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To: [Wylfa Newydd](#)
Cc: [Carrie Marchbank](#)
Subject: EN010007 Wylfa Newydd Nuclear Power Station: Deadline 2. Submission by RSPB
Date: 04 December 2018 12:39:35
Attachments: [Wylfa Newydd - RSPB response to the ExA's written questions Deadline 2 .pdf](#)
[DCO Evidence - eNGO Biodiversity Cemlyn Nature Reserve FINAL.PDF](#)
[Ecological Options Final Full Report May 2017.pdf](#)

Your ref: EN010007

Our interested party ref: 20011586

Further to the Rule 8 letter please see the attached submissions to the Examination:

- RSPB response to the Examining Authority's written questions
- a joint eNGO written representation: *Biodiversity – Cemlyn Nature Reserve*
- a copy of the joint eNGO Ecological Options paper as requested.

Kind regards

Simon

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Ecological Options for Cemlyn Natura 2000 network sites & Cemlyn Estate in response to Wylfa Newydd

Executive Summary

A tripartite group of wildlife NGOs has formed between the National Trust, North Wales Wildlife Trust and the RSPB, which has prepared this paper following increasing and significant concerns along with disappointment about progress by Horizon in relation to ecological options (avoidance, mitigation and compensation) for the Wylfa Newydd proposal. The focus of the paper is the Cemlyn Estate and its contiguity with the Wylfa Newydd Development Area (WNDA) including Porth-y-Pistyll.

The paper does not rehearse or supersede the detailed commentary provided by each individual organisation's consultation responses on PAC1, PAC2, EIA Progress Report and Section 61z response to the Site Preparation and Clearance application. However, it should be seen and dealt with as supplementary to those submissions and be considered as part of our contribution to the pre-application process and acted on accordingly by Horizon.

It is clear from PINS guidance that matters relating to the design of the Wylfa Newydd facility and its operation, in addition to the necessary packages of avoidance, mitigation and compensation should be in place when the DCO submission is made, as there is little opportunity to achieve change once the scheme is formally submitted.

The NGO tripartite group seeks to facilitate Horizon's development of ecological options and provides a reasoned justification and pragmatic approach to the issues, in light of knowledge about the working of the Cemlyn Estate and its environs. It is these NGOs' opinion that the options recommended in this paper are proportionate & reasonable given the developer's own acknowledged uncertainties, and represent the use of well documented techniques. These should be seen as working alongside the proposed best practise industry standards for construction management and consequent conditions. They address the need for necessary elements of mitigation along with adoption of a precautionary approach to some issues. Possible options for compensation of potentially unmitigatable impacts are also presented for discussion.

All recommendations contained within this paper are based on the NGO tripartite group's present understanding of the proposals and their potential impacts. They are therefore provided without prejudice to any further information coming to light which may necessitate additional and/or alternative measures to protect the wildlife interests of the area.

In summary, the NGO tripartite group presents the following ecological options for consideration and the planning mechanisms that could be used to secure them.

Maintain or improve resilience of SPA breeding tern colony

Establish a dedicated ring-fenced fund via the Section 106, part of which could be allocated by a joint Board of stakeholders & developer to provide measures to maintain productivity & breeding success, by either identified individual actions or supplement to existing work streams. The suggested ecological options are related to the conservation objectives of the SPA (identified by italics) and in response to what are currently acknowledged uncertain but multiple cumulative impacts of Wylfa Newydd.

Section 106 fund

- *Ensuring sufficiency of breeding habitat* within the colony and/or providing supporting studies to enable implementation of modification to breeding habitat.
- *Control of factors affecting the population*, the most critical of which is predator control, but also includes reducing the effects of anthropogenic disturbance.
- *Control of factors affecting the breeding habitat* by ensuring the integrity of Cemlyn Bay SAC lagoon & Esgair Cemlyn (see below).
- *The range & distribution of terns within the SPA and beyond is not constrained or hindered*. The worst-case scenario of the Wylfa Newydd impacts is colony collapse, this should be planned for on the precautionary basis. A two-staged approach is proposed. The first part sits within the Section 106 fund and involves contingency planning, so in the event of colony collapse compensatory measures can be swiftly and effectively put in place via an Emergency Action Plan.

Remediation Bond

The second stage for *maintaining the range and distribution of terns* occurs in the event of colony collapse and/or abandonment when a Bond would release funds to initiate the Emergency Action Plan; implementing the necessary compensatory project work at one or more of the identified projects for the Irish Sea tern breeding colonies as identified by the contingency plan.

Monitoring Condition In addition to impact source monitoring, Horizon commits to funding an agreed programme of population and breeding season monitoring in response to Wylfa Newydd's implementation. This would be in addition to the regular seabird counts already provided for the JNCC Seabird Monitoring Programme. This can be agreed and secured by standard conditions.

Maintain the area of Cemlyn SAC Lagoon and Esgair Cemlyn

The rationale and policy background of the Shoreline Management Plan (SMP2, 2011) is for managed realignment in the first plan period (up to 2025), then the adoption of No Active Intervention in the second & third plan periods (up to 2055 and subsequently 2105), with some acknowledgement of potential slippage into the second period of managed realignment works. The Shoreline Management Plan does not take account of any synergy with impacts from the development of Wylfa Newydd.

The National Trust's Vision and strategy for Cemlyn Estate anticipates the SMP approach and has begun discussion with relevant bodies (NRW) and estate tenants to ensure that there is resilience within the landholdings to encompass this and manage the change in an incremental manner rather than allow sudden events to overtake the primary conservation features' structure or integrity and threaten the site's international designation and status.

