Department of Energy & Climate Change

HABITATS REGULATIONS ASSESSMENT FOR THE MID-WALES WIND FARMS:

- **LLANDINAM REPOWERING**
- **LLAITHDDU**
- **LLANBADARN FYNYDD**
- **CARNEDD WEN**
- **LLANBRYNMAIR**

AND FOR THE LLANDINAM WINDFARM TO WELSHPOOL SUBSTATION 132 kV OVERHEAD LINE.

Date: **23 June 2015**

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1. Habitats Regulations Assessment

Introduction

1.1 This is a record of the Habitats Regulation Assessment (HRA) that the Secretary of State (SoS) for Energy and Climate Change has undertaken under the Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations) in respect of the consents for the 6 proposed projects in Powys, Wales. For the purposes of these Regulations, the SoS is the competent authority.

1.2 On 04 June 2013, the Planning Inspectorate (hereafter PINs) opened a conjoined public inquiry into five applications made under section 36, and one made under section 37, of the Electricity Act 1989. The public inquiry concluded on 30 May 2014. The inquiry jointly considered 5 wind farm projects (Llandinam Repowering, Llaithddu, Llanbadarn Fynydd, Carnedd Wen and Llanbrynmair) collectively referred to in this document as "the mid-Wales wind farm projects" and a related grid connection, the Llandinam wind farm to Welshpool substation 132 kV overhead line ("Llandinam 132 kV line"). The applications for these proposed developments are described in more detail in Section 2.

1.3 In Wales, onshore energy generating stations greater than 50 MW fall outside of the scope of the Town and Country Planning Act 1990. The Applications were submitted between November 2007 (Llanbadarn Fynydd) and December 2009 (Llandinam 132 kV line); before the provisions of the Planning Act 2008 came into force and are therefore subject to the requirements of the Electricity Act 1989 (the relevant consenting regime at that time).

1.4 Mr A. Poulter, an Inspector from the Planning Inspectorate (PINs), submitted his report of the inquiry, including his recommendation (the Inspector's Report), to the SoS on 08 November 2014.

1.5 The SoS's conclusions on matters pertaining to the Habitats Regulations are contained in this Habitats Regulations Assessment (HRA) report and have been informed by the Inspector's Report, and the documents and representations submitted before and during the inquiry.

1.6 Natural Resources Wales (NRW) is the statutory nature conservation body in Wales (replacing the Countryside Council for Wales (CCW)) and is also responsible for discharging the functions of the Environment Agency and Forestry Commission in Wales.

Legislation

1.7 Council Directive 92/43/EC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) aims to ensure the long-term survival of important species and habitats by protecting them from adverse effects of plans and projects.

1.8 The Habitats Directive provides for the designation of sites for the protection of habitats and species of European importance. These sites are called Special Areas of Conservation (SACs)

once designated at a national level. Sites that have been proposed to the European Commission but are not yet formally adopted are known as Sites of Community Importance (SCI). The Birds Directive provides for the classification of sites for the protection of rare and vulnerable birds and for regularly occurring migratory species. These sites are called Special Protection Areas (SPAs). SACs and SPAs are collectively termed European sites and form part of a network of protected sites across Europe. This network is called Natura 2000. Both Directives are often collectively referred to as the Habitats Directive.

1.9 In the UK, the Habitats Regulations transpose the Habitats and Birds Directives into national law as far as the 12 nm limit of territorial waters. Beyond territorial waters, the Offshore Habitats Regulations serves the same function for the UK's offshore marine area.

1.10 Regulation 61 of the Habitats Regulations provides that:
"…..*before deciding to give consent, permission or other authorisation for, a plan or project which is likely to have a significant effect on a European site (either alone or in combination) and which is not directly connected with or necessary to the management of the site, the competent authority must make an appropriate assessment of the implications for the site in view of the site's conservation objectives.*"

1.11 The projects are not directly connected with, or necessary to, the management of a European site. The Habitats Regulations require that, where a project(s) is likely to have a significant effect (LSE) on any such site, an appropriate assessment (AA) is to be carried out to determine whether or not the project will adversely affect the integrity of the site in view of its Conservation Objectives. In this document, the assessments as to whether there are LSEs, and, where required, the AAs, are collectively referred to as the HRA.

1.12 When determining whether there is an adverse effect the HRA can take into account mitigation measures so long as they are appropriately secured by requirements and conditions within the consent.

Statutory Consultation

1.13 Under Regulation 61 (3) of the Habitats Regulations the competent authority must, for the purposes of an AA, consult the appropriate statutory nature conservation body and have regard to any representation made by that body within such reasonable time as the authority specify.

1.14 Under Regulation 61 (4) of the Habitats Regulations the competent authority must also, if they consider it appropriate, take the opinion of the general public and if they do so, they must take such steps for that purpose as they consider appropriate.

1.15 The SoS consulted NRW on a draft version of this HRA on the 04 February 2015.

1.16 The response was received from NRW on the 18 February 2015, confirming that "NRW broadly agrees with the conclusions of the Habitats Regulations Assessment but considers that insufficient information has been provided to demonstrate that the mitigation has been appropriately provided and secured." It also raised a number of specific points which have been

taken into account when producing the final version of the HRA (23 June 2015). NRW's response to the draft HRA (dated 04 February 2015) is appended in full as Annex D and a table recording how these comments have been addressed is included as Annex E, including any outstanding areas of disagreement.

1.17 Given the extensive opportunity for representations on these applications during the conjoined Public Inquiry, which lasted from 28 November 2012 (the introductory meeting) to 30 May 2014 (final closing session), the SoS considers that he can rely on the Inspector's Report to summarise all relevant views and that wider public consultation is not necessary.

Information Sources

1.18 This HRA report should be read in conjunction with the documents submitted during the Public Inquiry. These documents provide extensive background information and are available on the Public Inquiry's website[1].

1.19 The key information in these documents, written representations and discussions at the hearings are summarised and referenced in this report where used.

[1] http://bankssolutions.co.uk/powys/

2. Development Descriptions

Overview

2.1 This HRA considers the impacts upon European sites from 6 proposed projects; the Llandinam Repowering project, the Llaithddu project, the Llanbadarn Fynydd project, Llanbrynmair, Carnedd Wen and the Llandinam 132 kV line. The projects are broadly split across 2 Strategic Search Areas (SSAs), SSA B and SSA C, although not all of the projects lie wholly within a SSA. The SSAs are areas defined by the Welsh Government in 2005 as being potentially suitable for the development of large scale wind farm developments. Further information about the allocation of these areas is described in the Technical Advice Note 8 policy document (TAN 8)[2]. The descriptions of these projects are provided in brief below, although designs have evolved over time descriptions are available in full within their respective ES's, Supplementary Environmental Information (SEI) and in summary within the Inspector's Report. A map showing the locations of the 5 mid-Wales wind farm projects (and their respective SSAs) is provided in figure 1. The proposed route of the Llandinam 132 kV line is provided in figure 3.

Llandinam Repowering – SSA C

2.2 The Llandinam Repowering proposal, was submitted by CeltPower Ltd, and consists of plans to decommission the existing wind farm on the site and build a new one in its place. The existing wind farm consists of approximately 102 turbines generating approximately 30 MW of electricity. The original plan was to build a 42 turbine scheme with a capacity of 126 MW in its place however that proposal has been revised several times. The current proposal (and the one considered within this document) is to build a 34 turbine scheme with a maximum generation capacity of 102 MW.

2.3 The existing turbines are 45 m in height (to blade tip) but the new turbines will be have a height of 121.2 m so will be significantly taller (although 3 of the turbines will have a reduced height to blade tip of 111.2 m to reduce visual impacts).

Llaithddu – SSA C

2.4 The original Llaithddu proposal, submitted by Fferm Wynt Llaithddu Cyf, was for 29 x 2.3 MW turbines. However, following consultation this was reduced to 27 x 2.3 MW turbines in 2 distinct groups. The northern group would consist of 12 turbines with a height to blade tip of 115.5 m. The southern group would consist of 15 turbines with a height to blade tip of 99.5 m.

2.5 Associated infrastructure development includes access tracks, a control building and electricity substation within a fenced compound, a temporary constructor's compound, borrow pits, underground cables, 2 anemometry masts and the provision of passing places for existing roads.

[2] Welsh Assembly Government. 2005. Technical Advice Note 8: Planning for renewable energy

Llanbadarn Fynydd – SSA C

2.6 This proposal, submitted by Vattenfall, is for the development of 17 x 3.5 MW turbines providing a maximum generating capacity of 59.5 MW of electricity. The turbines would have a maximum height to blade tip of 126 m.

2.7 Associated infrastructure includes; an on-site met mast, underground cabling, a substation, a construction compound and provisions for on-site borrow pits.

Llandinam 132 kV Line – SSA C

2.8 The proposed Llandinam Repowering scheme would require a new connection to the local electricity distribution network to account for the increase in generation capacity. The proposed route of the overhead line is shown in figure 3.

2.9 The proposed grid connection application was submitted by SP Manweb and would comprise approximately 35 km of 132 kV overhead lines within a 100 m corridor providing a 3-phase single circuit with 124 MW of capacity. The line would be supported by 382 wooden poles, ranging in height between 12 m and 16 m. The span between poles would vary between 50 m and 130 m with approximately the final 50 m buried in the ground.

2.10 Associated infrastructure includes a minimum of 2 (but potentially 3) temporary construction compounds as well as the constructor's main compound where kit, office and other equipment would be stored.

Carnedd Wen – SSA B

2.11 The original proposal for the Carnedd Wen project, submitted by RWE Npower Renewables Ltd, proposed the construction of a wind farm of up 250 MW. This proposal comprised of 65 turbines, associated ancillary development and the proposed felling of 1742 ha of coniferous forest in order to re-establish natural habitats.

2.12 This proposal was subsequently amended so as to reduce the overall capacity to 150 MW; this would be generated by 50 x 3 MW turbines with a maximum height to blade tip of 137 m. The amended scheme proposes 1409 ha of forestry clearance and a number of habitat management and improvement actions.

Llanbrynmair – SSA B

2.13 The original application for the Llanbrynmair proposal, submitted by RES UK and Ireland Ltd, was for 43 turbines (with a total capacity of between 86 MW and 129 MW) and associated infrastructure.

2.14 This proposal was amended to reduce the capacity to 90 MW; this would be generated by 30 turbines with an individual generating capacity of between 2 and 3 MW. The maximum height to blade tip would be 126 m.

2.15 Associated infrastructure includes; on-site tracks, underground cabling, forestry felling, crane hard standings, a communications mast, a permanent free standing 80 m high lattice wind

monitoring mast, electrical transformers, electrical connection works, a substation and a control building.

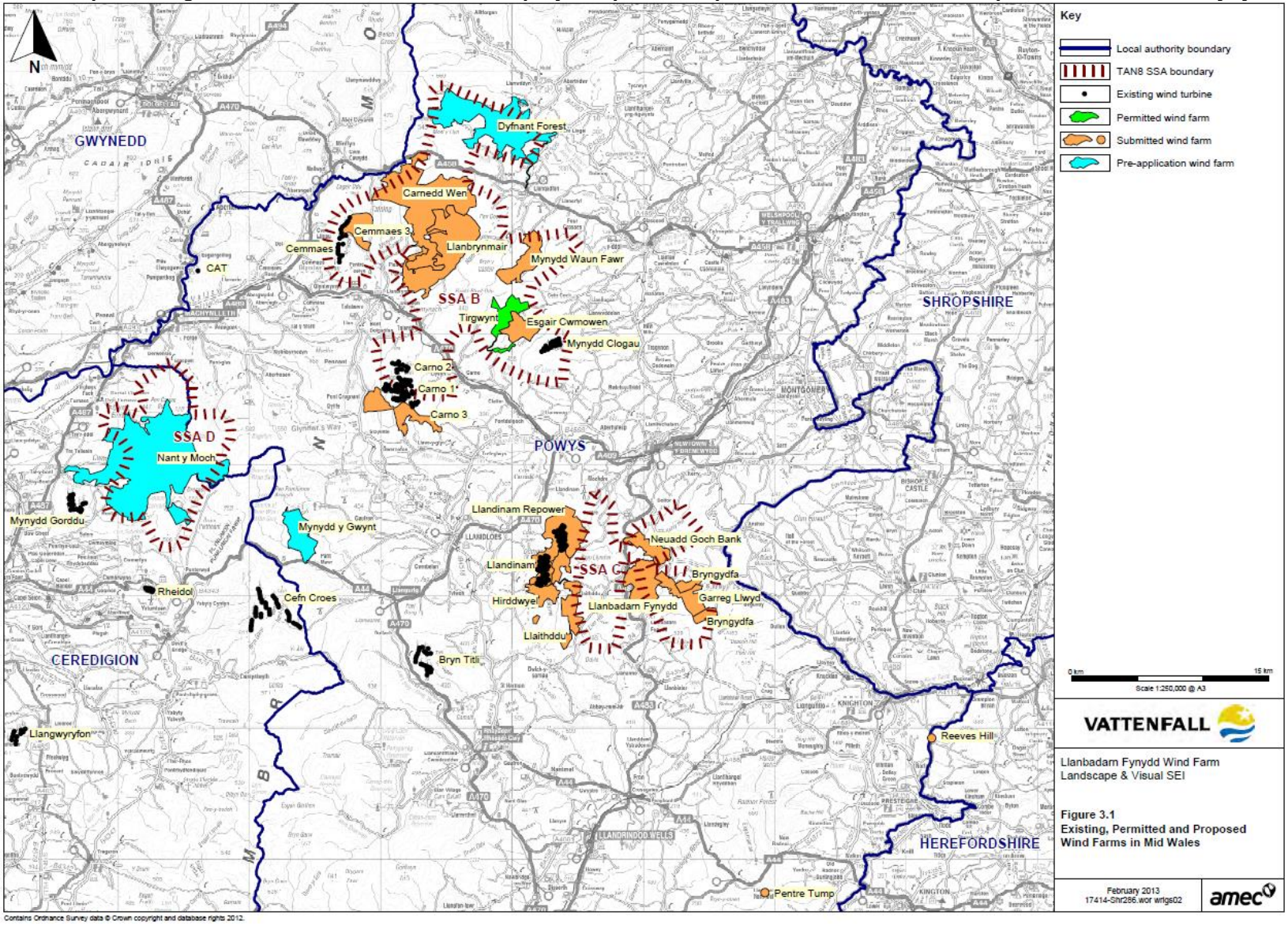
Rochdale Envelope

2.16 The Rochdale Envelope is a term used in planning to reflect that often an applicant will not know all of the details associated with the proposal at the time of application. The Rochdale Envelope allows an applicant to set out the broad range of options under consideration and then carry out an Environmental Impact Assessment (EIA) based on the worst case scenario for each of those options. The decision-maker, in this case the SoS, can then take a decision based on the impacts of the worst case scenario, allowing the developer to build up to, but not exceed this threshold. The Applicant is then able to position the final project design within the approved environmental envelope thereby providing some much needed flexibility.

2.17 For the projects considered within this HRA, the Applicants have sought to retain some flexibility in the final project design and the conditions on the consent have been framed to allow for multiple design options in accordance with the Rochdale Envelope concept.

2.18 The ESs produced for each of the 6 applications are therefore based on the assessment of a maximum adverse scenario (the realistic worst case) in environmental terms.

Figure 1. Map showing the locations of the 5 wind farm projects (and SSAs) considered within this AA (Source: Llanbadarn Fynydd SEI)



3 Likely Significant Effects Test

3.1 Under Regulation 61 of the Habitats Regulations, the SoS must consider whether a Development is likely to have a significant effect (LSE) on a European site, either alone or in combination with other plans or projects. A LSE is, in this context, any effect that may be reasonably predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated, but excluding trivial or inconsequential effects. An AA is required if a plan or project is likely to have a significant effect on a European site, either alone or in combination with other plans or projects.

3.2 The purpose of this test is to identify LSEs on European sites that may result from the proposed developments and to record the SoS's conclusions on the need for an AA and his reasons for screening activities, sites or plans and projects in for further consideration in the AA. For those features where a LSE is identified, these must be subject to an AA. This review of potential implications can be described as a 'two-tier process' with the LSE test as the first tier and the review of effects on integrity (AA) as the second tier.

3.3 This HRA jointly considers the impacts of all 6 of the projects (as described in section 2) given that they have jointly come to the SoS for consideration.

3.4 This section addresses this first tier of the HRA. The SoS has considered the potential impacts of the projects, both alone and in combination with other plans and projects, on each of the European sites (as shown in table 1) to determine whether or not there will be a LSE. Where a LSE is identified, these are briefly described in table 1. Further detail about the European sites, their respective interest features and conservation objectives are provided in the Annexes.

Treatment of decommissioning impacts

3.5 At the end of the projects' lifetime, decommissioning must take place. Each of the project's draft consents contains several conditions outlining the provisions for decommissioning (Llandinam Repowering: conditions 13-17; Llaithddu: 12-16; Llanbadarn Fynydd: 13-18; Llanbrynmair: 12-17; Carnedd Wen: 12-16; Llandinam 132 kV line: 17). These provisions require (amongst other things) the production of an Environmental Management Plan which uses updated habitats and birds survey results to detail the measures to be taken to protect habitats and birds. The Environment Management Plan needs to be submitted and approved by the Local Planning Authority (LPA).

3.6 If the environmental baseline were to be similar to the current situation, then the impacts of decommissioning of the projects could be expected to be similar to the anticipated impacts of construction.

3.7 There is no reason to suppose that the impacts of decommissioning would cause an adverse effect on site integrity and on this basis, the SoS considers that it is reasonable not to include a detailed discussion on decommissioning impacts in this report. He is satisfied that decommissioning effects will be addressed fully by the LPA, prior to decommissioning taking

place and using the more detailed information on decommissioning processes and environmental conditions which will be available at that time.

Likely significant effects: projects when considered alone

3.8 The projects identified as having a likely significant effect on a European site, when considered alone, are shown in table 1.

3.9 In SSA C, the Llandinam Repowering project, the Llaithddu project, the Llanbadarn Fynydd project and the Llandinam 132 kV line project will all have a likely significant effect upon the River Wye SAC. This is primarily because of the potential for the projects to have hydrological effects which could result in negative impacts for the habitats and species further downstream. In addition, the Llandinam Repowering project requires the construction of a Bailey bridge across the River Wye. The construction of the Bailey bridge has also been identified as having a likely significant effect upon the River Wye SAC.

3.10 In SSA B, the Carnedd Wen project has been identified as having a likely significant effect upon 2 European sites; the Pen Llyn a'r Sarnau SAC and the Berwyn SPA. The potential hydrological impacts resulting from the Carnedd Wen project could affect downstream coastal and marine habitats and species within the Pen Llyn a'r Sarnau SAC. The construction and operational effects of the project may also affect Berwyn SPA bird species through mechanisms such as disturbance, habitat loss and collision mortality.

3.11 The other development in SSA B, the Llanbrynmair project, will not have a likely significant effect upon any European sites. The Berwyn SPA is approximately 5 km from the Llanbrynmair project, a likely significant effect upon the Berwyn SPA was screened out because SPA bird species are unlikely to forage within or be functionally linked to the project site. On this basis, the SoS is satisfied that the Llanbrynmair project would not have a likely significant effect on the Berwyn SPA. This conclusion is supported by NRW (RES UK and NRW: Statement of Common Ground: Ornithology (27 March 2009)).

3.12 The potential for impacts upon 2 other European sites was highlighted during the Public Inquiry; the Berwyn and South Clwyd Mountains SAC, and the Montgomery Canal SAC. Both of these sites have been screened out of the AA. For the Berwyn and South Clwyd Mountains SAC, NRW advised that there would be no likely significant effect, either alone or in combination, from both the Carnedd Wen and the Llanbrynmair projects. Similarly, NRW raised no concerns about the potential for any of the projects to affect the water quality of the Montgomery Canal SAC (a concern raised during the Public Inquiry by the Montgomeryshire Wildlife Trust). On this basis a likely significant effect on this SAC was screened out.

3.13 The SoS is satisfied that the European sites identified in table 1 should form the basis of the AA.

3.14 The SoS is satisfied that there are no other European sites which should be taken into account within the AA. This view is supported by the findings of the Inspector's Report and the advice of NRW.

Table 1. The European sites with the potential to be at risk of a likely significant effect from the mid-Wales wind farm projects and the Llandinam 132 kV line.

Site	Interest features	Effects	Projects	LSE Alone	LSE In combination
River Wye SAC	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation Transition mires and quaking bogs White-clawed crayfish (*Austropotamobius pallipes*) Sea lamprey (*Petroymyzon marinus*) Brook lamprey (*Lampetra planeri*) River lamprey (*Lampetra fluviatilis*) Twaite Shad (*Alosa fallax*) Atlantic salmon (*Salmo salar*) Bullhead (*Cottus gobio*) Otter (*Lutra lutra*) Allis shad (*Alosa alosa*)	Hydrological Construction of Bailey bridge *(Llandinam Repowering only)* Disturbance (otter)	Llandinam Repowering	Y	Y
			Llaithddu	Y	Y
			Llanbadarn Fynydd	Y	Y
			Llandinam 132 kV line	Y	Y
Berwyn and South Clwyd Mountains SAC	European dry heaths Blanket bogs Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) Transition mires and quaking bogs Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) Calcareous rocky slopes with chasmophytic vegetation	Hydrological	Carnedd Wen	N	N
			Llanbrynmair	N	N
Pen Llyn a'r Sarnau	Sandbanks which are slightly covered by sea water at all time Estuaries Coastal lagoons Large shallow inlets and bays Reefs Mudflats and sandflats not covered by seawater at low tide Salicornia and other annuals colonising mud and sand Atlantic salt meadows (Glauco-puccinellietalia maritimae) Submerged or partially submerged seacaves Bottlenose dolphin (*Tursiops truncatus*) Otter (*Lutra lutra*) Grey seal (*Halichoerus grypus*)	Hydrological	Carnedd Wen	Y	Y
Berwyn SPA	Hen harrier (*Circus cyaneus*) Merlin (*Falco columbarius*) Peregrine falcon (*Falco peregrinus*) Red kite (*Milvus milvus*)	Collision risk Habitat loss Displacement Disturbance	Carnedd Wen	Y	Y
			Llanbrynmair	N	N

Likely significant effects: projects when considered in combination

Scope of in combination assessment

3.15 Under the Habitats Regulations, the SoS is obliged to consider whether other plans or projects in combination with the mid-Wales wind farm projects and the Llandinam 132 kV line project might affect European sites.

