HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.2.19 ES Volume B - Introduction to the environmental assessments App B5-2 - Existing Nitrogen and Acid Deposition and Critical Loads at Ecological Receptors for the Wylfa Newydd Project

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1 Introduction

1.1 Overview

1.1.1 The *Air Quality and Modelling Assessment Methodology – Non-Radiological Emissions* report was submitted to Natural Resources Wales (NRW) and the Isle of Anglesey County Council (IACC) in May 2017 [RD1]. The report set out the proposed air quality modelling and assessment methodologies to be used to support the Environmental Impact Assessment and Environmental Permit application processes for the Wylfa Newydd Project. It also specified that a technical note would be produced which would set out a schedule of the ecological sites that would be considered within the air quality assessment.

1.1.2 This technical note provides the schedule of all the ecological receptors included in the air quality assessments supporting the application for development consent for the Wylfa Newydd Project, the Town and Country Planning Act applications and the Environmental Permit application.

1.1.3 It is an update and expansion to the previous technical note that was issued in July 2016 and also includes data for the ecological sites close to the affected road network and in the vicinity of the proposed Park and Ride. It also includes some changes to take account of NRW responses to the initial technical note and subsequent consultation. A summary of these changes is provided in section 1.3.

1.2 Scope

1.2.1 This report specifies the existing deposition and proposed critical loads for agreement with NRW and the IACC for use in the dispersion modelling assessments of emission sources within the Wylfa Newydd Development Area, Park and Ride, Logistics Centre and from vehicle emissions on the road network. The note addresses the following ecological receptor designations that are within the relevant assessment study areas.

- Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), which are protected at a European level under the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC) respectively, collectively referred to as ‘Natura 2000’ sites. A candidate SAC (cSAC) is also considered within this assessment.
- Ramsar sites, comprising wetlands of international importance.
- Sites of Special Scientific Interest (SSSIs), which are protected by national legislation.
- Wildlife Sites and Ancient Woodlands.

1.2.2 There are a number of Wildlife Sites on Anglesey and in the vicinity of the Wylfa Newydd Development Area. The Wildlife Sites have been identified within the Joint Local Development Plan [RD2]. No local or national nature

reserves were identified within the relevant study areas on the Isle of Anglesey.

1.2.3 A technical note titled *Extent of study area and receptor selection for the assessment of air quality* was issued in 2017 [RD3]. This note specifies the study areas for the assessment of emissions from road traffic (on the Isle of Anglesey and on mainland Wales), construction plant, machinery and marine vessels and operational combustion plant. These are discussed further in section 2.

1.3 Summary of changes

1.3.1 The following updates have been made to this technical note following comments received from NRW and expansion of the note to include ecological receptors close to the road network and other sites associated with the Wylfa Newydd Project.

- The study area for SACs, SPAs and Ramsar sites was extended to 15km from the boundary of the Wylfa Newydd Development Area for the assessment of emissions from construction plant, machinery and marine vessels and combustion plant associated with the operation of the Power Station.
- Ecological receptors within the anticipated road traffic emissions study areas on both the Isle of Anglesey and mainland Wales were included.
- Ecological receptors within the study area for the Park and Ride and affected road network associated with vehicle movements to and from the Logistics Centre were included.
- A map of all the ecological receptors included in the assessments on the Isle of Anglesey and mainland Wales has been included.
- The existing deposition at all ecological receptors has been updated following an update to the information available on the Air Pollution Information System (APIS) website [RD4].
- The nitrogen deposition critical loads for the SACs, SPAs, Ramsar sites and SSSIs have been updated based on data provided by NRW.
- The acid deposition critical loads for the SACs, SPAs, Ramsar sites and SSSIs have been reviewed to include the main site features and not the complimentary habitats.

1.4 Terms and definitions

Term	Definition
Acid deposition rate (keq/ha/year)	Kilo equivalents per hectare per year. The rate at which acids or acidic compounds accumulate on a surface as a result of their separation from

Term	Definition
	the atmosphere. The principal unit of measurement of acid deposition is kilo equivalents per hectare per year.
Air Pollution Information System (APIS)	The APIS site managed by the Centre for Ecology and Hydrology provides a searchable database and information on pollutants and their impacts on habitats and species.
Associated Development	Works included in the DCO which facilitate the delivery of the NSIP, and which include: the Site Campus; Park and Ride; Logistics Centre; and the A5025 Off-line Highway Improvements.
Birds Directive	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
Candidate Special Area of Conservation (cSAC)	A site that has been submitted to the European Commission to be considered for designation under the Habitats Directive but which has not yet been formally designated.
Critical load	A quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge. This is used to assess the modelled nitrogen and acid deposition at ecological receptors.
Deposition	The vertical passage of a substance (e.g. dust) from the ambient air to a surface or the ground.
Dispersion modelling	The mathematical simulation of how air pollutants disperse in the ambient atmosphere. A dispersion model is used to estimate or predict the downwind concentration of air

Term	Definition
	pollutants emitted from sources such as industrial facilities or road traffic.
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
Isle of Anglesey County Council (IACC)	The local authority governing the area within which the Wylfa Newydd Project is intended to be constructed.
Natural Resources Wales (NRW)	The public body whose stated purpose is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future.
Nitrogen deposition rate (kgN/ha/year)	The rate at which nitrogen accumulates on a surface as a result of separation from the atmosphere. The principal unit of measurement of nitrogen deposition is kilograms of nitrogen per hectare per year.
Power Station	The proposed new nuclear power station at Wylfa, including two UK Advanced Boiling Water Reactors, the Cooling Water System, supporting facilities, buildings, plant and structures, radioactive waste and spent fuel storage buildings and the Grid Connection.
Site of Special Scientific Interest (SSSI)	A site designated as being of special interest for its flora, fauna or geological or physiographical features and protected under the Wildlife and Countryside Act 1981.
Special Area of Conservation (SAC)	An area which has been identified as being important for a range of vulnerable habitats, plant and animal species within the European Union and are designated under the Habitats Directive.
Special Protection Area (SPA)	A site designated under the Birds Directive due to their international importance for the breeding, feeding,

Term	Definition
	wintering, or the migration of rare and vulnerable species of birds.
Wildlife Site	A non-statutory designated site of nature conservation interest.
Wylfa Newydd Development Area	The indicative areas of land and sea, including the Power Station Site and the surrounding areas that would be used for the construction and operation of the WNDA Development.
Wylfa Newydd Project	The Wylfa Newydd Project, the Licensable Marine Activities and the Enabling Works.
Wylfa Newydd Project	The elements of the Wylfa Newydd Project for which consent is being sought through the DCO comprising the construction and operation of the Power Station, other on-site development, the Marine Works, the Off-Site Power Station Facilities and the Associated Development.

2 Ecological receptors

2.1 Summary of study areas

2.1.1 A summary of the ecological receptor study areas for the various assessments is provided below.

- The construction plant, machinery and marine vessel emissions and the operational combustion plant emissions study areas include all ecological receptors within 2km of the Wylfa Newydd Development Area and European Designated Sites (SAC, SPA and Ramsar sites) up to 15km from the Wylfa Newydd Development Area.
- For emissions from the Park and Ride, the assessment includes ecological receptors within 2km of the site boundary.
- The Isle of Anglesey road traffic emissions study area includes SACs, SPAs, SSSIs, Ancient Woodlands and Wildlife Sites within 200m of the affected roads, including within 200m of the Logistics Centre.
- The mainland Wales study area includes all SAC, SPA and SSSI within 200m of the A55 (the only affected road on mainland Wales). Based on the available Wylfa Newydd Project traffic flow data, the study area was assumed to extend as far east as the junction of the A55 with the A494, west of Chester.

2.2 Identified ecological receptors

Wylfa Newydd Development Area

2.2.2 The ecological receptors within the 2km and 15km study areas of the Wylfa Newydd Development Area are set out in table 2-1 and shown in figure 7-1. Figure 7-2 shows those ecological receptors within 2km of the Wylfa Newydd Development Area.

Table 2-1 Ecological receptors included in the air quality assessment – Wylfa Newydd Development Area

Ecological site/designations	Approximate distance and direction from nearest part of the Wylfa Newydd Development Area
SSSI, SPA, SAC and Ramsar sites within 2km	
Anglesey Terns / Morwenoliaid Ynys Môn SPA	The marine section of the SPA is along the northern coast adjacent to the Wylfa Newydd Development Area and is below the mean high water line. The marine section of the SPA is therefore not sensitive to air pollution and nitrogen or acid

Ecological site/designations	Approximate distance and direction from nearest part of the Wylfa Newydd Development Area
	deposition. The Cemlyn Bay section of the Anglesey Terns SPA, which contains terrestrial habitats, is 110m to the west of the nearest part of the Wylfa Newydd Development Area.
Anglesey Marine cSAC	The cSAC is along the northern coast adjacent to the Wylfa Newydd Development Area and is below the mean high water line. The cSAC is therefore not sensitive to air pollution and nitrogen or acid deposition.
Cemlyn Bay SAC/SSSI	110m to the west
Cae Gwyn SSSI	Adjacent to the Wylfa Newydd Development Area
Llyn Llygeirian SSSI	1.5km to the south
Tre'r Gof SSSI	Within the Wylfa Newydd Development Area.
European Designated Sites (SPA, SAC and Ramsar sites) between 2km and 15km	
Holy Island Coast SPA and SAC	13km to the southwest
Llyn Dinam SAC	14.4km to the south-southwest
Anglesey Fens SAC	14km to the southeast
Anglesey and Llyn Fens Ramsar	14km to the southeast
Liverpool Bay SPA	11.3km to the east – entirely aquatic and covered by water so not sensitive to air pollution and nitrogen or acid deposition.
Wildlife Sites within 2km	
Afon Wygyr	520m to the southeast
Arfordir Mynydd y Wylfa - Trwyn Penrhyn (Wylfa Head)	Within the Wylfa Newydd Development Area
Arfordir Trwyn y Buarth – Porth Wen	0.9km to the northeast
Cors Cae-Owen	1.6km to the east-northeast
Cors Cromlech	0.7km to the east-southeast

Ecological site/designations	Approximate distance and direction from nearest part of the Wylfa Newydd Development Area
Cors Mynachdy	1.9km to the west-southwest
Rhostir Mynydd Mechell	1.6km to the south-southeast
Tir Gwlyb Teilia Neuadd	1.7km to the east-northeast
Trwyn Pencarreg	40m to the southwest at its nearest point
Ancient Woodlands within 2km	
Ancient Woodland (ID 26076)	750m to the east-southeast
Ancient Woodland (ID 26058)	1km to the east-southeast
Ancient Woodland (ID 26074)	1.3km to the southeast
Ancient Woodland (ID 26057)	1.5km to the southeast
Ancient Woodland (ID 26073)	1.6km to the southeast
Ancient Woodland (ID 26072)	2km to the south-southeast
Ancient Woodland (ID 26053)	2km to the south-southeast
Ancient Woodland (ID 26051)	1.1km to the south-southwest
Ancient Woodland (ID 26052)	1.8km to the southwest
Ancient Woodland (ID 26054)	1.6km to the southwest
Ancient Woodland (ID 26055)	1.5km to the southwest
Ancient Woodland (ID 26056)	1.7km to the west-southwest
Ancient Woodland (ID 26060)	Within the Wylfa Newydd Development Area

Affected roads – Isle of Anglesey

2.2.3 The ecological receptors within the 200m of the affected road network on the Isle of Anglesey are set out in table 2-2 and shown in figure 7-1.