The presence of the SAC features and its conservation objectives are essentially related to the physical structure and environmental parameters of the lagoon and shingle ridge. These are intimately connected to the presence of the tern breeding colony and hence the conservation status of the SPA.

The creation of the MOLF harbour (Marine Off-Loading Facility) and flood defence structure of the breakwaters have significant potential to compound impacts and increase the levels of uncertainty of those impacts and outcomes in-combination with those of climate change. In addition, there is loss of habitats within the new harbour's footprint. The proposal's impacts will change coastal geomorphological processes and wave action particularly localised effects of storm events.

The tripartite NGO group recommends that Horizon adopt a precautionary approach to the implementation of Wylfa Newydd and the uncertainty of these impacts. Ecological options are recommended;

- Section 106 funds – Enhanced resilience - Horizon commit via the Section 106 to fund an agreed proportion of the costs to achieve the managed realignment when/if funding is secured. This will be a precautionary approach to achieve enhanced resilience to the wider coastal habitat and off-set for the loss of marine habitat within Porth-y-Pistyll.

- Restoration Bond - Emergency Action Plan – A bond is raised, for the lifetime of the construction & operational lifetime of the power station (approx 70 years), Horizon would contribute an agreed proportion of funding towards the costs of emergency remediation. This will be triggered in the event of a catastrophic event requiring action to maintain the features of the SAC and SPA as directed by UK, European or international agencies or the legislative obligations required under their designation.
- Design features - The design of the breakwater is adjusted to incorporate ecological features to provide ecological enhancements and off-set the impacts within Porth-y-Pistyll.
- Monitoring - An environmental monitoring package of physical processes is agreed to and funded.

Maintain the hypohaline (brackish) conditions and water quality of Cemlyn Bay SAC

As part of the general approach to good ecological practice and construction impact monitoring incorporate appropriate mechanisms on the eastern freshwater inflow adjacent (less than 150m) to the remodelled landform. This could be secured via conditions;

- Natural SuDS type attenuation ponds including reedbeds
- Creation of inflow weir structure with ability to stop lock and control inflow during extreme weather events.
- Monitoring would be encompassed by the package as indicated above.

Introduction

This paper has been prepared jointly by the National Trust, North Wales Wildlife Trust and the RSPB. It builds on this NGO tripartite group's work following the circulated meeting notes (May 2016) and internal discussion papers on Ecological Options.

This work has been prompted by growing concern within the tripartite group about the lack of progress relating to proposals to address the ecological impacts of the Wylfa Newydd development, given the timeframes for submission of DCO applications and other associated plans and projects. This is despite the recent rescheduling by Horizon. In particular, there is disappointment with:

- The HRA process; which is still at very early stages of screening and with no formulation or discussion of any outline mitigation proposals coming forward through this or the Environmental Impact Assessment.
- Horizon's failure to adopt a precautionary approach to the cumulative and in-combination effects of the proposal and lack of joined up thinking in relation to features on the margins of the WNDA or immediately adjacent to it. In considering this position the NGO group has full cognisance of European Guidance on this matter¹.
- The over reliance on CEMP (Construction Environmental Management Plan) construction mitigation measures. Whilst these measures are very much welcomed, they do not deal with the potential or known consequences on the internationally important habitats and species from the implementation of the power station project and its operation. Additionally, nationally or regionally significant features are apparently similarly overlooked.
- There is significant concern that these factors will be compounded if they are not resolved prior to the DCO application being submitted for determination. PINS advice notes² state clearly that following submission there is little scope for alteration of the detail of the proposal.

This paper is an endeavour to facilitate Horizon's process of development of ecological options (including avoidance, mitigation, enhancement and compensation options) for Wylfa Newydd, but focused on the area to the north and west of the WNDA, which encompasses:

- The Cemlyn Estate
- Cemlyn Nature Reserve - Cemlyn Bay Site of Special Scientific Interest (SSSI) & Special Area of Conservation (SAC); and part of the Ynys Feurig, Cemlyn Bay and the Skerries Special Protection Area (SPA).
- Porth-y-Pistyll

This paper does **not** consider issues relating to other substantive nature conservation features, such as:

- Tre'r Goff SSSI and Cae Gwyn SSSI
- Chough as an Annex 1 species and designated feature of other SPAs
- Marine mammals and the North Anglesey Marine Candidate Special Area of Conservation (cSAC)
- Wylfa Head LNR
- LEMP 5 & biodiversity hotspots (NWWT terminology)

These have been covered to date in each of the NGO's individual consultation responses and may be dealt with potentially by the development of further joint statements.

The NGO tripartite group presents a solution-orientated approach to the matters that have been identified in the EIA process, which have been discussed extensively in our consultation responses and at meetings. It is felt that, with some consideration, these can be effectively secured by the planning process via the provision of allocated funding within a Section 106 schedule, the use of planning bonds, and/or (in the case of enhancement measures) by financial allocation nested within a Community Impact Mitigation Fund/Community Resilience Fund or similar.

