From:	Kieran Somers
To:	Kay Sully; Wylfa Newydd
Cc:	KJ Johansson; Horizon Production Management Team; David Palmer (Contractor); PMO; James.Hooker@gov.wales; Iwan.Williams@cyfoethnaturiolcymru.gov.uk; energyisland@cyfoethnaturiolcymru.gov.uk; Dylan Williams; Neil Burke
Subject:	Wylfa Newydd DCO Examination Horizon - Deadline 2 Submissions
Date:	04 December 2018 21:56:50
Attachments:	8.25 Statement of Common Ground between Horizon Nuclear Power Wylfa Limited and the Welsh Government.pdf 8.25 Statement of Common Ground between Horizon Nuclear Power Wylfa Limited and NRW.PDF
Importance:	High

Good Evening

Please find attached Horizon's Deadline 2 submissions relating to :

- Statement of Common Ground Between Horizon Nuclear Power Wylfa Limited and Welsh Government
- Statement of Common Ground Between Horizon Nuclear Power Wylfa Limited and NRW

Kind Regards

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HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

Statement of Common Ground between Horizon Nuclear Power Wylfa Limited and NRW

PINS Reference Number: EN010007

Application Reference Number: 8.25

4 December 2018

Revision 1.0
Examination Deadline 2

Regulation Number: 5(2)(q)

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Horizon Internal DCRM Number: WN0902-HZDCO-PAC-REP-00008

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Contents

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1 Introduction

1.1 Status of this SoCG

1.1.1 This Statement of Common Ground (hereafter referred to as the 'SoCG') is being submitted to the Examining Authority as an agreed draft between both parties. It will be amended as the examination progresses in order to enable a final version to be submitted to the Examining Authority by Deadline 6.

1.2 Purpose of this document

1.2.1 This SoCG is a 'live' document that has been prepared by Horizon Nuclear Power Wylfa Limited (hereafter referred to as 'Horizon') and Natural Resources Wales (here after referred to as 'NRW'). It has been prepared in accordance with the guidance published by the Department of Communities and Local Government (hereafter referred to as 'DCLG Guidance')[1] and example SoCG documents provided on the Planning Inspectorate's website[2].

1.2.2 The purpose of this SoCG is to set out agreed factual information about the application for development consent has been made by Horizon for the construction and operation of a new nuclear power station at the Wylfa Newydd Development Area (hereafter referred to as 'WNDA') together with on and off-site associated development (hereafter referred to as 'the Wylfa Newydd DCO Project').

1.2.3 Paragraph 58 of the DCLG Guidance states:

"A statement of common ground is a written statement prepared jointly by the applicant and another party or parties, setting out any matters on which they agree. As well as identifying matters which are not in real dispute, it is also useful if a statement identifies those areas where agreement has not been reached. The statement should include references to show where those matters are dealt with in the written representations or other documentary evidence"

1.2.4 The aim of this SoCG is to therefore provide a clear position of the state and extent of discussions and agreement between Horizon and NRW on matters relating to the Wylfa Newydd Project as at 4th December 2018.

1.2.5 DCLG Guidance recognises and expects that SoCG's will continue to evolve during the examination period (if deemed necessary through on-going discussions between the parties). Discussions between Horizon and NRW will therefore continue to seek to extend the areas of common ground.

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[1] Planning Act 2008: Guidance for the examination of applications for development consent (March 2015) paragraphs 58 – 65 https: / / www.gov.uk / government / uploads / system / uploads / attachment_data / file / 418015 / examinations_guidance-__final_for_publication.pdf

[2] [2] https://infrastructure.planninginspectorate.gov.uk/application-process/example-documents/

1.2.6 The first draft of the SoCG was provided to NRW by Horizon on 27 October 2017 for review and comment. This SoCG has evolved through a series of iterative drafts.

1.2.7 The document will be updated as more information becomes available and as a result of on-going discussions between Horizon and NRW.

1.2.8 Once finalised, the SoCG will be submitted to the Examining Authority in relation to the application by Horizon under section 37 of the Planning Act 2008 (the Act) for an order granting development consent for the construction of the Wylfa Newydd DCO Project.

2 Overview of Engagement

2.1.1 The preparation of this SoCG has been informed by a programme of discussions between Horizon and NRW. The relevant meetings are summarised below.