3.16 There are a number of other plans and projects which could potentially affect some of the same European sites. These include a number of planned onshore wind farms within the vicinity of the mid-Wales wind farm projects and the Llandinam 132 kV line. The list of plans and projects screened into the in combination assessment is provided in table 2.

3.17 In addition to the projects listed in table 2, there are 2 Nationally Significant Infrastructure Projects (NSIPs) close to the proposed mid-Wales wind farm projects and the Llandinam 132 kV line project; they are the SP Manweb Mid Wales Electricity Connections project and the National Grid Mid Wales Electricity Connection. These projects fall inside the scope of the Planning Act 2008 because they carry a voltage of 132 kV, and unlike the Llandinam 132 kV line were submitted after the provisions of the Planning Act 2008 came into effect.

3.18 The SP Manweb Mid Wales Electricity Connections project has been registered with PINS and an application is expected to be submitted in either Q2 or Q3 2015. The project consists of linking several wind farms with a proposed 400 kV/132 kV National Grid substation at Cefn Coch. The link will be provided by several overhead lines and underground cables. Until the application is submitted to PINS, there is only limited information publicly available about the proposed route that the overhead lines/underground cables will take and the associated environmental impacts. According to the Applicant's EIA scoping report and the PINS scoping opinion report, the River Wye SAC lies within 2 km of the indicative DCO boundary. There is therefore the potential for the construction works to have hydrological effects which might affect the SAC. In addition, NRW have identified the potential for an impact upon the Berwyn SPA.

3.19 As at 23 June 2015, information on the nature, magnitude and the duration of the potential impacts and mitigation measures was not available. On this basis, the SP Manweb Mid Wales Electricity Connections project has been excluded from this in combination assessment as the SoS considers that there is insufficient information available at this point to include it within the HRA. We take this position in light of the fact that it is not yet considered a known project whose effects can be properly assessed. When it becomes an assessable project, for instance when the project design is settled on, then it will have to be considered in conjunction with any environmental effects of windfarms existing at that point or any other known proposals or permissions (if not built out). At that point, the SP Manweb Mid Wales Electricity Connections project may not be able to go ahead, or could run such a risk, due to the cumulative effects.

3.20 The National Grid Mid Wales Electricity Connection project is expected to be submitted as an application to PINS in 2015. The proposed project consists of a 400 kV overhead line linking a new substation located just outside Cefn Coch with an existing substation at Shrewsbury. As

with the SP Manweb project, until the application is submitted to PINS, there is only limited information publicly available about the proposed route that the overhead lines will take and the associated environmental impacts. According to the Applicant's EIA scoping report and the PINS scoping opinion report, the only European site within the proposed corridor is the Montgomery Canal SAC. There are 2 other internationally protected sites within 2 km of the search area, the Tanat and Vyrnwy Bat SAC and the Midland Meres and Mosses Ramsar site.

3.21 Information on the nature, magnitude and the duration of the potential impacts is not available, nor are details of the mitigation measures which might be implemented by the Applicant. On this basis, the National Grid Mid Wales Electricity Connection project has been excluded from the in combination assessment as the SoS considers that there is insufficient information available at this point to include it within the HRA. We take this position in light of the fact that it is not yet considered a known project whose effects can be properly assessed. When it becomes an assessable project, for instance when the project design is settled on, then it will have to be considered in conjunction with any environmental effects of windfarms existing at that point or any other known proposals or permissions (if not built out). At that point, the National Grid Mid Wales Electricity Connection project may not be able to go ahead, or could run such a risk, due to the cumulative effects

Table 2. Plans and projects considered in combination with the 5 mid-Wales wind farm projects and the Llandinam 132 kV line (status as of 23 June 2015).

Strategic Search Area B		
Name	**Description**	**Status**
Esgair Cwmowen	19 turbine wind farm (47.5 MW)	Applicant currently collecting further information following consultation with Powys County Council (PCC)
Carno 3	18 turbine wind farm (41-45 MW)	Applicant currently collecting further information following consultation with PCC
Cemmaes 3	12 turbine wind farm (24 MW)	Applicant has appealed against PCC's decision to refuse planning permission
Mynydd Lluest y Graig	Up to 35 turbine wind farm (up to 122.5 MW)	Pre-planning, registered with PINS. Application expected in 2016.
Tirgwynt	12 turbine wind farm (30 MW)	Consented but not yet constructed.
Mynydd Clogau	17 turbine wind farm (15 MW)	Operational since January 2006
Mynydd y Gwynt	Up to 27 turbine wind farm (81 - 89.1 MW)	Currently with the Planning Inspectorate at the Recommendation stage.
Strategic Search Area C		
Bryngydfa wind farm	12 turbine wind farm (24 MW)	Currently with PCC for determination
Garreg Lwyd Hill	17 turbine wind farm (at least 30.6 MW)	Consented but not yet constructed
Hirddywel	9 turbine wind farm (27 MW)	Currently with PCC for determination
Neuadd Goch Bank	9 turbine wind farm (27 MW)	Applicant has submitted an appeal to the Planning Inspectorate on grounds of non-determination.

3.22 The SoS recognises that both of the grid connection projects (National grid's and SP Manweb's) could not be lawfully consented should they be unable to demonstrate that they will not result in an adverse effect upon the integrity of a European site(s). The SoS is therefore satisfied that the alone and in combination impacts of both future projects will be fully assessed at a later stage when they are being considered for consent.

Likely significant effect: in combination assessment

3.23 The European sites with the potential to be affected by the mid-Wales wind farm projects and the Llandinam 132 kV line, in combination with other plans and projects (as identified in table 2), are shown in table 1. A likely significant effect has been identified at three sites, the River Wye SAC, the Berwyn SPA and the Pen Llyn a'r Sarnau SAC.

3.24 In SSA C; the Llandinam Repowering project, the Llaithddu project, Llanbadarn Fynydd project, and the Llandinam 132 kV line project, in combination with each other and with other plans or projects (in table 2), have been identified as having a likely significant effect upon the River Wye SAC. This is primarily because of the potential for the projects to have cumulative hydrological impacts which might affect SAC interest features further downstream.

3.25 In SSA B, the Carnedd Wen project, in combination with the other plans and projects (in table 2), has been identified as having a likely significant effect upon 2 European sites; the Pen Llyn a'r Sarnau SAC and the Berwyn SPA. The potential cumulative hydrological impacts resulting from the Carnedd Wen project, and other plans and projects, could affect the coastal and marine habitats and species downstream within the SAC. The cumulative construction and operational effects of the projects (in table 2) may affect SPA bird species through mechanisms such as disturbance, displacement, habitat loss and collision mortality.

3.26 The other development in SSA B, the Llanbrynmair project, will not have a likely significant effect upon any European sites in combination with other plans and projects. The Berwyn SPA is approximately 5 km from the Llanbrynmair project, a likely significant effect upon the Berwyn SPA was screened out because SPA bird species are unlikely to forage within or be functionally linked to the project site.

3.27 The SoS is therefore satisfied that the Llanbrynmair project, in combination with other plans and projects, will not have a likely significant effect upon the Berwyn SPA. This conclusion is supported by NRW (RES UK and NRW: Statement of Common Ground: Ornithology (27 March 2009)).

Conclusions on Likely Significant Effects

3.28 The SoS considers, in line with his requirements under the Habitats Regulations, that sufficient information has been provided to inform a robust assessment of the potential for the mid-Wales wind farm projects and the Llandinam 132 kV line to have a likely significant effect, both alone and in combination, upon European sites.

3.29 Having given due consideration to the information and analysis presented to him, the SoS is satisfied that there are 3 European sites (the River Wye SAC, the Berwyn SPA and the Pen Llyn a'r Sarnau SAC) for which a LSE could not be excluded, both alone and in combination with other plans and projects, that are relevant to his AA.

3.30 The SoS is satisfied that there are no other European sites which are at risk of a LSE as a result of the mid-Wales wind farm projects and the Llandinam 132 kV line, either alone or in combination with other plans or projects.

4 Appropriate Assessment

Test for Adverse Effect on Site Integrity

4.1 The requirement to undertake an AA is triggered when a competent authority, in this case the SoS, determines that a plan or project is likely to have a significant effect on a European site either alone or in combination with other plans or projects. Guidance issued by the European Commission states that the purpose of an AA is to determine whether adverse effects on the integrity of the site can be ruled out as a result of the plan or project, either alone or in combination with other plans and projects, in view of the site's conservation objectives (European Commission, 2000).

4.2 The purpose of this AA is to determine, in view of the site's conservation objectives and using the best scientific evidence available, whether or not adverse effects on the integrity of those sites can be ruled out as a result of the project, either alone or in combination with other plans and projects.

4.3 If the competent authority cannot ascertain the absence of an adverse effect on site integrity within reasonable scientific doubt, then under the Habitats Regulations, alternative solutions should be sought. In the absence of an acceptable alternative, the project can only proceed if there are imperative reasons of overriding public interest (IROPI) and suitable compensation measures identified. Considerations of IROPI and compensation are beyond the scope of an AA.

Conservation Objectives

4.4 Guidance from the European Commission indicates that disturbance to a species or deterioration of a European site must be considered in relation to the integrity of that site and its conservation objectives (European Commission, 2000). Section 4.6.3 of that guidance defines site integrity as:

"…the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified."

4.5 Conservation objectives outline the desired state for a European site, in terms of the interest features for which it has been designated. If these interest features are being managed in a way which maintains their nature conservation value, they are assessed as being in a 'favourable condition'. An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation (English Nature, 1997).

4.6 There are no set thresholds at which impacts on site integrity are considered to be adverse. This is a matter for interpretation on a site-by-site basis, depending on the designated feature and nature, scale and significance of the impact.

4.7 In this assessment, conservation objectives have been used by the SoS to consider whether the 4 mid-Wales wind farm projects and the Llandinam 132 kV line (for which a likely significant effect has been identified) have the potential to have an adverse effect on a site's integrity, either alone or in combination with other plans and projects.

4.8 The potential for each of the projects to have an adverse effect is considered in turn.

5 Llandinam Repowering

5.1 The Llandinam Repowering project is located approximately 7 km east of Llanidloes and 12 km southwest of Newtown in an area of Rhyddhwell hills; an area characterised by an extensive upland plateau over 500 m above sea level. The project site covers approximately 1,307 ha and is roughly 6.5 km in length and up to 3 km across at its widest point.

Impacts: project alone

5.2 The Llandinam Repowering project was identified as having a likely significant effect upon the River Wye SAC. The River Wye SAC lies approximately 5 km from the project site. Whilst most of the water courses on the site flow into the River Severn, the watercourses in the east of the site flow into the River Wye via the River Ithon. There is therefore the potential for the project to affect the River Wye SAC should there be any hydrological impacts which might result from the development. This AA considers whether these impacts are such that an adverse effect upon the integrity of the River Wye SAC cannot be ruled out.

5.3 The River Wye SAC covers approximately 2,235 ha and was designated to protect its freshwater habitats and species. A full list of interest features, as well as the conservation objectives, for the River Wye SAC is provided in Annex A. The River Wye rises on Plynlimon in the Cambrian Mountains and flows generally in a south-easterly direction, entering the River Severn at Chepstow. The upper catchment contains several large sub-catchments, including the Irfon in the northwest, the Ithon in the northeast and the Lugg in the east. The ecological structure and functions of the SAC are dependent on hydrological and geomorphological processes as well as the quality of riparian habitats and connectivity of habitats.

5.4 In their initial representations (CCW outline statement of case: Llandinam Repowering), NRW advised the Llandinam Repowering will have a likely significant effect, both alone and in combination, on the River Wye SAC and that an AA is required. Subsequent representations from NRW (Celt Power and NRW: statement of common ground) advised that with appropriately secured mitigation measures is should be possible to conclude no likely significant effect as a result of the hydrological impacts.

5.5 NRW monitors the water quality at a number of places in the upper reaches of the River Ithon. This data has been used by the SoS to establish the baseline water quality. The water quality data from 2009 (the most recently available data) is presented in table 3. The SoS can see no reason why the water quality would have declined since 2009 and is satisfied to rely on this data as the basis for his assessment.

5.6 It is clear from table 3 that the water quality in the upper catchment of the River Ithon is of a very high quality; this makes it particularly sensitive to any changes which might affect its water quality.

5.7 All of the interest features of the River Wye SAC are potentially sensitive to siltation and pollution. The Applicant has provided an assessment of the relative sensitivities of the interest features (MacArthur, 2014a). Atlantic salmon, for example, are sensitive to increases in

suspended sediment concentrations which could have the effect of settling on spawning beds, or causing a decrease in the level of dissolved oxygen in the water column. This could result in a reduction in the spawning success of Atlantic salmon and could constitute an adverse effect upon the site's integrity.

5.8 The release of large quantities of suspended sediment into watercourses could adversely affect aquatic species and habitats along the length of the River Wye SAC. Negative impacts could occur through the covering and clogging of spawning grounds, and reductions in water quality (potentially through changes in chemical composition, clarity or oxygen content).

5.9 The distribution of interest features within the River Wye SAC is described in table 4. Despite records showing the interest features are widely distributed throughout the SAC, most of the interest features are more commonly found towards in the lower and middle reaches of the River Wye. The upper areas of the River Wye SAC, closest to the catchments more likely to be affected by the Llandinam Repowering project, are less likely to support many of these interest features.

Table 3. The water quality of the River Ithon at three sampling sites, collected by the Environment Agency in 2009. (Chemical and biological results: A = very good – F = bad; Nitrate and phosphate results: 1 = very low levels – 6 = very high levels)

	Sampling site		
	Blue Lins Brook	Llaethdy Brook	Gwenlas Brook
Chemistry	A	A	A
Biology	A	A	A
Nitrates	1	1	1
Phosphates	1	1	1

5.10 Given that most of the potential impacts are indirect hydrological effects, it is possible through good design practices and on-site management measures to mitigate many of these effects and these have been secured through conditions.

5.11 Most of the turbines will be located at least 50 m from watercourses, with only 3 turbines located any closer (at 18 m, 31 m, and 23 m respectively). The distance to watercourses should prevent any loose sediment or other material, exposed as a result of the construction work, from entering the watercourses and potentially harming species and habitats downstream.

5.12 The Applicant estimates that approximately 2.3 % of the proposed development will have impermeable surfaces which could potentially increase the level of surface water runoff.

5.13 Construction of silt traps and settlement ponds, where necessary, should further reduce the risk of exposed sediment profiles from being washed into watercourses and potentially being washed into the River Wye SAC.

5.14 NRW and the Applicant have agreed a condition, secured within the s36 consent (condition 41), which will require the Applicant to produce a Construction Environmental Management Plan (CEMP). The CEMP will describe the measures designed to prevent any hydrological impacts which may have a negative impact upon the River Wye SAC.

Table 4. The distribution of the River Wye SAC interest features (source: Llanbadarn Fynydd SEI 2010: supplementary information for HRA).

Interest Feature	Distribution within SAC
Ranunculus-type vegetation	Ranunculion fluitantis and Callitricho-batrachion vegetation is widely distributed throughout the SAC and is a key habitat in all site units, other than the Colwyn Brook Marshes (North and South) SSSI. It is particularly common in the middle and lower reaches of the River Ithon, River Aran, Mithil Brook, Clywedog Brook, River Dulas, and the Howey Brook where the plant communities are typical of mesotrophic rivers and streams. It is more unusual in the headwaters, where oligotrophic conditions dominate.
Transition mires and quaking bogs	Only found within Colwyn Brook Marshes (North and South) SSSI; this component SSSI is located on the headwaters of the River Edw, near Builth Wells.
White-clawed crayfish	There has been a major decline in the distribution and abundance of white-clawed crayfish in the Wye catchment, and the species may now be largely absent from the main river channel in its middle reaches. The River Wye (Tributaries) SSSI is thought to form the core range, with significant populations now confined to the Sgithwen, Cletwr, Edw, Llynfi Dulas, and Builth Road Dulas.
Sea lamprey	Primarily associated with the lower reaches of the River Wye, but recorded spawning to Rhyader on the main channel of the River Wye (~14 km upstream of the confluence with the River Ithon). Key sites thought to be in lower reaches of the Wye.
Brook lamprey	Considered present in most reaches of the River although likely to be more prevalent in the headwaters.
River lamprey	As for brook lamprey, although river lamprey may be the more abundant species in the main channel and the lower reaches of larger tributaries.
Twaite shad	Known to spawn in the lower reaches of the River Wye around Monmouth, and will migrate through other reaches; has been recorded in the lower 0.6 km of the River Irfon SSSI, above the confluence with Wye; only infrequently recorded above this point. Known spawning sites at Builth Wells.
Atlantic salmon	The Atlantic salmon is the focus for much of the management activity carried out on the Wye. It is widely distributed throughout the SAC and is present in all site units, other than the Colwyn Brook Marshes (North and South) SSSI.
Bullhead	Bullheads are very widely distributed throughout the whole of the River Wye SAC, and are present in most site units.
Otter	Present within all units of the River Wye SAC, with higher densities in the mid-Wales reaches and the coastal reaches around the Severn Estuary and Gwent levels
Allis shad	Allis shad are thought to be uncommon within the Wye, although difficulties in distinguishing this species from the Twaite shad ensure that accurate information on distribution is not available. For monitoring and management purposes it is assumed that the distribution is the same as for Twaite shad (i.e. known to spawn in the lower reaches of the River Wye, recorded in the lower 0.6 km of the River Irfon SSSI, above the confluence with Wye; only infrequently recorded above this point).

5.15 The CEMP will contain a site-specific Environmental Management and Pollution Prevention Plan (EMPPP) (containing a Drainage Management Plan and a Ground and Surface Water Management Plan) which will describe the full range of mitigation measures to be implemented. It will also describe the locations and parameters where the Applicant will monitor any changes in water quality (subject to approval by the LPA). A draft EMPPP was produced for the inquiry

(v2 March 2013) and will be updated, as required, in order to discharge this condition requirement.

5.16 As described in table 4, many of the SAC features (transition mires and quaking bogs, sea lamprey, river lamprey, Twaite shad and Allis shad) are thought to be absent or largely absent from the River Ithon SSSI. The presence of these interest features is therefore considered to be located some distance from the Llandinam Repowering site boundary, at which point any hydrological effects should be fully attenuated by influences at a wider catchment-scale.

5.17 The other features (described in table 4) are at least present, either within the River Ithon, or the Gwenlas Brook (Ranunculus-type vegetation, white-clawed crayfish, brook lamprey, Atlantic salmon, bullhead and otter). Whilst the sensitivity of these features to changes in water quality is high, the proposed mitigation measures will ensure that the magnitude of any residual effects is negligible.

5.18 Condition 47 of the s36 consent requires the appointment and presence of a suitably qualified Ecological Clerk of Works (ECOW) to oversee the implementation of mitigation measures during construction. This should ensure that all measures are correctly implemented and remedial measures taken in the event of any unforeseen circumstances. On this basis, the SoS is confident that there will not be any adverse effects as a result of changes in water quality.

5.19 In addition to the potential hydrological impacts, the Llandinam Repowering project also requires the construction of a Bailey bridge at Aberedw near Erwood. This was identified by NRW as resulting in a likely significant effect upon the River Wye SAC. The Bailey bridge is required to enable abnormal indivisible loads (AILs), such as turbine components, to cross the River Wye.

5.20 Although not part of this consent application, it is expected that an application will be submitted to PCC for the Bailey bridge in the near future (possibly 2015). Nonetheless it is important that this appropriate assessment considers whether the construction of the Bailey bridge has the potential to have an adverse effect on the integrity of the River Wye SAC, in so far as sufficient information is available to do so at this point.

5.21 Two potential sites for the Bailey bridge have been identified; both are located approximately 2 km downstream of the Ithon sub-catchment. The proposed bridge design, with abutments set back from the river banks and crossing the river in a single span, means no part of the construction will be in the river or wetted area. A separate draft EMPPP for the Bailey bridge has been produced which sets out further measures to minimise erosion and the release of sediments into the water course. NRW advised (NRW and CeltPower Ltd Statement of Common Ground, 2013) that with appropriate design, mitigation measures and the inclusion of relevant conditions on any planning permission granted then there is no reason to believe that the proposal for the Bailey bridge will adversely affect the integrity of the SAC.

5.22 Otters are a feature of the River Wye SAC, and are at risk of being disturbed by the construction of the Bailey bridge project. The Applicant has considered the potential for the bridge to affect the otter population of the SAC (MacArthur, 2014b).

5.23 The proposed Bailey bridge is located in the sub-catchment middle Wye, this section is considered to have a lack of suitable breeding sites. Evidence of breeding otter was recorded in 2000 when a dead lactating female road casualty was found on the Afon Edw. Two separate sightings of female groups have been recorded in 2001 and 2005, both within a couple of kilometres of the dead female.

5.24 Despite the relative sparse records of otters in these locations, there is still potential for the construction, operation and removal of the Bailey bridge to cause disturbance or damage areas of otter habitat. To mitigate this risk the Applicant has proposed the inclusion of measures within the EMPPP, which will be implemented during the works and monitored by the ECOW. In addition, to prevent disturbance works will only be undertaken during daylight hours, with no potentially harmful work areas being left accessible to otters during times when work has ceased.

5.25 Survey work carried out between 2002 and 2009 did not record the presence of holts, or resting places, within 300 m of the proposed crossing points. It is possible that a holt has been established (and is occupied by a breeding female with dependent cubs) within 100 m of the crossing point since the 2009 survey. Should this be the case, a European Protected Species licence would be required from NRW in order to permit the disturbance of the holt. A number of mitigation measures would need to be secured to the licence to ensure no unacceptable impacts on the conservation status of otters. Such measures (detailed in full in MacArthur, 2014b) include: the establishment of a 30 m protection zone around the holt entrance and taking reasonable care at all time to avoid or prevent the injury or death of any otters or their young discovered during construction operations

5.26 The SoS considers that there is sufficient information available to conclude that the bridge will not have adverse effects upon the SAC, recognising that a HRA will be undertaken in full when planning permission is sought for the Bailey bridge and that the proposed mitigation measures appear to be effective and securable.

5.27 The SoS has considered all of the information submitted to him and he is satisfied that sufficient information has been provided to allow him to discharge his responsibilities under the Habitats Regulations.

5.28 Any residual hydrological effects, resulting from the Llandinam project, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their conservation objectives (as described in Annex A).

5.29 The SoS is satisfied that the conditions (as described in paragraphs 5.14, 5.18 and 5.24), secured within the s36 consent, are sufficient to mitigate any hydrological impacts which may

occur. The SoS is therefore satisfied that the Llandinam Repowering scheme will not have an adverse effect upon the River Wye SAC.