¹ Communication (COM (2000) 1 final) on the Precautionary Principle; Summary - <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:I320422> updated 30.11.2016

² PINS advice note 8.1 (December 2016) <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2013/04/Advice-note-8-1v4.pdf>

This paper places the proposals within the context of the existing legislative/policy framework for the sites and current work/projects to make a meaningful contribution to the conservation status of the sites' ecological resources and is in direct response to the anticipated high risk of impacts, which are difficult to quantify/model and have associated high levels of uncertainty. The contextual documentation includes:

- 'Core Management Plan – including Conservation Objectives for Ynys Feurig, Cemlyn Bay and The Skerries SPA, Cemlyn Bay SAC, Ynys Feurig SSSI, The Skerries SSSI, Cemlyn Bay SSSI' (version 3 M Lewis & J Ratcliffe, 31st March 2008)³
- 'Anglesey Terns/ Morwenoliaid Ynys Môn pSPA Draft Conservation Objectives' (NRW, December 2015)⁴
- Terns & Wylfa Newydd, Meeting Note (NGO tripartite group, 20th May 2016) shared and circulated in summer 2016 with Horizon - various teams, NRW & Anglesey Council
- Our Vision for the Cemlyn Estate (National Trust, January 2017)⁵
- 'Maintaining nesting habitat for terns Cemlyn SSSI/SPA/SAC – a preliminary investigation of increasing resilience in the face of climate change and other threats' (North Wales Wildlife Trust, October 2016; version 17.1.17) joint working document with National Trust and NRW as part of the Roseate Tern *LIFE* Project (*LIFE* 14 NAT/UK/000394) – internal document

This paper does not seek to rehearse the individual comments of the NGOs to PAC1, PAC2 or the EIA Progress Report & Section 61z for the Site Preparation & Clearance (SP&C). However, it is increasingly clear from both the documentation presented by Horizon and their own acknowledgements, that there is a high degree of uncertainty associated with many aspects of the impact assessments and consequently the Habitat Regulations Assessment. In our opinion these uncertainties are associated with but do not exclusively include:

- the data collection, baseline modelling or their interpretation
- the variability of environmental processes themselves and/or the scientific understanding of them
- assessment/modelling of degree of impacts and their predictive capabilities
- the likely responses of the systems to identified impacts

In many of the circumstances pertaining to Wylfa Newydd it may be impossible to establish an absence of risk to the Natura 2000 sites and the Cemlyn estate. These uncertainties will be compounded by the inter-relationship and likely synergistic effects from the different types of impacts arising from the project or its associated processes and plans. The resultant risks and environmental costs/consequences of inaction are high and could potentially lead to tern colony collapse/slow declines in breeding success over one or more seasons, potentially leading to ultimate abandonment of the site. Similarly, the loss of lagoonal habitats or environmental changes threatening the survival of community assemblages/species or shingle ridge failure have high environmental costs to both the SAC and consequently the habitats that support the SPA breeding colony.

Therefore, it is this tripartite group's view that in addition to industry best standards of construction management (CEMP) the package of measures for this area should be integrated with proportionate and tried-and-tested techniques for mitigation or avoidance including measures carried out on a precautionary basis to help build site resilience against uncertain high risk impacts. Flexibility is necessary to any approach agreed, as the landowner and their tenants will continue to manage the Estate to maintain conservation status and adapt to climate change.

³ Core Management Plan (2008) download pdf

https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwiF7PzAssfSAhWBJ8AKHbRqDL4QFgghMAE&url=https%3A%2F%2Fwww.naturalresources.wales%2Fmedia%2F671214%2FCemlyn%2520WES32%2520plan%2520English.pdf&usq=AFQjCNGVRt_BS9vDW5dqakpIVO-g5-IYrw

⁴ Anglesey Terns / Morwenoliaid Ynys Môn potential SPA

<https://naturalresources.wales/about-us/consultations/our-own-consultations-closed/new-marine-sac/anglesey-terns/?lang=en>

⁵ 'Our Vision for Cemlyn Estate' (National Trust, January 2017) download pdf

<https://www.nationaltrust.org.uk/features/cemlyns-changing-coastline>

Ecological Options for Cemlyn Natura 2000 network sites & Cemlyn Estate in response to Wylfa Newydd, North Wales Wildlife Trust, RSPB, National Trust. May 2017. Final Report.

Please note that this paper is based on the NGO tripartite group's present understanding of the proposals and their potential impacts. All recommendations presented are therefore provided without prejudice to any further information coming to light which may necessitate additional and/or alternative measures to protect the wildlife interests of the area.

Tern breeding colony Cemlyn Bay (part of Ynys Feurig, Cemlyn Bay & The Skerries SPA)

The current conservation objectives for the SPA are found in the Core Management Plan (2008) and the draft conservation objectives for the Anglesey Tern pSPA. The most recent figures (5 year mean average) have shown that the Sandwich tern colony has had remarkable success with the colony numbers increasing more than 5 fold (460 pairs at designation to 2,400 pairs 5 year mean average 2016), with Cemlyn being the only site within the SPA and in Wales where this species breeds. The common and Arctic terns have fared less well and only small populations currently occur at Cemlyn, but elsewhere within the SPA they are faring much better. Roseate tern have not bred regularly at Cemlyn since 1994, although they are present every year; in 2015 a young pair showed all the signs of breeding but was not confirmed. The Sandwich tern numbers are significant and are estimated to be 3% of world population, 20% of UK population and make a significant contribution to the Irish Sea metapopulation (JNCC⁶).