Table 2-1 SOCG meetings held between Horizon and NRW

Meeting Date	Attendees	Purpose of Meeting
24th January 2018	Horizon, Natural Resources Wales, Jacobs	To discuss and agree the intended approach and programme for developing the SOCG.
1st August 2018	Horizon, Natural Resources Wales, Jacobs	To discuss and identify the issues of concern to NRW where further meetings are required in order to establish common ground.
10th September 2018	Horizon, Natural Resources Wales, Jacobs, Atkins	To discuss outstanding issues related to the Water Framework Directive and agree the additional work required to establish common ground.
12th September 2018	Horizon, Natural Resources Wales, Jacobs	To discuss outstanding issues related to Tre'r Gof SSSI and agree the additional work required to establish common ground.
14th September 2018	Horizon, Natural Resources Wales, Jacobs, Wood	To discuss outstanding issues related to flooding and agree the additional work required to establish common ground.
14th September 2018	Horizon, Natural Resources Wales, Jacobs	To discuss outstanding issues related to monitoring protected species after translocation and agree the additional work required to establish common ground.
27th September 2018	Horizon, Natural Resources Wales, Jacobs, Royal Haskoning DHV, RWE	To discuss outstanding issues related to the modelling and water aspects of the Shadow Habitats Regulations Assessment and agree the additional work required to establish common ground.
1st October 2018	Horizon, Natural Resources Wales, Atkins, Jacobs	To discuss outstanding issues related to the bathing water compliance assessment and agree the additional work required to establish common ground.
17th October 2018	Horizon, Natural Resources Wales, Royal Haskoning DHV	To discuss outstanding issues related to the birds impacts in the Shadow Habitats Regulations Assessment and agree the additional work required to establish common ground.

2.1.2 In addition to these discussions, Horizon has engaged with Natural Resources Wales since 2013 through a number of technical meetings to

address specific project issues as they have arisen. A list of these meetings is provided below. All of these discussions have helped to inform this SoCG.

Table 2-2 Technical meetings held between Horizon and NRW

Meeting Date	Attendees	Purpose of Meeting
12th February 2013	Horizon Natural Resources Wales (as CCW and Environment Agency Wales) Isle of Anglesey County Council Marine Management Organisation Cefas Jacobs	Marine Environment Discussions of methodology and feedback on outputs from marine modelling and ecology work completed to date. Discussion of the ongoing marine survey work required.
17th October 2014	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	Groundwater and Surface Water Discussion of historical, on-going and proposed groundwater and surface water monitoring including on-going and proposed data collection.
24th November 2014	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	Noise and Vibration Modelling and Assessment To discuss and collect Regulators' initial comments on Horizon's proposed approach to noise and vibration modelling and assessment to support the EIAs, Environmental Permits and HRAs required for the Wylfa Newydd Project and associated development.
24th November 2014	Horizon Natural Resources Wales Isle of Anglesey County Council AMEC/Wood Jacobs	Air Quality Modelling and Assessment To discuss and collect Regulators' initial comments on Horizon's proposed approach to air quality modelling and assessment to support the EIAs, Environmental Permits and HRAs required for the Wylfa Newydd Project and associated development.
22nd January 2015	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	Marine Environment Update on marine modelling undertaken to date including wave modelling. Discussion of future assessment work planned including marine
4th March 2015	Horizon Natural Resources Wales Jacobs	Groundwater and Surface Water Discussion of the water environment assessment methodology including surface water and groundwater modelling
11th March 2015	Horizon Natural Resources Wales Isle of Anglesey County	Soils and Geology Discussions are to cover topic scope and interfaces with various subject areas,

