



Wylfa Newydd Project

Post Oral Hearing Summaries - Thursday 10th January

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HORIZON NUCLEAR POWER WYLFA LIMITED – WYLFA NEWYDD PROJECT – DEVELOPMENT CONSENT ORDER APPLICATION

Written summary of Horizon's oral submissions at the Biodiversity Day 1 Issue Specific Hearing held on 10 January 2019.

Introduction

1. This note summarises submissions made on behalf of Horizon Nuclear Power Wylfa Limited at the Biodiversity Day 1 issue specific hearing on 10 January 2019.
2. Oral submissions by all parties attending the hearing were made pursuant to the agenda published by the Examining Authority (ExA) on 19 December 2018 (the "Agenda"). In setting out Horizon's position on the issues raised in the agenda, as submitted orally at the hearing, the format of this note follows that of the agenda.
3. In addition to covering the agenda items as noted above, this note also relates to the Examining Authority's list of action points arising from the hearing.
4. A CV for each of the witnesses who made oral submissions on behalf of the Applicant is appended to this document.

ExA's Agenda Item	Summary of Horizon's Oral Submission made in the hearing	Relevant document references
Item 3 – Habitats Regulation Assessment		
3 – Habitats Regulation Assessment (General)	<p>Horizon provided the following update on HRA matters:</p> <ul style="list-style-type: none"> • Due to the number of European sites in close proximity to the Wylfa Newydd DCO Project, Horizon has undertaken a substantial amount of assessment on the impacts on European Sites. • Horizon has resolved a number of issues relating to European Sites with NRW and IACC, including issues 	Shadow HRA Report [APP-050]

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	<p>relating to air quality, effects on marine mammals, marine water quality, impingement and entrainment, and land take.</p> <ul style="list-style-type: none"> • There are two outstanding issues which remain – relating to coastal processes and disturbance effects on terns. (Coastal processes to be discussed at second biodiversity Issue Specific Hearing on 11 January 2019.) • In relation to disturbance effects to terns: <ul style="list-style-type: none"> - Horizon considers that there is sufficient evidence to provide certainty that no adverse effects will arise. - Disturbance effects are expected to be marginal due to low levels of noise from construction with limited reactions predicted from terns (fly-ups). These conclusions are supported by the scientific literature, expert review, assessments and observed tern behaviours. - Further, although no effect is predicted, Horizon has provided a range of measures through the control documents to monitor effects and implement additional controls in the event of disturbance. <p>Horizon is continuing to liaise with NRW to resolve concerns in respect of tern disturbance.</p>	
3(a) – seabird data	<p>NRW and the environmental NGOs (North Wales Wildlife Trust, Royal Society for the Protection of Birds, and National Trust) ("eNGOs") noted their disagreement that the seabird data enabled a conclusion of no adverse effects on seabirds; albeit that NRW did not advise that further data was acquired. In response, Michael Humphries QC, Counsel for Horizon, Counsel for Horizon made the following comments:</p>	<p>Shadow HRA Report [APP-050] Wylfa Newydd Code of Construction Practice [REP2-030] and sub-Codes of Construction Practice [REP2-031] to [REP-036].</p>

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	<ul style="list-style-type: none"> • Horizon has undertaken two types of survey to date. These are the offshore surveys of seabirds regarding distribution of birds, and secondly the disturbance surveys relating to tern responses. NRW has confirmed that there are no concerns regarding the methodology used for these surveys or the receptors considered; the key disagreement between the parties relates to the interpretation of the results and conclusions. • The CoCPs contain a number of controls on noise levels and impacts on the tern colony. As noise impacts from the Wylfa Newydd DCO Project are known and can be controlled the only claimed uncertainty is how birds may respond noise from the Wylfa Newydd DCO Project. However, Horizon considers that any colony responses will be adequately monitored and managed through the control documents. • A number of metrics have been used to assess the potential disturbance impacts, most notably frequency of fly-ups; but fly-ups also occur for other reasons than noise disturbance. In 2017, when the colony suffered heavy predation by otters, there is no evidence to suggest a direct effect of these predation events on the measured frequency of fly ups, because the predatory events were nocturnal in their timing whereas the surveys were undertaken in daylight hours. The colony has recovered since this event. • Dr Murray Grant, for Horizon, confirmed that the data obtained are adequate to enable disturbance effects on the tern colony to be understood and a conclusion of no adverse effect to be reached. The disturbance data from the surveys at 	

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	<p>Cemlyn Bay are augmented by the findings of the scientific literature, which supports the conclusion reached by the disturbance surveys. The new 2018 surveys complement the 2017 data and add to the robustness of the interpretation and conclusions from the 2017 data.</p>	
<p>3(b) To explore the impacts on the interest features of:</p> <p>i. Anglesey Terns SPA, including blasting effects on Tern; and</p>	<p>Evidence of stress</p> <p>NRW stated that there is a lack of evidence that 'stress' does not impact breeding success and that the academic evidence relied upon by Horizon does not take into account the unique sensitivities of the Sandwich terns. NRW stated it was not satisfied that there was no scientific doubt that there would be no adverse impact on the integrity of the SPA and for this reason Stage 3 and 4 assessments must be undertaken and compensation is required.</p> <p>In response, Dr Grant made the following points on behalf of Horizon:</p> <ul style="list-style-type: none"> • NRW has not provided any evidence that there will be effects; all it has raised is doubt regarding the conclusions reached by Horizon. It cannot be assumed that an absence of an effect is an absence of evidence. • Beale and Monahan (2004), who surveyed kittiwakes and guillemots, identified that the key source of stress for those birds was the presence of people near nesting areas, as people are seen as false predators. Sian John for Horizon also noted that stress in the Anglesey Terns SPA is also attributable to increased competition for food due to the success (and vastly increased numbers) of the colony over recent years. 	<p>Shadow HRA Report [APP-050]</p> <p>Wylfa Newydd Code of Construction Practice [REP2-030] and sub-Codes of Construction Practice [REP2-031] to [REP-036].</p>