The proposals at Wylfa Newydd have the potential to adversely affect the majority of the site's conservation objectives and the arguments have been rehearsed in full within consultation responses. The commentary below provides a more qualitative approach, which can be seen to sit alongside the quantitative analysis and critique of the NGOs to PAC1, PAC2, the EIA Progress Report & Section 61z. The headings in bold relate to the conservation objectives of the SPA/pSPA:

- **Productivity** – the interaction of a number of adverse factors can act synergistically on the number of pairs breeding, number of chicks fledged or juvenile condition/survival rates and could potentially lead to colony collapse either in one breeding season or eventual abandonment of the colony across several years.
- **Disturbance** – can be caused directly by visual/noise issues associated with the implementation of Wylfa Newydd, as evidenced by the recent blast trials (28th March 2017). These types of impact have been discussed fully in formal responses. However additional, in-combination effects of Wylfa may arise as a result, for example, of increased ease of access to Cemlyn Bay due to the road improvements (2016-2017) associated with enabling works for the proposal. Whilst the area does already attract low numbers of recreational activity by kite surfers, jet-skiers and sea kayakers, the improved vehicular accessibility of the site may cause increases in this type of activity, especially if the area is un-wardened during peak times (ie Bank Holidays) and more restrictions are being implemented elsewhere on Anglesey. It has been observed (*warden pers comm 2016 Cemlyn & also at Blakeney Point*) that the presence of kite surfers, on the generally quiet tern flight path across Cemlyn Bay over the ridge back to the nest, can cause terns carrying prey items to abandon their return and not deliver food to the chicks. To reduce uncertainty about such impacts and their combined effects with Wylfa's main proposals, detailed on-going behavioural analysis of tern movement patterns, population dynamics, and of recreational activities (e.g. mapping jet-skiers choice of routes or use of landing sites) should have been undertaken.
- **Predation** – This is acknowledged to be a significant factor in relation to breeding success both at Cemlyn⁷ and other sites, and management is in place to control the current suite of predators. Predation impacts include the taking of young chicks, eggs and adults but also the increased disturbance to other nesting birds within the colony and the presence of such predators prior to the establishment of the colony. It is noted as the over-riding pressure which caused the recent abandonment of a sub-colony at Blakeney Point (*NT warden pers comm Nov 2016 – rats & fox*) & historic declines at Sands of Forvie (foxes JNCC population trends). The clearance of the WNDA of all above ground features (eg hedges, woodland, cloddiau) and topsoil stripping will displace the existing predator populations (eg fox, stoat/weasel & otter), but may also attract larger gulls. The impact of these types of factors from the implementation of Wylfa Newydd is difficult to assess as the current WNDA populations of predators are not known and the patterns of dispersal/displacement/attraction is unpredictable.

⁶ JNCC marine biodiversity monitoring - latest trends – Sandwich terns <http://jncc.defra.gov.uk/page-2890>

⁷ Cemlyn annual reports and CCW management plan

Ecological Options for Cemlyn Natura 2000 network sites & Cemlyn Estate in response to Wylfa Newydd, North Wales Wildlife Trust, RSPB, National Trust. May 2017. Final Report.

- **Supporting habitat** – the breeding colony at Cemlyn is entirely reliant on the structure of the lagoon, its islands and the integrity of the shingle ridge, which are influenced by the physical environment of the area (see Cemlyn Bay SAC discussion below).
- **Supporting habitat** – the Core Management Plan/pSPA draft Conservation Objectives also identify that there should be no constraints or hindrance to breeding capability at other sites, either within or outside the SPA which support breeding tern. This is of critical importance if the colony at Cemlyn were to suffer major or catastrophic impacts, resulting in the terns seeking alternative breeding habitat within the Irish Sea sites. There are well documented cases of influxes of terns resulting from early season colony collapse due to a variety of natural or anthropogenic factors⁸. Additionally, it has been observed that over-crowding due to an influx of birds from elsewhere can cause an established colony to struggle and productivity rates to fall (eg common tern at Seaforth colony in 2010 from abandonment of Shotton⁹).

The maps at Appendix 1 show the known Irish Sea tern colonies and those that the Core Management Plan identifies within Anglesey that may have potential to support breeding tern. At Cemlyn any consequences of cumulative synergistic impacts, which adversely affect the suitability of the habitat and colony success will have knock on consequences at other sites within the metapopulation.

- **Food supply** – the presence & role of the feeding resource within Porth-y-Pistyll (now part of the extended SPA) does not appear to be well understood from the Horizon data collected to date and the structure of the bay will be fundamentally altered (see discussion below) by the implementation of the MOLF and breakwater. As observed at other colonies (Wells Outer Harbour¹⁰), Porth-y-Pistyll could currently provide more sheltered feeding in a variety of circumstances such as: at certain times of year, or states of the tide, or in adverse weather conditions, or for adult birds with younger chicks who need to make more frequent foraging trips.
- **Wintering territory** – for this conservation objective there are no likely causal effects, sources or pathways.
- **Supporting species** – although not referred to as a specific conservation objective, the maintenance of a breeding colony of black-headed gull at Cemlyn is known to be sympatric with the Sandwich terns breeding. Therefore, any positive or negative impacts on this species and its success at Cemlyn could negatively impact the **productivity** of the Sandwich tern colony.

As indicated in the circulated tern paper (meeting note May 2016) the NGO tripartite group believe that the ecological options for the Wylfa Newydd project should consider measures to:

- increase the resilience of the tern colony to maintain its productivity by introducing mechanisms to improve the breeding energy budgets of the birds by reducing pressures from contributory factors/pressures.
- ensure that the carrying capacity of the wider Irish Sea tern metapopulation is able to accommodate an influx of additional birds should there be a colony collapse at Cemlyn.