Impacts: project in combination

5.30 There are several other proposed wind farms (Llaithddu, Llanbadarn Fynydd, Llandinam 132 kV line, Bryngydfa, Hirddywell and Neuadd Goch) as well as the now consented Garreg Lwyd Hill, which have the potential to have in combination effects with the Llandinam Repowering project. The locations of most of these projects, relative to the Llandinam Repowering project, are shown in figure 2. These projects all propose to construct turbines and ancillary development, to varying extents, within the sub-catchments of the River Wye SAC. The Llandinam 132 kV line is being built to export the power from the proposed Llandinam Repowering project to the grid point at Welshpool (further information is available in section 8).

5.31 All of the projects listed above could have the same hydrological impacts as the Llandinam Repowering project. The exposure of sediment profiles, increased surface run off and increased erosion could cause increases in suspended sediment or other pollutants, ultimately causing a decrease in water quality. If of a sufficient magnitude or for a prolonged period, this decrease in water quality could harm the interest features of the River Wye SAC.

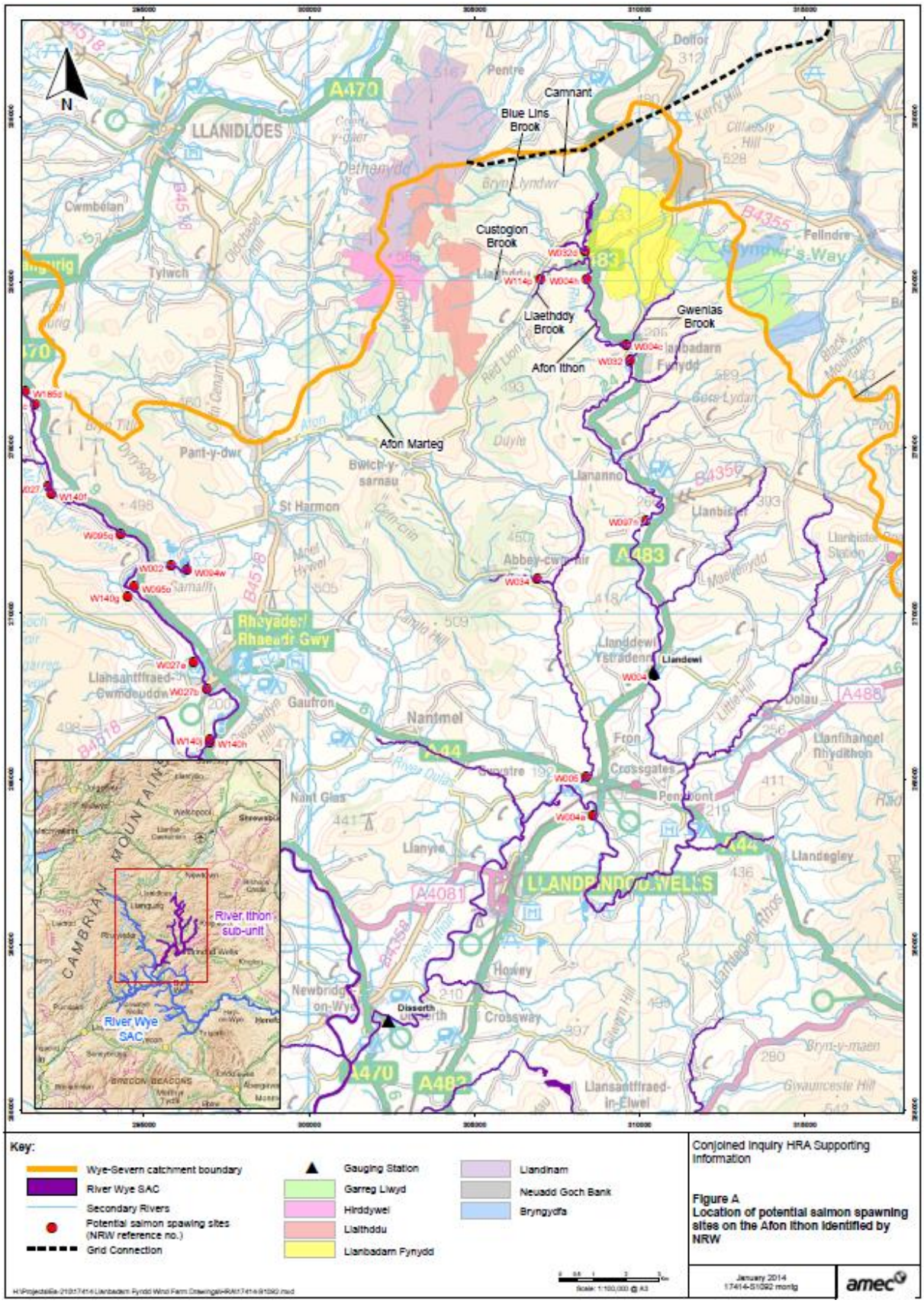
5.32 There is a risk that if all of the projects were constructing at the same time, there could be a significant drop in water quality, particularly after periods of high or intense rainfall. The effects of which would be much greater than from the impacts of the Llandinam Repowering project alone.

5.33 The location of the Atlantic salmon spawning areas relative to the proposed Llandinam Repowering development and the other plans and projects considered in combination are shown in figure 2. The first potential Atlantic salmon spawning area that could be affected is located at the confluence of the Blue Lins Brook and the Ithon. This spawning site is approximately 7.2 km from the Llandinam Repowering site boundary, 5.8 km from the Llaithddu site boundary and 0.9 km downstream of the Llanbadarn Fynydd site boundary.

5.34 In a joint statement of common ground between CeltPower, Vattenfall and Fferm Wynt Llaithddu (developers of Llandinam Repowering, Llanbadarn Fynydd and Llaithddu, respectively) stated that the lower river flows and the distances involved meant there was a negligible likelihood of any sediment from the Llandinam Repowering and the Llaithddu projects to this salmon spawning site (CeltPower, Vattenfall and Fferm Wynt Llaithddu, 2014).

5.35 In their joint statement of common ground (CeltPower, Vattenfall and Fferm Wynt Llaithddu, 2014), the Applicants stated that the amount of sediment (or other contaminants) potentially released as a consequence of each wind farm or their respective grid lines is so small as to be within the margin of error of any attempt to model sediment transport in the catchment or estimate dilution.

Figure 2. Location of potential salmon spawning sites on the River Ithon as identified by NRW (Source: Vattenfall *et al*, 2014).



5.36 The Applicants have designed (and agreed between themselves) a comprehensive set of mitigation measures based on best practice guidelines to mitigate the release of sediment and other contaminants into watercourses.

5.37 As described elsewhere in this AA, all of the in combination projects will be required, as a condition of any consent issued by the SoS, to adopt best practice standard, industry wide, mitigation measures such as micro-siting turbines away from watercourses and construction of silt traps to minimise hydrological effects.

5.38 These mitigation measures should be sufficient to prevent further impacts on water quality downstream. All of the in combination projects will be using standard industry-wide mitigation measures such as micro-siting turbines away from watercourses and the construction of silt traps to minimise hydrological effects. When considering applications for these projects, PCC will need to ensure that the integrity of the River Wye SAC is not adversely affected by those proposals. We therefore expect that they will require developers to adopt similar industry-wide mitigation measures to prevent adverse effects from affecting the River Wye SAC.

5.39 The construction works of the in combination projects, would need to be occurring either concurrently or sequentially, and for the proposed mitigation measures to be collectively ineffective, to result in an in combination effect upon the SAC.

5.40 The diluting effects of the progressively larger catchments would also help to reduce the potential impacts upon species and habitats further downstream.

5.41 Any residual hydrological effects, from either the construction of the project itself or the Bailey bridge, resulting from the Llandinam Repowering project in combination with other plans or projects, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

5.42 In order for there to be even a risk to the River Wye SAC, there would need to be a combination of events that the SoS considers to be extremely remote such that he has confidence that it will not happen. This would be in the first instance that all or a number of projects are constructed at the same time. This appears unlikely, although there could be some sequential overlaps in construction. Second, there would need to be a trigger, such as a heavy rainfall event. Finally, there would have to be either a calamitous failure of all of the mitigation measures or a period of on-going breaches that were not rectified, despite monitoring arrangements in place and the presence of a suitably qualified ECOW.

5.43 The SoS notes that the Inspector (Inspector's Report paragraph 538) considered the draft conditions (included within the Inspector's Report Annexes) to be suitable and would deliver the mitigation measures as set out in the ES and SEI. The Inspector also had no reason to doubt that the general principles and measures in the draft plans will be translated into suitably designed and site specific measures in the final plans to be submitted for approval. The Inspector also stated that the LPA would be the appropriate body to assess and approve the

plans, and that the draft conditions would empower the LPA to ensure compliance and if necessary enforce all measures within the plans.

5.44 The SoS is therefore satisfied that the mitigation mechanisms, coupled with monitoring arrangements that are appropriately secured within the s36 consent, are sufficient to ensure that the Llandinam Repowering project, in combination with other plans and projects, will not result in an adverse effect upon the integrity of the River Wye SAC.

6 Llaithddu

6.1 The Llaithddu project is also located in SSA C, approximately 8 km southwest of Newtown, Powys. The application site covers some 660 ha; the project comprises the construction of 27 wind turbines (each rated at 2.3 MW), 2 anemometry masts and other ancillary infrastructure. It is anticipated that the construction works would take approximately 17 months to complete.

Impacts: project alone

6.2 The Llaithddu project was identified as having a likely significant effect upon the River Wye SAC.

6.3 As with the Llandinam Repowering project, most of the potential impacts on the River Wye SAC from the Llaithddu development could arise from changes to the local site hydrology. Any changes in water quality, suspended sediment concentrations; water clarity and/or water chemical composition could affect habitats and species which are part of the River Wye SAC. A full list of the interest features and the conservation objectives for the River Wye SAC are provided in Appendix A.

6.4 NRW's view (Fferm Wynt Laithddu Cyf and NRW: statement of common ground) is that the Llaithddu project has the potential to have a LSE on the River Wye SAC however, with mitigation measures, appropriately secured within the s36 Consent; it should be possible to conclude that the project, either alone or in combination, will not have an adverse effect upon the integrity of the SAC.

6.5 The Llaithddu project stretches across 2 river catchments, with all but 3 of the turbines located within the River Ithon catchment. The River Ithon drains into the River Wye SAC (the other turbines are located within the River Severn catchment). Depending on the route of the particular watercourse, the River Wye SAC is located several kilometres away from the proposed Llaithddu project (approximately 4 km along the Blue Lins catchment and over 2.5 km along the Llaethdy Brook catchment).

6.6 The results of NRW's water quality sampling (shown in table 3) demonstrate that the water quality in this area is very high. This means that the River Ithon is very sensitive to changes in water quality. Table 4 shows the broad scale distribution of the River Wye SAC interest features.

6.7 Records show that the interest features are widely distributed throughout the SAC, however most of the interest features are more commonly found in the lower and middle reaches of the River Wye. The upper areas of the River Wye SAC, closest to the catchments more likely to be affected by the Llaithddu project, are less likely to support many of these interest features.

6.8 The nature of the works means that hydrological impacts are more likely during the construction of the Llaithddu project, rather than during its operational phase.

6.9 Construction activity, where the ground is broken either through cable laying, foundation construction or widening of existing tracks can lead to increased levels of erosion. During

periods of rainfall, this sediment could be carried by surface runoff into nearby watercourses potentially running into the River Wye SAC.

6.10 The Applicant has proposed a number of mitigation measures to manage and reduce potential hydrological impacts. Some are these measures are embedded in the project's design; whilst others are specific plans or actions designed to reduce or control the hydrological impact.

6.11 Although construction works for the Llaithddu project are scheduled to take approximately 17 months, only parts of the site will be subject to fresh excavations at any one time. This will help to limit the extent of impacts of any hydrological changes from construction works.

6.12 The Llaithddu project will result in the construction of hard-standing (e.g. for tracks, foundations and construction compounds) on what would otherwise be undeveloped ground, this therefore has the potential to increase surface run-off. Increased surface run-off has the potential to affect water quality by increasing suspended sediment concentrations and/or by washing pollutants into watercourses.

6.13 The Applicant proposes to micro site turbines away from watercourses and use infiltration basins (small ponds which act as temporary run-off storage) to collect any potential increases in surface water run-off. These basins will help to slow the flow of surface water into the river catchments, increasing the lag time for any effects which might result from increased suspended sediment concentrations. The basins will also allow suspended sediment to drop out of the water column thereby helping to reduce the amount of sediment which might end up in the catchments.

6.14 In addition, the Applicant proposes to construct silt traps and employ Sustainable Drainage Schemes (SuDS) to further prevent sediment from entering the watercourses. The Applicant will also produce (and agree with NRW):

- A water quality management plan which will (amongst other things): define the measures to be taken to prevent the pollution of watercourses; detail the locations and procedures for water quality monitoring; define measures and procedure for acting should water quality targets be breached.
- A construction method statement which will define (amongst other things): a site construction environmental management plan; a scheme for the protection of watercourses, drainage systems, wetlands and the water environment.

6.15 The requirements to produce the water quality management plan and the construction method statement are secured within the draft Llaithddu s36 Consent as Conditions 39 and 44, respectively.

6.16 Condition 49 of the s36 consent requires the appointment and presence of a suitably qualified ECOW to oversee the implementation of mitigation measures during construction. This will ensure that all measures are correctly implemented and remedial measures taken in the event

of any unforeseen circumstances. On this basis, the SoS is confident that there will not be any adverse effects as a result of changes in water quality.

6.17 If, after the mitigation measures, there are any residual effects from the project such as increased suspended sediment concentrations, they are likely to be further diluted and dispersed as water courses from across the catchment come together to drain into the River Wye. The combined inputs of all the catchments coming together into the River Wye should further diminish the effects.

6.18 With the implementation of the mitigation and monitoring measures (as described above and considered best practice (Vattenfall *et al*, 2014)), the SoS is confident that the residual impact on catchment water quality would not adversely affect the integrity of the River Wye SAC.

6.19 As described in table 4, many of the SAC features (transition mires and quaking bogs; sea lamprey; river lamprey; Twaite shad; Allis shad) are thought to be absent or largely absent from the River Ithon SSSI. Any downstream effects would be fully attenuated by wider catchment-scale dilution. The River Wye catchment as a whole covers in excess of 4000 km^2 of which the individual catchments in which the site is located (Blue Lins Brook, Llaithdy Brook and Afon Martey) constitute less than 1 %.

6.20 The other features (described in table 4) are at least present, either within the River Ithon, or the Gwenlas Brook (Ranunculus-type vegetation; white-clawed crayfish; brook lamprey; Atlantic salmon; bullhead; otter). Whilst the sensitivity of these features to possible changes in water quality is high, the proposed mitigation measures will ensure that the magnitude of any residual effects will be negligible and would not lead to adverse effects.

6.21 Any residual hydrological effects, resulting from the Llaithddu project, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

6.22 The SoS considers that with the mitigation measures described above, and appropriately secured within the s36 consent, that the proposed Llaithddu development when considered alone will not have an adverse effect upon the River Wye SAC.

Impacts: in combination

6.23 There are several other proposed wind farms (Llandinam Repowering, Llanbadarn Fynydd, Llandinam 132 kV line, Bryngydfa, Hirddywell and Neuadd Goch) as well as the now consented Garreg Lwyd Hill, which have the potential to have in combination effects with the Llaithddu project. The locations of most of these projects, relative to the Llaithddu project, are shown in figure 2. These projects all comprise turbines and ancillary development, to varying extents, within the sub-catchments of the River Wye SAC. The Llandinam 132 kV line is being built to export the power from the proposed Llandinam Repowering project to the grid point at Welshpool (further information is available in section 8).

6.24 All of the projects listed above could have the same (or similar) hydrological impacts as the Llaithddu project. The exposure of sediment profiles, increased surface run off and increased erosion could cause increases in suspended sediment or other pollutants, ultimately causing a decrease in water quality. If of a sufficient magnitude or for a prolonged period, this decrease in water quality could harm the interest features of the River Wye SAC.

6.25 There is a risk that if all of the projects were constructed at the same time, there could be a significant drop in water quality, particularly after periods of high or intense rainfall. The effects of which would be much greater than from the impacts of the Llaithddu project alone.

6.26 As described elsewhere in this AA, all of the in combination projects will be using standard industry-wide mitigation measures such as micro-siting turbines away from watercourses and the construction of silt traps to minimise hydrological effects. When considering applications for these projects, PCC will need to ensure that the integrity of the River Wye SAC is not adversely affected by those proposals. We therefore expect that they will require developers to adopt similar industry-wide mitigation measures to prevent adverse effects from affecting the River Wye SAC.

6.27 These mitigation measures will prevent any residual impacts on downstream water quality. The construction works for the in combination projects, would need to be occurring either concurrently or sequentially, and for the proposed mitigation measures to be collectively ineffective, to result in an in combination effect upon the SAC.

6.28 The diluting effects of the progressively larger catchments should also help to reduce the potential impacts upon species and habitats further downstream. This should be sufficient to ensure that there will be no adverse effects.

6.29 Any residual hydrological effects, resulting from the Llaithddu project in combination with other plans or projects, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

6.30 The SoS considers it unlikely there would be a systematic failure of the mitigation measures at the Llaithddu and at one (or all) of the other projects identified as having the potential to have an in combination impact.

6.31 The SoS notes that the Inspector (Inspector's Report paragraph 538) considered the draft conditions (included within the Inspector's Report Annexes) to be suitable and would deliver the mitigation measures as set out in the ES and SEI. The Inspector also had no reason to doubt that the general principles and measures in the draft plans will be translated into suitably designed and site specific measures in the final plans to be submitted for approval. The Inspector also stated that the LPA would be the appropriate body to assess and approve the plans, and that the draft conditions would empower the LPA to ensure compliance and if necessary enforce all measures within the plans.

6.32 The SoS is therefore satisfied that the mitigation mechanisms, appropriately secured within the s36 consent, are sufficient to ensure that the Llaithddu project, in combination with other plans and projects, will not result in an adverse effect upon the integrity of the River Wye SAC.

7 Llanbadarn Fynydd

7.1 The proposed Llanbadarn Fynydd wind farm is located in SSA C, approximately 2 km north of the village of Llanbadarn Fynydd on an area of upland dominated by grazed and improved grassland. The area to be developed covers approximately 5.3 ha.

Project: Impacts alone

7.2 The Llanbadarn Fynydd project has been identified as having a likely significant effect upon the River Wye SAC. As with the other SSA C wind farms, a LSE was identified because of the scheme's potential to cause hydrological impacts which might negatively affect habitats and species downstream. The interest features and conservation objectives for the River Wye SAC are provided in Annex A.

7.3 The Llanbadarn Fynydd project is located within the catchment of the River Wye SAC on an area of upland between the River Ithon and one of its tributaries, Gwenlas Brook. Both of these watercourses are tributaries of the River Wye and form part of the SAC designation. Several of the smaller watercourses of the River Ithon originate within the Llanbadarn Fynydd site boundary.

7.4 The construction of the wind farm has the potential to cause of number of impacts which might affect downstream habitats and species. The exposure of sediment profiles through excavation works could, after periods of heavy rainfall, cause increases in suspended sediment concentrations with an associated decrease in water quality.

7.5 Once constructed, there will be a significant increase in the amount of impermeable surfaces as a result of the roads, tracks and construction compounds. This will have the effect of reducing the run off time of surface flows. It could also increase erosion rates as surface flows take new or different routes into existing watercourses.

7.6 Water quality samples are collected by the NRW at Gwenlas Brook which is approximately 1.2 km downstream of the site boundary. As shown in table 3, the water quality at this sampling location is very high, making the River Ithon very sensitive to any changes in water quality. Changes in water quality, either for a prolonged period or a dramatic change in the short term, could have a detrimental effect on the interest features of the River Wye SAC.

7.7 Table 4 shows the broad scale distribution of River Wye SAC interest features. Records show that the interest features are widely distributed, however most of the interest features are more commonly found towards the lower and middle reaches of the River Wye. The upper areas of the River Wye SAC, closest to the catchments which are more likely to be affected by the Llanbadarn Fynydd project, seem less likely to support many of these interest features.

7.8 To reduce the potential for the Llanbadarn Fynydd project to cause hydrological impacts which might otherwise reduce water quality; the Applicant has proposed a number of mitigation measures. Some of these mitigation measures are embedded within the project design whilst

others are specific measures the Applicant will use to control and reduce any hydrological effects which may occur.

7.9 The Applicant has agreed to micro-site each turbine so that it is at least 20 m from the nearest watercourse; the closest turbine is located 27 m from the nearest watercourse. This should help to reduce the risk of sediment exposed during construction works from running into watercourses after heavy rainfall.

7.10 The Applicant proposes a number of further measures to reduce the risk of hydrological impacts on downstream habitats and species. These include constructing tracks in accordance with the Forestry Commission Guidelines (Forestry Commission, 2011), working on small stretches of the track at any one time. Suspended sediment will be collected through the construction of silt traps and settlement ponds which will act as temporary stores for the sediment before it is re-distributed into vegetated areas. Where tracks run adjacent to watercourses, they will be cambered away from watercourses to prevent run-off. The Applicant also proposes to plan track construction around periods of heavy rainfall, in so far as it is reasonably possible to do so.

7.11 The full list of measures will be described within a CEMP (and within that a specific EMPPP) which will be produced by the Applicant. This will need to be agreed and approved by the Local Planning Authority. The requirement to produce the CEMP, and the matters which the CEMP shall cover, is secured within Condition 41 of the proposed s36.

7.12 The SoS is confident that these measures will be sufficient to prevent adverse effects occurring to the River Wye SAC.

7.13 However, if there are any residual impacts, the size of the river catchment relative to the size of the area to be developed will minimise any effects upon the SAC downstream. The most affected watercourse is likely to be the Gwenlas Brook. The Applicant estimates that approximately 38.1 % of the Gwenlas Brook catchment is derived from the development site; however the built scheme itself is only likely to affect approximately 1.1 % of the catchment. Further downstream, at the confluence with the River Wye (near Newbridge-on-Wye) the total development site accounts for 1.9 % of the total catchment and the developed area accounts for just 0.1 %.

7.14 Any residual increases in suspended sediment concentrations or changes in chemical status would have an insignificant impact upon the SAC interest features once the dilution effects of the wider catchment are incorporated.

7.15 As described in table 4, many of the SAC features (transition mires and quaking bogs, sea lamprey, river lamprey, Twaite shad and Allis shad) are thought to be absent or largely absent from the River Ithon SSSI. The presence of these interest features is therefore considered to be located some distance from the Llanbadarn Fynydd site boundary, at which point any effects will be fully attenuated by wider catchment-scale influences.