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	<ul style="list-style-type: none"> • There are already a range of noises that occur within the study area which are similar to the expected construction noise that the birds do not respond to (e.g. airplanes, gunshots and agricultural vehicles), as evidenced from the disturbance monitoring. Construction noise, included noise with sharp rise times, is not anticipated to cause disturbance. • Although the academic literature relied upon by Horizon is not specific to Sandwich terns (and their sensitivities), together with the disturbance data and assessment it provides a robust body of evidence for how birds respond to activity within the area and whether they will exhibit a stress response to construction noise – which is not predicted. • For this reason, Horizon does not consider that construction noise will result in increased stress in the tern colony. • With regard to abandonment, Horizon noted that the majority of abandonment is due to predation, rather than noise. However, it offered to consider the evidence identified by NRW in its Written Representation [REP2-325] on other tern colonies and respond at Deadline 4 (17 January 2019). <p>Sian John on behalf of Horizon also noted that NRW's statement that the noise at the tern colony would be "substantially louder" than predicted, which matches existing levels at the colony, is unfounded. The modelling undertaken was very conservative and has not been challenged by NRW.</p> <p>Proposed controls to manage impacts on the tern colony</p>	

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	<p>NRW stated that while it did not disagree with the noise threshold of 60dB that had been identified, it was not satisfied that Horizon had put in place adequate controls to address noise impacts and that there was still a level of uncertainty on disturbance at the tern colony. Horizon made the following comments:</p> <ul style="list-style-type: none"> • There is a considerable distance between the construction site and the location of the terns at Cemlyn Bay (approximately 1km). At this distance, noise from rock blasting – at its loudest - would be heard at 62.9dB $L_{AF,max}$; which is similar to the noise levels that would be experienced in a restaurant. • At this distance, there would be an increased attenuation of high frequency noises and multiple noise sources would combine to result in the works being heard as a single noise. <p>In response to NRW's and the eNGOs concerns regarding the controls proposed in the CoCP and the deliverability and effectiveness of mitigation to avoid impacts on the tern colony, Sian John made the following submissions on behalf of Horizon:</p> <ul style="list-style-type: none"> • Although Horizon does not consider that there will be any disturbance effects on the terns, it has committed to monitoring and mitigating any effects. • The monitoring programme will be maintained for whole tern breeding period (15 April – 15 August, by negotiation) and will stay below certain levels (i.e. 60dB in the daytime). There will also be a 4-week tern 'establishment' period where Horizon will be required to maintain lower noise thresholds of 55dB (daytime). 	

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	<ul style="list-style-type: none"> • If there is evidence that the breeding season may start earlier than 15 April, Horizon will implement controls at an earlier date. These measures will be secured through the CoCP via the Deadline 5 (12 February 2019) update. • NRW's reference to a "traffic light" system of monitoring is incorrect; there are two noise thresholds – amber and red. Red levels are the key thresholds which must not be exceeded. Amber levels are to be agreed with NRW and are trigger points for action to be taken prior to the red thresholds being reached. • Reactive monitoring will also assist in identifying stress behaviour and ensuring that corrective measures are taken. If an issue is identified, the site management will consider what site operations can be stopped or altered to reduce noise levels to an acceptable level (where disturbance reaction cease). • Hourly averages have been proposed for the noise monitoring (as opposed to the observations) as there are no other meaningful parameters available. Hourly averages will be supplemented by reactive monitoring for disturbance signals. • In terms of the response, it may not always be possible to cease a particular activity immediately due to practical and safety considerations. However, as the noise signature would come from the whole site, there will be opportunities to stop or alter other activities occurring on the site in order to lower noise levels. And the commitment includes the 	

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	<p>statement that monitoring will continue until noise levels have reached an acceptable level.</p> <ul style="list-style-type: none"> Horizon would welcome any suggestions from Interested Parties on how the controls proposed in the CoCP can be improved. <p>Securing HRA related controls</p> <p>The ExA raised concerns about the removal of HRA-related requirements, in particular PW5 and PW6, from the updated draft DCO submitted at Deadline 2 (4 December 2018).</p> <p>In response, Horizon noted that the intention of the removal was to avoid duplication between the requirements and the control documents, and to have controls in one place. However, Horizon said that these requirements could be reinstated in the Draft DCO to be submitted at Deadline 5 (12 February 2019). Horizon also stated it would consider how requirements could be referred to within the control documents (or vice versa) to ensure that contractors were aware of these additional obligations.</p>	
<p>3(b) To explore the impacts on the interest features of:</p> <p>ii. Cemlyn Bay SAC, including from Mound E drainage.</p>	<p>Drainage proposals for Mound E</p> <p>In response to the ExA's question regarding whether Horizon had proposed additional monitoring, including triggers and thresholds, for water return to Nant Cemlyn, Sian John on behalf of Horizon confirmed that:</p> <ul style="list-style-type: none"> A baseline monitoring programme had been designed to establish the water quality in Nant Cemlyn and would be agreed with NRW; however, this would not be completed 	<p>Shadow HRA Report [APP-050]</p> <p>Wylfa Newydd Code of Construction Practice [REP2-030] and sub-Codes of Construction Practice [REP2-031] to [REP-036].</p>

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	<p>before the end of Examination as a number of seasons were required to establish a robust baseline.</p> <ul style="list-style-type: none"> Once baseline monitoring had been completed, Horizon would agree 'baseline' water quality thresholds with NRW so that if these were reached, the diversion of water from Mound E to the Afon Cafnan during construction would cease and drainage to the Nant Cemlyn reinstated. <p>Although noting its support for the drainage proposals, NRW said that these had to be adequately secured within the Main Power Station Site sub-CoCP. Ms Hughes, on behalf of the eNGOs, also expressed concern that there was limited detail on how drainage would work in practice. In response, Horizon confirmed that further details regarding the monitoring and agreement of these thresholds would be included in the updated Main Power Station Site sub-CoCP to be submitted at Deadline 5 (12 February 2019).</p> <p>The ExA queried how drainage from Mound E would be managed and why Mound E needed to be reworked during construction. In response, for Horizon, Mr Charlie Tasker noted that:</p> <ul style="list-style-type: none"> The mounds have been proposed to store materials generated from earthwork activities until they are required later to backfill areas of the WNDA. This is why they will, most likely, need to be reworked at a later date during construction. Proposals for the Mounds are multi-phased and include sustainable drainage design, swales, ditches and discharge 	