Current tern conservation work at Cemlyn is provided by North Wales Wildlife Trust with support from National Trust, along with seasonal wardening during late April – mid August. The Wildlife Trust wardens' work is funded via a donation with general maintenance work undertaken by volunteers/Conservation Officer. Other major work is usually funded by grant aid and currently the site forms part of the Roseate Tern LIFE Project¹¹. This project's primary aim is to ensure that Cemlyn remains a viable breeding site for roseate terns; the short-term focus is on maintaining and increasing the breeding common tern population, which is a key sympatric species to roseate tern

⁸ In 2002 Cemlyn had a dramatic increase in Sandwich tern numbers, shortly after similar numbers abandoned Hodbarrow colony in Cumbria (c. 217) - NWWT Wardens Report 2002

⁹ Merseyside Ringing Group 2014 Report – Common Tern (Peter Coffey) download at <http://www.merseysiderg.org.uk/>

¹⁰ Results of 2013 survey of Wells Outer Harbour (James McCallum) http://www.wellsharbour.co.uk/cgi-bin/3d/3d?action=fdl&dir=environmental&file=little_tern_survey_2013.doc

¹¹ LIFE 14 NAT/UK/000394 <http://www.roseatetern.org/> and also for main project details http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5346

breeding. Preliminary investigations have identified short term goals (eg nesting rafts, anti-mammal fencing) and secondly major works on the main island.

Decisions and permissions for implementing some work may need to be supported by additional studies to ensure that other features of the internationally designated lagoon site (Cemlyn Bay SAC) are not negatively affected (eg lagoon faunal such as *Hydrobia ventrosa* or *Idotea chelipes* or floral distribution studies spiral tasselweed – *Ruppia cirrhosa*). This can unexpectedly and considerably increase costs (eg estimated £10K for invertebrate survey & analysis). This work is necessary to satisfy NRW that there are no additional risks to the other Natura 2000 sites designated features.

Work undertaken by the NWWT and National Trust will not go into hiatus as a result of Wylfa Newydd, nor would it be anticipated that Horizon would take on sole responsibility for funding generic works. However, it is the NGO tripartite group's view that the vulnerability of the tern breeding colony will be increased by the associated impacts and increased pressures on key factors during the construction of the facility and also its operation, which results in the need for both mitigation and precautionary resilience-building measures. Therefore, it is a pragmatic solution that Horizon do not establish stand-alone measures, but provide sufficient resources for measures that integrate with the planned work and strategic direction of the land-owners/tenants in order to address the development's impacts.

Ecological Options

It is recommended that the ecological options suggested by the NGO tripartite group to protect and enhance the Cemlyn Bay tern colony are secured via a schedule within the Section 106, that includes identified funding arrangements part of which can be allocated on an annual basis, as agreed by a joint Board of developer & stakeholders, to mitigate for the impacts on the tern colony and maintain/enhance its productivity & breeding success. The Board may decide annually to either contribute to identified individual actions or supplement/improve efficacy of existing work streams. This fund should be front-end loaded to the construction & site enabling preparation works period (10 - 12 years) when it is anticipated that the majority of the perturbation will occur, but continue for a lesser amount into the operational lifetime for the standard 5 year landscape establishment period of LEMP 5.

Flexibility is required in the operation of this Schedule of the Section 106, during the 15 – 17 year period, due to the inherent unpredictability of how the tern colony will react to the cumulated synergistic impacts of Wylfa Newydd's implementation. It is proposed that some works via the Section 106 fund could be allocated annually in light of the monitoring (both Seabird Counts and agreed protocol established by Horizon – see below) and the annual Warden's Reports. Examples of works that might be included are (***but not exclusively***):

Control of factors affecting the population

- Predator control measures – protected rafts (*LIFE* Project has established some)
- Predator control measures – electric fencing (currently being investigated *LIFE* Project)
- Predator control measures – increased vigilance; for example, use of camera traps
- Predator control measures – increased staffing & vigilance
- Predator control measures – licensed trapping and removal of animals
- Predator control & access management – increase length of seasonal staffing to encompass early Easter (March) and August Bank Holidays
- Access management – improved signage and passive control
- Control of factors affecting habitat – see below Cemlyn Bay lagoon SAC

Sufficiency of breeding habitat

- Securing breeding habitat – rafts (*LIFE* Project has established some)
- Securing breeding habitat – island modifications, beyond small scale works undertaken by hand NWWT and volunteer
- Securing breeding habitat – necessary baseline studies eg invertebrate/lagoonal habitat distribution to inform habitat works

No hindrance or constraints to range & distribution of terns within & outside SPA

In the case that colony collapse and/or abandonment cannot be conclusively ruled out, the NGO tripartite group advise a two-staged approach to this conservation objective to facilitate the precautionary approach and initiate necessary compensatory measures to protect the integrity of the Natura 2000 site network in this worst case scenario. The first part could be incorporated into the ring-fenced project fund, the second secured by an insurance bond whose funds would be released under certain criteria.

-Section 106 fund – Contingency Planning - part of the dedicated Section 106 fund to be used to commission a study of other breeding colonies & ‘opportunity mapping’ to establish scope for remedial works to increase carrying capacity at alternative locations outside the SPA in the event of colony collapse/abandonment and the need to compensate for this loss. This type of exercise is best prepared well in advance of any need and discussed with relevant land owners/site managers, in order that action can be taken effectively and in a timely manner when required.

In the event of colony collapse and/or abandonment:

- Planning Bond - Emergency Action Planning - implementation to accommodate changes in Irish Sea metapopulation dynamics. A Bond secured for duration of construction and the 5 year LEMP 5 establishment period, to implement the necessary remedial project work at one or more of the identified projects for the Irish Sea tern breeding colonies.