Table 2-2 Ecological receptors within 200m of the affected roads – Isle of Anglesey study area

Ecological sites/designations	Approximate distance and direction from affected roads
A5025	
Beddmanarch-Cymyran SSSI	Approximately 60m to the west of the A5025 where the A5025 crosses the

Ecological sites/designations	Approximate distance and direction from affected roads
	Afon Alaw on the southern edge of Llanfachraeth.
Afon Wygyr Wildlife Site	Approximately 10m to the south of the A5025 south of the village of Cemaes.
Ancient Woodland (26051)	Approximately 10m to the east of the A5025 at Cefn Coch.
Ancient Woodland (26076)	Approximately 140m to the southeast of the A5025 at Cemaes.
A55	
Beddmanarch-Cymyran SSSI	Adjacent to the north and south of the A55 where the A55 crosses Afon Crigyll (between Junction 2 and Junction 3).
Glannau Porthaethwy SSSI	Adjacent to the A55 eastbound carriageway on the Britannia Bridge. Road elevated above SSSI at this location (approximately 30m to 40m). The majority of the site is regularly covered by the tide and vegetation not considered to be sensitive to changes in air pollution or deposition of nitrogen and acid.
Malltraeth Marsh SSSI	45m to the south of the A55 to the east of Junction 6 at its nearest point.
Menai Strait and Conwy Bay SAC	Adjacent to the A55 eastbound carriageway on the Britannia Bridge. Road elevated above SAC at this location (approximately 30m to 40m). Designated site is below the mean high water line, regularly inundated with sea water and not sensitive to changes in air pollution or deposition of nitrogen and acid.
Cae Barcdy Wildlife Site	200m to the south of the A55 southwest of Junction 3 of the A55.
Gwely Cyrs Caergeiliog Wildlife Site	Adjacent to Junction 3 of the A55.
Cors Tafarn-y-Grib Wildlife Site	150m to the north of the A55, west of Gwalchmai.

Ecological sites/designations	Approximate distance and direction from affected roads
Cors Hendre Fawr Wildlife Site	Adjacent to the eastbound carriageway east of Gwalchmai to the west of Junction 6.
Cors Tregarnedd Fawr Wildlife Site	Adjacent to the east and westbound carriageway to the east of Junction 6.
Coed Braint Siglen Dyfnia Wildlife Site	180m to the north of the A55 at Llanfair Pwllgwyngyll.
Ancient Woodland (25883)	Adjacent to the eastbound carriageway between Junction 6 and Junction 7.
Ancient Woodland (25882)	Adjacent to the westbound carriageway between Junction 6 and Junction 7.
Ancient Woodland (26066)	Adjacent to the westbound carriageway east of Junction 2.
Ancient Woodland (43665)	Adjacent to the eastbound carriageway east of Junction 2.
Ancient Woodland (26037)	Adjacent to the eastbound carriageway east of Junction 2.
Ancient Woodland (26067)	Adjacent to the eastbound carriageway east of Junction 2.
Ancient Woodland (25084)	Adjacent to the westbound carriageway west of Junction 8.
Ancient Woodland (25083)	Adjacent to the westbound carriageway east of Junction 8a.
Ancient Woodland (25087)	Adjacent to the eastbound carriageway west of Junction 8.
Ancient Woodland (43393)	Adjacent to the eastbound carriageway west of Junction 8.
Ancient Woodland (24252)	Adjacent to the eastbound carriageway west of Junction 8.

Affected roads – mainland Wales

2.2.4 The ecological receptors within the 200m of the affected road network on mainland Wales are set out in table 2-3 and shown in figure 7-3.

Table 2-3 Ecological receptors within 200m of the affected roads – mainland Wales study area

Ecological sites/designations	Approximate distance and direction from affected roads
Coedydd Afon Menai SSSI	Adjacent to the A55 eastbound carriageway on the Britannia Bridge. Road elevated above SSSI at this location (approximately 30m to 40m).
Menai Strait and Conwy Bay SAC	25m from the A55 at the closest point near Llanfairfechan. Designated habitats are below the mean high water line, regularly inundated with sea water and not sensitive to changes in air pollution or deposition of nitrogen and acid.
Liverpool Bay SPA	
Traeth Lafan/Lafan Sands, Conway Bay SPA and Traeth Lafan SSSI	
Coedydd Aber SAC/SSSI	45m to the south of the A55 east of Junction 13 of the A55 at Abergwyngregyn.
Aber Afon Conwy SSSI	Adjacent to the northern edge of the A55 at its closest point at Penmaen-bach Point to the west of Conwy. Habitat features are generally not sensitive to changes in air pollution or deposition of nitrogen and acid or are greater than 200m from the A55.
Sychnant Pass SSSI	120m to the south of the A55 close to Junction 16a, west of Conwy.
Traeth Pensarn SSSI	90m to the north of the A55 at Junction 23a north of Abergele.
Halkyn Mountain SAC and Halkyn Common and Holywell Grasslands SSSI	10m from the east and westbound carriageway of the A55 at its closest point east of Junction 31.
Llanddulas Limestone and Gwrych Castle Wood SSSI	180m to the south of the A55 at Junction 23a west of Llanddulas.

Park and Ride

2.2.5 The ecological receptors within the 2km of the Park and Ride facility are set out in table 2-4 and shown in figure 7-1.

Table 2-4 Ecological receptors included in the air quality assessment for the Park and Ride

Ecological site/designations	Approximate distance and direction from the Park and Ride
SSSI, SAC and Wildlife Sites within 2km	
Llyn Dinam SAC	1.2km to the southwest
Llynnau Y Fali SSSI	1.2km to the southwest
Llyn Traffwll SSSI	830m to the south
Cors Plas Wildlife Site	1.2km to the southeast
Rhostir a Phwll Caergeiliog Wildlife Site	1.6km to the west

3 Existing deposition

3.1 Data source

3.1.1 The APIS website [RD4] provides the existing deposition rates of nutrient nitrogen and acid deposition which will be used in the assessment of deposition at the sensitive ecological receptors. This is the standard approach used for determining the nutrient nitrogen and acid deposition for use in air quality modelling and assessments for planning and permitting applications.

3.1.2 The existing nutrient nitrogen and acid deposition is calculated on a 5km x 5km grid square basis across the UK. This is carried out using the Concentration Based Estimated Deposition approach which is based on measured–interpolated data for a three-year average between 2013 and 2015. The existing deposition levels for each specific ecological site were obtained from the APIS website using the 'site relevant critical loads' function. Where this function was not available, for example for locally designated sites, the 'search by location' function on the APIS website was used, specifying the location of each specific ecological site.

3.1.3 Deposition rates of nitrogen and acid vary based on whether they are depositing on short or tall vegetation. Where an ecological receptor contained habitat types representing both tall and short vegetation, existing deposition rates and critical load values were obtained for each of these separately. These are referred to as 'tall' vegetation (such as trees and hedges) and 'short' vegetation (such as grasses and forbs) in this technical note.

3.2 Existing deposition rates

Main site

3.2.2 The existing nitrogen and acid deposition levels identified for the ecological receptors included in the air quality assessment are displayed in table 3-1.

Table 3-1 Existing deposition at ecological sites within 15km (European Designated Sites) and 2km (all other ecological sites) of the Wylfa Newydd Development Area

Ecological sites	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)[1]		Existing nutrient nitrogen deposition (kgN/ha/year)[2]
		Nitrogen	Sulphur	
SACs, SPAs and Ramsar sites within 15km and SSSIs within 2km				
Anglesey and Llyn Fens SAC and Ramsar	Short	1.03	0.17	14.42
Cae Gwyn SSSI	Short	0.71	0.14	9.94
Cemlyn Bay SSSI, SAC and the Cemlyn Bay section of the Anglesey Terns / Morwenoliaid Ynys Môn SPA	Short	0.71	0.14	9.94
Holy Island Coast SSSI, SAC and SPA	Short	0.58	0.13	8.12
Llyn Dinam SAC	Short	0.87	0.15	12.18
Llyn Llygeirian SSSI	Short	0.93	0.14	13.02
Tre'r Gof SSSI	Short	0.93	0.17	13.02
Wildlife Sites within 2km				
Afon Wygyr	Short	0.93	0.17	13.02
	Tall	1.46	0.20	20.44
Arfordir Mynydd y Wylfa - Trwyn Penrhyn (Wylfa Head)	Short	0.93	0.17	13.02

[1] Keq/ha/year = Kilo equivalents per hectare per year (the principal unit of measurement of acid deposition).

[2] KgN/ha/year = Kilograms of nitrogen per hectare per year (the principal unit of measurement of nitrogen deposition).

Ecological sites	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)[1]		Existing nutrient nitrogen deposition (kgN/ha/year)[2]
		Nitrogen	Sulphur	
Arfordir Trwyn y Buarth – Porth Wen	Short	0.93	0.17	13.02
Cors Cae-Owen	Short	0.93	0.17	13.02
	Tall	1.46	0.20	20.44
Cors Cromlech	Short	0.93	0.17	13.02
Cors Mynachdy	Short	0.71	0.14	9.94
Rhostir Mynydd Mechell	Short	0.93	0.17	13.02
Tir Gwlyb Teilia Neuadd	Short	0.93	0.17	13.02
	Tall	1.46	0.20	20.44
Trwyn Pencarreg	Short	0.71	0.14	9.94
Ancient Woodlands within 2 km				
Ancient Woodland (ID 26076)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26058)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26074)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26057)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26073)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26072)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26053)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26051)	Tall	1.14	0.18	15.96
Ancient Woodland (ID 26052)	Tall	1.14	0.18	15.96

Ecological sites	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)[1]		Existing nutrient nitrogen deposition (kgN/ha/year)[2]
		Nitrogen	Sulphur	
Ancient Woodland (ID 26054)	Tall	1.14	0.18	15.96
Ancient Woodland (ID 26055)	Tall	1.14	0.18	15.96
Ancient Woodland (ID 26056)	Tall	1.14	0.18	15.96
Ancient Woodland (ID 26060)	Tall	1.46	0.20	20.44

Affected roads – Isle of Anglesey

3.2.3 The existing nitrogen and acid deposition rates identified for the assessed ecological receptors in the vicinity of the affected road network on the Isle of Anglesey are displayed in 3-2.