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	<p>points as well as silt busters to lower concentrations of sediment. Horizon will divert drainage from Mound E to the Afon Cafnan to avoid draining directly into Nant Cemyln and onto the lagoon during earthworks.</p> <ul style="list-style-type: none"> • New requirements will be included in the next update of the Draft DCO to require the construction drainage design to be submitted to IACC for approval. <p>Recreational disturbance on the SAC</p> <p>In response to concerns raised by NRW and the eNGOs regarding the potential workforce disturbance to the SAC (and SPA), Horizon confirmed that it was fully aware of the potential disturbance to the terns and the SAC by its workforce being located at the Site Campus and that a range of measures were being proposed through the control documents (for example, the Workforce Management Strategy and section 106 contributions, including a contribution to wardening) to manage impacts. Horizon noted that an updated Workforce Management Strategy would be submitted at Deadline 5 (12 February 2019).</p> <p>In-combination effects on the SAC</p> <p>The ExA queried how the issue of in-combination effects had been addressed. In response, Sian John on behalf of Horizon stated that Horizon had considered in-combination effects and determined that there no significant effects were predicted. All effects identified were negligible or minor and, cumulatively within the Wylfa Newydd DCO Project and in combination with other projects, they were considered to be insignificant (i.e. the</p>	

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	<p>minor effects have been considered together and their effects assessed).</p> <p>At the request of the ExA, Horizon confirmed it would review its in-combination assessment and Shadow HRA in light of the Environmental Statement and HRA for the North Wales Connection Project and report back on any changes at Deadline 5 (12 February 2019).</p> <p>Visitor centre proposal</p> <p>In response to the ExA's query on how the visitor centre proposal related to the Draft DCO Application, Horizon made the following points:</p> <ul style="list-style-type: none"> • The visitor centre is not part of the Draft DCO application and would need to be advanced through a Town and Country planning application. It is not relied upon as mitigation or compensation for the Wylfa Newydd DCO Project under the Draft DCO application and, therefore, it is acknowledged that limited weight can be placed on it. • While Horizon can make a commitment to apply for the visitor centre and if granted, construct it, it cannot fetter IACC's decision making discretion. • Horizon welcomed IACC's support for the Visitor Centre and noted that it would consider the appropriate mechanism for securing the obligation to apply and build it, noting that the Draft DCO s.106 seemed like an appropriate place. <p>The ExA noted that the Visitor Centre could provide important tourism and legacy benefits and would like further details on the</p>	

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	<p>specifications for the centre. Horizon confirmed that it would provide further specifications, following consultation with IACC, at PINS REFERENCE: EN010007 Wylfa Newydd.</p>	
<p>3(c) To understand the differences between IPs on coastal processes and geomorphological monitoring, with particular reference to the National Trust submission [REP2-316].</p>	<p>Impacts on Cemlyn Bay SAC during construction</p> <p>In relation to the further coastal process modelling work submitted by Horizon at Deadline 2 (4th December 2018) [REP2-007], NRW noted that there was still uncertainty about the ongoing impact of the breakwater on the shingle ridge. Additional modelling confirms the findings of the chapter D12 [APP-131] that potential changes are small however uncertainty in modelling results in NRW being unable to conclude beyond reasonable scientific doubt that there is no effect on site integrity. NRW stated that Horizon should propose monitoring and adaptive management.</p> <p>In response to NRW, Mr Rob Bromley on behalf of Horizon made the following points:</p> <ul style="list-style-type: none"> • As part of the Draft DCO application, Horizon undertook modelling of waves and shear stress and examined the effects on receptors, including the SAC. The modelling approach was agreed with NRW. • In response to comments from Interested Parties following submission, Horizon undertook additional modelling of an extreme 99th percentile winter wave scenario and the effects of the cooling water discharge on coastal processes. • The results of that additional modelling were provided in a technical note [REP2-007] and demonstrated that the 	<p>Environmental Statement Chapter B12 (Coastal process and geomorphology) [APP-077].</p> <p>Environmental Statement Chapter B12 (Marine environment) [APP-078].</p> <p>Environmental Statement Chapter D12 (Coastal process and geomorphology) [APP-131]</p> <p>Horizon Deadline 2 Submission – Supplementary Information on Coastal Processes to Support Wylfa Newydd EIA and Shadow HRA [REP2-007]</p> <p>‘Mitigating the loss of marine habitats and species under the footprint of the marine works’ – to be submitted at Deadline 4 (17th January 2019).</p>

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	<p>changes would not be significant or affect the integrity of the SAC.</p> <ul style="list-style-type: none"> Despite this conclusion, Horizon has agreed with NRW to undertake a monitoring programme and adopt an adaptive management approach. These measures will be included in the updated Marine sub-CoCP to be submitted at Deadline 5 (12 February 2019). <p>National Trust expressed concerns about the robustness and adequacy of modelling undertaken by Horizon on the impacts on the shingle ridge and integrity of the SAC and that it does not consider the cumulative effects of less severe conditions (frequent waves). National Trust stated that more thorough baseline investigations were required and that additional mitigation should be provided through the design of the breakwaters. Ms Hughes, on behalf of the eNGOs, noted that there should be a restoration bond included within the DCO in the event that there is a catastrophic breach.</p> <p>In response to these concerns, Mr Rob Bromley noted that the design of the breakwaters has been carefully managed and developed through an options appraisal process, both in terms of location and design. Any changes to the design will result in new effects and Horizon considers that the current design proposed as part of the Draft DCO application is the best design to limit environmental effects and protect the Cooling Water System and Marine Off-loading Facility.</p>	