7.16 The other features (described in table 4) are least present, either within the River Ithon, or the Gwenlas Brook (Ranunculus-type vegetation, white-clawed crayfish, brook lamprey, Atlantic

salmon, bullhead and otter). Whilst the sensitivity of these features to possible changes in water quality is high, the proposed mitigation measures will ensure that the magnitude of any residual effects will be negligible. There should therefore be no adverse effects.

7.17 The SoS is satisfied that any residual hydrological effects, resulting from the Llanbadarn Fynydd project, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

7.18 The SoS is therefore satisfied that conditions secured within the s36 consent will be sufficient to ensure that the Llanbadarn Fynydd project will not have an adverse effect upon the integrity of the River Wye SAC.

Impacts: in combination

7.19 There are several other proposed wind farms (Llandinam Repowering, Llaithddu, Llandinam 132 kV line, Bryngydfa, Hirddywell and Neuadd Goch Bank) as well as the now consented Garreg Lwyd Hill, which have the potential to have in combination effects with the Llanbadarn Fynydd project. The locations of most of these projects, relative to the Llanbadarn Fynydd project, are shown in figure 2. These projects all propose to construct turbines and ancillary development, to varying extents, within the sub-catchments of the River Wye SAC. The Llandinam 132 kV line is being built to export the power from the proposed Llandinam Repowering project to the grid point at Welshpool (further information is available in section 8).

7.20 All of the projects listed above could have the same hydrological impacts as the Llanbadarn Fynydd project. The exposure of sediment profiles, increased surface run off and increased erosion could cause increases in suspended sediment or other pollutants, ultimately causing a decrease in water quality. If of a sufficient magnitude or for a prolonged period, the decrease in water quality could harm the interest features of the River Wye SAC.

7.21 There is a risk that if all of the projects were constructing at the same time, there could be a significant drop in water quality, particularly after periods of high or intense rainfall. The effects of which would be much greater than from the impacts of the Llanbadarn Fynydd project alone.

7.22 As described elsewhere in this AA, all of the in combination projects will be using standard industry-wide mitigation measures such as micro-siting turbines away from watercourses and the construction of silt traps to minimise hydrological effects. When considering applications for these projects, PCC will need to ensure that the integrity of the River Wye SAC is not adversely affected by those proposals. We therefore expect that they will require developers to adopt similar industry-wide mitigation measures to prevent adverse effects from affecting the River Wye SAC.

7.23 These mitigation measures should be sufficient to prevent further impacts on water quality downstream. The construction works of the in combination projects, would need to be occurring either concurrently or sequentially, and for the proposed mitigation measures to be collectively ineffective, to result in an in combination effect upon the SAC.

7.24 The diluting effects of the progressively larger catchments should also help to reduce the potential impacts upon species and habitats further downstream.

7.25 Any residual hydrological effects, resulting from the Llanbadarn Fynydd project in combination with other plans or projects, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

7.26 The SoS considers it unlikely there would be a systematic failure of the mitigation measures at the Llanbadarn Fynydd and at one (or all) of the other projects identified as having the potential to have an in combination impact.

7.27 The SoS notes that the Inspector (Inspector's Report paragraph 538) considered the draft conditions (included within the Inspector's Report Annexes) to be suitable and would deliver the mitigation measures as set out in the ES and SEI. The Inspector also had no reason to doubt that the general principles and measures in the draft plans will be translated into suitably designed and site specific measures in the final plans to be submitted for approval. The Inspector also stated that the LPA would be the appropriate body to assess and approve the plans, and that the draft conditions would empower the LPA to ensure compliance and if necessary enforce all measures within the plans.

7.28 The SoS is therefore satisfied that the mitigation mechanisms, appropriately secured within the s36 consent, are sufficient to ensure that the Llanbadarn Fynydd project, in combination with other plans and projects, will not result in an adverse effect upon the integrity of the River Wye SAC.

8 Llandinam 132 kV line

8.1 The Planning Inspector also considered the proposed construction of the Llandinam 132 kV line. This new line would be needed to carry the additional generating capacity produced by the proposed Llandinam Repowering wind farm to the grid substation at Welshpool. The 35 km of overhead line would be supported on approximately 394 wood poles between 12 m and 16 m in height, roughly 100 m apart.

8.2 The construction phase is estimated to take between 3 and 4 weeks per kilometre, 5 days per pole, with a total construction period of approximately 24 months. The overhead line is expected to be in place for 25 years, the same duration as the Llandinam Repowering wind farm. Following this period, it is expected that the Llandinam 132 kV line and the Llandinam Repowering wind farm will both be decommissioned.

8.3 The proposed route of the Llandinam 132 kV line is described in the Applicant's Updated Environmental Statement (October 2013) and shown in figure 3.

8.4 A number of alternative route options were discussed during the inquiry as a potential means of reducing impacts (primarily on landscape and visual impact grounds). These alternative options include:

- A 132 kV line to Welshpool but taking several different routes;
- A connection to Welshpool at 33 kV;
- A 132 kV connection to Newtown or Carno;
- A connection to proposed Cefn Coch sub-station;
- A part Trident solution employing a remote earthing station (RES);
- Various undergrounding options.

8.5 This AA does not consider the impacts resulting from any of the proposed alternative routes, only the route that is the basis for the Application is considered here. The impacts of the alternative options are described and assessed within the Applicant's Environmental Statement. Nonetheless, at this stage the SoS is satisfied with the Inspector's recommendation that under the Habitats Regulations, there is no reason why a viable alternative route could not be utilised, if required.

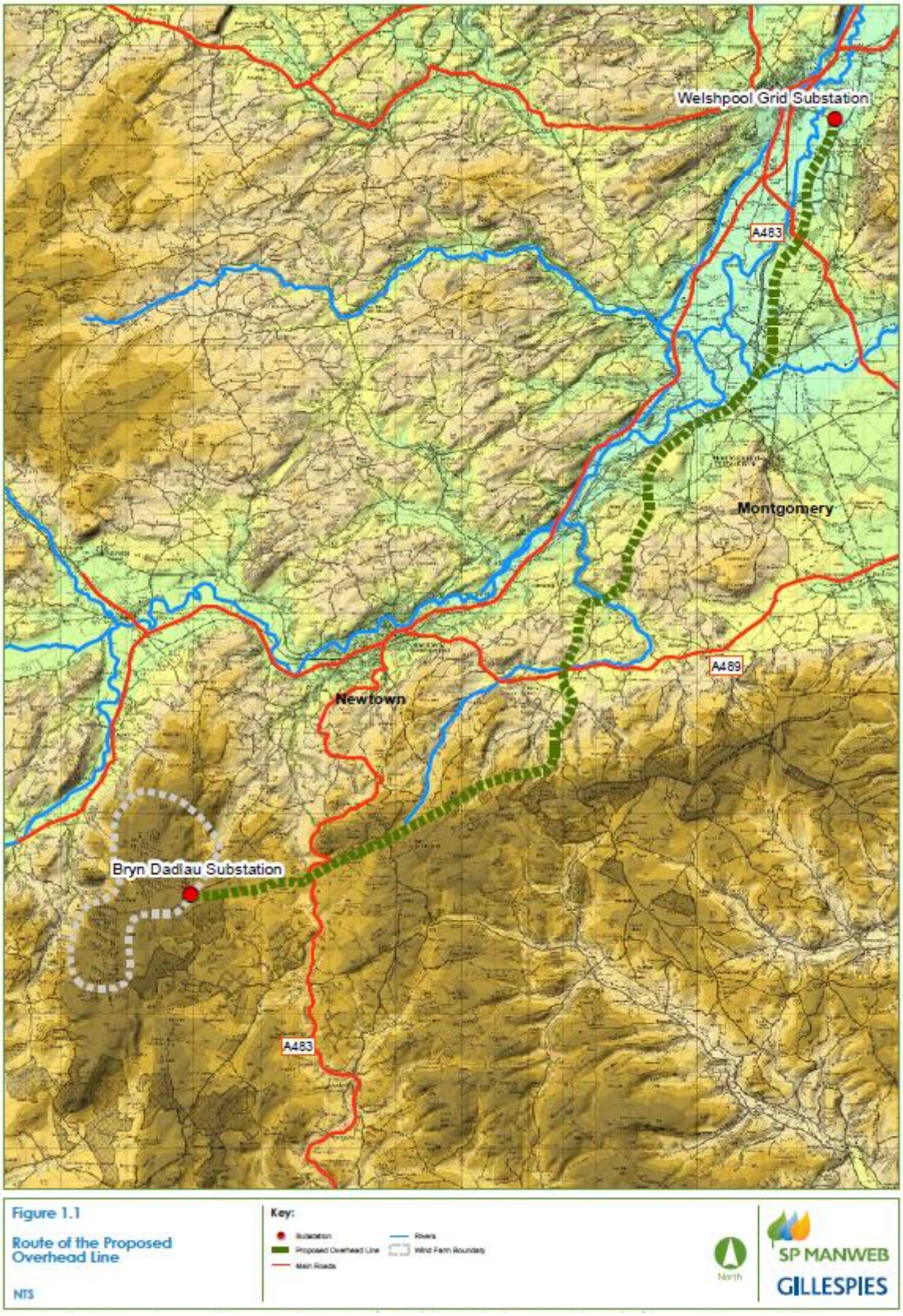
Project: Impacts alone

8.6 The Llandinam 132 kV line was identified as having a likely significant effect upon the River Wye SAC. As with the other SSA C wind farms a likely significant effect cannot be ruled out due to the hydrological effects from the construction and on-going maintenance of the line.

8.7 The interest features and conservation objectives for the River Wye SAC are provided in Appendix A. The broad scale distribution of those interest features is described in table 4.

8.8 Construction of the overhead line, access tracks, site compounds, storage areas and the clearance of vegetation has the potential to increase surface run off particularly after periods of high or intense rain fall.

Figure 3. The proposed route of the Llandinam 132 kV overhead line to connect the Llandinam Repowering project with the Welshpool grid substation.



8.9 This could lead to increased levels of exposed sediment or pollutants washing into nearby watercourses with the potential to harm sensitive species or habitats further downstream. Once

constructed, it is very unlikely that the Llandinam 132 kV line will have significant operational effects on the River Wye SAC as most of its components are maintenance free and only annual and monthly site inspections are required, respectively.

8.10 Part of the proposed Llandinam 132 kV line lies within the River Ithon catchment, approximately 1.4 km from the development at its closest point. The River Ithon runs into River Wye approximately 3 km to the south. No more than 20 poles will be located within the River Ithon catchment.

8.11 The construction works around each pole are likely to be limited in extent (restricted to an area of 225 m^2), vehicle access will be controlled and dedicated construction access tracks will be provided. This is likely to result in relatively low levels of disturbance to habitats and flora around each pole.

8.12 The Applicant considers that the construction works and any operation maintenance will not have a likely significant effect, either directly or indirectly, on SAC habitats and species.

8.13 Although the project is not expected to result in significant effects, the Applicant has included a number of best-practice mitigation measures (secured within the deemed planning permission) to reduce the magnitude of any impacts, should they occur. Those measures include the production of a Construction Method Statement (CMS) and an Environmental Management Plan (EMP) which will describe how potential impacts on watercourses (including the River Wye SAC) will be avoided or minimised.

8.14 The CMS will set out the procedures for vegetation and soil stripping and storage, vegetation reinstatement, storage of construction materials and pollution control measures. The CMS will also be used to for the demarcation of sensitive habitats close to working areas and ensuring construction workers take suitable precautions when working in these areas.

8.15 The Applicant stated that with the implementation of the mitigation measures as described, the impacts of the Llandinam 132 kV line on the River Wye SAC would not be significant.

8.16 The mitigation measures are considered to represent best practice, and are known to be effective (Vattenfall *et al*, 2014). However should the mitigation measures fail or there be any residual effects, the distance between the proposed works and the SAC should ensure that any pollutant or suspended sediment will be sufficiently diluted by the merging catchments before it reaches the SAC so as not to harm any of its interest features. This should be sufficient to ensure that there will not be any adverse effects.

8.17 The SoS is satisfied that any residual hydrological effects, resulting from the Llandinam 132 kV line, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

8.18 The SoS is therefore satisfied that the conditions secured within the deemed planning permission, accompanying the s37 consent, will be sufficient to ensure that the Llandinam 132 kV line will not have an adverse effect upon the integrity of the River Wye SAC.

Project: Impacts in combination

8.19 The Llandinam 132 kV line also has the potential to affect the River Wye SAC in combination with other plans or projects. In comparison to the larger wind farm developments, the proposed impacts of the Llandinam 132 kV scheme are likely to be smaller than the impacts of the wind farms but will extend over a greater distance (along the length of the 132 kV line).

8.20 There are several other projects (Llandinam Repowering, Llaithddu, Llanbadarn Fynydd, Bryngydfa, Hirddywell and Neuadd Goch Bank) as well as the now consented Garreg Lwyd Hill, which have the potential to have in combination effects with the Llandinam 132 kV line project. The locations of most of these projects are shown in figure 2. These projects all propose to construct turbines and ancillary development, to varying extents, within sub-catchments of the River Wye SAC.

8.21 The in combination projects (listed in 8.20) are all located within catchments which ultimately drain into the River Wye. There is therefore the potential for any hydrological impacts, such as increased sedimentation from runoff, from each of the projects to cumulatively affect habitats and species which form part of the River Wye SAC designation.

8.22 Should the construction periods of these projects overlap, either temporally or spatially, the mitigation measures associated with each of the projects (described elsewhere within this AA) should prevent cumulative effects from affecting downstream habitats and species. The mitigation measures are considered to represent best practice, and are known to be effective.

8.23 Should the mitigation measures fail for whatever reason or should there be any residual effects, the distance between the proposed works and the SAC should ensure that as the various catchments merge together any pollutant or suspended sediment will be sufficiently diluted so before it reaches the SAC so as not to harm any of its interest features.

8.24 The Applicant considered that the proposed mitigation measures for the other projects (such as the production of CEMPs and employment of ECOWs and described in detail within sections 5, 6 and 7 of this HRA) alongside those proposed for the Llandinam 132 kV line (e.g. condition 9 requiring the production of a CMS and condition 10 requiring the production of an EMP) would be sufficient to ensure that there would not be an adverse effect upon the integrity of the River Wye SAC.

8.25 The SoS notes that the Inspector (Inspector's Report paragraph 538) considered the draft conditions (included within the Inspector's Report Annexes) to be suitable and would deliver the mitigation measures as set out in the ES and SEI. The Inspector also had no reason to doubt that the general principles and measures in the draft plans will be translated into suitably designed and site specific measures in the final plans to be submitted for approval. The Inspector also stated that the LPA would be the appropriate body to assess and approve the plans, and that the draft conditions would empower the LPA to ensure compliance and if necessary enforce all measures within the plans.

8.26 The SoS is satisfied that any residual hydrological effects, resulting from the Llandinam 132 kV line in combination with other plans or projects, would not be sufficient to prevent any of the River Wye SAC interest features from achieving their respective conservation objectives (as described in Annex A).

8.27 The SoS has considered the information submitted and, on the basis of the mitigation measures secured in the s37 consent and the deemed planning permission, is satisfied that the Llandinam 132 kV Repowering project, in combination with other plans or projects, will not have an adverse effect upon the integrity of the River Wye SAC.

9 Carnedd Wen

9.1 The Carnedd Wen project is located in SSA B (as shown in figure 1); the site is situated on a raised plateau approximately 25 km west of Welshpool. The project proposal comprises 50 wind turbines, upgraded tracks, one substation and 2 anemometry masts along with temporary construction and storage compounds. The project also includes a habitat restoration and management plan (HRMP), the aims of which are to restore a substantial area (approximately 1409 ha) of low ecological value plantation forestry to an area of blanket bog and dwarf shrub heath.

9.2 The Carnedd Wen project was identified as having a likely significant effect upon the Berwyn SPA and the Pen Llyn a'r Sarnau SAC. The interest features and conservation objectives for the Berwyn SPA and the Pen Llyn a'r Sarnau SAC are provided in Annexes B and C, respectively.

Impacts: alone – Berwyn SPA

9.3 The Berwyn SPA lies approximately 2.5 km north of the nearest turbine within the proposed Carnedd Wen development. It is the most important upland in Wales for breeding birds. Covering approximately 24,187 ha, its habitats supports a wide range of species including internationally significant numbers of hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), peregrine falcon (*Falco peregrinus*) and red kite (*Milvus milvus*).

9.4 The Berwyn SPA is designated to protect its internationally important populations of birds of prey. At the time of designation (1998) the SPA supported 14 pairs of hen harriers (2.2% of the breeding population), 14 pairs of merlin (1.1 % of the breeding population), 18 pairs of peregrine falcon (1.5% of the breeding population) and 2 pairs of red kite (1.2% of the designation). It should be noted that the 2001 SPA review recommended that the red kite is removed as a feature of the Berwyn SPA, though this has not yet occurred.

9.5 In 2004, the Berwyn SPA supported 13 pairs of hen harriers, 9 pairs of merlin and 9 pairs of peregrine falcon and the conservation status of all three features is described as being unfavourable.

9.6 NRW have advised that the Carnedd Wen scheme has the potential to have a likely significant effect upon the Berwyn SPA. Given that the Carnedd Wen project is located outside of the SPA boundary; the Applicant and NRW agreed that the most relevant conservation objective for further consideration relates to the size of each interest features' breeding population (i.e. number of breeding pairs). This AA therefore considers the potential impacts of the Carnedd Wen project and whether those impacts would adversely affect the breeding population of the SPA species. Other conservation objectives, such as the population size of predators of ground nesting birds, are not considered further within this AA.

9.7 As part of the Carnedd Wen development, a significant area (1409 ha) of forestry clearance (or forestry thinning) is proposed. The forestry clearance has the potential to cause disturbance and

habitat loss to the SPA interest features. Merlin nest in trees and so may be particularly at risk however other SPA interest features which do not nest in trees but may still nest within the forested area. Between 2005 and 2008, between 0 and 4 hen harriers nested annually within the area of forest to be felled. Between 2006 and 2008, one pair of peregrine falcons nested within the forest. Although the Carnedd Wen project is not located within the Berwyn SPA, there is the potential for the birds nesting within the area of forestry clearance to be part of the SPA population. For the purposes of this AA, a precautionary assumption has been made that those nesting birds are part of the SPA population.

9.8 Without mitigation, the clearance of the forestry could have an adverse effect on those SPA birds as it may mean that trees containing their nests are cut down. This would make it more difficult for the SPA birds to reproduce, potentially harming the breeding success in the long term. If the trees containing the nests aren't cut down then there is also the potential that the act of forestry clearance could disturb SPA birds on the nest, forcing them to flee the area. This could also reduce breeding success and could lead to a long-term population decline.

9.9 To prevent the Carnedd Wen project from causing these potential impacts, the Applicant has proposed a number of mitigation measures. These mitigation measures are secured within the section 36 consent, specifically conditions 42-46. These are described below.

9.10 The original proposal was to clear the area of forestry over a 6 year period but this has now been amended to occur over a 7 year period instead. This will reduce the level of disturbance within the forested areas as smaller areas of forest will be cleared in any one year.

9.11 In the long term, the forestry clearance will restore natural habitats within this area of Wales and should have a positive effect upon the SPA species. The Applicant's Outline HRMP (RWE, 2013) describes a range of beneficial measures which will be implemented to improve the environment over a 25 year period. Condition 42 requires the Applicant to submit a detailed HRMP to the LPA for approval and details the matters which the HRMP should cover.

9.12 To further reduce the construction impacts, particularly during the felling and thinning of the forested land, measures are to be put in place to avoid damaging birds' nests and causing disturbance in accordance with guidance produced by the Forestry Commission Wales (FCW). These mitigation measures are secured within the section 36 consent, specifically condition 42. Exclusions zones around nest sites will be established. This will ensure that the trees supporting nests will not be cut down; it will also mean that there will be no disturbance which might cause SPA birds to leave the nest. These measures should ensure that the breeding success of nesting SPA birds will not be affected by the forestry work.

9.13 To ensure that the mitigation measures are properly implemented and monitored, an ECOW will be appointed to oversee the works, this is required by condition 44.

9.14 Once construction is complete, the operational impacts of the Carnedd Wen project need to be considered. The turbines have the potential to increase the risk of collision mortality. To

investigate this, the Applicant undertook collision risk modelling for the three key species: hen harrier, red kite and peregrine falcon.

9.15 Collision risk modelling is used to estimate the number of birds likely to be killed through collision with the wind turbine blades. A number of factors can determine collision risk such as species ecology (flight height, manoeuvrability etc.), turbine location (areas of high passage) and weather conditions (poor visibility etc.). Birds of prey are thought to be particularly vulnerable to collision risk when compared with other types of birds.

9.16 The results generated by collision risk modelling can be used to estimate what impact that mortality would have upon a population in the long term and whether or not those losses are considered sustainable. For the Carnedd Wen project the Applicant used Population Viability Analysis (PVA).

9.17 The collision risk mortality results for hen harrier, red kite and peregrine falcon are presented in table 5. Collision risk modelling was not undertaken for merlin as the number of flights recorded was so low that it would not generate any meaningful results. It is considered that the risk of collision mortality for merlin to be so low such that any impact would have a negligible impact on the population.

Table 5. The predicted collision risk mortality rates for hen harrier, red kite and peregrine falcon following construction of the Carnedd Wen project. Assessments of population level significance is based on the use of PVA.

	Hen harrier		Red kite	Peregrine falcon
Avoidance rate (%)	98	99	98	98
One bird strike every:	1.9 years	3.8 years	1.96 years	11.2 years
Population level significance	Negligible	Negligible	Not significant	Not significant

9.18 All of the Applicant's assessments concluded that the potential increase in collision risk mortality, as a result of the development, would not have a significant impact upon the populations of these species. Collision mortality would be less than 1 bird every 1.5 years and in some cases much longer. The PVA results show that the SPA populations can withstand that additional mortality which could result from the Carnedd Wen project without a long term population decline. It is therefore considered that the operational effects of the Carnedd Wen project will not have an adverse effect on site integrity for those features.

9.19 The survey work carried out by the Applicant, the proposed mitigation measures and the areas of habitat creation/restoration are sufficient to demonstrate that any potential impacts are not likely to be significant in magnitude and will not result in any adverse impacts upon the SPA bird populations. This conclusion is supported by NRW (NRW opening submission (CON-003-004)).

9.20 The SoS is therefore satisfied that the Carnedd Wen project, when considered alone, and subject to the mitigation measures secured within the s36 consent, will not have an adverse effect on the integrity of the Berwyn SPA.