Table 3-2 Existing deposition at ecological sites within 200m of the affected road network on the Isle of Anglesey

Ecological site	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)		Existing nutrient nitrogen deposition (kgN/ha/year)
		Nitrogen	Sulphur	
SSSI, Wildlife Sites and Ancient Woodlands within 200m				
Beddmanarch-Cymyran SSSI (A5025)	Short	0.94	0.14	13.16
Beddmanarch-Cymyran SSSI (A55)	Short	0.66	0.14	9.24
Malltraeth Marsh SSSI	Short	1.03	0.18	14.42
Glannau Porthaethwy SSSI	Short	1.41	0.18	19.74
Afon Wygyr Wildlife Site	Short	0.93	0.17	13.02
	Tall	1.46	0.20	20.44
Gwely Cyrs Caergeiliog Wildlife Site	Short	0.87	0.15	12.18
	Tall	1.4	0.18	19.60

Ecological site	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)		Existing nutrient nitrogen deposition (kgN/ha/year)
		Nitrogen	Sulphur	
Cors Tregarnedd Fawr Wildlife Site	Short	1.03	0.18	14.42
	Tall	1.66	0.21	23.24
Cors Tafarn-y-Grib Wildlife Site	Short	1.07	0.15	14.98
	Tall	1.74	0.19	24.36
Cors Hendre Fawr Wildlife Site	Short	1.08	0.16	15.12
	Tall	1.72	0.20	24.08
Coed Brain Siglen Dyfnia Wildlife Site	Short	1.41	0.18	19.74
	Tall	2.27	0.21	31.78
Cae Barcdy Wildlife Site	Short	0.66	0.14	9.24
	Tall	1.07	0.17	14.98
Ancient Woodland (ID 25883)	Tall	1.66	0.21	23.24
Ancient Woodland (ID 25882)	Tall	1.66	0.21	23.24
Ancient Woodland (ID 26051)	Tall	1.14	0.18	15.96
Ancient Woodland (ID 26076)	Tall	1.46	0.20	20.44
Ancient Woodland (ID 26066)	Tall	0.95	0.16	13.30
Ancient Woodland (ID 43665)	Tall	0.95	0.16	13.30
Ancient Woodland (ID 26037)	Tall	0.95	0.16	13.30
Ancient Woodland (ID 26067)	Tall	0.95	0.16	13.30
Ancient Woodland (ID 25084)	Tall	2.27	0.21	31.78
Ancient Woodland (ID 25083)	Tall	2.27	0.21	31.78
Ancient Woodland (ID 25087)	Tall	2.27	0.21	31.78

Ecological site	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)		Existing nutrient nitrogen deposition (kgN/ha/year)
		Nitrogen	Sulphur	
Ancient Woodland (ID 43393)	Tall	2.27	0.21	31.78
Ancient Woodland (ID 24252)	Tall	2.27	0.21	31.78

Affected roads – mainland Wales

3.2.4 The existing nitrogen and acid deposition rates identified for the assessed ecological receptors close to the affected road network on mainland Wales are displayed in table 3-3.

Table 3-3 Existing deposition at ecological sites within 200m of the affected road network on mainland Wales

Ecological site	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)		Existing nutrient nitrogen deposition (kgN/ha/year)
		Nitrogen	Sulphur	
SAC, SPA and SSSI within 200m				
Coedydd Afon Menai SSSI	Tall	2.27	0.21	31.80
Coedydd Aber SAC and SSSI	Tall	1.70	0.38	23.80
Sychant Pass SSSI	Short	0.95	0.26	13.30
Traeth Pensarn SSSI	Short	1.03	0.23	14.42
Halkyn Mountain SAC and Halkyn Common and Holywell Grasslands SSSI	Short	1.25	0.21	17.50
Llanddulas Limestone and Gwrych Castle Wood SSSI	Tall	1.57	0.26	21.98

Park and Ride

3.2.5 The existing nitrogen and acid deposition rates identified for the assessed ecological receptors in the vicinity of the Park and Ride are displayed in table 3-4.

Table 3-4 Existing deposition at ecological sites within 2km of the Park and Ride

Ecological site	Vegetation type (for deposition velocity)	Existing acid deposition (keq/ha/year)		Existing nutrient nitrogen deposition (kgN/ha/year)
		Nitrogen	Sulphur	
SSSI, SAC and Wildlife Site within 2km				
Llyn Traffwll SSSI	Short	0.87	0.15	12.18
Llynnau Y Fali SSSI	Short	0.87	0.15	12.18
Llyn Dinam SAC	Short	0.87	0.15	12.18
Rhostir a Phwll Caergeiliog Wildlife Site	Short	0.87	0.15	12.18
	Tall	1.40	0.18	19.60
Cors Plas Wildlife Site	Short	0.87	0.15	12.18
	Tall	1.40	0.18	19.60

4 Critical loads

4.1 Data source

4.1.1 This section sets out the selection process for the critical loads at the ecological receptors to be used as part of the air quality assessments for the Wylfa Newydd Project.

4.1.2 The critical loads for nutrient nitrogen deposition for the SACs, SPAs, Ramsar sites and SSSIs included in the assessment were provided by NRW [RD5][3]. The information provided by NRW is reproduced in annex 1. The selection of the acid deposition critical load for all ecological receptors, and the nutrient nitrogen deposition critical loads for Wildlife Sites and Ancient Woodlands were based on identifying the vegetation or habitat types present at each site using the 'site relevant critical loads' function on the APIS website [RD4]. This tool provides a list of the habitat interest features that are present at each designated ecological receptor. It then lists all the specific priority habitats within that habitat interest feature regardless of whether they are present at the designated site or not. Where relevant, the qualifying features identified in the citations were selected from this list of priority habitats and the lowest critical load (i.e. the most stringent) from those priority habitats actually present at the site was used for the assessment. Where it was not possible to select specific priority habitats listed for each interest feature, the lowest critical load for any of the specific priority habitats listed under each habitat interest feature present at the site was used for the assessment. The critical loads for acid deposition for the various habitat types/critical load classes at the SACs, SPAs, Ramsar sites and SSSIs are provided in annex 2. The critical loads for acid deposition for the habitat types present at the Wildlife Sites is provided in annex 3.

4.1.3 For Ancient Woodlands and Wildlife Sites, the 'search by location' function was used to determine the critical loads for these ecological sites, and the specific habitat features present at each site were selected on the APIS website [RD4]. For nitrogen deposition, it was assumed that the lowest nitrogen critical load of any of the tree/woodland habitat types (coniferous woodland) was applicable, as a conservative approach. This was a value of 5–10kg/ha/year. The acid critical loads were based on the critical load class of "*Broadleafed/Coniferous unmanaged woodland*" which applies for all of the woodland types listed on the 'search by location' function.

4.1.4 For nitrogen deposition, the critical loads are provided as a range, and it is accepted good practice to initially apply the lower end of the range in the

[3] The advice on the Critical Loads were provided on 1/8/2016 (for the initial list of SSSI/SAC/SPA/Ramsar protected sites provided by Jacobs), on 1/12/2016 (for the rest of the protected sites on Anglesey) and on 17/2/2017 (for the list of protected sites on the mainland). This clarification should be provided as Jacobs/Horizon should be using the latest information for their submissions. The APIS website, which NRW has used in identifying the relevant Critical Loads, is being kept updated. When updated, NRW may need to review its advice on the Critical Loads identified. Please note, NRW is not aware of any imminent plans to update the relevant info on APIS.

determination of the potential significance of the predicted increase. For acid deposition, it is more complex as the critical load is made up of a number of values that represent a critical load function, based on the nitrogen and sulphur-derived acid deposition. There are specific rules on how this critical load function should be applied, and a 'Critical Load Function Tool' is provided on the APIS website to assist with the calculations and presentation of the results [RD4]. These would be used for the assessment.

4.2 Critical loads

WNDA Development

4.2.2 The nitrogen and acid deposition critical loads identified for the ecological receptors are displayed in table 4-1.

Table 4-1 Critical loads at ecological sites within 15km (European Designated Sites) and 2km (all other ecological sites) of the Wylfa Newydd Development Area

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
SACs, SPAs and Ramsar sites within 15km and SSSIs within 2km					
Anglesey and Llyn Fens SAC and Ramsar	Short	10	0.44	4.28	4.60
Cae Gwyn SSSI	Short	10	0.22	1.01	0.79

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Cemlyn Bay SSSI, SAC and the Cemlyn Bay section of the Anglesey Terns / Morwenoliaid Ynys Môn SPA	Short	20[4]	0.22[5]	1.01[5]	0.79[5]
Holy Island Coast SSSI, SAC and SPA	Short	10	0.44	1.97	1.53
Llyn Dinam SAC	Short	10	0.32	0.50	0.18
Wildlife Sites within 2km					
Afon Wygyr	Short	10	0.44	1.99	1.55
	Tall	10	0.36	2.77	2.42
Arfordir Mynydd y Wylfa - Trwyn Penrhyn (Wylfa Head)	Short	10	0.22	1.02	0.80

[4] Subsequent to the advice on nitrogen deposition critical loads provided by NRW [RD5] which advised use of 8 kgN/ha/year in the absence of a defined critical load for 'perennial vegetation of stony banks', a report produced by the Centre for Ecology and Hydrology (CEH) on behalf of Horizon [RD6] concluded that the lowest critical load for any vegetation within Cemlyn Bay SSSI and SAC is 20 kgN/ha/year.

[5] The report produced by CEH on behalf of Horizon [RD6] concluded that the Cemlyn Bay SSSI/SAC is not expected to be sensitive to acid deposition. However, the acid critical loads were applied in the assessment as a conservative approach in order to indicate where the CEH report should be taken into account in further consideration of predicted acid deposition rates.

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Arfordir Trwyn y Buarth – Porth Wen	Short	10	0.33	1.50	1.17
Cors Cae-Owen	Short	10	0.22	1.02	0.80
	Tall	10	0.14	1.55	1.41
Cors Cromlech	Short	10	0.44	1.99	1.55
Cors Mynachdy	Short	10	0.44	1.99	1.55
Rhostir Mynydd Mechell	Short	10	0.44	1.99	1.55
Tir Gwlyb Teilia Neuadd	Short	10	0.22	1.02	0.80
	Tall	10	0.14	1.55	1.41
Trwyn Pencarreg	Short	10	0.22	1.01	0.79
Ancient Woodlands within 2km					
Ancient Woodland (ID 26076)	Tall	5	0.36	2.77	2.42
Ancient Woodland (ID 26058)	Tall	5	0.36	2.78	2.42
Ancient Woodland (ID 26074)	Tall	5	0.36	2.78	2.42

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Ancient Woodland (ID 26057)	Tall	5	0.36	2.78	2.42
Ancient Woodland (ID 26073)	Tall	5	0.36	2.78	2.42
Ancient Woodland (ID 26072)	Tall	5	0.36	2.78	2.42
Ancient Woodland (ID 26053)	Tall	5	0.36	2.78	2.42
Ancient Woodland (ID 26051)	Tall	5	0.36	2.74	2.38
Ancient Woodland (ID 26052)	Tall	5	0.14	1.52	1.38
Ancient Woodland (ID 26054)	Tall	5	0.36	2.74	2.38
Ancient Woodland (ID 26055)	Tall	5	0.36	2.74	2.38
Ancient Woodland (ID 26056)	Tall	5	0.14	1.51	1.37

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Ancient Woodland (ID 26060)	Tall	5	0.14	1.55	1.41

Affected roads – Isle of Anglesey

4.2.3 The nitrogen and acid deposition critical loads identified for the assessed ecological receptors close to the affected road network on the Isle of Anglesey are displayed in table 4-2.