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	<p>A summary of the options appraisal process will be provided at Deadline 4 (17th January 2019) as part of a wider marine mitigation report.</p> <p>Sediment transport during operation</p> <p>Dr Rod Jones raised concerns with dredging activities and impacts of sediment from Cemlyn Bay and the impact this could have on wave energy. Mr Matthew Wright, on behalf of Horizon, confirmed that baseline sediment assessments for site (as set out in Appendix D12-2 [APP-217] demonstrated that there is limited sediment transport along the coastline, and sediment in the system, and therefore sediment sinks are not an issue. The ExA requested Horizon to provide a note responding to comments by Dr Jones on the impact of sediment from dredging. Horizon confirmed that it will provide such a note at Deadline 5 (12 February 2019).</p>	
Item 4 – Marine Works and Marine Environment		
4(a) To understand the proposals and timings of marine works in relation to potential impacts to and mitigation of biodiversity receptors	<p>Mr Rob Bromley and Mr Charlie Tasker, on behalf of Horizon, provided a summary of the nature and location of the temporary and permanent Marine Works. In terms of sequencing, Mr Tasker explained that the construction of the Marine Works would commence shortly after DCO grant so that the MOLF would be constructed within the first 24 months. Earthworks would be undertaken in parallel to establishment activities as MOLF so that the MOLF is available for commencement of Main Construction.</p>	<p>WNSA Development Figure Booklet - Volume D, Figure D1-12 [APP-237]</p> <p>Construction Method Statement [APP-136] (paras 4.1.23-33) and Phasing Strategy]</p>

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<p>4(b) To identify areas where there are still differences of opinion and whether additional work, mitigation or changes to the development proposals in relation to:</p> <p>i. Noise modelling and mitigation;</p>	<p>In respect of noise modelling and mitigation relating to the Marine Works, Horizon made the following comments:</p> <ul style="list-style-type: none"> • The Environmental Statement is based on worst-case predictions in terms of the plant used in the assessment. The control documents do not secure plant, as Horizon considers the control documents should try and control outcomes in terms of effects, rather than necessarily how things are done. This approach avoids potential future issues where equipment changes are necessary. • Horizon acknowledged that more than 2 simultaneous drilling rigs could be used. Horizon has undertaken additional modelling to examine concurrent activities relating to the Marine Works, and this will be submitted at Deadline 5 (12th February 2019). • In respect of the airborne noise assessment, Mr Sam Williams on behalf of Horizon noted that noise from the Marine Works was considered along with the site as a whole. This includes very conservative assumptions such as a large number of plant operating at any one time (including 400-600 plant in any model). • In response to concerns expressed by NRW regarding recently published (NMFS) criteria for assessing effects on marine mammals, Horizon responded that updated modelling has been undertaken based on the new criteria. The results show that the noise effects of the Wylfa Newydd DCO Project on marine mammals will still be negligible, and will be submitted at Deadline 4. While the assessment shows that effects will not be significant; JNCC good practice 	<p>Environmental Statement, Chapter D13 - Marine environment [APP-132]</p> <p>Deadline 3 Submission - Technical Note indicating how Horizon would meet committed noise levels [REP3-048]</p>

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	mitigation for piling activities (piling being a proxy for rock breaking) will be applied to rock breaking and drilling activities.	
ii. The Water Framework Directive;	<p>Anglesey North waterbody</p> <p>NRW stated that it is waiting on more information regarding effects on the Anglesey North waterbody before advising on whether an Article 4(7) derogation is required. NRW consider the information provided does not look at all impacts of outfall on the water column. Mr Rob Bromley made the following comments in response, on behalf of Horizon:</p> <ul style="list-style-type: none"> • Effects on shear stress (ie scour) are presented in [REP2-007] submitted at Deadline 2 (4th December 2018), called 'supplementary information on coastal processes to support Wylfa Newydd EIA and shadow HRA'. • The effects on tidal vectors results show that the cooling water has little effect on the velocities with only localised changes around the outfall from a worst case (99th %ile). The gyres in the main bays remain unaffected. These results will be included in a report and entered into examination at Deadline 6 (19 February 2019). • The effect of thermal stratification is considered and addressed in Environmental Statement chapter D13 [APP-132]. • The effect of the cooling water discharge on coastal processes in WFD and EIA terms is not significant. 	<p>Supplementary information on coastal processes to support Wylfa Newydd EIA and Shadow HRA [REP2-007]</p> <p>Environmental Statement, Chapter D13 – Marine Environment [APP-132]</p>

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	<p>Cemlyn Lagoon</p> <p>NRW consider it is not possible to rule out no adverse effects on the integrity of Cemlyn Lagoon due to the Marine Works. Horizon noted that this is also an HRA issue. As per the morning discussion, the HRA work is ongoing and the WFD workstream will follow the lead of the HRA on this issue. Should the HRA find there is a compliance issue, then this would be brought into the article 4(7) derogation.</p>	
<p>iii. Cumulative effects in relation to benthic ecology;</p>	<p>In response to a question from the ExA as to whether the information provided at Deadline 3 (18th December 2018) by Horizon [REP3-035] resolves its concerns, NRW stated that it disagrees with the conclusion that no mitigation is required to offset an additional 5.7ha loss of identified in additional information. NRW requested that mitigation should be provided for rocky reef habitat if the scope of loss cannot be reduced. In response, Mr Rob Bromley made the following comments on behalf of Horizon:</p> <ul style="list-style-type: none"> • Operational sub lethal effects of TRO and thermal discharge are expected to be highly localised being limited to the immediate zone of discharge (i.e. within a few 100 metres of the outfall). • The 5.7ha quoted by NRW as loss from operation is not loss but rather is the area potentially affected (i.e. where TRO will exceed 0.1ug/l). The mitigation Horizon proposes already accounts for an acute effect up to about 600m as a result of construction activities. 	<p>Environmental Statement, Chapter D13 – Marine Environment [APP-132]</p> <p>Horizon's Response to Written Representation - Natural Resources Wales [REP3-035]</p>