Impacts: alone – Pen Llyn a'r Sarnau SAC

9.21 In addition to the impacts on the Berwyn SPA, the Carnedd Wen project also has the potential to affect the Pen Llyn a'r Sarnau SAC. The Pen Llyn a'r Sarnau SAC covers areas of sea, coast and estuary which support a wide range of different marine habitats and species. The full list of SAC interest features, along with their conservation objectives, is provided in Appendix C. The SAC covers approximately 146,023 ha.

9.22 The Carnedd Wen project is wholly outside of the SAC, however 3 of the 5 major catchments draining the project site (Afon Dugoed, Afon Tadolog and the Afon Cwm) form part of the Afon Dyfi catchment. The Afon Dyfi flows in the SAC approximately 25 km from the Carnedd Wen development. The potential for the Carnedd Wen project to affect the Pen Llyn a'r Sarnau SAC arises from any changes in site hydrology which might have a negative impact upon habitats and species downstream.

9.23 Water quality statistics, as recorded by the Environment Agency (now NRW) in 2009, are shown in table 6. This is the most recent data available and the SoS has no reasons to consider that it is not reasonable to use it, or that the current water quality would be significantly different. The table shows that the water quality at the 4 sampling sites is very high, scoring the highest criteria possible for all but one parameter at one location.

Table 6. The water quality recorded by the Environment Agency at 4 locations on the Afon Dyfi in 2009.

	Sampling site name			
	Dugoed - Blaenpennant	Aberangell – Hendre-Ddu	Twymyn - Dugoed	Nant Gwydol - Twymyn
Chemistry	A	A	A	A
Biology	A	B	A	A
Nitrates	1	1	1	1
Phosphates	1	1	1	1

9.24 The high water quality recorded at the 4 sample sites demonstrates the vulnerability of the catchments to any impacts which could potentially cause a decline in water quality.

9.25 Whilst construction work associated with the turbines could cause reductions in water quality, the primary source of concern relates to the forestry clearance and to a lesser extent the construction of the associated infrastructure. The mobilisation of sediments and nutrient enrichment could, if of a sufficient magnitude or are present for a prolonged period, have a detrimental effect upon the SAC habitats and species downstream however the distance to the Pen Llyn a'r Sarnau SAC makes this unlikely.

9.26 To reduce the risk of hydrological impacts having a negative effect upon the Pen Llyn a'r Sarnau SAC interest features (and the wider environment) the Applicant has proposed a number of mitigation measures to further reduce the risk. These measures are secured within conditions 17, 39 and 42-46 and include provisions to:

- Take extra care when micro-siting turbines in or near watercourses;

- Build silt traps and settlement lagoons (with enough storage for a 1 in 100 year rainfall event) to reduce high concentrations of suspended sediment from entering watercourses;
- The project design will incorporate Sustainable Drainage Schemes (SuDS) and culverting schemes to further reduce the effects.
- Produce a Drainage Management Plan (DMP) which will establish the methodology and protocols to protect water quality during the forestry felling, construction and habitat restoration works.
- Produce a Forestry Management Plan (FMP).

9.27 As with the other wind farm projects (Llandinam Repowering, Llaithddu and Llanbadarn Fynydd) considered within this AA, these best practice industry-wide measures are considered to be sufficient to prevent any adverse impacts.

9.28 However should the mitigation measures prove to be ineffective, or should there be any residual impacts then the distance between the Carnedd Wen project and the Pen Llyn a'r Sarnau SAC (approximately 25 km) would help to further reduce the effects due to downstream dilution.

9.29 The impacts are unlikely to be significant given the size of the catchments and the distance between the Carnedd Wen project and the Pen Llyn a'r Sarnau SAC. The largest of the sub-catchments draining the site, the Afon Dugoed, drains approximately 22.02 km^2. Whilst a large part of the Carnedd Wen site boundary lies within the Afon Dugoed catchment (some 43 %), any hydrological effects are likely to be greatly diluted and diminished further downstream. This is because the Afon Dyfi catchment is substantially larger than that of the Afon Dugoed. The Afon Dyfi drains a total area of approximately 501 km^2.

9.30 Given the extent of works planned within the catchments, the dilution factor and distance to the SAC, it is considered highly unlikely that the Carnedd Wen project will have any adverse impacts. This view is supported by NRW (NRW, 2013).

9.31 The SoS is satisfied that proposed mitigation measures will ensure that the Carnedd Wen project, when considered alone, will not have an adverse effect upon the integrity of the Pen Llyn a'r Sarnau SAC.

Impacts: in combination – Berwyn SPA

9.32 When the impacts of the Carnedd Wen project are considered in combination with other plans or projects there is the potential for the impacts upon the Berwyn SPA bird populations to be exacerbated.

9.33 The Applicant has considered the potential for in combination impacts from several other wind farm developments (Cemmaes 3, Esgair Cwmowen, Esgair Cwmowen Central and South, Carno 3 and Llanbrynmair).

9.34 Although many of the projects considered in combination with Carnedd Wen are some distance away from the Berwyn SPA, this AA takes a precautionary approach that there is connectivity between the SPA bird populations and birds that are recorded within the vicinity of the other wind farms.

9.35 Impacts from construction works, such as disturbance and/or displacement will be controlled using defined mitigation measures for each project. However, there is a risk that once operational, the increased collision risk presented by all of the projects' turbines could represent an adverse effect upon the integrity of the Berwyn SPA.

9.36 To better understand the level of risk, the Applicant has undertaken collision risk and PVA modelling to understand the impacts upon the SPA species populations in the long term.

9.37 For red kites, the Applicant estimated that the in combination collision risk impacts, based on an avoidance rate of 98 %, would be 4.73 birds per year. A significant proportion of this predicted impact is because of the relatively high collision risk predicted for the Esgair Cwmowen project. The Carnedd Wen project represents approximately 11 % of the cumulative collision risk. The PVA analysis, assuming that the red kite population increases by a factor of 3.69 during the first ten years of the operation of Carnedd Wen, predicts that this level of mortality could reduce the breeding female red kite population by 2.5 %.

9.38 The Applicant considers that this predicted impact to be highly precautionary. The Applicant considered that the red kite avoidance rate is likely to be higher than the assumed rate of 98 % and that the population is unlikely to grow by a factor of 3.69 (more than 5 times the current growth rate of the population). The Applicant's view was that the cumulative collision mortality would not represent a significant impact upon the red kite population of the Berwyn SPA.

9.39 The Applicant estimates that the in combination collision risk mortality for hen harriers using an avoidance rate of 98% is 0.61 birds per year (0.47 birds per year using a 99 % avoidance rate). The PVA analysis undertaken by the Applicant estimated that the hen harrier population could tolerate an additional mortality of 2.9 females a year whilst still leaving the population growth rate largely unaffected. On this basis, the Applicant considered the impact of the additional collision mortality as a result of the Carnedd Wen project in combination with other plans or projects to have a negligible effect upon the SPA population of hen harriers.

9.40 Collision risk modelling was not undertaken for the Carnedd Wen project or for any of the in combination sites due to the low number of merlin flights recorded at each of the projects. In all of the cases the projects' potential impacts upon merlin were assessed as either being negligible, low or not significant. The Applicant therefore considered that the impacts of any potential cumulative increase in collision risk mortality would have a negligible effect upon the merlin population of the Berwyn SPA.

9.41 For peregrine falcons, the Applicant estimated the in combination collision mortality to be 0.35 bird strikes per year (based on an avoidance rate of 98 %). The Carnedd Wen project accounts for approximately 26 % of the total cumulative collision risk. The Applicant considers that the

potential mortality of 1 peregrine falcon every 2.9 years would not represent a significant impact upon the SPA population.

9.42 The SoS notes that the Inspector (Inspector's Report paragraph 538) considered the draft conditions (included within the Inspector's Report Annexes) to be suitable and would deliver the mitigation measures as set out in the ES and SEI. The Inspector also had no reason to doubt that the general principles and measures in the draft plans will be translated into suitably designed and site specific measures in the final plans to be submitted for approval. The Inspector also stated that the LPA would be the appropriate body to assess and approve the plans, and that the draft conditions would empower the LPA to ensure compliance and if necessary enforce all measures within the plans.

9.43 NRW considered that the Carnedd Wen project, in combination with other plans and projects, would not have an adverse effect upon the Berwyn SPA (NRW opening submission (CON-003-004)).

9.44 The SoS has considered the potential for the Carnedd Wen project, in combination with other plans or projects, to have an adverse effect upon the Berwyn SPA. The SoS is satisfied that the results of the collision risk and PVA modelling demonstrates that the impacts of the Carnedd Wen project, in combination with other plans and projects, will not have an adverse effect upon the integrity of the Berwyn SPA.

Impacts: In combination – Pen Llyn a'r Sarnau SAC

9.45 The Carnedd Wen project, in combination with the Cemmaes 3 wind farm (planning permission for which has now been refused) has the potential to jointly have hydrological impacts which could affect the interest features of the Pen Llyn a'r Sarnau SAC.

9.46 This AA has already described the various measures that are undertaken when constructing new onshore wind farms to minimise hydrological effects. It is expected that the Cemmaes 3 project will also be employing these techniques as they represent industry-wide best practice. Nonetheless, should there be a residual effect or the mitigation measures at these sites fail, then there is the possibility for an adverse effect upon the Pen Llyn a'r Sarnau SAC.

9.47 The Cemmaes 3 wind farm (and the existing Cemmaes wind farm) lies within the Afon Cwm catchment. The Afon Cwm, along with the Afon Dugoed and the Afon Tafolog, are 3 of the major catchments which drain into the Afon Dyfi, which in turn drains into the Pen Llyn a'r Sarnau SAC. Of the 50 turbines proposed for the Carnedd Wen project, only one of these turbines is located within the Afon Cwm catchment.

9.48 The Applicant stated that the impacts on the Afon Cwm catchment resulting from the Carnedd Wen project (with the mitigation measures described in 9.25) and the Cemmaes 3 project would be of neutral significance.

9.49 As described in paragraph 9.29, the relative contribution of the Afon Dyfi sub-catchments (of which the Afon Dugoed is the largest with a catchment of 22.01 km^2) is small compared to the

overall Afon Dyfi catchment which drains an area of approximately 501 km^2. It is therefore thought to be unlikely that any residual impacts resulting from the Carnedd Wen project, in combination with the Cemmaes 3 project, will affect the marine and coastal interest features of the Pen Llyn a'r Sarnau SAC which is located approximately 25 km away.

9.50 The SoS notes that the Inspector (Inspector's Report paragraph 538) considered the draft conditions (included within the Inspector's Report Annexes) to be suitable and would deliver the mitigation measures as set out in the ES and SEI. The Inspector also had no reason to doubt that the general principles and measures in the draft plans will be translated into suitably designed and site specific measures in the final plans to be submitted for approval. The Inspector also stated that the LPA would be the appropriate body to assess and approve the plans, and that the draft conditions would empower the LPA to ensure compliance and if necessary enforce all measures within the plans.

9.51 Given the size of the catchments, the proposed mitigation measures and the distance to the SAC, the SoS is satisfied that there will not be any adverse effects upon the Pen Llyn a'r Sarnau. This conclusion was supported by NRW (NRW, 2013).

9.52 The SoS is satisfied that the Carnedd Wen development, when considered in combination with other plans and projects, will not have an adverse effect upon the integrity of the Pen Llyn a'r Sarnau SAC.

10 Habitats Regulations Assessment Conclusions

10.1 The SoS has carefully considered all of the information presented before and during the Inquiry, including the projects' ESs and SEIs, representations made by Interested Parties, Statutory Consultees, and the Inspector's report itself. The SoS is satisfied that there is sufficient evidence to enable him to undertake a robust assessment as required by the Habitats Regulations.

10.2 The SoS considers that the mid-Wales wind farm projects (Llandinam Repowering, Llaithddu, Llanbadarn Fynydd and Carnedd Wen) and the Llandinam 132 kV line project, when considered both alone and in combination with other known plans and projects whose effects are ascertainable, have the potential to have a likely significant effect upon 3 European sites protected by the Conservation of Habitats and Species Regulations 2010.

10.3 Those sites are:

- River Wye SAC (Llandinam Repowering, Llaithddu, Llanbadarn Fynydd, Llandinam 132 kV line);
- Berwyn SPA (Carnedd Wen);
- Pen Llyn a'r Sarnau SAC (Carnedd Wen).

10.4 In accordance with Regulation 61 of the Habitats Regulations, the SoS has undertaken an AA in respect of those 3 sites' conservation objectives to determine whether the mid-Wales wind farm projects and the Llandinam 132 kV line project, either alone or in combination with other known plans and projects whose effects are ascertainable, will result in an adverse effect upon the sites' integrity.

10.5 The SoS has undertaken a robust assessment using all of information available to him. Having considered all of the information available, and the mitigation measures secured within the s36 consent and s37 consent (and the deemed planning permission), the SoS has determined that the mid-Wales wind farm projects (Llandinam Repowering, Llaithddu, Llanbadarn Fynydd and Carnedd Wen) and the Llandinam 132 kV line will not have an adverse effect upon the sites' integrity either alone or in combination with other known plans or projects whose effects are ascertainable.

10.6 The SoS is satisfied that the proposed Llanbrynmair project will not have a likely significant effect upon any European sites, either alone or in combination with other known plans or projects whose effects are ascertainable.

10.7 These conclusions are supported by the Inspector's report, NRW and the Applicant's for their respective projects.

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Date: **23 June 2015**

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Annex A – River Wye SAC Interest Features and Conservation Objectives

(Source: River Wye SAC Core Management Plan. NRW, 2008)

The ecological status of the watercourse is a major determinant of FCS for all features. The required conservation objective for the watercourse is defined below.

4.1 Conservation Objective for the watercourse

4.1.1 The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary.

4.1.2 The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process given in Annexes 1-3.

4.1.3 Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC.

4.1.4 All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural processes cause them to change.

4.1.5 Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.

4.1.6 The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial river banks using stone, concrete or waste materials, unsustainable extraction of gravel, addition or release of excessive quantities of fine sediment, will be avoided.

4.1.7 River habitat SSSI features should be in favourable condition. Where the SAC habitat is not underpinned by a river habitat SSSI feature, the target is to maintain the characteristic physical features of the river channel, banks and riparian zone.

4.1.8 Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, eg. weirs, bridge sills, acoustic barriers.

4.1.9 Natural factors such as waterfalls, which may limit, wholly or partially, the natural range of a species feature or dispersal between naturally isolated populations, should not be modified.

4.1.10 Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered.

4.1.11 Flow objectives for assessment points in the Wye Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 1 of this document.

4.1.12 Levels of nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the Wye SAC, and measures taken to maintain nutrients below these levels. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 2 of this document.

4.1.13 Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the Wye SAC, and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the

standards used by the Review of Consents process given in Annex 3 of this document.

4.1.14 Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, will be considered in assessing plans and projects.

4.1.15 Levels of suspended solids will be agreed between EA and CCW for each Water Framework Directive water body in the Wye SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

4.2 Conservation Objective for Features 1-5:
- Sea lamprey *Petromyzon marinus* (**EU Species Code:** ***1095***) ;
- Brook lamprey *Lampetra planeri* (**EU Species Code : *1096***) ;
- River lamprey *Lampetra fluviatilis* (**EU Species Code : *1099***) ;
- Twaite shad *Alosa fallax* (**EU Species Code : *1103***) ;
- Allis shad *Alosa alosa* (**EU Species Code : *1102***) ;
- Atlantic salmon *Salmo salar* (**EU Species Code : *1106***) ;
- Bullhead *Cottus gobio* (**EU Species Code : *1163***)

Vision for features 1-5

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

FCS component		*Supporting information / current knowledge*
4.2.1	*The conservation objective for the water course as defined in 4.1 above must be met*	
4.2.2	*The population of the feature in the SAC is stable or increasing over the long term.*	*Refer to sections 5.1 to 5.5 for current assessments of feature populations* *Entrainment in water abstractions directly impacts on population dynamics through reduced recruitment and survival rates.* *Fish stocking can adversely affect population dynamics through competition, predation, introduction of disease and alteration of population genetics.*
4.2.3	*The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms eg. suitable flows to allow upstream migration, depth of water and substrate type at spawning sites, and ecosystem structure and functions eg. food supply (as described in sections 2.2 and 5). Suitable habitat need not be present*	*Some reaches of the Wye SAC are more suitable for some features than others eg. the Edw has important populations of salmon but is not used by shad due to its small size. These differences influence the management priorities for individual reaches and are used to define the site units described in section 3.2. Further details of feature habitat suitability are given in section 5. In general, management for one feature is likely to be sympathetic for the other features present in the river, provided that the components of favourable conservation status for the watercourse given in section 4.1 are secured.* *The characteristic channel morphology provides the diversity of water depths, current velocities and substrate types necessary to fulfil the habitat*

	Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity, such as physical barriers to migration, will be assessed in view of 4.2.4	*requirements of the features. The close proximity of different habitats facilitates movement of fish to new preferred habitats with age.* *Hydrological processes in the Wye are affected by abstraction and regulation releases from the Elan Valley reservoirs. While these effects cannot practicably be removed any adverse effects on the integrity of the SAC should be minimised as far as possible.* *Extensive coniferous forestry plantations in the upper catchment, including the Irfon catchment, adversely affect the run-off and sediment characteristics and water quality of the river. Measures should be taken to restore the hydrological characteristics of headwater areas including wetland functions.* *Shad and salmon migration can be affected by acoustic barriers and by high sediment loads, which can originate from a number of sources including construction works.*
4.2.4	*There is, and will probably continue to be, a sufficiently large habitat to maintain the feature's population in the SAC on a long-term basis.*	

Performance indicators for features 1-5

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Sea lamprey *Petromyzon marinus* : *Performance indicators for feature condition*			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Distribution within catchment	Suitable habitat adjacent to or downstream of known spawning sites should contain *Petromyzon* ammocoetes.	This attribute provides evidence of successful spawning and distribution trends. Spawning sites known to have been used within the previous 10 years and historical sites considered still to have suitable habitat are shown in Annex 4. Spawning locations may move within and between sites due to natural processes and new sites may be discovered over time. Silt beds downstream of all sites identified in Annex 4 will be sampled for presence or absence of ammocoetes. Where apparently suitable habitat at any site is unoccupied feature condition will be considered unfavourable.	1A-D, 2A, 2B, 6, 7

b) Ammocoete density	Ammocoetes should be present in at least four sampling sites each not less than 5km apart.	This standard CSM attribute establishes a minimum occupied spawning range, within any sampling period, of 15km.	1A-D, 2A, 2B, 6, 7

Brook lamprey *Lampetra planeri* and River lamprey *Lampetra fluviatilis* : *Performance indicators for feature condition*			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Age/size structure of ammocoete population	Samples < 50 ammocoetes ~ 2 size classes Samples > 50 ammocoetes ~ at least 3 size classes	This gives an indication of recruitment to the population over the several years preceding the survey. Failure of one or more years recruitment may be due to either short or long term impacts or natural factors such as natural flow variability, therefore would trigger further investigation of the cause rather than leading automatically to an unfavourable condition assessment.	All
b) Distribution of ammocoetes within catchment	Present at not less that 2/3 of sites surveyed within natural range	The combined natural range of these two species in terms of ammocoete distribution includes all units above the tidal limit. Presence at less than 2/3 of sample sites will lead to an unfavourable condition assessment.	All
	No reduction in distribution of ammocoetes	Reduction in distribution will be defined as absence of ammocoetes from all samples within a single unit or sub-unit/tributary, and will lead to an unfavourable condition assessment.	
c) Ammocoete density	Optimal habitat: $>10m^{-2}$ Overall catchment mean: $>5m^{-2}$	Optimal habitat comprises beds of stable fine sediment or sand ≥15cm deep, low water velocity and the presence of organic detritus, as well as, in the Wye, shallower sediment, often patchy and interspersed among coarser substrate.	All

Twaite shad *Alosa fallax* and Allis shad *Alosa alosa* : *Performance indicators for feature condition*			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Spawning distribution	No decline in spawning distribution	Spawning distribution is assessed by kick sampling for eggs and/or observations of spawning adults. A representative sample of sites within units 1C and 2A will be monitored at 3 yearly intervals. Absence from any site in 2 consecutive surveys will result in an unfavourable condition assessment.	1A-D, 2A
Performance indicators for factors affecting the feature			
a) Flow	Targets are set	Targets equate to those levels agreed and used in	1A-D,

	in relation to river/reach type(s)	the Review of Consents (see Annex 1). Shad are particularly sensitive to flow. The ideal regime is one of relatively high flows in March-May, to stimulate migration and allow maximum penetration of adults upstream, followed by rather low flows in June-September, which ensures that the juveniles are not washed prematurely into saline waters and grow rapidly under warmer conditions. The release of freshets to encourage salmonid migration should therefore be discouraged on shad rivers during this period.	2A

Atlantic salmon *Salmo salar* : *Performance indicators for feature condition*			
Attribute	***Specified limits***	***Comments***	***Relevant unit(s)***
a) Adult run size	Conservation Limit complied with at least four years in five (see 5.4)	CSM guidance states: Total run size at least matching an agreed reference level, including a seasonal pattern of migration characteristic of the river and maintenance of the multi-sea-winter component. As fish counter data in the Wye is considered unreliable (EA pers. comm.), adult run size is calculated using rod catch data. Further details can be found in the EA Wye Salmon Action Plan.	All
b) Juvenile densities	Expected densities for each sample site using HABSCORE	CSM guidance states: These should not differ significantly from those expected for the river type/reach under conditions of high physical and chemical quality. Assessed using electrofishing data.	All except 1A-D, 2A
Performance indicators for factors affecting the feature			
Water quality			
a) Biological quality	Biological GQA class A	This is the class required in the CSM guidance for Atlantic salmon, the most sensitive feature.	All
b) Chemical quality	RE1	It has been agreed through the Review of Consents process that RE1 will be used throughout the SAC (see Annex 3)	All
Hydromorphology			
a) Flow	Targets are set in relation to river/reach type(s)	Targets equate to those levels agreed and used in the Review of Consents (see Annex 1)	All