Meeting Date	Attendees	Purpose of Meeting
	Council	defining the study area, baseline conditions, assessment criteria and methodologies, and likely mitigation measures. <u>Materials Management</u> Presenting approach to conventional materials and wastes management for the project; SWMP, PWMPs and MMP. <u>Fluvial and Coastal Geomorphology and Water Framework Directive</u> Discuss the existing baseline for the fluvial and coastal geomorphology and Water Framework Directive. Discuss the following key areas: method, local knowledge, NRW policies and the Water Framework Directive. Explanation of the link between coastal geomorphology and marine environment work stream.
2nd April 2015	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	<u>Marine Environment</u> Detailed presentation on marine modelling results and discussion on approach to future marine survey work and modelling.
7th May 2015	Horizon Isle of Anglesey County Council Gwynedd Council Conwy Council Natural Resources Wales Magnox Electric Jacobs	To present and discuss the proposed approach to Cumulative Impact Assessment. Views were sought from attendees on both the overall process and the individual stages, including input to the list of external project considered in the assessment.
27th May 2015	Horizon Isle of Anglesey County Council Jacobs	<u>Public Access and Recreation</u> Discussion of methodology, potential mitigation and enhancement measures that could be employed to mitigate the loss of the PRoW on the Wylfa Newydd Development Area, with particular focus on the Wales Coast Path
3rd July 2015	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	<u>Terrestrial and Freshwater Ecology</u> Discussion on approach to terrestrial ecology mitigation including mitigation proposals
16th July 2015	Horizon Natural Resources Wales Isle of Anglesey County Council	<u>Landscape and Visual</u> Presentation and discussion on draft Landscape and Environmental Masterplan (LEMP) phasing plans

Meeting Date	Attendees	Purpose of Meeting
	North Wales Wildlife Trust Jacobs	
3rd August 2015	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation Technical Advisory Group (TAG) Inaugural meeting of TAG to advise on development of compensation proposals for potential impacts on Tre'r Gof SSSI
14th and 25th September 2015	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	Groundwater and Surface Water Conference call with planning liaison team (14 September) and technical experts from NRW (25 September) to discuss the findings of the hydrological investigations completed at Tre'r Gof SSSI and to agree the proposed monitoring regime at and around the feature.
11th November 2015	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG
12th February 2016	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG
6th April 2016	Horizon Isle of Anglesey County Council Gwynedd Council Jacobs	Socio-economic Broad discussion on scope, methodology, baseline, progress and outcomes of the socio-economic assessment.
18th July 2016	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG
27th October 2016	Jacobs Natural Resources Wales	Air Quality Confirm the approach for selecting critical loads for ecological receptors, including study areas and ecological receptor selection.
14th December 2016	Horizon Natural Resources Wales Jacobs	Water Framework Directive To discuss the Preliminary WFD Assessment and NRW's comments on PAC2 and to agree a way forward for WFD on the Project.

Meeting Date	Attendees	Purpose of Meeting
13th February 2017	Horizon Natural Resources Wales Isle of Anglesey County Council	<u>Groundwater and Surface Water</u> Provide NRW with details of the hydrological monitoring and assessment of Cae Gwyn SSSI, status of the conceptual model, implications for DCO, and obtain feedback / comments from NRW
23rd February 2017	Horizon Natural Resources Wales	<u>Water Framework Directive</u> To discuss and agree the approach to WFD (WFD) assessment for the Wylfa Newydd Project.
3rd March 2017	Horizon Isle of Anglesey County Council Natural Resources Wales Public Health England Public Health Wales Ben Cave Associates Welsh Government Wales Health Impact Assessment Support Unit	<u>Health Impact Assessment</u> Progress update on Wylfa Newydd HIA and role of the Steering Group
16th March 2017	Horizon Natural Resources Wales Royal Haskoning Jacobs	<u>Marine Environment</u> To present the baseline for fish and fish-specific studies completed and to summarise the consultation carried out to date. To set out the pathways to effects on fish and discuss the approaches to assessing the effects for EIA, HRA and WFD. To discuss and agree on the relevant fish receptors which will be considered in the various assessments To discuss NRW's comments on reports submitted to date (baseline fish survey report, Lifetable report, Entrapment report, Survivability report).
5th April 2017	Horizon Natural Resources Wales Jacobs	<u>Water Framework Directive</u> To discuss NRW's comments on the Preliminary WFD Assessment and technical memos. To agree the format of the WFD Compliance Assessment. To discuss engagement with NRW and agree a way forward.
10th April 2017	Horizon Welsh Government Natural Resources Wales Isle of Anglesey County Council Jacobs	To understand the approach being taken to Cumulative Impact Assessment for the Wylfa Newydd Project, including the methodology being applied and the expected outcomes. The Reasonably Foreseeable Future Projects (RFFP) long-list will be presented and discussed to make