Table 4-2 Critical loads at ecological sites within 200m of the affected road network on the Isle of Anglesey

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Beddmanarch-Cymyran SSSI (A5025)	Short	10	0.71	2.25	1.54
Beddmanarch-Cymyran SSSI (A55)	Short	10	0.71	2.25	1.54

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Malltraeth Marsh SSSI	Short	15	0.44	1.24	0.8
Afon Wygyr Wildlife Site	Short	10	0.44	1.99	1.55
	Tall	10	0.36	2.77	2.42
Gwely Cyrs Caergeiliog Wildlife Site	Short	10	0.32	0.50	0.18
	Tall	10	0.36	2.72	2.37
Cors Tregarnedd Fawr Wildlife Site	Short	10	0.32	0.56	0.23
	Tall	10	0.36	2.82	2.46
Cors Tafarn-y-Grib Wildlife Site	Short	10	0.32	0.53	0.21
	Tall	10	0.14	1.54	1.4
Cors Hendre Fawr Wildlife Site	Short	10	0.44	1.99	1.55
	Tall	10	0.36	2.78	2.42
Coed Brain Siglen Dyfnia Wildlife Site	Short	10	0.32	0.59	0.27
	Tall	10	0.14	1.64	1.5
Cae Barcdy Wildlife Site	Short	10	0.44	1.98	1.54
	Tall	10	0.36	2.71	2.35
Ancient Woodland (ID 25883)	Tall	5	0.14	1.60	1.46
Ancient Woodland (ID 25882)	Tall	5	0.14	1.60	1.46
Ancient Woodland (ID 26051)	Tall	5	0.36	2.74	2.38

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Ancient Woodland (ID 26076)	Tall	5	0.36	2.77	2.42
Ancient Woodland (ID 26066)	Tall	5	0.19	1.79	1.59
Ancient Woodland (ID 43665)	Tall	5	0.19	1.79	1.59
Ancient Woodland (ID 26037)	Tall	5	0.19	1.79	1.59
Ancient Woodland (ID 26067)	Tall	5	0.19	1.79	1.59
Ancient Woodland (ID 25084)	Tall	5	0.14	1.65	1.50
Ancient Woodland (ID 25083)	Tall	5	0.14	1.64	1.50
Ancient Woodland (ID 25087)	Tall	5	0.14	1.64	1.50
Ancient Woodland (ID 43393)	Tall	5	0.14	1.64	1.50
Ancient Woodland (ID 24252)	Tall	5	0.14	1.64	1.50

Affected roads – mainland Wales

4.2.4 The nitrogen and acid deposition critical loads identified for the assessed ecological receptors close to the affected road network on mainland Wales are displayed in table 4-3.

Table 4-3 Critical loads at ecological sites within 200m of the affected road network on mainland Wales

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Coedydd Afon Menai SSSI	Tall	10	0.36	2.82	2.47
Coedydd Aber SAC and SSSI	Tall	10	0.29	2.13	1.84
Sychant Pass SSSI	Short	10	0.18	0.64	0.46
Traeth Pensarn SSSI	Short	Designated feature/feature habitat not sensitive to eutrophication	0.44	2.04	1.60
Halkyn Mountain SAC and Halkyn Common and Holywell Grasslands SSSI	Short	10	0.18	1.01	0.83
Llanddulas Limestone and Gwrych Castle Wood SSSI	Tall	15	0.36	2.91	2.56

Park and Ride

4.2.5 The nitrogen and acid deposition critical loads identified for the ecological receptors included in the air quality assessment for the Park and Ride are displayed in table 4-4.

Table 4-4 Critical loads at ecological sites within 2km of the Park and Ride

Ecological site	Vegetation type (for deposition velocity)	Relevant or most sensitive site features for nitrogen deposition - Provided by NRW (SSSI, SAC, SPA and Ramsar) or taken from APIS	Most sensitive species/habitat type for acidity - Taken from APIS based on habitats present		
		Critical load nitrogen (kgN/ha/year)	Critical load acid deposition (keq/ha/year)		
			CLmin N	CLmax N	CLmax S
Llyn Traffwll SSSI	Short	10	0.22	4.26	4.04
Llynnau Y Fali SSSI	Short	10	0.22	4.26	4.04
Llyn Dinam SAC	Short	10	0.32	0.50	0.18
Rhostir a Phwll Caergeiliog Wildlife Site	Short	10	0.32	0.50	0.18
	Tall	10	0.36	2.72	2.37
Cors Plas Wildlife Site	Short	10	0.32	0.51	0.19
	Tall	10	0.36	2.73	2.37

5 Summary

5.1.1 This technical note sets out the existing nitrogen and acid deposition and specific critical loads for the ecological sites (SSSI, SAC, SPA, Ramsar sites, Ancient Woodlands and Wildlife Sites) within the vicinity of the Wylfa Newydd Development Area, Park and Ride and affected roads. These values are proposed to be used for the detailed dispersion modelling assessments of emissions to air from the various combustion emission sources associated with the Wylfa Newydd Project to support the Environmental Impact Assessment for the Development Consent Order and Town and Country Planning Act and Environmental Permit application processes.

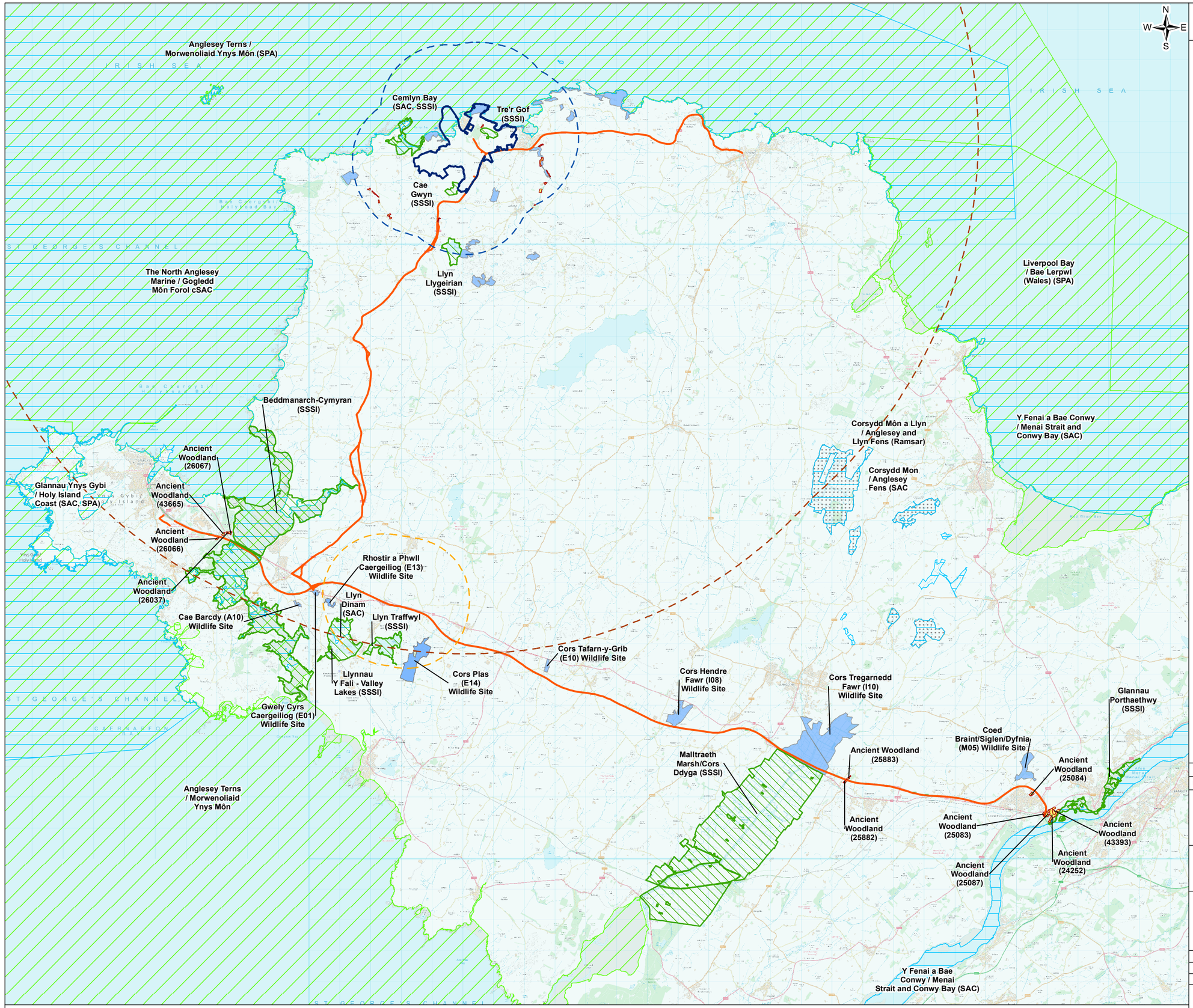
6 References

Table 6-1 Schedule of references

ID	Reference
RD1	Horizon Nuclear Power Ltd. 2017. *Wylfa Newydd Project, Air Quality Modelling and Assessment Methodology – Non-Radiological Emissions*, DCRM: HNP-S5-PAC-REP-00022, Revision 2.0, 15/05/2017.
RD2	Isle of Anglesey County Council and Gwynedd Council. 2017. *Anglesey and Gwynedd Joint Local Development Plan 2011 - 2016, Written Statement,* July 2017.
RD3	Horizon Nuclear Power Ltd. 2017. *Wylfa Newydd Project, Extent of Study Area and Receptor Selection for the Assessment of Air Quality*, Revision 3.0, DCRM: WN034-JAC-PAC-MEM-00024, 12/07/2017.
RD4	Centre for Ecology and Hydrology. 2016. *UK Air Pollution Information System* (APIS). [Online]. [Accessed: August 2016 to April 2017]. Available from: http://www.apis.ac.uk/.
RD5	Natural Resources Wales. 2017. Nitrogen critical loads spreadsheet titled '*Wylfa – AQ Critical Loads.xlsx',* provided to Horizon in an email communication 17 February 2017.