Monitoring It is also recommended that in addition to point source pollution/impact monitoring (CEMP) that Horizon commits to funding an agreed programme of tern population and breeding season monitoring. This could include tern radio tracking data, as has been established for both Sheringham Shoal and Dudgeon Off-shore Wind Farms, along with other measures to monitor the condition of the breeding colony to identify early signs of colony stress or pre-breeding collapse (eg black headed gull colony fails to establish). This would be in addition to the annual Seabird Monitoring Counts provided to JNCC. A package agreed prior to the submission of the DCO can be secured by standard conditions.

Cemlyn Bay SAC - Porth-y-Pistyll; the creation of the MOLF and breakwater

The construction of Wylfa Newydd will see the large-scale industrialisation of this currently natural bay and section of coastline, by the creation of the MOLF, breakwaters and providing the new harbour for large delivery vessels. The consequences of this for the existing ecology within the bay and the Cemlyn Estate include;

- Loss of current benthic habitats, intertidal rocky shore, shingle banks
- Loss of species, such as shingle specialist sea kale (*Crambe maritima*)
- Changes to fish assemblage and potentially availability of prey items for terns
- Disturbance impacts – visual, noise and vibration
- Changes to the coastal geomorphology, wave energy,
- Creation of sediment plumes

The issues associated with the breeding tern colony are considered above, whilst this section discusses the likely consequences and ecological options associated with the changes to the physical structure & coastal processes and the opportunities associated with the newly constructed features.

The Coastal Environment

The Shoreline Management Plan for West Wales includes the north Anglesey Coast (PDZ18, November 2011 non-statutory document) and identifies Cemlyn Bay's current condition & management practice as;

- Of importance for its natural history, international designations & geomorphological features along with its value as a tourism feature
- Whilst the risk of flooding is stated as low, Cemlyn is highlighted as one of the few areas - within PDZ18 - at significant risk
- Is identified as an area for managed realignment in the time period to 2025, to support an eventual on-going policy of No Active Intervention (NAI) during policy plan periods to 2055 and subsequently up to 2105. It is acknowledged that a detailed management plan needs to be developed along with key partners and landowner collaboration and, additionally, that the implementation of the managed realignment may carry over into the second 45 year plan period to 2055.

It is important to remember that the SMP's approach clearly states that it is premised on uncertain predictors of sea level rise, but most significantly **without** any exacerbating factors, such as new flood defence features for development. The Wylfa Newydd MOLF and breakwater are currently being assessed, but have significant potential to add to the effects of the primary energy source locally, as described in the SMP;

“Within the main bay [Cemlyn], the shingle ridge has been developed within a very constrained inlet, opening to the north east. While waves can enter the bay directly from this direction causing some variation in movement of the shingle along the frontage, the main energy acting on the natural feature is, and has been, waves diffracting around the headland. This very dominant aspect of the inshore wave climate, effectively filtering the variation in offshore wave approach and creating a uniform and tightly banded wave approach direction at the shoreline has allowed development of the long shingle ridge.”¹²

The National Trust have commissioned an independent report investigating this as discussed in their PAC2 consultation response.

¹² Shoreline Management Plan - PDZ 18. NORTH ANGLESEY : Twyn Cliperau to Trwyn Cwmrw - Policy Development Coastal Area G, November 2011

<http://www.westofwalessmp.org/smp/files/wwsmp2013/West%20of%20Wales%20Shoreline%20Management%20Plan%202/English%20-%20Main%20Report/Coastal%20Area%20G/4q3%20-%20Section%204%20Coastal%20Area%20G%20PDZ18.pdf>

Ecological Options for Cemlyn Natura 2000 network sites & Cemlyn Estate in response to Wylfa Newydd, North Wales Wildlife Trust, RSPB, National Trust. May 2017. Final Report.

Horizon state¹³ that the breakwaters at Wylfa Newydd have two functions;

- The north-eastern breakwater provides the harbour wall to shelter the roll-on-roll-off structure and other berthing facilities for delivery of material to support the construction of the power station (approx 10 years)
- Provides flood defence during the power station's operational lifespan (60 years) for the Cooling Water Intake and other associated infrastructure located within Porth-y-Pistyll

It is understood that the detailed modelling of the likely impacts of the MOLF and breakwater construction are proving difficult to develop and to provide conclusive predictive outcomes and the level of uncertainty is currently predicted as high.

The Shoreline Management Plan (SMP2); Section 5¹⁴ refers to the HRA undertaken for the SMP1, which concludes no likely significant effect (LSE) on Cemlyn SAC or SPA **with** managed realignment and subsequent NAI (No Active Intervention), but does not factor in the new flood defences at Wylfa Newydd. However, the SMP goes on to state that the Cemlyn Natura 2000 sites are identified as potentially being vulnerable to sudden change and a 'do nothing' scenario for the whole plan period raises significant issues in relation to the designated habitats. Welsh Government have established the National Habitat Creation Programme to facilitate interventions funded through the flood and coastal erosion management programmes associated with the SMP policies. Whilst the interventions proposed at Wylfa Newydd have not been identified as part of the Welsh Government funding, they should be considered at the same strategic level given that the project includes the installation of the breakwater to protect nationally important infrastructure. It would logically follow that given the compounded effects of two uncertain scenarios; sea level rise and Wylfa Newydd breakwater, along with the policy direction for managed realignment that the secured planning package for the DCO contributes to the PDZ18 SMP's strategic objective.