Meeting Date	Attendees	Purpose of Meeting
		sure there are no projects missing. The RFFP short-list will be presented along with the process used for moving from the long-list to the short-list and list of committed development. To understand the approach being taken to EIA for the DCO, including the expected format, content and structure of the ES. This will be a relatively high level discussion which will include a description of some of the key topics covered in the EIA and some key areas of uncertainty.
16th May 2017	Horizon Natural Resources Wales	Air Quality and Noise To review NRW comments and HNP responses
19th May 2017	Horizon Natural Resources Wales Jacobs Dwr Cymru Welsh Water	To discuss water supply for construction and operation of the site and to agree how and where any environmental effects should be assessed. To discuss proposals for discharge of foul water.
23rd May 2017	Horizon Natural Resources Wales Jacobs RHDV	Marine Environment Presentation and discussion of fish assessments relating to entrapment, underwater noise and temperature
25th May 2017	Horizon Natural Resources Wales Jacobs Independent	Water Framework Directive To continue discussions on WFD related topics and to present the approach to assessment.
14th June 2017	Horizon Natural Resources Wales Jacobs Isle of Anglesey County Council (EH) GeoMon	Soils and Geology To discuss the mitigation for the Porth Wnal Dolerite RIGS and discuss updates to the design.
16th June 2017	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs Public Health Wales Ben Cave Associates	Air Quality / Health Impact Assessment To present approaches to non-threshold effects for some pollutants in the assessment of air quality.
20th June 2017	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	Water Framework Directive To provide an update on WFD related activities and to hear NRW's feedback on the approach
28th June 2017	Horizon	Groundwater and Surface Water To present the latest groundwater modelling

Meeting Date	Attendees	Purpose of Meeting
	Natural Resources Wales AMEC Jacobs	and provide an opportunity for questions. To review the context of the WFD Groundwater Compliance Assessment, taking into account findings of the model.
11th July 2017	Horizon Natural Resources Wales Isle of Anglesey County Council AMEC/Wood Jacobs	Air Quality To discuss draft baseline air quality report and updated air quality modelling and assessment methodology report. Discuss relevant review comments received from NRW on these documents. Discuss any initial comments on the revised existing deposition and critical loads report Review and discuss latest modelling and assessment results (construction dust, construction plant/machinery emissions, operational combustion plant and project wide traffic emissions.
11th September 2017	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG
10th November 2017	Horizon Natural Resource Wales	Level 2 meeting with NRW
15th November 2017	Horizon Natural Resource Wales	SPA Workshop
16th November 2017	Horizon Natural Resource Wales	Construction water discharge to Nant Cemlyn
22nd November 2017	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG
5th December 2017	Horizon Natural Resource Wales	Environmental Workshop
5th December 2017	Horizon Natural Resource Wales	Marine Effects Technical Workshop
12th December 2017	Horizon Natural Resource Wales	Wylfa site ecological effects technical workshop
13th December 2017	Horizon Natural Resource Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG & HRA

Meeting Date	Attendees	Purpose of Meeting
21st June 2018	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG
30th October 2018	Horizon Natural Resources Wales Isle of Anglesey County Council Jacobs	SSSI Compensation TAG

3 Project Overview

3.1 Description of development

The Wylfa Newydd Project

3.1.1 The Wylfa Newydd Project includes:

The Enabling Works

3.1.2 The Enabling Works comprise the Site Preparation and Clearance Proposals (SPC Proposals) and the A5025 On-line Highway Improvements.

3.1.3 Horizon has submitted applications for planning permission for the Enabling Works under the Town and Country Planning Act 1990 to the Isle of Anglesey County Council (IACC) as local planning authority. The On-line Highway Improvements were granted planning permission on 13th July 2018 (ref: 27C106E/FR/ECON). The planning authority resolved to grant the SPC application subject to the signing of a legal agreement on the 5th September 2018. The position with the SPC application was summarised in the SPC Status Note submitted to the Examining Authority by Horizon at Deadline 1.

3.1.4 In order to maintain flexibility in the consenting process for the Wylfa Newydd DCO Project, the SPC Proposals have also been included in the DCO application. The A5025 On-line Highway Improvements are not part of the DCO application.