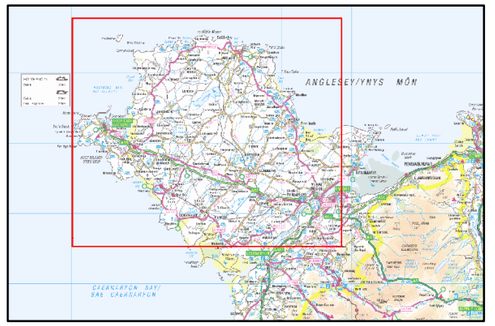
7 Figures

FIGURE 7-1



Legend

- Wylfa Newydd Development Area
- Wylfa Newydd Development Area 15km buffer
- Wylfa Newydd Development Area 2km buffer
- Park and Ride facility and Dalar Hir 2km buffer
- Affected road network – Isle of Anglesey
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Wildlife Site
- Ancient Woodland
- Ramsar



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: ECOLOGICAL RECEPTORS WITHIN THE AIR QUALITY STUDY AREAS ON THE ISLE OF ANGLESEY

Scale @ A3	1:120,000	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No.: 60PO8077_DCO_VOL_B_APP_05_02_07_01

Licence information for additional legend items can be found in Appendix A1-1, Application Reference Number: 6.1.8

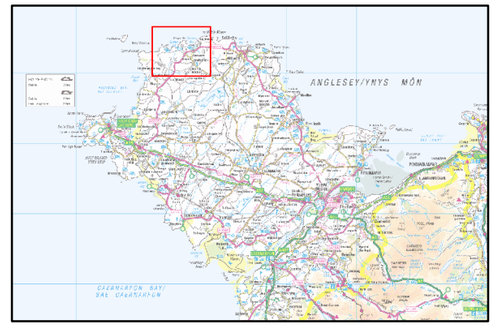
FIGURE 7-2

Legend

- Wylfa Newydd Development Area
- Wylfa Newydd Development Area 2km buffer
- Special Protection Area (SPA) (Anglesey Terns SPA not shown to full extent)
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Wildlife Site
- Ancient Woodland

Arfordir Mynydd y Wylfa – Trwyn Penrhyn (Wylfa Head) (G13) Wildlife Site
Arfordir Trwyn y Buarth - Porth Wen (G08) Wildlife Site
Cors Cae Owen (G06) Wildlife Site
Tir Gwlyb Teilia Neuadd (G07) Wildlife Site
Ancient Woodland (26060)
Tre'r Gof (SSSI)
Cemlyn Bay (SSSI and SAC)
Trwyn Pencarreg (G12) Wildlife Site
Ancient Woodland (26076)
Afon Wygyr (G05) Wildlife Site
Ancient Woodland (26058)
Ancient Woodland (26074)
Ancient Woodland (26057)
Ancient Woodland (26073)
Cors Mynachdy (G02) Wildlife Site
Ancient Woodland (26056)
Ancient Woodland (26055)
Ancient Woodland (26054)
Ancient Woodland (26052)
Cae Gwyn (SSSI)
Cors Cromlech (G04) Wildlife Site
Ancient Woodland (26072)
Ancient Woodland (26053)
Ancient Woodland (26051)
Rhostir Mynydd Mechell (F07) Wildlife Site
Llyn Llygeirian (SSSI)

Cemlyn Bay
Cemaes Bay
Cemaes
Penrhyn
Tregele
Llanfechell
Mynydd Mechell
Llanfairynghornwy
Mynydd-y-Garn
Llanlleiana
Coronation Tower (King Edward VII)
A5025



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

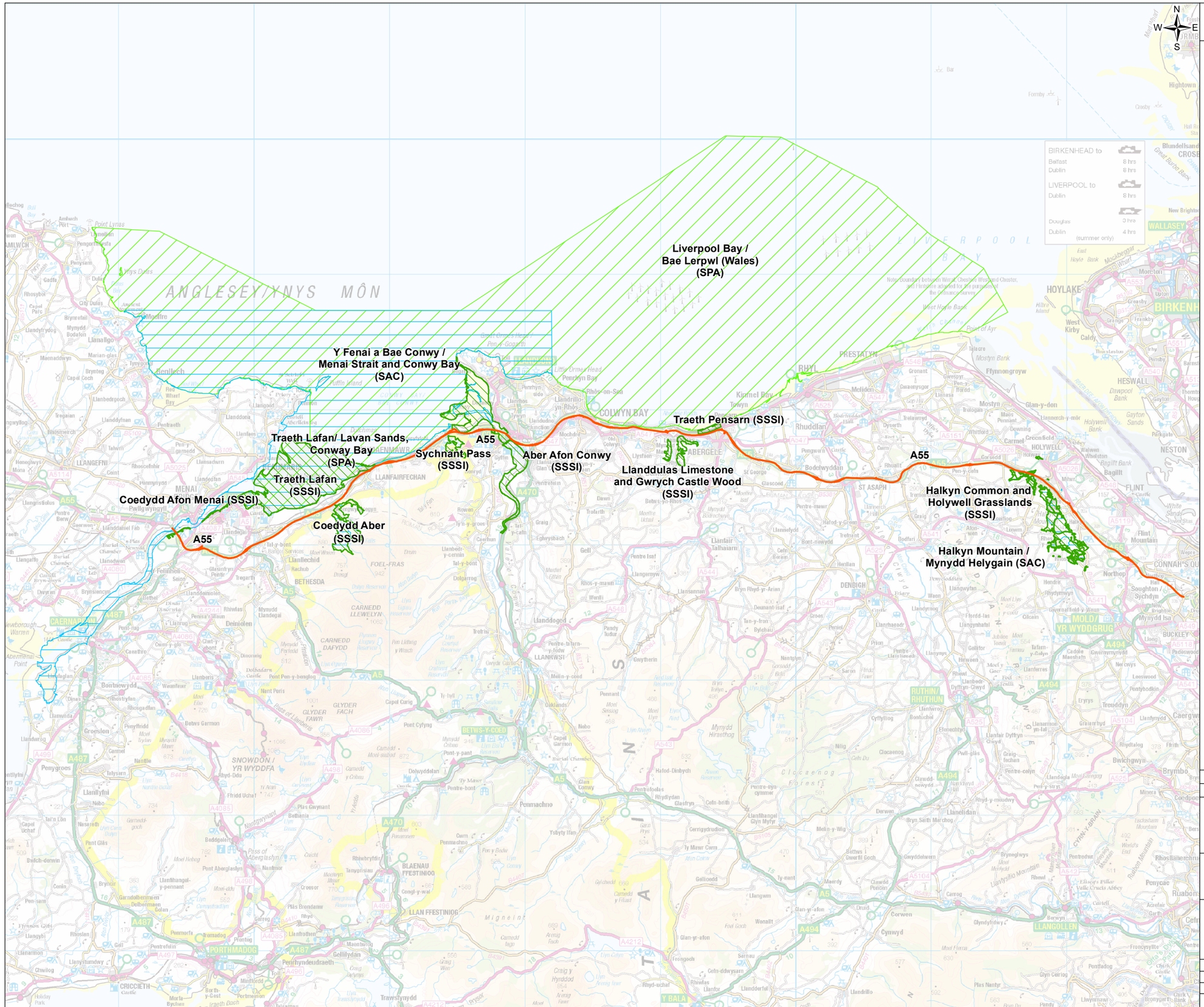
Drawing Title: ECOLOGICAL RECEPTORS WITHIN 2KM OF THE WYLFA NEWYDD DEVELOPMENT AREA

Scale @ A3	1:26,000	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No. 60PO8077_DCO_VOL_B_APP_05_02_07_02

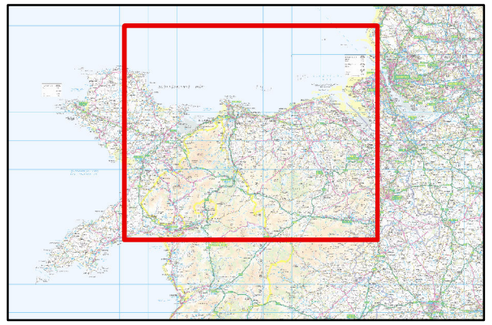
0 250 500 1,000 1,500 2,000 2,500 metres

FIGURE 7-3



Legend

- Affected road network - Mainland Wales
- Special Protection Area within 200m of affected roads
- Special Area of Conservation within 200m of affected roads
- Site of Special Scientific Interest within 200m of affected roads



0 1 2 4 6 8 10 Kilometres

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1.0	MAR 18	DCO submission	HNPWL	HNPWL	HNPWL	HNPWL

Client: HORIZON NUCLEAR POWER

Project: WYLFA NEWYDD PROJECT
ENVIRONMENTAL STATEMENT

Drawing Title: ECOLOGICAL RECEPTORS WITHIN THE AIR QUALITY STUDAY AREA ON MAINLAND WALES

Scale @ A3	1:275,000	DO NOT SCALE
Jacobs No.	60PO8077	
Client No.		

Drawing No. 60PO8077_DCO_VOL_B_APP_05_02_07_03

Appendix 7-1

Annex 1 - Nitrogen critical loads at ecological sites – SSSI, SAC, SPA and RAMSAR Sites

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DRAFT

Protected Site	Status	Relevant application	Site Features	NVC community	NVC Code	EUNIS class equivalent	Critical Load range (kgN/ha/yr)	Critical Load to be used for screening (kgN/ha/yr)	Comments
Tre'r Gof	SSSI	SPC, DCO	Alkaline fen		S2a	D5.24	15 - 30	15	
			Fen		M22	E3.41	15 - 25	15	
					M23a	E3.42	15 - 25	15	
					M15	F4.11	10 - 20	10	
					S27	D5.21	10 - 15	10	
			Marsh fern		M22a	E3.41	15 - 25	15	(use fen habitat)
Cae Gwyn	SSSI	SPC, DCO, A5025	Acid wetland		M15 swampy variant	F4.11	10 - 20	10	
					M5	D2.33	10 - 15	10	
					M25b	E3.51	15 - 25	15	
					M24a/b	E3.51	15 - 25	15	
					M23a	E3.42	15 - 25	15	
Cemlyn Bay	SAC	SPC, DCO, EPR, ML	1150 Coastal lagoons*				20 - 30	20	No critical loads available on APIS - NRW advise that the closest analogue would be lower saltmarsh habitat
			1220 Perennial vegetation of stony banks	Rumex crispus - Glaucium flavum shingle community	SD1	Acid dunes	8-15	8	No critical loads available on APIS - NRW advise that the closest analogue would be dry acid dunes. For Cemlyn Bay SAC as a whole, we advise the critical load for screening is 8 is order to protect the most sensitive feature of the site
				Atriplex prostrata - Beta vulgaris ssp. maritima sea-bird cliff community	MC6	?	10 - 20	10	
				Festuca rubra - Plantago spp. maritime grassland	MC10				
				Festuca rubra - Armeria maritima maritime grassland	MC8				
Ynys Feurig, Cemlyn & Skerries	SPA	SPC, DCO, EPR, ML	Arctic tern					N/A	NRW advise that by looking at the most sensitive interest feature present within the SAC/SPA to air quality changes then the species that rely on the presence of the shingle ridge and lagoon communities will also be protected and therefore no need to consider seperately.
			Sandwich tern					N/A	
			Common tern					N/A	
			Roseate tern (not bred recently but seen in colony regualrly by wardens)					N/A	
Anglesey Terns	pSPA	SPC, DCO, EPR, ML	Covered by above SPA					N/A	See above.
Cemlyn Bay	SSSI	SPC, DCO, EPR, ML	Covered by SAC/SPA features					N/A	See above.
North Anglesey Marine	pSAC	DCO, SPC, EPR, ML	Habrour porpoise					N/A	For marine habitats or species found in the marine environment, we consider that because they are entirely aquatic and covered by water they are not sensitive to aerial deposition.
Llyn Llygeirian	SSSI	DCO	Moderate nutrient rich lake	Dune slack pools			10 - 20	10	No critical loads available on APIS - NRW advise that the closest analogue would be dune slack pools.
		(close to A5025, 250m)	Water plants						Would be covered by Lake habitat
Liverpool Bay	SPA	DCO	Red throated diver					N/A	For marine habitats or species found in the marine environment, we consider that because they are entirely aquatic and covered by water they are not sensitive to aerial deposition.
			Common scoter					N/A	
Anglesey Fens	SAC	DCO	7210 Calcareous fens with Cladium mariscus*	Cladium mariscus swamp and sedge-beds	S2	D2	15 - 30	15	
				Carex rostrata - Calligeron cuspidatum/giganteum mire	M9	D2.33	10 - 15	10	We advise the use 10 for the whole SAC given that this interest fetaure is most vulnerable
				Schoenus nigricans - Juncus subnodulosus mire	M13	D4.11	15 - 30	15	
			Alkaline Fen	Carex rostrata - Calligeron cuspidatum/giganteum mire	M9	D2.33	10 - 15	10	
				Carex dioica - Pinguicula vulgaris mire	M10	D4.15	15 - 30	15	
				Schoenus nigricans - Juncus subnodulosus mire	M13	D4.11	15 - 30	15	
			Hard oligo-mesotrophic waters		No NVC		10 - 20	10	No critical loads available on APIS - NRW advise that the closest analogue would be dune slack pools (permanent oligotrophic water) which have a critical load of 10 - 20.
			Molinia meadows	Juncus effusus/acutiflorus - Galium palustre rush-pasture	M23	E3.42	15 - 25	15	
				Molinia caerulea – Cirsium dissectum fen-meadow	M24	E3.51	15 - 25	15	
				Molinia caerulea – Potentilla erecta mire	M25	E3.51	15 - 25	15	
			Wet heaths	Scirpus cespitosus - Erica tetralix wet heath	M15	F4.11	10 - 20	10	
				Erica tetralix – Sphagnum compactum wet heath	M16	F4.11	10 - 20	10	