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	<ul style="list-style-type: none"> • A revised mitigation commitment will be provided at Deadline 4 (17th January 2019), which includes a detailed options appraisal for ecological enhancement and revised measures to reduce the effects on rocky reef habitat from a moderate adverse to minor adverse effect. • The subtidal and intertidal habitats, (including those of conservation importance) affected cumulatively are considered common around the north coast of Anglesey and effects are considered spatially limited and therefore any loss would not result in wider effects on the structure and function of benthic habitats. The assessment of cumulative effect is therefore not significant • The area affected is not all rocky reef habitat, and it is noted that there was previously a cooling water discharge at that location. The effects of Wylfa A operations were assessed, and it was considered that the effect was confined to location of discharge point and within 600m. • Horizon has committed to enhancement measures (and this will include rockpools). It was noted however that ecological enhancement within marine environment is novel and an emerging area, as no large scale enhancements have yet been implemented in the UK. 	
iv. Invasive non-native species;	<p>NRW raised concerns that there was a lack of detail within the Marine sub-CoCP regarding invasive non-native species. In response, Mr Rob Bromley made the following points:</p> <ul style="list-style-type: none"> • The Marine Sub-CoCP [REP2-033] secures the principles of the Biodiversity Risk Assessment which is included as part of 	Marine Sub-CoCP [REP2-033]

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	<p>the Shadow HRA [APP-050]. Further details can only be provided once the contractor has been appointed.</p> <ul style="list-style-type: none"> As the BRA is primarily required under the Marine Licence and will be enforced by NRW under that licence, Horizon considers that it does not need to be replicated within the DCO as this would then require Horizon to discharge under both the DCO and Marine Licence for exactly the same issue. Clarification will be provided in the Marine Works sub-CoCP to this effect The Planning Act 2008 and NPSs recognise that there are other consenting mechanisms and that these should not be replicated within DCOs. 	
v. Monitoring impingement effects of marine works; and	<p>NRW also raised concerns that the detail regarding mitigation and monitoring of the impingement of fish was lacking from the Main Power Station Site sub-CoCP. In response, Horizon noted that:</p> <ul style="list-style-type: none"> Similar to controls for invasive non-native species, fish impingement would be primarily addressed through the Environmental Permits. For this reason, only principles have been included within the Code of Operational Practice. The issue is whether or not the ExA considers that the control needs to be within the Draft DCO or whether it can rely on NRW as a responsible regulator to enforce controls under the Environmental Permit. NPS EN-1 at [4.10.3] states that "the IPC should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes, including those on 	<p>Code of Operational Practice [REP2-037]</p> <p>NPS EN1 at [4.10.3]</p>

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	<p>land drainage, water abstraction and biodiversity, will be properly applied and enforced by the relevant regulator. It should act to complement but not seek to duplicate them."</p> <ul style="list-style-type: none"> • Horizon considers that fish impingement controls will be properly applied and enforced through the Environmental Permit and therefore additional detail is not required within the Main Site sub-CoCP. <p>Counsel for Horizon stated that Horizon will provide a note regarding mercury contamination at Deadline 5 (12 February 2019).</p>	

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Item 5 – Terrestrial ecology and birds		
<p>5(a) To receive an update on progress between parties; an explanation of any important differences of view; and timescales for completion in relation to:</p> <p>i. Baseline surveys, hydroecological assessment, drainage and dewatering and air quality impacts on Tre'r Gof SSSI;</p>	<p>Update on progress relating to Tre'r Gof SSI</p> <p>Dr James Cook and Mr John Ferry provided the following update on the progress with Tre'r Gof on behalf of Horizon:</p> <ul style="list-style-type: none"> • Considerable progress has been made with NRW on the conceptual site model and hydrological baseline. • There is agreement between NRW and Horizon that there will be significant effects due to water quality and quantity on the features of Tre'r Gof. There is a currently a difference of opinion between the parties as to how the model should be interpreted; however, Horizon is engaging closely with NRW to reduce areas of disagreement. • Horizon will expand its site model to include all potential pathways and will identify any monitoring or mitigation that can be provided in respect of any additional pathways identified. Horizon does not consider that any update to the model will not change the existing level of significance of effects. • The CoCPs will secure drainage controls and Horizon is also proposing new requirements relating to drainage design at Deadline 5 (12th February 2019). Further detail is set out in Horizon's response to NRW at Deadline 3 (18 December 2018) [REP3-035]. • Horizon has also undertaken additional modelling on the air quality impacts of the Wylfa Newydd DCO Project on Tre'r Gof which shows a minor adverse effect; although slightly 	<p>Horizon's response to NRW at Deadline 3 [REP3-035].</p> <p>Air Quality Mitigation Quantification Report [REP3-048].</p>

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	<p>improved from the assessment contained within the Draft DCO application. This updated assessment was submitted at Deadline 3 (18th December 2018) [REP3-048].</p> <p>Validity of baseline data</p> <p>The ExA noted that IACC had raised concerns with the validity of baseline data for the A5025, given that it was three years old. In response, Horizon stated that it considered that the data was still robust and would submit a report into Examination at Deadline 5 (12th February 2019) to justify this position.</p> <p>Additional mitigation</p> <p>With regard to additional mitigation sought by NRW in respect of the CoCPs for the Main site and A5025, Horizon confirmed this detail would be included in the Deadline 5 (12th February 2019) updates to these documents.</p> <p>Effects of the Site Campus on Tre'r Gof SSSI</p> <p>Dr James Cook, on behalf of Horizon, made the following comments:</p> <ul style="list-style-type: none"> • It is predicted that there will be significant effects on Tre'r Gof, even if the Site Campus was removed as there are other aspects of the WNDAs that have a greater influence on the SSSI, such as the construction of Mound A which will alter a larger area of the Tre'r Gof catchment. The Site Campus, therefore, has limited impacts on Tre'r Gof compared to other elements. • The Site Campus has been designed to minimise its impact on Tre'r Gof, including through the use of 20m buffers, 	

