9; G9, Application Reference Number: 6.7.9; and H9, Application Reference Number: 6.8.9 as detailed in table B9-11). It is not considered that any of these survey-specific constraints represent a significant limitation to adequately assessing the value of receptors for the purposes of undertaking a robust ecological assessment.

9.5 References

Table 9-14 Schedule of references

ID	Reference
RD1	British Ecological Society. 2016. <i>What is ecology?</i> [Online]. [Accessed: May 2017]. Available from: http://www.britishecologicalsociety.org/about/what-is-ecology/ .
RD2	Department of Energy and Climate Change. 2011. <i>Overarching National Policy Statement for Energy (EN-1)</i> . [Online]. [Accessed: February 2016]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf .
RD3	Department of Energy and Climate Change. 2011. <i>National Policy Statement for Nuclear Power Generation (EN-6)</i> . [Online]. [Accessed: February 2016]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47859/2009-nps-for-nuclear-volumel.pdf .
RD4	Welsh Government. 2016. <i>Planning Policy Wales</i> . Edition 9. [Online]. [Accessed: April 2017]. Available from: http://gov.wales/docs/desh/publications/161117planning-policy-wales-edition-9-en.pdf
RD5	Isle of Anglesey County Council. 2014. <i>New Nuclear Build at Wylfa: Supplementary Planning Guidance</i> . [Online]. [Accessed: May 2016]. Available from: http://www.anglesey.gov.uk/download/39341 .
RD6	Welsh Assembly Government. 2009. <i>Technical Advice Note 5: Nature Conservation and Planning</i> . [Online]. [Accessed: May 2016]. Available from: http://gov.wales/docs/desh/policy/100730tan5en.pdf
RD7	Isle of Anglesey County Council and Gwynedd Council. 2017. <i>Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026 - Written Statement</i> . [Online]. [Accessed: August 2017]. Available from: http://www.anglesey.gov.uk/Journals/j/v/e/Anglesey-and-Gwynedd-Joint-Local-Development-Plan---Written-Statement.pdf .
RD8	Isle of Anglesey County Council. 2003. <i>Working for the Wealth of Wildlife: Anglesey's Local Biodiversity Action Plan (LBAP) – B2 Habitat Action Plans (HAPs) and Species Action Plans (SAPs)</i> . [Online]. [Accessed: August 2017]. Available from: http://www.anglesey.gov.uk/planning-and-waste/countryside/biodiversity-and-conservation/what-are-we-doing-to-help-biodiversity-on-anglesey/
RD9	Welsh Assembly Government. 2009. <i>Woodlands for Wales</i> . [Online]. [Accessed: January 2018]. Available from: http://gov.wales/topics/environmentcountryside/forestry/our-strategy/?lang=en .

ID	Reference
RD10	Isle of Anglesey County Council. 2003. <i>Anglesey Tree, Hedgerow and Woodland Strategy</i> . Isle of Anglesey Planning Service, 2003-2008.
RD11	Chartered Institute of Ecology and Environmental Management (CIEEM). 2016. <i>Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal</i> . 2nd Edition. Winchester: Chartered Institute of Ecology and Environmental Management.
RD12	Highways Agency. 1993. <i>Design Manual for Roads and Bridges</i> . Volume 11, Section 3, Part 4. Ecology & Nature Conservation. London: The Stationery Office.
RD13	Highways Agency. 2010. <i>Interim Advice Note (IAN) 130/10. Ecology and Nature Conservation: Criteria for Impact Assessment</i> . London: The Stationery Office.
RD14	Ecology Consulting Ltd. 2012. <i>North Blyth Biomass Project: The Proposed North Blyth Biomass Power Station Order: Habitats Regulations Assessment Report</i> . Document No. 6.2.40. Document Ref: 02377-000743. Appendix 12.1 of Environmental Statement. [Online]. [Accessed: July 2016]. Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010016/EN010016-000206-6.2.40%20Habitats%20regulations%20assessment%20report%20(Appendix%2012.1%20of%20Environmental%20Statement).pdf
RD15	Joint Nature Conservation Committee. 2010. <i>Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit</i> . Peterborough: Joint Nature Conservation Committee.
RD16	Rodwell, J.S. 2006. <i>National Vegetation Classification Users' Handbook</i> . Peterborough: Joint Nature Conservation Committee.
RD17	Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. 2000. Evaluating the suitability of habitat for the great crested newt (<i>Triturus cristatus</i>). <i>Herpetological Journal</i> . 10(4), pp. 135–155.
RD18	English Nature. 2001. <i>Great crested newt mitigation guidelines</i> . Peterborough: English Nature.
RD19	Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R. A., Foster, J., Wilkinson, J., Arnett, A., Williams, P. and Dunn, F. 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 (<i>Triturus cristatus</i>) environmental DNA</i> . Oxford: Freshwater Habitats Trust.