			Vertigo geyeri		M9	D2.33	10 - 15	10	Use fen habitat - species will be protected by the protection of the supporting habitat features
					M10	D4.15	15 - 30	15	
					M13	D4.11	15 - 30	15	
			Coenagrion mercuriale		M9	D2.33	10 - 15	10	Confined to shallow, well vegetated, base-rich runnels and flushes. Most sites are on wet heath.
					M13	D4.11	15 - 30	15	
			Marsh fritillary		M23	E3.42	15 - 25	15	Use Succissa habitat - species will be protected by the protection of the supporting habitat features
					M24	E3.51	15 - 25	15	
					M25	E3.51	15 - 25	15	
Corsydd Mon a Llyn	Ramsar	DCO	Wetland supporting a suite of base-rich fens						Use the same values as for Anglesey Fens SAC.
Llyn Dinam	SAC	DCO	Eutrophic lake				10 - 15	10	S27 used as a surrogate
Beddmanarch Cymyran	SSSI	A5025	Eel grass	Zostera communities	SM1		20 - 30	20	There are other saltmarsh communities but we consider these to be representative.
			Saltmarsh	Juncus maritimus - Triglochin maritima salt-marsh community	SM15	A2.53	20 - 30	20	
				Juncus maritimus salt-marsh community	SM18	A2.53	20 - 30	20	
				Puccinellia maritima salt-marsh community	SM13	A2.54 & A2.55	20 - 30	20	
			Dune heath	Calluna vulgaris - Carex arenaris heath	H11		10 - 20	10	
				Calluna vulgaris - Erica cinerea heath	H10c		10 - 20	10	
			Overwintering water birds						Covered by habitat
Glannau Ynys Gybi	SAC	DCO	1230 Vegetated sea cliffs	Armeria maritima – Cerastium diffusum ssp. diffusum maritime therophyte community	MC5		10 - 20	10	
			4030 Dry heath	Calluna vulgaris - Scilla verna heath	H7	F4.2	10 - 20	10	
				Calluna vulgaris - Ulex gallii heath	H8	F4.2	10 - 20	10	
			4010 Wet heath	Scirpus cespitosus - Erica tetralix wet heath	M15	F4.11	10 - 20	10	
				Erica tetralix – Sphagnum compactum wet heath	M16	F4.11	10 - 20	10	
Glannau Ynys Gybi	SPA	DCO	Chough					N/A	Critical load for dry heath and vegetated sea cliffs should be used to protect chough too.
Llyn Traffwll	SSSI	Dalar Hir	Natural eutrophic lake	S4 Phragmites australis swamp and reed-beds	S4		NA	NA	Is P-limited. But have to meet S27 anyway.
				S27 Carex rostrata - Potentilla palustris tall-herb fen Potentillo-Caricetum rostratae	S27	D2	10 - 15	10	
				There are other NVC communities on site, including mire, scrub, grassland etc but these are the most important swamp communities form a very narrow fringe around parts of the lake			10 - 15	10	Have to meet S27 anyway
Llynau y Fali / Valley Lakes	SSSI	Dalar Hir	Natural eutrophic lake s	S4 Phragmites australis swamp and reed-beds	S4		NA	NA	Is P-limited. But have to meet S27 anyway.
				S27 Carex rostrata - Potentilla palustris tall-herb fen Potentillo-Caricetum rostratae Wheeler 1980a	S27	D2	10 - 15	10	
				There are a range of other NVC communities on site but these are the most important swamp communities which fringe the lakes			NA	NA	Have to meet S27 anyway
Llyn Hafodol and Cors Clegyrog	SSSI	Rhosgoch		S27 Carex rostrata - Potentilla palustris tall-herb fen Potentillo-Caricetum rostratae Wheeler 1980a	S27	D2	10 - 15	10	
				S12 Typha_latifolia_swamp	S12		NA	NA	Is P-limited. But have to meet S27 anyway.
				M23 Juncus effusus'/acutiflorus - Galium palustre rush-pasture	M23	E3.51	15 - 25	15	
				M23 Juncus effusus'/acutiflorus - Galium palustre rush-pasture	M23	E3.51	15 - 25	15	
				S10 Equisetum fluviatile swamp	S10		NA	NA	Is P-limited. But have to meet S27 anyway.
				M15 Scirpus cespitosa Erica tetralix wet heath	M15	F4.11	10 - 20	10	
Mynydd Parys	SSSI	Rhosgoch		Designated for metallophyte lichens and geology Lichens grow on spoil heaps, old buildings, rock outcrops and heather stems – just about any substrate on site which is enriched with copper and other minerals. This community is not described in NVC.	??		10 - 15	10	Very similar to the Annex 1 Calaminarian grasslands of the Violetalia calaminariae.
				Geological interest is mineralogy and unlikely to be affected by aerial deposition			NA	NA	
Malltraeth Marsh	SSSI	DCO (A55)		Much of the grassland is improved ryegrass pasture, some of it reverting with widespread Juncus : site is notified for breeding birds of lowland wet pasture and as a grazing marsh/ditch system with associated aquatic flora and fauna. The RSPB reserve in the north east quarter (near the road) has more varied habitats including semi-natural grasslands, open water – some of it seasonally wet scrapes and channels but also including a larger lake and S4 Phragmites australis swamp and reed-beds.			15 - 25	15	Presence of Juncus hints that it could be similar to M23 (15 – 25kgN/ha/yr)

Glannau Porthaethwy		DCO (A55)		Muddy gravel, Tideswept algae, Sheltered rock, Mixed substrates and rockpools			NA	NA	Not going to be sensitive to N-dep. Description indicates that covered by tide regularly and there doesn't seem to be any vegetation on there that would be sensitive.
Glynllifon	SSSI	DCO (A487)	Lesser horseshoe bats	N/A			N/A	N/A	
Glynllifon	SAC	DCO (A487)	Lesser horseshoe bats	N/A			N/A	N/A	
Afon Gwyrfai a Llyn Cwellyn	SSSI	DCO (A487) - New bypass proposed, operational 2019-20??	Water plants					N/A	
			Standing & running water					N/A	
			Fish					N/A	
			Otter	N/A				N/A	
Afon Gwyrfai a Llyn Cwellyn	SAC	DCO (A487)	Oligotrophic to mesotrophic standing water			C1.1	N/A	N/A	
			Watercourses of plain to montane levels					N/A	
			Salmon					N/A	
			Otter					N/A	
			Floating water plantain				N/A	N/A	
Afon Seiont	SSSI	DCO (A487)		Geological feature			N/A	N/A	
Coedydd Aber	SSSI	DCO (A55)	0.5ha of site within 200m of A55, habitat is broadleaved woodland, potentially with SAC habitat	SAC habitat: 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	W17	G1.8	10 - 15	10	
Coedydd Aber	SAC	DCO (A55)	0.5ha of site within 200m of A55, habitat is broadleaved woodland, potentially with SAC habitat	SAC habitat: 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	W17	G1.8	10 - 15	10	
Menai Strait and Conwy Bay	SAC	DCO (A55)	Mudflats and sandflat not covered at low tide					N/A	
			Reefs					N/A	
			Sandbanks slightly covered all the time					N/A	
			Large shallow inlets and bays					N/A	
			Submerged or partially submerged sea caves					N/A	
Traeth Lafan	SSSI	DCO (A55)	Marine habitats on shore between low and high tide					N/A	
			Dwarf Eelgrass (Zostera noltei)					N/A	
			Oystercatcher					N/A	
			Curlew					N/A	
			Great crested grebe					N/A	
Traeth Lafan / Lavan Sands, Conwy Bay	SPA	DCO(A55)	Oystercatcher					N/A	
Aber Afon Conwy	SSSI	DCO(A55)	Intertidal habitat					N/A	Not sensitive
			Piddock habitat					N/A	Not sensitive
			Belted beauty moth					N/A	No moth or its supporting habitat within 200m of the A55
Sychnant Pass (Conwy)	SSSI	DCO(A55)	Dry lowland heath	Dry Heath	H8	F4.2	10 - 20	10	
			Ashowrth's Rustic and Weaver's Wave moths	Reliant on dry heath habitat	Use H8		10 - 20	10	
Llanddulas Limestone and Gwrych Castle Wood	SSSI	DCO(A55)	Broadleaved woodland	Fraxinus excelsior - Acer campestre - Mercurialis perennis woodland	W8e	G1A	15 - 20	15	
			Lesser horseshoe bats					N/A	
			Other features >200m						
Traeth Pensarn (Conwy)	SSSI	DCO(A55)	Coastal vegetated shingle beach		SD1			N/A	
Deeside and Buckley Newt Sites	SAC	DCO(A55)	GCN					N/A	
			Sessile Oakwoods						
Buckley Clay Pits and Commons	SSSI	DCO(A55)	GCN / amphibian assemblage					N/A	
			Grassland mosaic						
Halkyn Mountain	SAC		Covered by SSSI - see below						
Halkyn Common and Holywell Grasslands	SSSI		GCN & Amphibian assemblage	N/A				N/A	
			Habitat features - see NVC list:		U4b, U4a, U5	E1.71 / E1.72	10 - 15	10	
					M24b/M23	E3.51	15 - 25	15	
					MG6, MG6a	E3.3	20 - 30	20	
					MG1	??	??	10	Appropriate N-Clo is not clear, however, applying the lowest from the other NVCs is likely to be protective of this habitat.
					OV25, OV27, OV37, OV37a, OV37c	E1.26	15 - 25	15	
					CG2c, CG10a	E1.26	15 - 25	15	
					Heathland	F4.2	10 - 20	10	
					H8a, H8b	F4.2	10 - 20	10	