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	<p>phased construction, use of permeable materials within the design, and a drainage design which seeks to replicate the existing water regime of flows.</p> <ul style="list-style-type: none"> • Horizon is also proposing various adaptive monitoring and mitigation through the control documents. A new drainage requirement is also proposed which will require Horizon to submit construction drainage plans to IACC for approval. • The mounds have been proposed to provide storage for earthworks spoil; however, they also provide Horizon with an ability to integrate the Power Station into the local landscape as well as providing noise and visual screening to local communities. If the mounds were removed, then the spoil would need to be taken off site which would result in additional traffic impacts. <p>The ExA queried what the justification of the Site Campus was given its impact on the SSSI. In response, Counsel for Horizon noted that there is policy support for the Wylfa Newydd DCO Project in NPS EN1 and EN6, and the Ministerial Statement. The provision of the Site Campus within the WNDA, and located in close proximity to the SSSI was considered during the design stages of the Wylfa Newydd DCO Project and balanced against the benefits of, and need for, the Wylfa Newydd DCO Project.</p>	
ii. Hydrological baseline information for Cors Gwawr and Cae Canol-dydd compensation sites;	<p>SSSI Compensation sites</p> <p>NRW expressed concerns that the hydrological monitoring provided for the ecological compensation sites was inadequate and alternative compensation sites should be considered. In</p>	<p>Appendix D9-24 – SSSI Compensation Strategy [APP-191] Draft DCO [REP2-020]</p>

ExA's Agenda Item	Summary of Horizon's Oral Submission made in the hearing	Relevant document references
	<p>response, Dr James Cook made the following comments on behalf of Horizon:</p> <ul style="list-style-type: none"> Hydrological monitoring has been undertaken and an interim monitoring report will be submitted at Deadline 6 (19th February 2019). NRW and Horizon will meet next week to review the data. Although data only covers one season it does include a long summer dry period and so Horizon considers that a range of hydrological conditions have been included to provide a worst case assessment for fen conditions. For this reason, Horizon does not agree with NRW's comments that the data is inadequate. At Deadline 5 (12 February 2019), Requirement ECS4 will be amended to include hydrological monitoring and a conceptual site model. A 12 month monitoring report will be submitted to discharge ECS4. The extent of fen habitat will also be determined by the results of hydrological monitoring. Alternative sites are not considered necessary because: <ul style="list-style-type: none"> - Selection of sites followed an extensive site selection process, which included a Technical Advisory Group of which NRW was a member. The current sites were chosen because they were considered the optimal sites for providing compensatory habitat in close proximity to the SSSI. - Horizon is already providing an overcompensation through the provision of 14ha of compensation sites to mitigate effects on the 10ha Tre'r Gof SSSI 	<p>Horizon's Response to Written Representation - Natural Resources Wales [REP3-035]</p>

ExA's Agenda Item	Summary of Horizon's Oral Submission made in the hearing	Relevant document references
	<p>Theresa Hughes on behalf of eNGOs noted that there are long lead times to establish fen habitat and that the Draft DCO is not clear how the long-term management of these compensation sites will be secured.</p> <p>In response, Dr James Cook for Horizon made the following comments:</p> <ul style="list-style-type: none"> Long-term management of the ecological compensation sites is secured through Requirement ECS3 which requires management schemes to be approved by IACC. These schemes must be in accordance with the management principle in the LHMS. <p>The Ty Du site, which already has established fen habitat, will provide a short-term provision of habitat while the two other sites are established.</p>	
<p>iii. Baseline and air quality information for Cae Gwyn SSSI;</p>	<p>Mitigation proposals for Cae Gwyn</p> <p>NRW considers that the mitigation proposals in the Main Power Station Site Sub-CoCP are not sufficient, as there will still be a 1% decline in species due to nitrogen depositions. NRW consider a 1% decline could still result in important species being lost and Horizon should provide more mitigation to reduce at source nitrogen concentrations.</p> <p>In response to NRW's concerns about nitrogen disposition, Mr Nick Clark on behalf of Horizon stated that exposure to nitrogen deposition is for a limited period of two years and that Horizon will monitor deposition within the WNDA and near to Cae Gwyn (as Horizon has no access to the site) and implement measures</p>	<p>Main Power Station Site Sub-CoCP [REP2-032]</p>

ExA's Agenda Item	Summary of Horizon's Oral Submission made in the hearing	Relevant document references
	<p>in the event that results are close to or exceed agreed thresholds. These additional measures were included in the updated Main Power Station Site sub-CoCP submitted at Deadline 2 (4th December 2018).</p> <p>In response, Horizon stated that while it will seek to reduce impact to the greatest extent possible, there will be residual effects from the Wylfa Newydd DCO Project, and these do not outweigh the need.</p> <p>In response to ExA's queries regarding Horizon's access to Cae Gwyn, counsel for the Applicant confirmed that the site was located outside the Order Limits and Horizon had no legal access to it. However, the Draft DCO includes powers in article 24 to enter onto land outside the order limits for the purposes of surveys or investigations.</p>	
iv. Air quality at Trwyn Pencarreg Wildlife Site;	<p>Nitrogen levels at Trwyn Pencarreg</p> <p>Theresa Hughes on behalf of the eNGOs queried the maximum nitrogen concentrations shown on Figure D5-9 and noted that she had calculated expected levels of nitrogen within Trwyn Pencarreg at 17kg per hectare per year. In response, Mr Steve Bryne, on behalf of Horizon, noted that:</p> <ul style="list-style-type: none"> • The concentrations shown on Figure D5-9 related to human receptors, rather than ecological. • Calculation of depositions has been based on an annual mean concentration of ND which has been modelled. • Horizon has committed, through the control documents, to ensuring all plant meets the Stage IV emission standards and 	<p>Main Power Station Site Sub-CoCP [REP2-032]</p> <p>WNSA Development Figure Booklet - Volume D, Figure D5-9 [APP-237]</p> <p>Air Quality Mitigation Quantification Report [REP3-052]</p>

ExA's Agenda Item	Summary of Horizon's Oral Submission made in the hearing	Relevant document references
	<p>this was included in the updated Main Power Station Site sub-CoCP submitted at Deadline 2 (4th December 2018) [REP2-032].</p> <ul style="list-style-type: none"> • The modelling submitted at Deadline 3 (18th December 2018) [REP3-052] identifies that with these mitigations in place, it is expected that there will be a new value of 1.3kg of nitrogen per hectare, per year, which is much lower than the eNGOs' calculation of 17kg 	
Item 6 – other consents and licences		
<p>6(a) To receive an update on progress between parties and timescales for completion in relation to any matters not discussed at the second draft DCO hearing on 9 January.</p>	<p>Following a request by the ExA, Horizon confirmed that it would provide a post hearing note of any updates regarding progress for obtaining any other consents, licences and agreements.</p>	



STEVEN BYRNE

EXPERT WITNESS FOR AIR QUALITY ASSESSMENT

AREA OF SPECIALISM

Steven has over 18 years' experience in air quality assessment and has provided technical advice to private and public sector clients on air pollution, dust and odour emissions from power generation, minerals, waste management, industrial, road transport and domestic sources.