Bullhead *Cottus gobio* : *Performance indicators for feature condition*			
Attribute	***Specified limits***	***Comments***	***Relevant unit(s)***
a) Population densities	No less than 0.2 m^{-2} in	CSM guidance states that densities should be no less than 0.2 m^{-2} in upland rivers (source altitude	All except

	sampled reaches	>100m) and 0.5 m^{-2} in lowland rivers (source altitude ≤100m). A significant reduction in densities may also lead to an unfavourable condition assessment.	1A, 1B
b) Distribution	Bullheads should be present in all suitable reaches. As a minimum, no decline in distribution from current	Suitable reaches will be mapped using fluvial audit information validated using the results of population monitoring. Absence of bullheads from any of these reaches, or from any previously occupied reach, revealed by on-going monitoring will result in an unfavourable condition assessment.	All except 1A, 1B
c) Reproduction / age structure	Young-of-year fish should occur at densities at least equal to adults	This gives an indication of successful recruitment and a healthy population structure. Failure of this attribute on its own would not lead to an unfavourable condition assessment.	All except 1A, 1B

4.3 Conservation Objective for Feature 6:
- European otter *Lutra lutra* **(EU Species Code: *1355*)**

Vision for feature 6
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

FCS component		*Supporting information / current knowledge*
4.3.1	*The population of otters in the SAC is stable or increasing over the long term and reflects the natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour.*	*Refer to section 5.9 for current assessment of feature population*
4.3.2	*The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories. The whole area of the Wye SAC is considered to form potentially suitable breeding habitat for otters. The size of breeding territories may vary depending on prey abundance. The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the*	*Survey information shows that otters are widely distributed in the Wye catchment. However, an assessment of otter breeding habitat has indicated that there may be a shortage of suitable habitat around the middle reaches of the river, which may affect the long-term viability of the population. This should be addressed by habitat enhancement including stock exclusion from suitable woodlands near to the river but outside the floodplain.* *The decline in eel populations may be having an adverse effect on the population of otters in the Wye.*

	provision of artificial holts. No otter breeding site should be subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance must be managed.	
4.3.3	*The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers.*	*Road and bridge improvement schemes within the catchment should take appropriate measures towards achievement of this objective.*

Performance indicators for feature 6

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Distribution	Otter signs present at 82-90% of Otter Survey of Wales sites in sub-catchments	Ref: CCW Environmental Monitoring Report No 30 (2006)[5]	All
b) Breeding activity	Reports of cub/family sightings (no specified limit)	Ref: CCW Environmental Monitoring Report No 30 (2006)[5]	All
c) Actual and potential breeding sites	No decline in number and quality of mapped breeding sites in sub-catchments. Increase from 5 to 9 sites in Middle Wye sub-catchment (see Ref)	Ref: CCW Environmental Monitoring Report No 30 (2006)[5] In the Wye catchment within Wales, 32 actual or potential breeding sites have been identified (19 within the Wye SAC), distributed throughout the catchment on the main river and tributaries. It is recommended that this should increase to at least 40 (23 within Wye SAC)[5]. Note: breeding territories typically contain more than one breeding site.	All

4.4 Conservation Objective for Feature 7:
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (**EU Habitat Code:** *3260*)

Vision for feature 7

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

FCS component		*Supporting information / current knowledge*
4.4.1	*The conservation objective for the water course as defined in 4.1 above must be met*	
4.4.2	*The natural range of the plant communities represented within this feature should be stable or increasing in the SAC. The natural range is taken to mean those reaches where predominantly suitable habitat exists over the long term. Suitable habitat and associated plant communities may vary from reach to reach. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms eg. depth and stability of flow, stability of bed substrate, and ecosystem structure and functions eg. nutrient levels, shade (as described in section 2.2). Suitable habitat for the feature need not be present throughout the SAC but where present must be secured for the foreseeable future, except where natural processes cause it to decline in extent.*	*Stands of this feature are known to be widespread in the Wye SAC including many of the tributaries. However, further information on its natural range, distribution and variation is desirable. Sympathetic management will be promoted wherever the feature is present.* *Species indicative of unfavourable condition for this feature eg. filamentous algae associated with eutrophication, invasive non-native species, should be maintained or restored below an acceptable threshold level, indicative of high ecological status within the SAC.*
4.4.3	*The area covered by the feature within its natural range in the SAC should be stable or increasing.*	*Adverse factors may include elevated nutrient levels, shading or altered flow and/or sediment regimes.* *It is possible that reaches with slightly elevated nutrient levels and/or regulated flows may have a higher cover of the feature than under natural conditions, though species composition may also be affected (see 4.4.4)*
4.4.4	*The conservation status of the feature's typical species should be favourable. The typical species are defined with reference to the species composition of the appropriate JNCC river vegetation type for the particular river reach, unless differing from this type due to natural variability when other typical species may be defined as appropriate.*	*More information on the typical species expected within each management unit in the SAC is required.* *The effects of artificial factors such as flow regulation on species composition should be examined eg. river jelly lichen may prefer greater flow variability.*

Performance indicators for feature 7

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Distribution within catchment	Distribution within site units	*Ranunculus* spp. will be present with a cover of at least 10% in any three representative sample 100m stretches of suitable habitat in: [reaches to be confirmed]	All
b) Typical species	Species list for reference vegetation type	Should conform to appropriate JNCC type or other list for site unit as appropriate. Details to be confirmed	All
Performance indicators for factors affecting the feature			
Negative indicators			
a) Native species	Cover of indicators of eutrophication maintained below threshold over the medium to long term	CSM guidance states: Care should be taken with the setting of these targets as thresholds may vary considerably by site and conservation goals. For the Wye SAC: Algae indicative of eutrophication (*Enteromorpha* spp., *Cladophora* spp. and *Vaucheria* spp.) should not have a cover value of greater than 10% in 3 consecutive years in: [reaches to be confirmed]	All
b) Alien / introduced species	No impact on native biota from alien or introduced species	In the CSM guidance, the SERCON scoring system for naturalness of aquatic and marginal macrophytes and naturalness of banks and riparian zone, are used to assess this attribute. SERCON protocols have not been applied in the Wye SAC, therefore assessment of this attribute relies on locally defined thresholds and expert judgement. Details to be confirmed	All

4.2 Conservation Objective for Feature 8:
- White-clawed crayfish *Austropotamobius pallipes* **(EU Species Code: *1092*)**

Vision for feature 8

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

FCS component	*Supporting information / current knowledge*
4.2.5 The conservation objective for the water course as defined in 4.1 above must be met	

4.2.6	*The population of the feature in the SAC is stable or increasing over the long term.*	*Refer to section 5.8 for current assessment of feature population* *Presence of non-native crayfish adversely affects population dynamics through competition, predation and introduction of disease (crayfish plague). This is thought to invariably lead to local extinction of white-clawed crayfish. American signal crayfish are present in the Bachawy and Lugg and Arrow sub-catchments (outside the SAC) and have been reported in the Edw.* *The release of highly toxic sheep dips into streams has caused mass mortality and local extinction in the SAC from which populations may be very slow to recover.*
4.2.7	*The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms eg. substrate type, water hardness and temperature, and ecosystem structure and functions eg. food supply, absence of invasive non-native competitors (as described in sections 2.2 and 5). Suitable habitat need not be present throughout the SAC but where present must be secured for the foreseeable future. Natural factors such as waterfalls may limit the natural range of individual species. Existing artificial influences on natural range that cause an adverse effect on site integrity will be assessed in view of 4.2.4*	*Some reaches of the Wye SAC are more suitable for some features than others eg. the natural range of white-clawed crayfish may be limited by water hardness and temperature (which may possibly also mediate competition with non-native crayfish to some extent). These differences influence the management priorities for individual reaches and are used to define the site units described in section 3.2. Further details of feature habitat suitability are given in section 5.* *Eradication of American signal crayfish, or control of its spread in the Wye catchment is considered essential to the long-term suitability of the SAC for white-clawed crayfish. At present there are no known effective methods for eradication or long-term control of signal crayfish.* *Prevention of release of toxic sheep dips and other harmful diffuse pollution into water courses is essential.*
4.2.8	*There is, and will probably continue to be, a sufficiently large habitat to maintain the feature's population in the SAC on a long-term basis.*	*Invasion of American signal crayfish is likely to make existing habitat in the Wye SAC unsuitable for white-clawed crayfish in the long term. There may be a need to translocate white-clawed crayfish to suitable habitat outside its present (and historic) range.*

Performance indicators for feature 6

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

White-clawed crayfish *Austropotamobius pallipes* : *Performance indicators for feature condition*			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Adult/juvenile densities	Abundance in habitat patches above threshold	Average number of crayfish in each habitat patch surveyed by stone turning and trapping combined should be greater than 1[9].	3, 4, 5, 6
b) Distribution	Distribution in suitable reaches (monitoring units)	Suitable reaches within the relevant management units will be mapped using fluvial audit information validated with historic data and the results of population monitoring. Absence of white-clawed crayfish from any of these reaches revealed by on-going monitoring will result in an unfavourable condition assessment.	3, 4, 5, 6
Performance indicators for factors affecting the feature			
Negative indicators			
a) Invasive non-native crayfish	Absence of non-native crayfish from the SAC	Collation of *ad hoc* records of non-native crayfish in the Wye catchment and adjacent areas and monitoring in conjunction with control programmes using trapping.	All
b) Porcelain disease in white-clawed crayfish	Incidence <10%	Incidence to be recorded during population monitoring.	3, 4, 5, 6

4.4 Conservation Objective for Feature 9:
- Quaking bogs and transition mires (**EU Habitat Code:** *7410*)

Vision for feature 9

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

FCS component		*Supporting information / current knowledge*
4.4.5	*The conservation objective for the water course as defined in 4.1 above must be met*	
4.4.6	*The natural range of the plant communities represented within this feature should be stable or increasing in the SAC. The natural range is taken to mean those reaches where near-natural hydrological and geomorphological processes and landforms favour the development of this habitat. The feature need not be present in all suitable locations in the SAC but where present must be secured for the foreseeable future.*	*This feature is represented within the SAC at Colwyn Brook Marshes SSSI. Other locations with similar habitat within and adjacent to the SAC are not considered to qualify as examples of this feature e.g. Waen Rhyd SSSI, but may have similar management requirements.* *Species indicative of unfavourable condition for this feature eg. invasive native trees and shrubs and non-native species, should be maintained or restored below an acceptable threshold level, indicative of high ecological status within the SAC.*
4.4.7	*The area covered by the feature within its natural range in the SAC should be stable or increasing.*	*Adverse factors may include elevated nutrient levels or altered hydrological processes through drainage or groundwater abstraction.*
4.4.8	*The conservation status of the feature's typical species should be*	*More information on the typical species expected within each management unit is required. Details*

	favourable. The typical species are defined with reference to the species composition of the appropriate NVC type(s), unless differing from this type due to natural variability/local distinctiveness when other typical/indicator species may be defined as appropriate.	*to be confirmed*

Performance indicators for feature 9

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition			
Attribute	*Specified limits*	*Comments*	*Relevant unit(s)*
a) Habitat extent	No reduction in total extent	This would be indicative of drying out due to a change in hydrological processes/wetland structure & function.	9
b) Habitat composition	No significant increase in woodland/scrub	This would be indicative of drying out due to a change in hydrological processes/wetland structure function and/or vegetation succession due to a change in grazing pressure.	9
c) Habitat structure	Cover of exposed substrate/litter	May indicate either over- or under-grazing.	9
d) Vegetation composition	Indicator species presence/frequency for reference vegetation type(s). No significant reduction in key type(s)	Should conform to appropriate NVC type(s) and/or locally defined vegetation composition criteria as appropriate. Shifts in vegetation composition may indicate change in hydrology, nutrient status and/or grazing pressure. Details to be confirmed	9
Performance indicators for factors affecting the feature			
Negative indicators			
a) Native species	Cover of indicators of under-grazing, drainage, eutrophication or disturbance maintained below threshold	May include graminoids such as *Phragmites australis, Phalaris arundinacea, Glyceria maxima, Typha latifolia, Juncus* spp., *Molinia caerulea*; tall herbs such as *Epilobium hirsutum, Urtica dioica, Pteridium aquilinum, Rubus fruticosus*; bryophytes such as *Brachythecium rutabulum, Eurhynchium praelongum, Sphagnum recurvum;* tree and shrub spp. (CSM Lowland fens guidance)	9
b) Invasive non-native species	No impact on native biota from invasive non-native or introduced species	Possible invasive non-natives include New Zealand swamp-stonecrop *Crassula helmsii*: although not recorded at the site, any records should be verified and followed up with control measures.	9

Annex B – Berwyn SPA Interest Features and Conservation Objectives

(Source: Berwyn SPA Core Management Plan. NRW, 2008)

4.7 Conservation Objective for Feature 7:
Hen harrier *Circus cyaneus* **(EU Species Code: A082)**

Vision for feature 7

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

1. The size of the population must be being maintained at eleven breeding pairs or increased beyond this.
2. There will be sufficient appropriate habitat to support the population in the long-term including patches of tall heather available for nesting and roosting, areas grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
3. Distribution of species within site is maintained.
4. Distribution and extent of habitats supporting the species is maintained.

5. Developments should not be permitted where they can be shown to have likely adverse impacts upon hen harrier.
6. Populations of legally controllable predator species, such as foxes and carrion crows, will not pose a threat to ground nesting birds.
7. Hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
8. There will be no disturbance of any nest location.
9. Illegal human persecution of protected bird species should not occur.
10. All factors affecting the achievement of these conditions are under control

Performance indicators for Feature 7

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition		
Attribute	***Attribute rationale and other comments***	***Specified limits***
A1. Breeding population size	Generic threshold approach adopted (due to concerns over extent of coverage in some years). Population remains in favourable condition if decline is <25% from the Natura 2000 figure of 14 territorial pairs.	Number of territorial pairs within SPA from a minimum of three counts in each 6-year reporting cycle. *Upper limit*: n/a *Lower limit*: 11 pairs
A2. Breeding success	Successful nests are those, which fledge at least 1 young per season.	*Upper limit*: n/a *Lower limit*: 1 fledged per territorial pair.
A3. Extent of available nesting habitat	Areas of tall mature-rank heather usually on steep slopes in sheltered locations.	*Upper limit:* None set *Lower limit:* extent at notification.
A4. Extent of available foraging territory	Areas of extensive open rough grassland supporting abundant small mammals and passerines.	*Upper limit:* None set *Lower limit:* 1:3 ratio of nesting to foraging habitat in mosaic throughout breeding area.
A5. Disturbance	There should be no disturbance within at least 500 m of the breeding site.	*Upper limit:* Zero *Lower limit:* None set
Performance indicators for factors affecting the feature		
Factor	***Factor rationale and other comments***	***Operational Limits***
F1.Availability of nesting sites.	Frequent patches of tall heather or young forestry (conifers <2m in height).	Ground layer sward height *Upper limit*: 100cm *Lower limit*: Maintain patches of heather at least 40cm deep on flat or gently sloping ground
F2. Prey availability	Abundance of small mammals and birds in open rough grassland with rushes, bracken or low trees/scrub.	*Upper limit:* None set *Lower limit*: Prey availability = Biomass or number m^2 (Insufficient data)
F3. Habitat extent	Assessment once in 6 year period. Areas based on %, of each relevant habitat, of the total SPA area as given on Natura 2000 forms.	*Upper limit*: n/a *Lower limit*: Bogs 8824 ha Heath 9191 ha Grassland 5805 ha Woodland 484 ha

		Rocks/scree 241 ha
F3. Fires	Burning of potential nesting sites, limits nesting territory. Burning season extends into nesting period (1st October to 15th April – Uplands).	*Upper limit*: No fires within traditional nest locations. *Lower limit*: n/a
F4. Persecution	No persecution of schedule 1 species.	*Upper limit*: Zero *Lower limit*: None set
F5. Predation	Natural predation by foxes.	*Upper limit*: Zero *Lower limit*: None set.
F7. Factors out with the site	Damage to their wintering grounds may be having an effect at the meta-population scale.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F8. Disease	Release of captive bred game birds adjacent to site. e.g. Avian Cholera/ Bird Flu	*Upper limit*: No releases on site. *Lower limit*: None set
F9. Weather	Adverse weather can affect the breeding success of the females, e.g. very bad winters affecting the breeding condition of the females before they reach their summer territories, or wet/cold weather chilling the eggs/young chicks.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F10. Development	Upland sites are frequently targeted for windfarm development which generates increased risk of mortality as a result of birds colliding with turbine blades.	*Upper limit*: None set *Lower limit*: Sufficient buffer from nest to ensure zero impact.
F11. Disturbance	Limit all disturbances affecting breeding success. Dogs should be on leads during breeding season.	*Upper limit* None set *Lower limit*: 500m & dogs on lead

Also considered:

Mortality

Rates of mortality should reflect natural dynamics of the population and carrying capacity of available habitat within acceptable limits. Exceptions being made only in years of bad weather e.g. 2007. Excluded because we can't measure it.

4.8 Conservation Objective for Feature 8:

Merlin *Falco columbarius* (EU Code: A098)

Vision for feature 8

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

1. The size of the population must be being maintained at 13 breeding pairs or increased beyond this.
2. There will be sufficient appropriate habitat to support the population in the long-term including patches of tall heather available for nesting and roosting, areas grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
3. Distribution of species within site is maintained.
4. Distribution and extent of habitats supporting the species is maintained.
5. Developments should not be permitted where they can be shown to have likely adverse impacts upon merlin.
6. Populations of legally controllable predator species, such as foxes and carrion crows, should not pose a threat to ground nesting birds.
7. Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
8. There will be no disturbance of any nest location.
9. Illegal human persecution of protected bird species should not occur.
10. All factors affecting the achievement of theses conditions are under control

Performance indicators for Feature 8

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition		
Attribute	***Attribute rationale and other comments***	***Specified limits***
A1. Breeding population size	Known natural fluctuation approach adopted. Population in favourable condition if 13, or more, territorial pairs present based on the Natura 2000 minimum breeding population size recorded from five counts for.1991 to 1995.	Number of territorial pairs within SPA from a minimum of three counts in each 6-year reporting cycle. *Upper limit*: n/a *Lower limit*: 13 pairs
A2. Breeding success	Successful nests are those, which fledge at least 1 young per season.	*Upper limit*: n/a *Lower limit*: 1 fledged per territorial pair
A3. Extent of available nesting habitat	Areas of tall mature-rank heather usually on steep slopes in sheltered locations.	*Upper limit:* None set *Lower limit:* Extent at notification
A4. Extent of available foraging territory	Areas of extensive open rough grassland supporting abundant small mammals and passerines.	*Upper limit*: None set *Lower limit:* 1:3 ratio of nesting to foraging habitat in mosaic throughout breeding area
A5. Disturbance	There should be no disturbance within at least 500 m of the breeding site.	*Upper limit:* Zero *Lower limit:* n/a
Performance indicators for factors affecting the feature		
Factor	***Factor rationale and other comments***	***Operational Limits***
F1. Availability of nesting sites	Frequent patches of tall heather plus small clusters of scattered trees of 4-5m in clumps of 0.5-2ha.	Ground layer sward height *Upper limit*: 70cm *Lower limit:* 30cm **with** <30% cover of trees overall.

F2. Prey availability	Abundance of small birds and day flying moths in open rough grassland with rushes, bracken or low trees/scrub.	*Upper limit:* None set *Lower limit*: Prey availability = Biomass or number m^2 ***Insufficient data***
F3. Habitat extent	Assessment once in 6 year period. Areas based on %, of each relevant habitat, of the total SPA area as given on Natura 2000 forms.	*Upper limit*: n/a *Lower limit*: Bogs 8824 ha Heath 9191 ha Grassland 5805 ha Woodland 484 ha Rocks/scree 241 ha
F3. Fires	Burning of potential nesting sites, limits nesting territory. Burning season extends into nesting period (1st October to 15th April – Uplands).	*Upper limit*: No fires within traditional nest locations. *Lower limit*: n/a
F4. Persecution	No persecution of schedule 1 species.	*Upper limit*: Zero *Lower limit*: None set
F5. Predation	Natural predation by foxes	*Upper limit*: Zero *Lower limit*: None set.
F7. Factors out with the site	Damage to their wintering grounds may be having an effect at the meta-population scale.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F8. Disease	Release of captive bred game birds adjacent to site. e.g. Avian Cholera/ Bird Flu	*Upper limit*: No releases on site. *Lower limit*: None set
F9. Weather	Adverse weather can affect the breeding success of the females, e.g. very bad winters affecting the breeding condition of the females before they reach their summer territories, or wet/cold weather chilling the eggs/young chicks.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F10. Development	Upland sites are frequently targeted for windfarm development which generates increased risk of mortality as a result of birds colliding with turbine blades.	*Upper limit*: n/a. *Lower limit*: Sufficient buffer from nest to ensure zero impact.
F11. Disturbance	Limit all disturbances affecting breeding success. Dogs should be on leads during breeding season.	*Upper limit* None set *Lower limit*: 500m & dogs on lead

Also considered:

Mortality

Rates of mortality should reflect natural dynamics of the population and carrying capacity of available habitat within acceptable limits. Exceptions being made only in years of bad weather e.g. 2007.
Excluded because we can't measure it.