Annex 2 – Acid critical loads at ecological Sites – SSSI, SAC, SPA and RAMSAR Sites

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Project element	Sites	Habitat Interest Feature		Acidity critical loads (keq/ha/year) [1]		
		Broad category	Subcategory (BAP Priority Habitat / BAP Broad Habitat) or acidity class specified on APIS for European Designated Sites	CLmin N	CLmax N	CLmax S
Wylfa Newydd Development Area (2km)	Cae Gwyn SSSI	Fen	Upland Flushes Fens and Swamps	0.223	1.013	0.79
			Purple Moor Grass and Rush Pastures	0.223	1.013	0.79
			Fen, marsh and swamp	0.223	1.013	0.79
		Wet Heath	Upland heathland	0.892	1.682	0.79
			Dwarf shrub heath	0.892	1.682	0.79
	Cemlyn Bay – SAC, SSSI	Perennial vegetation of stony banks (H1220)	Acid grassland	0.223	1.013	0.79
		Coastal lagoons (H1150)	Not sensitive	APIS states habitat not sensitive to acidification		
		Percolated Saline Lagoon	Inshore sublittoral sediment	APIS states habitat not sensitive to acidification		
		Shingle/boulders Above High Water Mark	Coastal Vegetated Shingle	0.223	1.013	0.79
		Standing Water	Standing open water and canals	There are no critical loads set for Freshwater on APIS		
	Cemlyn Bay section of the Anglesey Terns / Morwenoliaid Ynys Môn SPA	*Sterna sandvicensis* (Western Europe/Western Africa) - Sandwich tern (A191)	Supralittoral sediment (acidic type) - Acid grassland	0.223	4.263	4.40
		Sterna dougallii (Europe - breeding) - Roseate tern (A192)	Supralittoral sediment (acidic type) - Acid grassland	0.223	4.263	4.40
		Sterna hirundo (Northern/Eastern Europe - breeding) - Common tern (A193)	Supralittoral sediment (acidic type) - Acid grassland	0.223	4.263	4.40
		Sterna paradisaea (Arctic - breeding/Southern Oceans - wintering) - Arctic tern (A194)	Supralittoral sediment (acidic type) - Acid grassland	0.223	4.263	4.40
			Dwarf shrub heath - Dwarf shrub heath	0.892	4.932	4.40
	Tre'r Gof SSSI	Fen	Lowland Fens	0.438	1.988	1.55
			Purple Moor Grass and Rush Pastures	0.438	1.988	1.55
			Fen, marsh and swamp	0.438	1.988	1.55
	Llyn Llygeirian SSSI	Dunes, Shingle & Machair	Dwarf shrub heath	1.250[3]	2.040[3]	0.79[3]
Wylfa Newydd Development Area (15km)	Anglesey and Llyn Fens – SAC, RAMSAR	Northern Atlantic wet heaths with *Erica tetralix* (H4010)	Dwarf shrub heath	1.350	4.952	4.60
		Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (H6410)	Acid grassland	0.438	4.283	4.60

Project element	Sites	Habitat Interest Feature		Acidity critical loads (keq/ha/year) [1]		
		Broad category	Subcategory (BAP Priority Habitat / BAP Broad Habitat) or acidity class specified on APIS for European Designated Sites	CLmin N	CLmax N	CLmax S
		Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (H7210)	Not Sensitive	APIS states habitat not sensitive to acidification		
		Alkaline fens (H7230)	Not Sensitive	APIS states habitat not sensitive to acidification		
		Euphydryas (Eurodryas, Hypodryas) *aurinia* – Marsh fritillary butterfly (S1065)	Calcareous grassland	0.438	4.283	4.6
		Coenagrion mercuriale – Southern damselfly (S1044)	Dwarf shrub heath	1.350	4.952	4.6
		Vertigo geyeri – Geyer`s whorl snail (S1013)	Fen, marsh and swamp – Rich fens	APIS states habitat not sensitive to acidification		
	Holy Island Coast – SSSI, SAC, SPA	Northern Atlantic wet heaths with *Erica tetralix* (H4010)	Dwarf shrub heath	1.35		
		European dry heaths (H4030)	Dwarf shrub heath	1.35		
		Pyrrhocorax pyrrhocorax – Red-billed chough (A346)	Acid grassland – Non-Mediterranean dry acid and neutral closed grassland	0.438		
		Coastal Heath Land	Lowland heathland	n/a[2]		
		Continuous Bracken	Bracken	n/a[2]		
		Dry Heath	Lowland heathland	n/a[2]		
		Inter-Tidal	Littoral sediment	n/a[2]		
		Maritime Cliff & Associated Ledges & Crevices	Maritime Cliff and Slopes	n/a[2]		
		Other	Inland Rock Outcrop and Scree Habitats	n/a[2]		
			Inland rock	n/a[2]		
		Rockpools	Littoral rock	n/a[2]		
		Wet Heath	Lowland heathland	n/a[2]		
	Llyn Dinam – SAC	Fen, Marsh and Swamp	Fen, Marsh and Swamp	0.440[4]	1.980[4]	1.54[4]
		Bogs	Bogs	0.320[4]	0.500[4]	0.18[4]
Park and Ride Facility at Dalar Hir (2km)	Llyn Traffwll – SSSI	Fen	Fen, marsh and swamp	0.223	4.263	4.04
		Standing Water	Standing open water and canals	There are no critical loads set for Freshwater on APIS		
		Swamp	Fen, marsh and swamp	0.223	4.263	4.04

Project element	Sites	Habitat Interest Feature		Acidity critical loads (keq/ha/year) [1]		
		Broad category	Subcategory (BAP Priority Habitat / BAP Broad Habitat) or acidity class specified on APIS for European Designated Sites	CLmin N	CLmax N	CLmax S
	Llynnau Y Fali – SSSI	Fen	Lowland Fens	0.223	4.263	4.04
			Fen, marsh and swamp	0.223	4.263	4.04
		Marshy Grassland	Neutral grassland	0.223	4.263	4.04
		Standing Water	Standing open water and canals	APIS states habitat not sensitive to acidification		
		Swamp	Fen, marsh and swamp	0.223	4.263	4.04
Wylfa Newydd Project Traffic – Isle of Anglesey (200m of affected road)	Beddmanarch-Cymyran – SSSI	Coastal Heath Land	Lowland heathland	0.714	2.254	1.54
		Inter-Tidal	Littoral sediment	APIS states habitat not sensitive to acidification		
		Muddy Gravel	Littoral sediment	APIS states habitat not sensitive to acidification		
		Sheltered Mud	Littoral sediment	APIS states habitat not sensitive to acidification		
	Malltraeth Marsh – SSSI	Marshy Grassland	Neutral grassland	0.438	1.238	0.80
		Other: Improved Grassland	Improved grassland	APIS states habitat not sensitive to acidification		
		Standing Water	Standing open water and canals	APIS states habitat not sensitive to acidification		
		Swamp	Fen, marsh and swamp	0.438	1.238	0.80
	Glannau Porthaethwy – SSSI	Maritime Cliff & Associated Ledges & Crevices	Maritime Cliff and Slopes	APIS states habitat not sensitive to acidification		
			Supralittoral rock	APIS states habitat not sensitive to acidification		
		Mixed Substrata	Coastal Vegetated Shingle	0.438	1.988	1.55
			Supralittoral sediment	0.438	1.988	1.55
		Muddy Gravel	Littoral sediment	APIS states habitat not sensitive to acidification		
		Rockpools	Littoral rock	APIS states habitat not sensitive to acidification		
		Sheltered Rock	Littoral rock	APIS states habitat not sensitive to acidification		
Wylfa Newydd Project Traffic – mainland Wales (200m of affected road)	Coedydd Afon Menai SSSI	Semi-Natural Woodland	Upland Oakwood	0.357	2.823	2.47
			Lowland Mixed Deciduous Woodland	0.357	2.823	2.47
			Upland Mixed Ashwoods	0.357	2.823	2.47
			Broadleaved, mixed and yew woodland	0.357	2.823	2.47
	Coedydd Aber – SAC and SSSI	Old sessile oak woods with Ilex and Blechnum in the British Isles (H91A0)	Unmanaged Broadleafed/Coniferous Woodland	0.357	3.343	3.553
		Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) (H91E0)	Not Sensitive	APIS states habitat not sensitive to acidification		

Project element	Sites	Habitat Interest Feature		Acidity critical loads (keq/ha/year) [1]		
		Broad category	Subcategory (BAP Priority Habitat / BAP Broad Habitat) or acidity class specified on APIS for European Designated Sites	CLmin N	CLmax N	CLmax S
		Scrub	Upland Oakwood	0.285	2.125	1.84
			Wet Woodland	0.285	2.125	1.84
			Lowland Mixed Deciduous Woodland	0.285	2.125	1.84
			Upland Mixed Ashwoods	0.285	2.125	1.84
		Semi-Natural Woodland	Upland Oakwood	0.285	2.125	1.84
			Wet Woodland	0.285	2.125	1.84
			Lowland Mixed Deciduous Woodland	0.285	2.125	1.84
			Upland Mixed Ashwoods	0.285	2.125	1.84
	Sychnant Pass – SSSI	Acid Grassland	Acid grassland	0.223	0.683	0.46
		Continuous Bracken	Bracken	APIS states habitat not sensitive to acidification		
		Dry Heath	Upland heathland	0.499	0.959	0.46
			Dwarf shrub heath	0.499	0.959	0.46
		Flush and Spring	Fen, marsh and swamp	0.223	0.683	0.46
		Natural Inland Rock Exposures, Screes & Upland Ledges	Inland Rock Outcrop and Scree Habitats	0.178	0.638	0.46
		Running Water	Rivers and streams	There are no critical loads set for Freshwater on APIS		
		Standing Water	Standing open water and canals	There are no critical loads set for Freshwater on APIS		
	Traeth Pensarn – SSSI	Exposed Sand	Littoral sediment	APIS states habitat not sensitive to acidification		
		Other: Strandline Vegetation	Coastal Vegetated Shingle	0.438	2.038	1.60
			Coastal Sand Dunes	0.438	2.038	1.60
		Shingle/boulders Above High Water Mark	Coastal Vegetated Shingle	0.438	2.038	1.60
			Coastal Sand Dunes	0.438	2.038	1.60
	Halkyn Mountain / Mynydd Helygain – SAC and Halkyn Common and Holywell Grasslands – SSSI	Calaminarian grasslands of the *Violetalia calaminariae* (H6130)	Acid grassland	0.438	4.323	4.10
			Calcareous grassland (using base cation)	1.710	5.710	4.00
		European dry heaths (H4030)	Dwarf shrub heath	1.170	4.992	4.10
		Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) (H6210)	Calcareous grassland (using base cation)	1.710	5.710	4.00