ID	Reference
RD20	Joint Nature Conservation Committee. 2004. <i>Common Standards Monitoring Guidance for Reptiles and Amphibians</i> . Peterborough: Joint Nature Conservation Committee.
RD21	Gent, T. and Gibson, S. 2003. <i>Herpetofauna Workers Manual</i> . Peterborough: Joint Nature Conservation Committee.
RD22	Bibby, C., Burgess, N.D., Hill, D. and Mustoe, S. 2000. <i>Bird Census Techniques</i> . 2nd Edition. London: Academic Press.
RD23	Shawyer, C.R. 2011. <i>Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment. Developing Best Practice in Survey and Reporting</i> . Winchester: IEEM.
RD24	The Barn Owl Trust. 2012. <i>Barn Owl Conservation Handbook</i> . Exeter: Pelagic Publishing.
RD25	Bat Conservation Trust. 2007. <i>Bat Surveys – Good Practice Guidelines</i> . London: Bat Conservation Trust.
RD26	Hundt, L. 2012. <i>Bat Surveys: Good Practice Guidelines</i> . 2nd Edition. London: Bat Conservation Trust.
RD27	Strachan, R. and Jefferies, D.J. 1996. <i>Otter Survey of England 1991–1994</i> . London: Vincent Wildlife Trust.
RD28	Strachan, R. 2015. <i>Otter Survey of Wales 2009–10</i> . [Online]. [Accessed: November 2015]. Available from: http://naturalresources.wales/media/4590/osw-5-english-24-06-2015.pdf .
RD29	Strachan, R. and Moorhouse, T. 2006. <i>Water Vole Conservation Handbook</i> . 2nd Edition. Oxford: WildCru.
RD30	Strachan, R., Moorhouse, T. and Gelling, M. 2011. <i>Water Vole Conservation Handbook</i> . 3rd Edition. Oxford: WildCru.
RD31	Thornton, P. 1988. Density and distribution of badgers in southwest England: a predictive model. <i>Mammal Review</i> . 18, pp. 1–23.
RD32	Gurnell, J., Lurz, P., Macdonald, R. and Pepper, H. 2009. Practical techniques for surveying and monitoring squirrels. Forestry Commission Practice Note. Edinburgh: Forestry Commission.
RD33	Pond Action. 2002. A guide to monitoring the ecological quality of ponds and canals using PSYM. Pond Conservation Trust: Oxford Brookes University.
RD34	Water Framework Directive – United Kingdom Technical Advisory Group (WFD-UKTAG). 2014. <i>Phytobenthos – Diatoms for Assessing River and Lake Ecological Quality (River DARLEQ2)</i> . Stirling: WFD-UKTAG.

ID	Reference
RD35	Water Framework Directive – United Kingdom Technical Advisory Group (WFD-UKTAG). 2014. <i>River Assessment Methods: Macrophytes</i> . Edinburgh: SNIFFER.
RD36	British Standards Institution. 2012. <i>BS EN 10870:2012 Water Quality – Guidelines for the selection of sampling methods & devices for benthic macroinvertebrates in fresh water</i> . London: British Standards Institution.
RD37	Water Framework Directive – United Kingdom Technical Advisory Group (WFD-UKTAG). 2008. <i>River Assessment Methods: benthic invertebrate fauna – River Invertebrate Classification Tool (RICT)</i> . Edinburgh: SNIFFER.
RD38	Water Framework Directive – United Kingdom Technical Advisory Group (WFD-UKTAG). 2008. <i>River Assessment Methods: Fish Fauna – Fisheries Classification Scheme 2 (FCS2)</i> . WFD-UKTAG. Stirling: SNIFFER.
RD39	British Standards Institution. 2003. <i>BS EN 14011:2003 Water Quality – Methods of biological sampling, Sampling of fish with electricity</i> . London: British Standards Institution.
RD40	Forestry Commission. 2016. <i>Forestry Commission: Ancient Woodland Inventory 2011</i> . [Online]. [Accessed: March 2016]. Available from: https://www.forestry.gov.uk/datadownload
RD41	International Union for Conservation of Nature (IUCN). 2015. <i>The IUCN Red List of Threatened Species</i> . Version 20171. [Online]. [Accessed: June 2015]. Available from: http://www.iucnredlist.org
RD42	Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. <i>British Birds</i> . 108, pp. 708–746.

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