4.9 Conservation Objective for Feature 9:
Peregrine falcon *Falco peregrinus* (EU Code: A103)

Vision for feature 9

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

1. The size of the population must be being maintained at 13 breeding pairs or increased beyond this.
2. Mountainous and moorland terrain with cliffs, crags and quarries for nesting and roosting plus grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
3. The range of the population must not be contracting.
4. Distribution and extent of habitats supporting the species is maintained.
5. Developments should not be permitted where they can be shown to have likely adverse impacts upon peregrine.
6. Populations of legally controllable predator species, such as foxes and carrion crows, should not pose a threat to ground nesting birds.
7. Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
8. There will be no disturbance of any nest location.
9. Illegal human persecution of protected bird species should not occur.
10. All factors affecting the achievement of theses conditions are under control

Performance indicators for Feature 9

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition		
Attribute	***Attribute rationale and other comments***	***Specified limits***
A1. Breeding population size	Generic threshold approach adopted as Natura 2000 figure based on unsupported data. Population remains in favourable condition if decline is <25% from the Natura 2000 figure of 18 territorial pairs	Number of territorial pairs within SPA from a minimum of three counts in each 6-year reporting cycle. *Upper limit*: n/a *Lower limit*: 13 pairs
A2. Extent of available nesting habitat	Areas of mountainous cliff and crag with ledges suitable for nesting.	*Upper limit*: None set *Lower limit:* SPA boundary
A3. Extent of available foraging territory	Areas of extensive open rough grassland supporting abundant small passerines.	*Upper limit:* None set *Lower limit:* SPA boundary.
A4. Disturbance	There should be no disturbance within at least 500 m of the breeding site.	Upper limit: Zero Lower limit: none set.
Performance indicators for factors affecting the feature		
Factor	***Factor rationale and other comments***	***Operational Limits***
F1. Availability of nesting sites.	Undisturbed cliffs or crags on moorland/mountain. Inter species competition for nest sites i.e. with raven.	*Upper limit*: None set *Lower limit*: Extent at notification. Note majority of nest locations are outside the SPA Boundary and are not in SSSI.
F2. Prey availability	Abundance of small birds in open rough grassland with rushes, bracken or low trees/scrub.	*Upper limit:* None set *Lower limit*: Prey availability = Biomass or number m^2 *Insufficient data*

F3. Habitat extent	Assessment once in 6 year period. Areas based on %, of each relevant habitat, of the total SPA area as given on Natura 2000 forms.	*Upper limit*: n/a *Lower limit*: Bogs 8824 ha Heath 9191 ha Grassland 5805 ha Woodland 484 ha Rocks/scree 241 ha
F4. Persecution	No persecution of schedule 1 species. Eggs and young are taken illegally. Failures due to nest theft could be significant. Some nests fail repeatedly.	*Upper limit*: Zero *Lower limit*: None set
F5. Predation	Predation by crows during breeding season.	*Upper limit*: Zero *Lower limit*: None set.
F6. Factors out with the site	Damage to their wintering grounds may be having an effect at the meta-population scale.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F7. Disease	Release of captive bred game birds adjacent to site. e.g. Avian Cholera/ Bird Flu	*Upper limit*: No releases on site. *Lower limit*: None set
F8. Weather	Adverse weather can affect the breeding success of the females, e.g. very bad winters affecting the breeding condition of the females before they reach their summer territories, or wet/cold weather chilling the eggs/young chicks.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F9. Development	Upland sites are frequently targeted for windfarm development which generates increased risk of mortality as a result of birds colliding with turbine blades.	*Upper limit*: None set *Lower limit*: Sufficient buffer from nest to ensure zero impact.
F10. Disturbance	Limit all disturbances affecting breeding success. Dogs should be on leads during breeding season.	*Upper limit* None set *Lower limit*: 500m & dogs on lead

Also considered:

Mortality

Rates of mortality should reflect natural dynamics of the population and carrying capacity of available habitat within acceptable limits. Exceptions being made only in years of bad weather e.g. 2007. Excluded because we can't measure it.

Breeding success

Can't measure this as not enough data, therefore not a realistic PI

4.10 Conservation Objective for Feature 10:
Red kite *Milvus milvus* (EU Code: A074)

Vision for feature 10

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

1. The size of the population must be being maintained at 2 breeding pairs or increased beyond this.
2. Sufficient Broadleaf woodland required for nesting and roosting plus heath and rough grassland for feeding with an adequate supply of prey species in the form of carrion, small birds and small mammals to maintain successful breeding. (NOTE: Red kite do not nest within the SPA.)
3. Developments should not be permitted where they can be shown to have likely adverse impacts upon red kite.
4. Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
5. There will be no disturbance of any nest location.
6. Illegal human persecution of protected bird species should not occur.
7. All factors affecting the achievement of theses conditions are under control

Performance indicators for Feature 10

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition		
Attribute	***Attribute rationale and other comments***	***Specified limits***
A1. Breeding population size	Generic threshold approach adopted as Natura 2000 figure based on unsupported data.	*Upper limit*: n/a *Lower limit*: 2 pairs or 1.2% of the UK population
A2. Extent of available nesting habitat	Areas of broadleaf woodland for nesting close to open ground including moorland and rough grassland for feeding.	Nest outside of SPA. *Upper limit*: None set *Lower limit: **Insufficient data***
A3. Extent of available foraging territory	Areas of extensive open rough grassland supporting carrion, abundant small mammals and passerines.	Upper limit: None set Lower limit: SPA boundary
A4. Disturbance	There should be no disturbance within at least 500 m of the breeding site.	*Upper limit:* Zero *Lower limit:* None set
Performance indicators for factors affecting the feature		
Factor	***Factor rationale and other comments***	***Operational Limits***
F1. Availability of nesting sites.	Many small to large woodlands >1ha amongst open country and representing 20-50% of the area overall, within 5km from good feeding terrain. Predominantly open canopy with abundance of tall trees.	*Upper limit*: None set *Lower limit*: <50% canopy overall with trees of >12m height. **None nest within the site but pairs nesting adjacent to the site boundary forage extensively within the site.**
F2. Prey availability	Abundance of carrion, live mammals, birds and ground surface invertebrates.	*Upper limit:* None set *Lower limit: **Insufficient data***
F3. Habitat extent	Assessment once in 6 year period. Areas based on %, of each relevant habitat, of the total SPA area as given on Natura 2000 forms.	*Upper limit*: n/a *Lower limit*: Bogs 8824 ha Heath 9191 ha Grassland 5805 ha Woodland 484 ha Rocks/scree 241 ha
F4. Persecution	Adults poisoned with baited carrion.	*Upper limit*: Zero *Lower limit*: None set

F5. Predation	Predation by crows during breeding season.	*Upper limit*: Zero *Lower limit*: None set
F6. Disease	Release of captive-bred game birds adjacent to site, with risk of, for example, avian cholera or bird flu.	*Upper limit*: No releases on site *Lower limit*: None set
F7. Weather	Adverse weather can affect the breeding success of the females, e.g. very bad winters affecting the breeding condition of the females before they reach their summer territories, or wet/cold weather chilling the eggs/young chicks.	*Upper limit*: ***Insufficient data*** *Lower limit*:
F8. Development	Upland sites are frequently targeted for wind farm development, which generates increased risk of mortality as a result of birds colliding with turbine blades.	*Upper limit*: None set *Lower limit*: Sufficient buffer from nest to ensure zero impact.
F9. Disturbance	Limit all disturbance affecting breeding success.	*Upper limit* None set *Lower limit*: 500m

Also considered:

Mortality

Rates of mortality should reflect natural dynamics of the population and carrying capacity of available habitat within acceptable limits. Exceptions being made only in years of bad weather e.g. 2007. Excluded because we can't measure it.

Breeding success

Can't measure this as not enough data, therefore not a realistic PI

Annex C – Pen Llyn a'r Sarnau SAC Interest Features and Conservation Objectives

(Source: Pen Llyn a'r Sarnau SAC Regulation 33 advice. NRW, 2009)

VISION STATEMENT

CCW's vision for the Pen Llŷn a'r Sarnau SAC is for a high quality marine and coastal environment which is healthy, productive and biologically diverse, supporting resilient marine ecosystems and communities. The special habitat and species features of the SAC will be maintained and, where necessary, restored so that they will be able to sustain themselves in the long-term as part of naturally functioning ecosystems. The diversity of the wildlife habitats and species in the SAC will not be degraded.

The varied physical character and processes in different parts of the SAC will operate without any undue interference, this includes the natural processes of tides, waves and currents and the associated processes of sediment erosion and deposition. The quality of water in the SAC will be maintained or restored to a level necessary to maintain the features in favourable condition for the foreseeable future. The health and quality of the 12 SAC features are inter-related and will also depend on the state of other non SAC feature marine habitats within the site, as well as structural and functional components of the marine ecosystem.

The *reefs* of the SAC should continue to comprise a large variety of habitats and their associated biological communities both on the shore and underwater. The different components of the reef habitat should continue to be present with no significant loss of extent, and the quality of the wildlife communities they support should be maintained or enhanced; these components comprise reef formed from different types of hard substrate throughout the site (bedrock, boulders, cobbles and mixed ground), biogenic reefs and carbonate reef. The potential for expansion of the biogenic reef communities on the shore and underwater will be safeguarded through appropriate management.

The *large shallow bay feature* (Tremadog Bay) should continue to comprise a variety of high quality sediment and hard substrate habitats and their associated biological communities. The special characteristics of the bay will be maintained, including species rich and species diverse subtidal sediments as the dominant habitat type within the bay. The subtidal sediments should comprise a mosaic of sediment types including extensive areas of muddy gravel, fine and muddy sand and mud. On the shore, the condition of the varied habitat types and their associated communities will be expected to be maintained or improved under appropriate management. The intertidal habitat types present will include muddy and sandy gravel, mixed sediment and boulder shores, bedrock, sand and shingle. The natural biological productivity of the bay and its ability to function as a nursery area for fish and shellfish species will be maintained and safeguarded. The potential for expansion of the biogenic reefs and eelgrass (seagrass) communities that are components of the bay feature should be safeguarded through appropriate management.

The *subtidal sandbanks* for the SAC should continue to comprise mobile or highly mobile sediment habitats and their associated communities. The overall structure, sediment characteristics and biological communities of the Tripods, Bastram Shoal and Devil's Ridge sandbanks will reflect their exposure to the prevailing south-westerly winds and strong tidal flow. The sediment characteristics and biological communities of the Four-fathom bank

sandbank will reflect conditions of slightly less exposure to wind and tidal currents. Sediment supply and hydrodynamic processes forming the sandbanks will continue unhindered. The condition of the biological communities within and on the sediment, together with mobile species associated with the sandbanks, will be maintained or improved under appropriate management.

Each of the three *estuaries* of the SAC will continue to be shallow, bar-built drying estuaries supporting a mosaic of habitats and associated wildlife that reflects the transition from the estuarine to terrestrial habitats. The estuaries will support good quality saltmarsh transitions to other habitats such as shingle, sand dune, peat mire, brackish and freshwater marsh, reed swamp, bog and woodland. The sediments of the estuaries will continue to comprise a high proportion of sandy to muddy sediments, and the sediment type and biological communities associated with them will reflect a gradient from more exposed and saline conditions at the mouth of each estuary to more sheltered freshwater-influenced communities in their landward reaches. The structure and characteristics of each estuary will be determined by unhindered geomorphological and biological processes, including sediment transport, erosion and accretion and the influence of flood events and by appropriate management of the surrounding catchments. Artificial constraints on the estuaries form and functioning will be minimised to ensure thelong-term presence and viability of estuary habitats; restore floodplain functions and habitats; and improve the ecosystem resilience to climate change. The estuaries will continue to function as fish nursery areas and to support important populations of migratory fish and birds, and other key species such as otter.

The Morfa Gwyllt *coastal lagoon* will continue to be present in its current location with no loss of extent or reduction in its ability to provide a specialised brackish water lagoon habitat. Specialist lagoon species will continue to be present as viable populations together with a range of other marine species characteristic of the predominantly sediment habitat in the lagoon basin. The negative impact of disturbance to the lagoon from human activities would be expected to be reduced under appropriate management, thereby improving the ability of Morfa Gwyllt to continue to exist and function as a coastal lagoon.

The *intertidal mudflats and sandflats* feature should continue to comprise an array of sediment habitats and their associated biological communities, ranging from exposed and moderately exposed sands in open coast situations, through exposed to sheltered sands and muds in estuarine conditions. Complete examples of zonation of exposed and moderately exposed sediment communities will continue to be present. The quality of intertidal mudflat and sandflat communities would be expected to be maintained or improved. The potential for expansion of the nationally scarce eelgrass (seagrass) community should be safeguarded through appropriate management. The long-term viability and quality of the intertidal mudflats and sandflats in estuarine conditions may be enhanced by restoration of more naturally functioning estuary systems.

The site retains its complete sequences of *saltmarsh vegetation*, from pioneer vegetation, such as glasswort, through to upper saltmarsh. The variety of communities will continue to be present and their quality will be maintained or improved. The long-term viability and quality of the saltmarsh features will be improved through management of the estuaries that restores more naturally functioning estuary systems.

The *sea caves* feature should continue to comprise intertidal and subtidal caves, clefts, crevices and tunnels in the bedrock substrate within the SAC. The extent of the sea caves and the variety and quality of the biological communities they support will be maintained or improved. Many of the caves (intertidal and subtidal) will continue to support well-developed zonation of sea cave communities. The sea caves of the SAC will continue to provide accessible and high quality breeding places for grey seal.

The SAC will continue to provide a productive and supportive marine area for *grey seals*. The population of grey seals frequenting the SAC will form and important component of a larger southwest UK population of grey seals. Grey seals will continue to be widespread throughout the SAC predominantly in areas of open coast and sea. Grey seals will have access to, and sufficient availability of prey, and they will have widespread availability and access to good quality essential habitats, including areas for hauling out and pupping, that are free from excessive disturbance. The quality and distribution of haul out and breeding sites for grey seals within the site will be maintained or improved through appropriate management.

The SAC will continue to provide a productive and supportive marine area for *bottlenose dolphin*. Bottlenose dolphin will continue to be widespread within the waters of the SAC and those frequenting the SAC will reflect a healthy population structure including immature and adult male and female dolphins. The bottlenose dolphins in the SAC will form an important component a larger population of this species present in Cardigan Bay and in the wider sea area around Wales and the north east Atlantic. The animals using the SAC will reflect good

physiological health. The bottlenose dolphins will have access to and sufficient availability of prey, and they will have widespread availability and access to good quality essential habitats free from excessive disturbance. The quality and distribution of essential habitats (such as for feeding, calving, resting and travelling) within the site will be maintained or improved through appropriate management.

Otters will continue to be widespread throughout the SAC both in areas of open coast and within the estuaries. Otters will have sufficient availability of prey and widespread availability and access to good quality essential habitats including freshwater and undisturbed resting and breeding sites to allow the otter population to thrive. The distribution, breeding centres and actual/potential breeding sites of otters within the site and adjacent catchments will be maintained or improved through appropriate management.

The landscape quality and conservation value of the area will continue to be high. The presence of the Pen Llŷn a'r Sarnau SAC and its special wildlife enhances the economic and social values of the area by providing a high quality environment for fisheries, outdoor activities, ecotourism, scientific and educational study, and peaceful enjoyment by local people and visitors. The positive contribution of the SAC to the natural, social and economic quality of the area will be recognised and promoted through appropriate sea and land management which ensures compatibility between activities and the sustainable use of the site. Local communities will take pride in their surroundings and work actively to make sustainable improvements for future generations.

CONSERVATION OBJECTIVES FOR THE PEN LLŶN A'R SARNAU SPECIAL AREA OF CONSERVATION

To achieve favourable conservation status all the following, subject to natural processes, need to be fulfilled and maintained in the long-term. If these objectives are not met restoration measures will be needed to achieve favourable conservation status.

HABITAT FEATURES

Reefs
Large shallow inlets and bays
Sandbanks which are slightly covered by seawater all the time
Estuaries
Coastal lagoons
Mudflats and sandflats not covered by seawater at low tide
Atlantic salt meadows
Salicornia and other annuals colonising mud and sand
Submerged or partially submerged sea caves

RANGE

The overall distribution and extent of the habitat features within the site, and each of their main component parts is stable or increasing.

For the **reef** feature these include:

- Rocky intertidal reefs
- Rocky subtidal reefs
- Extensive boulder and cobble reefs – the sarnau
- Biogenic reefs (horse mussel *Modiolus modiolus* reef / green crenella *Musculus discors* reef and Honeycomb worm *Sabellaria alveolata* reef
- Carbonate reef formed by methane gas leaking from the seabed.

For the **intertidal mudflat and sandflat** feature these include:

- *Mya arenaria* and polychaetes in muddy gravel

- Eel grass *Zostera marina* beds.
- Muddy gullies in the Mawddach estuary.

For the *Salicornia* feature this includes:
- Communities characterised by the species *Sarcocornia perennis*.

For the **intertidal mudflats and sandflats** and **sandbanks** features this requires an overall stability or increase in the amount of the feature, taking into account the areas of long term stability and localised losses and additions arising from environmental processes.

For **estuaries** this includes the stability of sandy sediments in proportion to the muddy sediments.

Restoration and recovery
As part of this objective it should be noted that; for the **estuaries** feature additional land which should form an integral part of the estuarine ecosystem should be restored

STRUCTURE AND FUNCTION

The physical, biological and chemical structure and functions necessary for the long-term maintenance and quality of the habitat are not degraded. Important elements include:
- geology
- sedimentology
- geomorphology,
- hydrography and meteorology
- water and sediment chemistry
- biological interactions.

This includes a need for nutrient levels in the water column and sediments to be:
- at or below existing statutory guideline concentrations
- within ranges that are not potentially detrimental to the long term maintenance of the features species populations, their abundance and range.

Contaminant levels in the water column and sediments derived from human activity to be:
- at or below existing statutory guideline concentrations
- below levels that would potentially result in increase in contaminant concentrations within sediments or biota
- below levels potentially detrimental to the long-term maintenance of the features species populations, their abundance or range.

For **Atlantic saltmeadows** this includes the morphology of the saltmarsh creeks and pans

Restoration and recovery
As part of this objective it should be noted that; for the **estuaries** feature the structure and functions of the estuaries that have been damaged/degraded by the constraints of artificial structures such as flood banks, are restored.

TYPICAL SPECIES

The presence, abundance, condition and diversity of typical species are such that habitat quality is not degraded. Important elements include:
- species richness
- population structure and dynamics,

- physiological heath,
- reproductive capacity
- recruitment,
- mobility
- range

As part of this objective it should be noted that:

- populations of typical species subject to existing commercial fisheries need to be at an abundance equal to or greater than that required to achieve maximum sustainable yield and secure in the long term
- the management and control of activities or operations likely to adversely affect the habitat feature, is appropriate for maintaining it in favourable condition and is secure in the long term.

Restoration and recovery

As part of this objective it should be noted that; for the reefs feature the potential for expansion of the horse mussel *Modiolus modiolus* community off the north Llŷn coast is not inhibited.

SPECIES FEATURES

Grey seal Bottlenose dolphin Otter

POPULATIONS

The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements are population size, structure, production, and condition of the species within the site.

As part of this objective it should be noted that :

- for **bottlenose dolphin, otter and grey seal**; contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression

- **grey seal** populations should not be reduced as a consequence of human activity

RANGE

The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future.

As part of this objective it should be noted that for **bottlenose dolphin, otter and grey seal**

- Their range within the SAC and adjacent inter-connected areas is not constrained or hindered
- There are appropriate and sufficient food resources within the SAC and beyond

The sites and amount of supporting habitat used by these species are accessible and their extent and quality is stable or increasing

- SUPPORTING HABITATS AND SPECIES

The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. Important considerations include;

- distribution,
- extent,
- structure,
- function and quality of habitat,
- prey availability and quality.

As part of this objective it should be noted that;

- The abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term.
- The management and control of activities or operations likely to adversely affect the species feature, is appropriate for maintaining it in favourable condition and is secure in the long term.
- Contamination of potential prey species should be below concentrations potentially harmful to their physiological health.

- Disturbance by human activity is below levels that suppress reproductive success, physiological health or long-term behaviour
- For **otter** there are sufficient sources within the SAC and beyond of high quality freshwater for drinking and bathing.

Restoration and recovery

As part of this objective it should be noted that for the **bottlenose dolphin** and **otter,** populations should be increasing.

5.1 UNDERSTANDING THE CONSERVATION OBJECTIVES

A dynamic marine environment

The conservation objectives recognise and acknowledge that the features are part of a complex, dynamic, multi-dimensional environment. The structures, functions (environmental processes) and species populations of habitat features are inextricably linked. Marine habitats are complex ecological webs of species, habitat structure and environmental functions that vary dynamically in time and space. Variety and change in habitat structure is primarily driven by environmental and physico-chemical factors, including water movement, water quality, sediment supply and prevailing weather conditions.

The species populations associated with these habitats also vary in time and space and this is, in part, a direct reflection of the variable habitat structure and dynamic environment. It is also the product of stochastic events and the great variation in survival and recruitment of species, particularly those with dispersive reproductive strategies.

Within the dynamism of habitats and species, there is also an element of stability and persistence, where species' and communities' populations as well as physical habitat structure show little overall long-term variation.

Human activities

These conservation objectives recognise and acknowledge that human activity has already modified and continues to modify habitats and species populations in various ways, to varying degrees and at varying spatial and temporal scales, either acutely or chronically. The conservation objectives do not aim to prevent all change to the habitat and species features, or to achieve an indefinable, abstract natural or pristine state, since these would be unrealistic and unattainable aspirations. Rather, they seek to prevent further negative modification of the extent, structure and function of natural habitats and species' populations by human activity and to ensure that degradation and damage to the features that is attributable to human activities or actions is prevented. Consequently, in order to meet the requirements of the Directive and ensure the site makes its appropriate contribution to conservation of biodiversity, the conservation objectives seek to:

- Encompass inherent dynamism rather than to work against it;
- Safeguard features and natural processes from those impacts of human activity that cause damage to the features through the degradation of their range, extent, structure, function or typical species;
- Facilitate, where necessary, restoration of features or components of features that are currently damaged or degraded and in unfavourable condition.

The term *degradation* is used to encompass damage or deterioration resulting only from such human activities or actions as have a detrimental effect on the feature. The magnitude of any degradation is dependent on the longevity and scale of the impact and the conservation importance of the species or habitats on which the impact occurs. This is influenced by:

- the type of human action, its nature, location, timing, frequency, duration and intensity,

- the species or habitats, and their intolerance and recoverability.

Outcomes arising from human action that are likely to be considered detrimental include such effects such as:

- permanent and long-term change of distribution or reduction in extent of a feature or feature component, or temporary modification or reduction sufficiently significant to negatively impact on biota or ecological processes;
- reduction in ecological function caused by loss, reduction or modification of habitat structural integrity;
- interference in or restriction of the range, variety or dynamism of structural, functional or ecological processes, *e.g.*: alteration of habitat structure, obstruction of tidal streams, chronic or acute thermal, salinity or suspended sediment elevations or reductions;
- hypertrophication or eutrophication;
- contamination by biologically deleterious substances;
- reduction in structure, function and abundance of species populations;
- change in reproductive capacity, success or recruitment of species populations;
- reduction in feeding opportunities of species populations
- reduction of health to a sub-optimal level, or injury, rendering the population less fit for, *inter alia,* breeding, foraging, social behaviour, or more susceptible to disease;
- increase in abundance and range of opportunist species through the unnatural generation of preferential conditions (*e.g.* organic enrichment), at the expense of existing species and communities.
- increase in abundance and range of non-native species.

The following table provided illustrative examples of specific changes and whether they would constitute degradation of the feature.