Project element	Sites	Habitat Interest Feature		Acidity critical loads (keq/ha/year) [1]		
		Broad category	Subcategory (BAP Priority Habitat / BAP Broad Habitat) or acidity class specified on APIS for European Designated Sites	CLmin N	CLmax N	CLmax S
		Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (H6410)	Acid grassland	0.438	4.323	4.10
		Triturus cristatus – Great crested newt (S1166)	Standing open water and canals	No critical loads available for this feature on APIS		
		Acid Grassland	Acid grassland	0.223	1.053	0.83
		Calcareous grassland	Calcareous grassland	0.856	4.856	4.00
		Continuous Bracken	Bracken	APIS states habitat not sensitive to acidification		
		Dry Heath	Dwarf shrub heath	1.170	4.992	4.10
		Fen	Upland Flushes Fens and Swamps	0.223	1.053	0.83
		Flush and Spring	Upland Flushes Fens and Swamps	0.223	1.053	0.83
		Marshy Grassland	Neutral grassland	0.223	1.053	0.83
		Natural Inland Rock Exposures, Screes & Upland Ledges	Inland Rock Outcrop and Scree Habitats	0.178	1.008	0.83
		Neutral Grassland	Neutral grassland	0.223	1.053	0.83
		Other: Artificial Rock Exposures	Inland Rock Outcrop and Scree Habitats	0.178	1.008	0.83
			Open Mosaic Habitats on Previously Developed Land	APIS states habitat not sensitive to acidification		
			Inland rock	0.178	1.008	0.83
		Other: Bare Ground	Inland Rock Outcrop and Scree Habitats	0.178	1.008	0.83
			Open Mosaic Habitats on Previously Developed Land	APIS states habitat not sensitive to acidification		
			Inland rock	0.178	1.008	0.83
	Llanddulas Limestone and Gwrych Castle Wood SSSI	Other: Coniferous Plantation	Coniferous woodland	0.357	2.914	2.56
		Other: Mixed Plantation	Upland Oakwood	0.357	2.914	2.56
			Upland Birchwoods	0.357	2.914	2.56
			Broadleaved, mixed and yew woodland	0.357	2.914	2.56
		Scrub	Broadleaved, mixed and yew woodland	0.357	2.914	2.56
		Semi-Natural Woodland	Broadleaved, mixed and yew woodland	0.357	2.914	2.56

Project element	Sites	Habitat Interest Feature		Acidity critical loads (keq/ha/year) [1]		
		Broad category	Subcategory (BAP Priority Habitat / BAP Broad Habitat) or acidity class specified on APIS for European Designated Sites	CLmin N	CLmax N	CLmax S
Notes						
1	Values in red indicate lowest critical load used in the assessment					
2	APIS returns 0 value					
3	Critical load based on search by location function following advice from NRW in Annex 1 to use dune slack pools for nitrogen deposition. Same approach adopted for acid deposition (acidity class of Dwarf Shrub Heath specified for Dunes, Shingle & Machair using the search by location function).					
4	Critical load based on search by location function following advice from NRW in Annex 1 to use NVC S27 (Carex rostrata) for nitrogen deposition. Same approach adopted for acid deposition and potential categories for S27 used). Jacobs ecologists have confirmed that NVC S27 is best represented through the APIS search by location function using the critical loads for Fen, Marsh and Swamp and Bogs. All Fen, Marsh and Swamp are classed as “This habitat is not sensitive to acidity” – a surrogate of acid grassland has been used to specify the acid critical loads, see table note 2 in Annex 3.					

Annex 3 – Acid and nitrogen critical loads at ecological sites – Wildlife Sites

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Project element	Sites	Habitat Interest Feature		Nitrogen critical loads (kgN/ha/year)		Acidity critical loads (keq/ha/year) 1		
		Broad category / Acidity class	Subcategory specified on APIS for N deposition	Range	Min	CLmin N	CLmax N	CLmax S
Wylfa Newydd Development Area (2km)	F7 - Rhostir Mynydd Mechell	Acid grassland	Non-Mediterranean dry acid and neutral closed grassland	10 - 15	10	0.44	1.99	1.55
		Dwarf Shrub Heath	Dry heaths	10 - 20	10	0.71	2.26	1.55
			Northern wet heath Calluna-dominated wet heath (upland moorland)	10 - 20	10			
	G2 – Cors Mynachdy	Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.99	1.55
		Neutral Grassland	Low and medium altitude hay meadows	20 - 30	20	0.85	4.67	3.81
	G4 - Cors Cromlech	Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.99	1.55
	G5 - Afon Wygyr	Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.99	1.55
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.36	2.77	2.42
	G6 – Cors Cae-Owen	Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.22	1.02	0.8
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.14	1.55	1.41
	G7 - Tir Gwlyb Teilia-Neuadd	Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.22	1.02	0.8
		Neutral Grassland	Low and medium altitude hay meadows	20 - 30	20	0.85	4.68	3.82
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.14	1.55	1.41
	G8 - Arfordir Trwyn y Buarth – Porth Wen	Acid grassland	Non-Mediterranean dry acid and neutral closed grassland	10 - 15	10	0.33	1.50	1.17
		Dwarf Shrub Heath	Dry heaths	10 - 20	10	0.98	2.15	1.17
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.33	1.50	1.17
	G12 - Trwyn Pencarreg	Acid grassland	Non-Mediterranean dry acid and neutral closed grassland	10 - 15	10	0.22	1.01	0.79

Project element	Sites	Habitat Interest Feature		Nitrogen critical loads (kgN/ha/year)		Acidity critical loads (keq/ha/year) 1		
		Broad category / Acidity class	Subcategory specified on APIS for N deposition	Range	Min	CLmin N	CLmax N	CLmax S
			Moist and wet oligotrophic grasslands *Molinia caerulea* meadows	15 - 25	15			
		Dwarf Shrub Heath	Dry heaths	10 - 20	10	1.3	2.28	0.98
	G13 - Arfordir Mynydd y Wylfa - Trwyn Penrhyn (Wylfa Head)	Acid Grassland	Non-Mediterranean dry acid and neutral closed grassland	10 - 15	10	0.223	1.023	0.80
		Dwarf Shrub Heath	Dry heaths	10 - 20	10	0.892	1.692	0.80
			Northern wet heath: Calluna-dominated wet heath (upland moorland)	10 - 20	10	0.892	1.692	0.80
Park and Ride Facility at Dalar Hir (2km)	E13 - Rhostir a Phwll Caergeiliog	Acid grassland	Moist and wet oligotrophic grasslands *Molinia caerulea* meadows	15 - 25	15	0.44	1.98	1.54
		Bogs	Valley mires, poor fens and transition mires	10 - 15	10	0.32	0.50	0.18
		Dwarf Shrub Heath	Northern wet heath Erica tetralix dominated wet heath	10 - 20	10	0.71	2.25	1.54
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.98	1.54
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.36	2.72	2.37
	E14 - Cors Plas	Acid grassland	Moist and wet oligotrophic grasslands Heath (Juncus) meadows and humid (*Nardus stricta*) swards	10 - 20	10	0.44	1.98	1.54
		Bogs	Valley mires, poor fens and transition mires	10 - 15	10	0.32	0.51	0.19
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.98	1.54
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.36	2.73	2.37
Wylfa Newydd Project Traffic – Isle of Anglesey (200m of affected road)	E01 - Gwely Cyrs Caergeiliog	Acid grassland	Moist and wet oligotrophic grasslands *Molinia caerulea* meadows	15 - 25	15	0.44	1.98	1.54
		Bogs	Valley mires, poor fens and transition mires	10 - 15	10	0.32	0.50	0.18

Project element	Sites	Habitat Interest Feature		Nitrogen critical loads (kgN/ha/year)		Acidity critical loads (keq/ha/year) 1		
		Broad category / Acidity class	Subcategory specified on APIS for N deposition	Range	Min	CLmin N	CLmax N	CLmax S
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.98	1.54
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.36	2.72	2.37
	I10 - Cors Tregarnedd Fawr	Acid grassland	Moist and wet oligotrophic grasslands Heath (Juncus) meadows and humid (*Nardus stricta*) swards	10 - 20	10	0.44	2.00	1.56
		Bogs	Valley mires, poor fens and transition mires	10 - 15	10	0.32	0.56	0.23
		Coastal and Floodplain Grazing Marsh	Low and medium altitude hay meadows	20 - 30	20	APIS states habitat not sensitive to acidification		
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	2.00	1.56
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.36	2.82	2.46
	E10 - Cors Tafarn-y-Grib	Acid grassland	Moist and wet oligotrophic grasslands Heath (Juncus) meadows and humid (*Nardus stricta*) swards	10 - 20	10	0.22	1.01	0.79
		Bogs	Valley mires, poor fens and transition mires	10 - 15	10	0.32	0.53	0.21
		Coastal and Floodplain Grazing Marsh	Low and medium altitude hay meadows	20 - 30	20	APIS states habitat not sensitive to acidification		
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.22	1.01	0.79
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.14	1.54	1.40
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.14	1.54	1.40
	I08 - Cors Hendre Fawr	Acid grassland	Moist and wet oligotrophic grasslands *Molinia caerulea* meadows	15 - 25	15	0.44	1.99	1.55
		Dwarf Shrub Heath	Dry heaths	10 - 20	10	0.71	2.26	1.55
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.99	1.55

Project element	Sites	Habitat Interest Feature		Nitrogen critical loads (kgN/ha/year)		Acidity critical loads (keq/ha/year) 1		
		Broad category / Acidity class	Subcategory specified on APIS for N deposition	Range	Min	CLmin N	CLmax N	CLmax S
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.36	2.78	2.42
		Improved Grassland	No comparable habitat with established nitrogen critical load estimate available			Habitat not sensitive to acidification		
	M05 - Coed Brain Siglen Dyfnia	Acid grassland	Moist and wet oligotrophic grasslands *Molinia caerulea* meadows	15 - 25	15	0.22	1.04	0.82
		Bogs	Valley mires, poor fens and transition mires	10 - 15	10	0.32	0.59	0.27
		Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.22	1.04	0.82
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.14	1.64	1.50
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.14	1.64	1.50
	A10 - Cae Barcdy	Fen, Marsh and Swamp [2]	Valley mires, poor fens and transition mires	10 - 15	10	0.44	1.98	1.54
		Hedgerows	Broadleaved deciduous woodland	10 - 20	10	0.36	2.71	2.35
		Broadleaved, Mixed and Yew Woodland	Broadleaved deciduous woodland	10 - 20	10	0.36	2.71	2.35

Notes	
1	Values in red indicate lowest critical load used in the assessment
2	For acid critical loads using the search by location function, APIS assumes that all habitats within the Fen, Marsh and Swamp broad category are rich fen types and therefore not sensitive to acid deposition. The Centre for Ecology and Hydrology (CEH) has confirmed that this is an oversight with the search by location function as other fen types (e.g. valley mires, poor fens or transition mires) should be identified as sensitive to acid deposition and a critical load provided. CEH has recommended that at sites where fen types sensitive to acid deposition are present that the acid critical loads for acid grassland should be used as a surrogate (email communication from Bill Bealey, CEH dated 25 May 2017). As a conservative approach, the acid critical loads for acid grassland has been adopted for all Fen, Marsh and Swamp habitats for the air quality modelling assessment, regardless of the fen type present at each site. For nitrogen deposition, it has been assumed that the fen type is "Valley mires, poor fens and transition mires" which is a conservative approach as rich fens have slightly higher critical loads.