In the last 18 months the National Trust have been developing a multi-agency partnership across North West Wales to implement the recommendations of SMP2. This partnership involves the National Trust, relevant Local Authorities and NRW. At the Cemlyn Estate, the 'Our Vision for the Cemlyn Estate' document has also involved key partners such as North Wales Wildlife Trust and the RSPB. 'Our Vision' sets out both the opportunities that sea level rise will bring in establishing new ecologically rich and important habitats on land within the flood zone and the need for infrastructure change. It is anticipated that creating new habitats will fit with the strategic National Habitat Creation Programme and ensure the maintenance of the SAC and SPA designated features. It will also develop a new futureproof visitor welcome point and associated infrastructure, ensuring a 'green' tourism visitor offer. The pedigree and appropriateness of the habitat creation project is clearly demonstrated by other UK schemes such as Medmerry¹⁵ in East Sussex and Abbots Hall¹⁶ in Essex.

Ecological Options

It is the NGO tripartite group's view that, on the basis of the precautionary approach, given the highly probable but uncertain coastal impacts from the MOLF and breakwaters and the loss of the marine habitat within Porth-y-Pistyll, that a contribution of funding from Horizon could be justified. This could be an agreed proportion of the costs for managed realignment proposals, which could be implemented via a planning package such as a Community Impact Fund/Community Resilience Fund or Schedule within the Section 106. This type of measure would increase the resilience of the Natura 2000 ecosystem to both climate change and the adverse coastal morphological/wave pattern

¹³ PAC 2 Main Consultation Document paragraphs 4.60 also 4.22, 5.55 and 6.162

¹⁴ West of Wales Shoreline Management Plan 2; Cardigan Bay and Ynys Enlli to the Great Orme - Section 5 Summary and Implications of Preferred Plan February 2011

<http://www.westofwalessmp.org/smp/files/wwsmp2013/West%20of%20Wales%20Shoreline%20Management%20Plan%202/English%20-%20Main%20Report/Main%20Documents/5%20-%20Section%205.pdf>

¹⁵ Medmerry managed realignment (EA & RSPB) <https://www.ice.org.uk/disciplines-and-resources/case-studies/managed-realignment-at-medmerry-sussex>

¹⁶ Abbots Hall managed realignment (Essex Wildlife Trust, Heritage Lottery, WWF – UK) <https://www.ice.org.uk/disciplines-and-resources/case-studies/managed-realignment-at-abbots-hall-essex>

changes resulting from the implementation of Wylfa Newydd and to achieve no net loss for the marine habitats within Porth-y-Pistyll by off-setting their loss.

In the scenario where the wider funding may not be forthcoming and SMP2 is not implemented, the presence of Wylfa Newydd breakwaters and sea level rise are likely to act together and exacerbate the effects of unexpected storm events. There will be a resulting increased probability of a sudden unplanned and catastrophic breach or lowering of the shingle ridge and the consequent sudden risks to the SPA and SAC. Such events have occurred in recent years in the UK and have led to the need to raise emergency funding for repair work to secure the nature conservation interests of high profile international sites, for example as at Blakeney Freshes (National Trust) and Cley (Norfolk Wildlife Trust) in the storms of winter 2013/14. In this scenario, it is this NGO group's opinion that the release of funds to provide a proportion of any emergency resource for remedial works could be secured via a Bond from Horizon.

The Harbour (MOLF) and breakwater

The harbour and the infrastructure associated with the berthing areas will become an industrialised landscape, which is likely to be maintained by dredging to allow an effective draught for mooring vessels and for the cooling water intake.

The detailed impacts at Porth-y-Pistyll and the need for measures to protect the current wildlife interests of the area are discussed in the section above. However, the new north western breakwater (approx 200m long) essentially provides a new island habitat almost secure from predation and other disturbances, once the main construction period has been finished.

Ecological Options

The design of the breakwater is still being devised, but could be engineered to provide ecological features such as additional nest space for seabirds. Well documented examples exist both as part of development proposals and as conservation action:

- The new outer harbour at Wells-next-the-Sea, which was provided in 2010 to supply the Sheringham Shoal Offshore Wind Farm was designed to incorporate features on its top surface (EIA Royal Haskoning) and has been successful for little tern nesting¹⁷. It provides supplementary habitat and adds to the resilience of North Norfolk coast's breeding tern colonies, which have experienced increased pressures due to the introduction of the wind farm in feeding areas and other associated impacts. This scheme has been combined with annual Sandwich tern tracking to monitor feeding consequences from the implementation of the wind farm.
- The proposed near vertical faces of the Wylfa Newydd breakwater are similar to natural rocky coastal outcrops and can be designed to facilitate nesting by other seabirds. For example, it has been shown that black guillemot adapts well to artificial nest boxes¹⁸ and this species or others could potentially be encouraged to nest by incorporation of appropriate design features. Black guillemot nest in Holyhead Harbour, so colonisation by this species is not unrealistic.



Wells-next-the-Sea Outer Harbour and little tern breeding site on harbour wall (Nov 2016 TRH)

- Investigation of other ecologically viable design options may provide other examples from other industry sources¹⁹ of improvements to the design of the breakwater to mimic natural habitat niches.

¹⁷ Results of 2013 survey of Wells Outer Harbour (James McCallum) http://www.wellsharbour.co.uk/cgi-bin/3d/3d?action=fdl&dir=environmental&file=little_tern_survey_2013.doc

¹⁸ BTO report of Bangor (County Down) black guillemot project <https://www.bto.org/national-offices/ireland/what-we-do/black-guillemot>

¹⁹ Naylor, L.A., Venn, O., Coombes, M.A., Jackson, J. Thompson, R.C. 2011. Including Ecological Enhancements in the Planning, Design and Construction of Hard Coastal Structures: A process guide. Report to the Environment Agency (PID 110461). University of Exeter Ecological Options for Cemlyn Natura 2000 network sites & Cemlyn Estate in response to Wylfa Newydd, North Wales Wildlife Trust, RSPB, National Trust. May 2017. Final Report.