PROFESSIONAL ORGANISATIONS

- Member of the Institute of Air Quality Management
- Member of the Institution of Environmental Sciences

QUALIFICATIONS

- MSc Environmental Technology
- BSc Physics with Environmental Science

RELEVANT WORK EXPERIENCE

Steven has been involved in the Wylfa Newydd Project since March 2014 managing or undertaking all aspects of the air quality assessment.

Air quality assessment for proposed new 1500MW gas-fired CCGT power station in Knottingley. Acted as air quality expert witness at DCO examination hearings, addressing specific issues raised by the local authority and Environment Agency.

Prepared and completed the detailed air quality assessments for four proposed biomass-fuelled power stations at Dundee, Grangemouth, Leith and Rosyth. Dispersion modelling of combustion emissions and also road traffic emissions in busy congested city centre areas within Air Quality Management Areas. The project required regular consultation with SEPA, local authorities and SNH and formed part of a section 36 planning application.

**Charlie Tasker [Senior Construction Adviser]**

DCO Client Expert Witness Construction [Various Construction Topics]

AREA OF SPECIALISM

Charlie has over 30 years' experience in the electricity industry, the majority of which have been in power plant development and construction which included five years in an operations and maintenance management position.

Charlie is responsible for establishing Construction Management arrangements for Horizon's lead project, Wylfa Newydd Power Station. Prior to this Charlie oversaw the development activities associated with the Nuclear new build programme including establishment of Early Works Contracts, Front End Engineering Contracts, Associated developments and owners scope activities.

Electricity industry experience includes a wide range of Power plant construction activities including Nuclear, Coal, Flue Gas Desulphurisation retrofit projects, Coal Importation Facilities and Combined Heat and Power projects.

Many of these projects have been delivered using innovative construction management approaches combined with latest technology to maximise commercial benefits.

PROFESSIONAL ORGANISATIONS

- Member of the Institution of Civil Engineers
- Chartered Engineer

QUALIFICATIONS

- BSc Engineering
- CEng

RELEVANT WORK EXPERIENCE

Experienced construction project director/senior project manager that encompasses a wide range of Power plant construction activities including Nuclear, Coal, Flue Gas Desulphurisation retrofit projects, Coal Importation Facilities and Combined Heat and Power projects.

Experienced in managing large multi-disciplined project engineering teams associated specialist technical support organisations.

7 years design and construction experience in the water industry prior to entering Electricity Industry.



Dr Matthew Wright

EXPERT WITNESS FOR COASTAL CHANGE

AREA OF SPECIALISM

Coastal and Marine Geomorphology

PROFESSIONAL ORGANISATIONS

QUALIFICATIONS

- PhD Coastal and Marine Geomorphology and Geology, Durham University (2000-2005)
- MSc Recent Environmental Change, University of Liverpool (1993-1994)
- BSc Geography, University of Liverpool (1990-1993)

RELEVANT WORK EXPERIENCE

Matthew is a coastal and marine geologist and geomorphologist with extensive (20+ years) experience of research and consultancy working on a wide range of projects in the estuarine, coastal and offshore realms throughout the UK and worldwide. His experience includes managing and providing expert advice on projects involving the assessment of marine and coastal processes, geomorphology, water and sediment quality, geology and geophysics, sedimentology and sea-level change.

Matthew is a Principal Consultant responsible for leading technical inputs and reporting for environmental impact assessment; capital infrastructure development and maintenance; flood and erosion risk management; and habitat protection, creation and restoration projects in coastal, estuarine and marine environments. He has undertaken work for clients ranging from private developers to local authorities and framework clients. Prior to joining Partrac Matthew was a Principal Consultant in coastal and marine geomorphology at Jacobs UK Ltd. and has also held a Mendenhall research fellowship (Research Geologist and Geomorphologist) at the United States Geological Survey (USGS).



Robert Bromley

EXPERT WITNESS FOR MARINE ENVIRONMENT

AREA OF SPECIALISM

Rob has 20 years' experience working in the field of marine science specialising in marine surveys, site characterisation, and marine impact assessments. Rob has been at the forefront of assessing water intakes in the UK and involved in the preparation of UK's Best Practice guidance for new nuclear builds. Rob has been the project manager and lead marine consultant for Horizon since 2010.

Rob's other areas of specialism include:

- Assessment of impingement and entrainment of fish.
- Cooling water mitigation measures.
- The function and ecology of eelgrass.

PROFESSIONAL ORGANISATIONS

- MRSB – Member of the Royal Society of Biology

QUALIFICATIONS

- Chartered Biologist
- MSc in Oceanography
- BSc Joint Hons - 2.1 in Marine Biology and Oceanography

RELEVANT WORK EXPERIENCE

Wylfa Newydd DCO, Horizon Nuclear Power Ltd, Environmental Project Manager and Marine Consultant, 2010 – ongoing

Pembroke Power Station Marine Services, RWE npower, Project Manager and Marine Consultant, 2009 – 2015

Beckton Desalination Entrainment Studies, Thames Water Utilities Ltd, Project Manager and Marine Ecologist, 2009 – 2013

Takoradi Power Station Marine EIA, World Bank, Author, 2010 – 2012

Rosyth International Container Terminal (RICT) Marine EIA, Marine Ecology Consultant and Expert Witness, 2009 and 2011-2012

Cooling Water options for New Generation of Nuclear Power Stations. Environment Agency, Marine Consultant, 2010

BEEMS Entrainment Studies at Nuclear Sites, CEFAS, Project Manager and Marine Consultant, 2009-2010

Tilbury Power Station Marine EIA, RWE npower, Project Manager and Marine Consultant, 2007 – 2009.