Degradation	Not Degradation
Reduction in grey seal reproductive potential as a result of sub optimal physiological health caused by high tissue burdens of anthropogenically derived contaminants.	Reduction in grey seal reproductive potential as a result of sub optimal physiological health caused by density dependent incidence of endemic disease.
Modification of a seabed community by organically rich effluent from a new sewage outfall.	Modification of a seabed community as a result of a reduction in organic material entering the sea from a sewage outfall.
Change in seabed community composition as a result of coastal engineering that has altered local wave exposure.	Change in seabed community composition as a result of a cliff fall, the debris from which has altered local wave exposure.
Change to the species composition of a seabed community as a result of an increase in scallop dredging intensity.	Change to the composition of a seabed community as a result of a reduction in scallop dredging intensity.
Permanent reduction of extent of sand and mud-flat as a result of new coastal development.	Permanent reduction of extent of sand and mud-flat as a result of long-term natural changes in sediment transport.
Changes in sediment granulometry as a result of beach recharge operations	Changes in sediment granulometry as a result of natural cliff fall and erosion

It is important to note that many human activities can either be beneficial (reduce or reverse detrimental human influence (*e.g.* improve water quality)), trivial (*e.g.* no significant and/or

substantive long-term effect) or benign (no outcome) in terms of their impact on marine habitats and species.

Advice on potentially detrimental human activities is provided in Section 6 (activities or operations which may cause damage or disturbance to features).

Use of the conservation objectives – Site management

The components of favourable conservation status detailed in the conservation objectives have different sensitivities and vulnerabilities to degradation by human activities. Conservation and protection of site features is provided by management, which should be based on levels of risk. The form of management and degree of protection necessary will vary spatially, temporally and from one feature component to another due to their differences in conservation importance and their sensitivity and susceptibility to change as a result of human action. Therefore it needs to be understood that these conservation objectives require a risk-based approach to the identification, prioritisation and implementation of management action.

Security of management is provided in part by sections 48 to 53 of the 1994 Conservation Regulations, which require the assessment of plans and projects likely to have a significant effect on the site.

Where there is a potential for a plan or project to undermine the achievement of the conservation objectives, CCW will consider the plan/project to be likely to have a significant effect and require appropriate assessment. Unless it is ascertained, following an appropriate assessment, that a plan or project will not undermine the achievement of the conservation objectives, the plan/project should be considered as having an adverse affect on the integrity of the site[22].

Appropriate and secure management of activities may also be provided through a site management plan.

Annex D – NRW response to AA consultation

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Graham Horton
Environment Manager
National Infrastructure Consents
Department of Energy and Climate Change

18 February 2015

Dear Mr Horton,

Mid-Wales wind farms - HRA consultation

Thank you for your email of 4 February 2015 consulting the Natural Resource Body for Wales (NRW) on the draft Habitats Regulations Assessment (HRA) for the Mid Wales windfarm projects.

NRW broadly agrees with the conclusions of the Habitats Regulations Assessment but considers that insufficient information has been provided to demonstrate that the mitigation has been appropriately provided and secured. The assessment also requires some further information to evidence the conclusions.

Our detailed comments are in Annex 1.

Please contact Carol Fielding should you require further advice or information regarding our advice.

Yn gywir/Yours sincerely

Carol Fielding

Dr Carol Fielding
Team Leader Montgomeryshire

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Croesewir gohebiaeth yn y Gymraeg a'r Saesneg
Correspondence welcomed in Welsh and English

Cyfoeth Naturiol Cymru
Natural Resources Wales

Annex 1 –
The Natural Resources Body for Wales detailed comments on the draft Habitats Regulations Assessment

1. Para 1.10 states that consideration of Ramsar sites have been undertaken in parallel with SPA designations within the Habitats Regulations Assessment (HRA). There are no Ramsar sites which are relevant to this HRA so we suggest that consideration is given to deletion of this point.
2. The HRA makes reference to windfarm projects being within Strategic Search Areas (SSAs). We note that some of the projects are not within SSAs. The Llandinam 132kV line is located at some distance from SSA C (Newtown South) although a part of the line is within the SSA. The Hendy and Bryn Blaen windfarms are some distance from any identified SSAs. Other projects such as Llandinam are just outside a SSA.
3. We note that in the version of the HRA provided to NRW on 4 February 2015 that the list of references within para 1.19 was incomplete.
4. The HRA report states in para 2.1 that full descriptions of the projects are available within the respective Environmental Statements for the projects. It should be noted that for many of the projects the description of the projects were updated by Supplementary Environmental Information.
5. The Llandinam Repowering windfarm is also an extension to the existing windfarm so we suggest it is described as the 'Llandinam windfarm' or 'Llandinam Repowering and Extension windfarm'. This observation is also relevant to para 2.2 which describes the project as replacing the existing windfarm.
6. There is inconsistency between the project descriptions in Section 2 when referring to associated development, for example for some projects the substation and borrow pits are listed whereas for others they are not. The is no description of the associated infrastructure for the Llandinam windfarm.
7. The Llanbrynmair windfarm also includes forestry felling as part of its associated works.
8. Figure 1 does not provide the current position and planning status with regards to windfarms in Powys as follows:
    - Mynydd y Gwynt is a submitted NSIP application under the Planning Act (2008);
    - Dyfnant Forest is a withdrawn project;

- Mynydd Waun Fawr is a withdrawn project but the land area has been incorporated within the Mynydd Lluest y Graig registered NSIP.

9. Para 2.8: The route of the Llandinam 132kV line is shown on Figure 3 and not Figure 2.

10. The meaning of para 3.3 is unclear with regard to 'jointly considering' projects and we suggest it is amended.

11. NRW are unclear about why decommissioning impacts have been excluded from the HRA as they are an integral part of the project being consented. The HRA acknowledges that the decommissioning impacts will be similar to the construction impacts and that the construction impacts are likely to give rise to a significant effect. It is therefore unclear how it can be concluded in para 3.7 that the impacts of decommissioning would not cause an adverse effect on site integrity (also before a LSE test has been undertaken). It would appear possible to have planning conditions which allow for providing mitigation in the decommissioning phase. The LPA will only be able to address decommissioning effects if the planning conditions allow them to provide for this.

12. Para 3.5 lists the planning condition numbers which allow for the provision of an Environmental Management Plan at decommissioning along with update surveys to inform such a plan. NRW has not been provided with the updated draft planning conditions for the projects so we cannot confirm whether the conditions secure the necessary mitigation.

13. Table 1: it is not clear why 'construction' is listed as an impact for the Llandinam windfarm on the River Wye SAC but not for the other projects listed for this SAC or for the Pen Llŷn a'r Sarnau SAC. It is also unclear what is meant by 'construction' as opposed to 'hydrological' effects.

14. Red kite is a classified feature of the Berwyn SPA but is omitted from Table 1. The conservation objectives for the feature are included in Annex B.

15. The bridge over the River Wye SAC is not part of the S36 consent for the Llandinam windfarm but has been included in the HRA presumably because the SoS considers it to be an integral part of the project. Our understanding is that a planning application for the bridge will be submitted to Powys County Council in 2015. In contrast, other ancillary development required for the windfarms are not included in the HRA. It is not clear why this distinction is drawn between the varying types of ancillary development all of which is integral to the respective projects.

16. There is little information in Table 1 as to how a decision on likely significant effect has been reached. There is also no mention of the potential for disturbance on otter, a feature of the River Wye SAC.

17. It may be helpful to list in para 3.12 or in table 1 the reasons for it being concluded there would be no likely significant effect (LSE) on the Montgomery Canal SAC.

18. The projects listed in Table 2 include the Mynydd Lluest y Graig registered NSIP but not the National Grid Mid Wales Connections NSIP or the SPEN Mid Wales Connections NSIP. It appears that only other large scale windfarms have been included in the in-combination assessment with no reasoning for this approach.

19. The LSE in-combination assessment does not detail which projects in Table 2 have been identified as having an in-combination assessment with the 6 projects subject to the HRA.

20. There are some errors in Table 2 as follows:

- The Tirgwynt windfarm is not operational but has been consented and not yet constructed.
- The status of the Esgair Cwmowen, Carno 3, Hendy, Bryn Blaen, Bryngydfa, Hirddywel and Neuadd Goch windfarms are the same in that they are submitted planning applications to PCC under the Town and Country Planning Act (1990).
- The Neuadd Goch windfarm application has not been refused by PCC. If an appeal is in progress then it is against non-determination of the application.
- The 'Bryn Baen' windfarm is the 'Bryn Blaen' windfarm which is also described as the 'Blaen y Glyn' windfarm later in the document (para 5.23).
- The Dyfnant windfarm was in SSA B.
- The Hendy and Bryn Blaen windfarms are not within SSA C or in proximity to it.
- The Mynydd y Gwynt windfarm which is a submitted application is omitted.

21. The Waun Garno windfarm listed in Table 2 has been refused planning permission and the appeal period has lapsed. We suggest it is removed from the in-combination assessment.

22. The Dyfnant windfarm has been withdrawn by the Applicant and it is no longer a registered NSIP with the Planning Inspectorate. We suggest it is removed from the in-combination assessment.

23. The Mynydd y Gwynt windfarm project is an accepted application under the Planning Act 2008. This needs to be considered in the in-combination assessment and listed in Table 2.

24. The result of the Garreg Llwyd windfarm appeal may be announced prior to the release of this HRA. Its inclusion in the in-combination assessment would however mean that the worse case scenario had been assessed.

25. It is incorrect to state that the Berwyn SPA is the only European site within 20km of the Llanbrynmair windfarm. Other criteria, rather than distance, have been used to determine no LSE for these sites from this project.

26. The HRA takes into account a number of planning conditions which are concluded to secure the mitigation measures to avoid an adverse effect on site integrity for the three European sites. We agree with this approach. However the final confirmed planning conditions have not been listed within the HRA or provided to NRW. We are therefore unable to confirm whether suitable mitigation measures are secured within these conditions.

27. The HRA states in para 5.4 that NRW's SOCG with Celtpower concludes that no likely significant effect from the Wye bailey bridge if there are appropriately secured mitigation measures. However no planning application has yet been made for this bridge and there are no secured mitigation proposals at this time.

28. Para 5.14 states that the CEMP will be subject to agreement with NRW but when we saw the draft planning conditions proposed by the Applicants there was no requirement for the final CEMP to be agreed with NRW. We therefore cannot confirm that any final CEMP will have the measures to avoid an adverse effect on integrity on the River Wye SAC as there is no certainty that NRW will be consulted on the final plan.

29. Para 5.19 describes the potential design for the Wye bailey bridge but given that no application has yet been submitted for the bridge then it is unclear what certainty there is regarding the final design.

30. Para 5.27 states that the construction works of the in-combination projects would have to be occurring concurrently or sequentially, and for the proposed mitigation measures to be collectively ineffective, to result in an in-combination effect upon the SAC. The same point is made in paras 6.26 and 7.23. This suggests that that an in-combination effect may occur if the projects are built concurrently or sequentially. There are no measures which would prevent the projects being built concurrently or sequentially and it is very likely that this will happen. We suggest that the HRA therefore proceeds on the basis that this will occur.

31. The appropriate assessments for the River Wye SAC do not mention otter and the potential for disturbance. Mitigation measures for this feature are also contained with various planning conditions.

32. Para 8.23 states that the distance between the proposed works for the Llandinam 132kV line and the SAC should ensure that any sediment is sufficiently diluted before it reaches the SAC. This same point is not made for the other projects within the River Wye SAC and it is unclear if this has actually been shown to be the case.

Cyfoeth Naturiol Cymru
Natural Resources Wales

33. The area of forestry clearance in para 9.7 is different to that quoted in para 2.12 of the report.

34. The Berwyn SPA features are not all tree nesting so references to the cutting of trees with nests in them should be amended. Hen harriers are ground nesting. Merlin can be ground nesting or in trees. Peregrine on the site nest on cliff faces.

35. Para 9.10 discusses mitigation for water quality and para 9.11 for black grouse which is not relevant to the Berwyn SPA AA.

36. We need to see the final proposed conditions for the Carnedd Wen project to inform this AA. The AA references conditions 42-46 which provides mitigation measures for birds. Our understanding from the public inquiry was that the Applicant was not willing to accept these conditions. We therefore seek confirmation from DECC as to the final proposed conditions to demonstrate that these mitigation measures have been secured.

37. The HRA makes reference to the Habitat Management Plan covering a 50 year period. Is there certainty that this is secured?

38. We consider that it should be the planning condition which controls the mitigation to avoid damaging bird nests rather than adherence to Forestry Commission and RSPB guidance (para 9.12). Adherence to guidance cannot secure mitigation measures. We consider the imposition of appropriate planning conditions to be the appropriate means of securing the necessary mitigation to avoid adverse effects on integrity of European sites. We are not aware of the RSPB guidance.

39. Paras 9.21 – 31 discuss the impact of the Carnedd Wen project alone on the Pen Llŷn a'r Sarnau SAC. It needs to be clear within this assessment that few of the turbines are within the catchment of the SAC but it is the tree felling, and to a lesser extent the construction of non-turbine infrastructure, which is likely to give rise to adverse effects. The required mitigation measures and planning conditions therefore need to primarily avoid impacts from the tree felling.

40. Para 9.13 mentions a proposal to create and maintain suitable nesting habitat for at least 3 to 4 breeding hen harriers. Our understanding is that this measure has been removed from the Habitat Management Plan although it was included in a previous version of the plan.

41. Para 9.47 lists the turbines in a number of sub-catchments but these are all within the Severn rather than the Dyfi catchment.

42. The Afonydd (Rivers) Gam and Banwy are not within the catchment of the Pen Llŷn a'r Sarnau SAC but within the catchment of the River Severn. It is therefore unclear why the HRA undertakes an in-combination assessment of effects on these rivers. Of the projects

listed in Table 2 only the Cemmaes 2 windfarm is within the catchment of the Pen Llŷn a'r Sarnau SAC so it is the only windfarm project which needs to be included in the in-combination assessment for this SAC.

43. An in-combination assessment has been undertaken for the Carnedd Wen windfarm for the Berwyn SPA and Pen Llŷn a'r Sarnau SACs but the plans and projects being considered in-combination assessment are not listed. It is unclear what these are.

44. It would be helpful to reference the conservation objectives in Annexes A-C to the current versions of the management plans for the sites.

END OF DOCUMENT

Annex E: Record of actions taken in response to NRW comments

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
1	No Ramsar sites relevant to this HRA, suggest removal.	Agreed	Reference to Ramsar sites removed	1.8
2	Not all of the wind farm projects are located within the Strategic Search Areas.	Agreed	Text added to clarify	2.1
3	Reference list is incomplete.	Agreed	Document provided in draft, reference list now complete	
4	Full project descriptions provided in the Supplementary Environmental Information.	Noted	Text added to clarify	2.1
5	Suggest renaming reference to Llandinam Repowering windfarm.	Noted	No changes made as consistent with language used in Inspector's Report	
6	Inconsistency with project descriptions in section 2.	Noted	No changes made as consistent with descriptions in Inspector's Report	
7	The Llanbrynmair wind farm also includes forestry works.	Agreed	Text added to clarify	2.15
8	Figure 1 does not provide the current position and planning status of wind farms in Powys.	Agreed	Agree but is still the best map available	

[3] Paragraph reference refers to the 04 February 2015 draft version of the HRA.

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
9	The route of the 132 kV line is on figure 3, not 2.	Agreed	Figure reference changed	2.8
10	The meaning of paragraph 3.3 is unclear with regard to 'jointly considering'	Noted	None, believe that this paragraph is clear	3.3
11	Why have decommissioning impacts been excluded from the HRA? Will the decommissioning planning conditions allow for mitigation?	Noted	None, we are satisfied that this approach is appropriate and that the LPA will be able to specify conditions and mitigation measures to prevent adverse effects, as required.	3.5 – 3.7
12	NRW has not been provided with the updated draft decommissioning conditions and therefore cannot confirm that are sufficient to secure the necessary mitigation.	Noted	None, at this stage we are unable to provide NRW with the draft conditions but instead refer NRW to the Mid-Wales Inquiry website where there is the opportunity to review the conditions which were discussed.	3.5
13	Not clear why 'construction' is listed for Llandinam, or the difference between 'construction' and 'hydrological'.	Agreed	Text added to clarify.	Table 1
14	Red kite is missing from table 1	Agreed	Text added	Table 1
15	Not clear why the Bailey bridge has been included in the HRA but other ancillary development has not	Noted	The SoS considers that the Bailey bridge should be included within the HRA as specifically considered during Inquiry. Text added to explain consideration of ancillary development within HRA.	3.17 – 3.22

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
16	Table 1 contains little information on how likely significant effect has been reached. No mention of disturbance of otter	Noted	Otter added to Table 1. The SoS considers there is sufficient justification within the text of section 3.	Table 1
17	Maybe helpful to list why there is no likely significant effect on the Montgomery Canal SAC.	Noted	No changes made.	3.12
18	The grid connections are missing from table 2.	Noted	The grid connection NSIPs have not been added to table 2 as we do not believe that there is sufficient information available to include them within the in combination assessment. Further information about these projects and their exclusion from the assessment has now been provided.	3.17-322
19	Table 2 does not detail which projects have been considered in combination with the 6 projects subject to HRA.	Noted	Table 2 provides an overview of all of the projects scoped into the in combination assessment. The appropriate assessment text outlines which projects are then considered within the in combination assessment for each respective projects.	
20	There are several errors in table 2 mainly relating to the status of respective projects.	Agreed	Changes made to table.	Table 2
21	Waun Garno wind farm should be	Agreed	Removed	Table 2

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
	removed from table 2.			
22	Dyfnant wind farm should be removed from table 2.	Agreed	Removed	Table 2
23	Mynydd y Gwynt should be included within table 2.	Agreed	Added	Table 2
24	The result of the Garreg Llwyd wind farm appeal may have been announced by the time the HRA is released.	Noted	No changes made, if the Appeal results are released in time, the HRA will be updated accordingly.	
25	It is incorrect to state that Berwyn SPA is the only European site within 20 km of the Llanbrynmair wind farm, other criteria than distance was used to determine no LSE	Noted	Text added to clarify.	3.11
26	The HRA takes into account a number of planning conditions which are needed to avoid an adverse effect on integrity. We agree with this approach but as the conditions have not been provided to NRW, we cannot confirm whether these mitigation measures are secured within the conditions.	Noted	No changes made, at this stage we are unable to provide NRW with the draft conditions but instead refer NRW to the Mid-Wales Inquiry website where there is the opportunity to review the conditions which were discussed.	
27	No application has been made yet for the	Agreed	Text added to clarify.	5.20

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
	Bailey bridge and therefore mitigation has not been secured.			
28	No guarantee that the CEMP will have the measures secured to avoid an adverse effect on integrity on the River Wye SAC. No certainty that NRW will be consulted on the final plan.	Noted	Accept that the condition text does not require consultation with NRW, however it does require approval by the LPA and we therefore consider it very likely that NRW will be consulted as a statutory consultee.	5.15
29	There is no certainty regarding the final design of the Bailey bridge.	Agreed	This is true but the SoS places weight on the SOCG between NRW and CeltPower Ltd that with appropriate design and mitigation measures there is no reason to believe that the Bailey bridge will adversely affect the integrity of the SAC, recognising that a HRA will be undertaken when the application is made.	5.21
30	Para 5.27 states that the construction works of the in combination projects would need be occurring concurrently or sequentially and for the proposed mitigation measures to collectively fail to have an adverse effect on the integrity of the SAC. There are no measures in place to prevent concurrent or sequential construction so the HRA should proceed	Noted	Accept that there is nothing to prevent concurrent or sequential construction but it is the mitigation measures which will prevent the adverse effect. There would need to be a collective failure of the mitigation measures and the SoS considers this unlikely. Especially as the proposed mitigation measures are considered to be best practice by industry.	5.38 and 5.41

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
	on the basis that this will occur.			
31	The appropriate assessment for the River Wye SAC does not mention the potential for disturbance of otters.	Agreed	Text added to address impacts on otters.	5.22 – 5.25
32	Para 8.23 states that the distance between the proposed Llandinam 132 kV line and the SAC should be sufficiently diluted before reaching the SAC. This point is not made for other projects and it is not clear whether it has been shown to be the case.	Agreed	Text added to clarify that the potential amount of sediment released from the in combination projects is so small as to be within the margin of error of any attempt to model sediment transport or estimate dilution. This is based on the Applicants (CeltPower, Vattenfall, Fferm Wynt Llaithddu).	5.35
33	The area of forestry clearance in para 9.7 is different to that in para 2.12	Agreed	Text amended to reflect correct figure.	9.7
34	The Berwyn SPA features are not all tree nesting so references to the cutting of trees with nests should be amended.	Agreed	Text added to clarify.	9.7
35	Para 9.10 and 9.11 are not relevant to the Berwyn SPA AA.	Agreed	Text removed.	9.11
36	We need to see the final proposed conditions for the Carnedd Wen project to inform this AA. We seek confirmation from	Noted	No changes made, at this stage we are unable to provide NRW with the draft conditions but instead refer NRW to the Mid-Wales Inquiry website where there is	

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
	DECC as to the final proposed conditions to demonstrate that these mitigation measures have been secured.		the opportunity to review the conditions which were discussed.	
37	The HRA makes reference to the Habitat Management Plan covering a 50 year period, is there certainty this has been secured?	Agreed	Text changed to 25 year period	9.11
38	It should be the conditions which secure mitigation, not adherence to Forestry Commission guidance (para 9.12)	Agreed	Text changed to make it clearer that it is the conditions which secure delivery of the mitigation.	9.12
39	Paras 9.21-9.31 needs to make it clear that it is the forestry clearance and to a lesser extent the construction of non-turbine infrastructure which is likely to give rise to adverse effects on the Pen Llyn a'r Sarnau SAC.	Agreed	Text added to clarify.	9.24 and 9.25
40	The proposal to create and maintain suitable nesting habitat for hen harriers was removed from a subsequent version of the Habitat Management Plan.	Agreed	Text removed to delete reference to this proposed measure.	9.12
41	The sub-catchments listed in para 9.47 are all located within the River Severn	Agreed	Text removed to clarify.	9.45

Comment number	Summary of NRW comment	DECC response	Amendments / Action	Paragraph number[3] (if applicable)
	catchment rather than the Dyfi catchment.			
42	The Gam and the Banwy are not located within the Pen Llyn a'r Sarnau SAC catchment. It is not clear why they are included within the HRA. The only project listed in table 2 which needs to be included in the Pen Llyn a'r Sarnau SAC is the Cemmaes 3 wind farm	Agreed	Reference to Gam and Banwy removed. In combination assessment now limited to the Cemmaes 3 wind farm.	9.43 – 9.47
43	The projects considered in combination with the Carnedd Wen development for the Berwyn SPA and the Pen Llyn a'r Sarnau SAC are not clear.	Agreed	Text added to clarify which projects are being considered in combination for these European sites.	9.32 and 9.43
44	The conservation objectives referenced in Annexes A-C should be taken from the latest versions of the Management Plans.	Agreed	Annexes A-C updated with the latest versions of the Management Plans.	Annexes A-C