Cemlyn Bay SAC – maintaining the brackish lagoon and water quality

The internationally designated features of the SAC are reliant on the hypohaline (brackish) conditions present within the lagoon (Core Management Plan 2008). It is known that the salinity of the lagoon fluctuates widely both temporally and spatially with both the saline inflow tidal ranges (neap & spring tides) and storm events and the freshwater inflows respond to seasonal flow rates in the catchment and flood flows from storm rainfall. The seawater inflow rates are controlled by a sluice and natural processes associated with the shingle ridge. Natural processes are considered to be part of the favourable conservation status of the site, but loss or damage to the sluice could result in the site being declared unfavourable.

The presence of Wylfa Newydd remodelled landforms within less than 150m of the SAC boundary on one of the principal freshwater inflows to the lagoon is being assessed and will require both a clear monitoring procedure of outflows and remediation strategy to ensure that emergency action can be initiated should there be, for example, flash flooding and increased sediment loads from storm events, nutrient release and heavy metals/contaminants. As currently proposed (PAC2 October 2016), the inflow adjacent to this new landform at the eastern end of the SAC near Tyddyn Sydney, does not include any flow control mechanism or attenuation feature. This will mean that flow rates and sediment loads will be unmediated.

Ecological Options

In addition to construction best practise monitoring and mitigation (CEMP) the NGO group recommend that the new landform incorporates:

- Natural SuDS attenuation ponds/features including reedbeds, which will trap sediments and help attenuate flows
- Introduction of weir with facility to stop lock the inflow and regulate storm water flows as a further control mechanism, which could also assist with longer term management of the lagoon
- Decision and planning regarding the saline inflow and sluice mechanism would be taken by the landowner/tenant in conjunction with the NRW and would be encompassed within the work associated with managed realignment and the emergency planning associated with the shingle ridge (see above).

Monitoring the consequences of Wylfa Newydd on shoreline processes & Cemlyn SAC

In association with investigating ecological options for likely impacts the National Trust have independently commissioned work to provide a monitoring package for environmental factors (Appendix 2 Pye December 2016), which this NGO group believes are necessary to inform remediation works from impacts of Wylfa Newydd or to inform the decision processes for managed realignment.

It would appear from the documentation presented thus far that Horizon are intending to monitor the impact point source effects rather than monitoring change at receptors. This approach is effective for example, when monitoring water quality outputs or volumes from a contained system such as treated water discharge from settlement pound, but is much more difficult in a dynamic environment with more dispersed effects.

Ecological Options

It is the NGO tripartite group's view that a number of factors should be monitored;

- GPS survey and monitoring of 12 profiles of ridge & beach MLWS & low water neap
- Tidal water levels & volumes (marine, lagoon & freshwater)
- Wave recorder nearshore on seaward side of Cemlyn ridge,
- Water chemistry in lagoon;
 - o Turbidity
 - o Salinity
 - o temperature
- LiDAR survey repeat
- Consideration of benthic sampling and grab samples
- Monitoring of nutrients and heavy metals

Given the sensitivity of the SAC and SPA to change the NGO tripartite group anticipates that Horizon will engage fully in establishing and resourcing a suitably detailed physical environment and ecological monitoring protocol, which will be undertaken prior to the inception of construction and last either for the construction period or for the long term as appropriate.

Appendix 1 – Maps

Irish Sea Metapopulation – breeding colonies



Map of other Irish Sea tern breeding colonies – Notes starting list for Horizon contingency planning study;

- Lady's Island Lake – Tern Project managed by National Park Wildlife Service for over 34 years supports largest Sandwich tern colony 4,500 pairs plus all 3 other target species
- Hodbarrow – managed by RSPB Sandwich, common & little tern
- Strangford Loch – several sites; managed by National Trust or Wildfowl and Wetlands Trust (Castle Espie) – Sandwich terns
- Larne Lough – common, roseate & Sandwich tern
- Dublin Bay – several sites; Rockabill (Bird Watch Ireland), Dalkey Island & Dublin Harbour common, Arctic & roseate

Other sites;

- Cockle Island, Groomsport, Northern Ireland – Sandwich, common & Arctic tern
- Ayres National Nature Reserve, Isle of Man – managed by Manx Wildlife Trust (Arctic & little tern)
- Copeland Islands – Copeland Bird Observatory, Northern Ireland All 4 tern species

Ecological Options for Cemlyn Natura 2000 network sites & Cemlyn Estate in response to Wylfa Newydd, North Wales Wildlife Trust, RSPB, National Trust. May 2017. Final Report.

Anglesey – potential options for breeding terns



Map of Anglesey potential tern sites (Core Management Plan 2008) – Notes;

- Llyn Alaw – Welsh Water owned; historically supported common terns
- Ynys Gored Goch – privately owned; 2011 10 pairs common
- Inland Sea – various locations near Trearddur privately owned; historically common/Arctic. In 2011 bird watcher reported 50 – 100 Sandwich display and bringing food in (no confirmed breeding)
- Ynys Dulas – no history of tern nesting?
- Rhoscolyn Beacon - no history of tern nesting?

Note all historic and other potential sites need to be investigated as to their viability during the proposed contingency planning study;

- Areas where black-headed gull are currently nesting, which may be managed to improve nesting potential for Sandwich terns. Small colony (c 20) has established at Morfa Madryn, Llanfairfechan (*pers comm.* Chris Wynne).