Nick Clark

EXPERT WITNESS FOR TERRESTRIAL ECOLOGY

AREA OF SPECIALISM

Nick has led the ecology input into a range of major infrastructure schemes across the UK, including ecological impact assessments, European Protected Species mitigation licences, mitigation designs and habitat creation and management plans, and Habitat Regulations Assessments.

He has 16 years' experience as a professional ecologist, and has acted as the head of discipline for terrestrial ecology on the Horizon project since 2012.

PROFESSIONAL ORGANISATIONS

- Member of the Chartered Institute of Ecology and Environmental Management (CIEEM)
- Chartered Environmentalist (CEnv)

QUALIFICATIONS

- MSc Oceanography
- BSc Zoology

RELEVANT WORK EXPERIENCE

Nick has acted as lead ecologist on a range of road, rail, utilities and flood risk schemes. He has a background in nature conservation, having managed conservation enhancement programmes across nationally and internationally designed wildlife sites, as well as managing a number of nature reserves.

Nick provided technical review of the three options short-listed by the Airports Commission for increasing airport capacity within the UK. He has undertaken due diligence of Habitat Regulations Assessments on behalf of the European Bank, and is the retained technical advisor on one of Highways England's largest mitigations schemes for impacts to European sites.



JOHN FERRY

EXPERT WITNESS FOR GROUNDWATER

AREA OF SPECIALISM

35 years experience as Director, advisor, public health scientist and hydrogeologist in fields of hydrogeology, hydroecology, environmental assessment, risk and liability, natural capital and and ecosystem services assessment.

PROFESSIONAL ORGANISATIONS

- Chartered Geologist
- Fello of Geological Society

QUALIFICATIONS

- MSc Hydrogeology, UCL
- Diploma, University College London
- BSc Geology (Hons) Glasgow University

RELEVANT WORK EXPERIENCE

John Ferry is a senior professional scientist with Jacobs with over 35 years UK and international experience.

John has worked for UK and overseas Governments, Anglian Water plc and British Geological Survey in regulatory and advisory roles. He has worked across many sectors - water, transport, renewable energy, nuclear, defence, industry and international technical development. His previous roles included leading nuclear, land and water consultant teams across UK

His core discipline is hydrogeology. He has significant experience with and specialises in the areas of groundwater and surface water resources, water quality, wetlands and hydro-ecology, land quality and EIA, risk assessment, natural capital, natural resource and asset management and ecosystem services assessment.

John has published on a number of technical areas and has been a member of the Geological Society Publishing House Editorial Board for QJEG.



James Cook

EXPERT WITNESS FOR SSSI / COMPENSATION

AREA OF SPECIALISM

James is a terrestrial ecologist with 12 years consultancy experience following early career experience in ecological research and countryside management. His key areas of expertise include Ecological Impact Assessment, mitigation design and habitat management planning.

PROFESSIONAL ORGANISATIONS

- Full Member of the Chartered Institute of Ecology and Environmental Management
- Chartered Environmentalist

QUALIFICATIONS

- PhD – Durham University, 2006
- BSc (Hons) First Class: Ecology & Conservation – University of Sussex, 2001
- Survey licences for bats, dormouse, barn owl and great crested newt

RELEVANT WORK EXPERIENCE

- 2014– present: Ecologist with Horizon, undertaking reviews of ecology reports, impact assessments and environmental management arrangements; specifying environmental works; habitat management planning; and providing technical leadership on compensation and mitigation proposals.
- 2006–2014: Ecologist roles with Andrew McCarthy Associates, Keystone Environmental and Atkins, undertaking species/habitat surveys; mitigation design; and preparing EIA chapters, HRA screening reports, habitat management plans and licence applications.
- 2006: Conservation Assistant with Exmoor National Park Authority, undertaking botanical surveys and preparing habitat management plans.
- 2002–2005: PhD Student, undertaking research on the ecological and biogeochemical responses of Swedish arctic tundra habitats to different snow cover regimes.
- 2002: Research Assistant with Oxford University, monitoring a trial beaver reintroduction to a fen in Kent.



Sam Williams

EXPERT WITNESS FOR NOISE AND VIBRATION

AREA OF SPECIALISM

Specialist with 20 years experience in the assessment of noise and vibration impacts of power, major transport, water, and industrial schemes.

PROFESSIONAL ORGANISATIONS

- Member of the Institute of Acoustics (MIOA)

QUALIFICATIONS

- B. Eng (Hons) Building Services Engineering, Loughborough University

RELEVANT WORK EXPERIENCE

Sam has been responsible for the assessment of over 150 schemes, including the calculation of city-wide road traffic noise immission maps of Birmingham and Coventry for Defra. In 2016 Sam provided reports and advice to the Airports Commission on the options for additional runways at Heathrow or Gatwick. In respect of Crossrail, Sam was responsible for developing a strategy for Network Rail to obtain the required consents for each worksite, and managed the successful preparation and submission of over forty s.61 applications to the local authorities. Sam has been the promoters expert witness for noise and vibration for the following projects:

- The Proposed Ashton Vale to Temple Meads and Bristol City Centre Rapid Transit Order Public Inquiry (2012)
- The Fishguard to Bangor Trunk Road (A487) (Porthmadog, Minffordd And Tremadog Bypass And De-Trunking) Order 200-. This project has since been constructed and has won 'Environmental Project of the year' at the Construction News Awards 2012 and ICE Wales Project of the Year for projects greater than £3m
- Expert witness for The London Development Agency (Lower Lea Valley, Olympic and Legacy) Compulsory Purchase Order (2006).

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