The Wylfa Newydd DCO Project

3.1.5 The Wylfa Newydd DCO Project comprises those parts of the Wylfa Newydd Project which are to be consented by a DCO, namely:

The Nationally Significant Infrastructure Project (NSIP)

- **Power Station**: the proposed new nuclear power station, including two UK Advanced Boiling Water Reactors, the Cooling Water System, supporting facilities, buildings, plant and structures, radioactive waste and spent fuel storage buildings and the Grid Connection;
- **Other on-site development**: including landscape works and planting, drainage, surface water management systems, public access works including temporary and permanent closures and diversions of public rights of way, new Power Station Access Road and internal site roads, car parking, construction compounds and temporary parking areas, laydown areas, working areas and temporary works and structures, temporary construction viewing area, diversion of utilities, perimeter and construction fencing, and electricity connections;
- **Marine works comprising**:
  - Permanent Marine Works: the Cooling Water System, the Marine Off-loading Facility, breakwater structures, shore protection works,

surface water drainage outfalls, waste water effluent outfall (and associated drainage of surface water and waste water effluent to the sea), fish recovery and return system, fish deterrent system, navigation aids and Dredging;

- Temporary Marine Works: temporary cofferdams, a temporary access ramp, temporary navigation aids, temporary outfalls and a temporary barge berth;

- **Off-site Power Station Facilities**: comprising the Alternative Emergency Control Centre (AECC), Environmental Survey Laboratory (ESL) and a Mobile Emergency Equipment Garage (MEEG); and

Associated Development

- the Site Campus within the Wylfa Newydd Development Area;
- temporary Park and Ride facility at Dalar Hir for construction workers (Park and Ride);
- temporary Logistics Centre at Parc Cybi (Logistics Centre);
- the A5025 Off-line Highway Improvements;
- wetland habitat creation and enhancement works as compensation for any potential impacts on the Tre'r Gof Site of Special Scientific Interest (SSSI) at the following sites:
  - Tŷ Du;
  - Cors Gwawr;
  - Cae Canol-dydd

3.1.6 The Power Station will be operational for approximately 60 years after which it will be decommissioned. The buildings will be removed from the site and all spent fuel and radioactive waste managed. The end state of the site will be agreed with the regulators.

Licensable Marine Activities

3.1.7 The Licensable Marine Activities comprise the Marine Works and the Deep Disposal (i.e. the disposal of material from dredging at the Disposal Site at Holyhead North). The Licensable Marine Activities will be consented under a Marine Licence; however, the Marine Works would also be consented under the DCO.

3.1.8 A more detailed description of development is contained at Chapter 4 of the Planning Statement (APP-406).

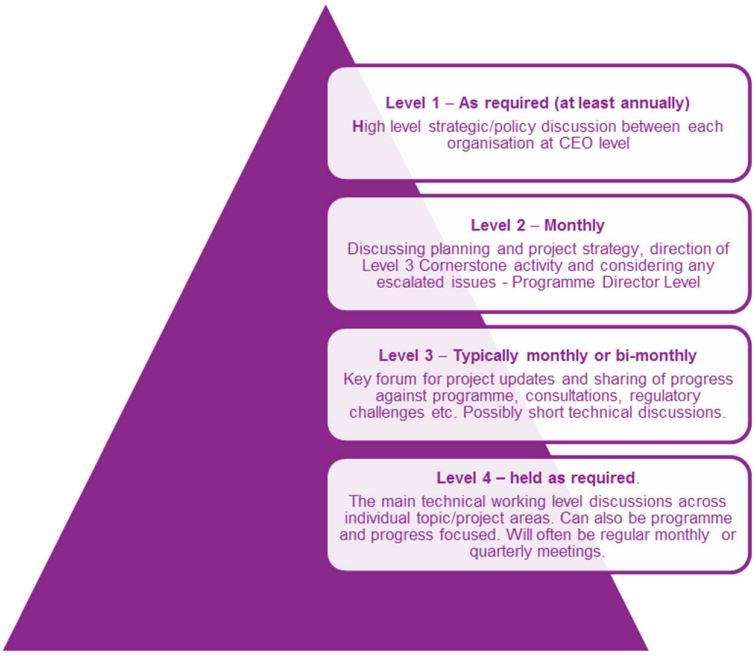
3.2 Consultation with NRW

3.2.1 Horizon has undertaken engagement with NRW throughout the pre-application period.

3.2.2 Full details are provided in the Consultation Report (APP-037).

3.2.3 Horizon has an overarching engagement framework in place and although not formally agreed with NRW, Officers have attended meetings at the different levels as illustrated in Figure 3-1 below:

Figure 3-1 Wylfa Newydd Engagement Framework



3.2.4 Following Horizon's Stage Two Pre-Application Consultation, Horizon set up a series of Level 4 technical meetings on specific issues.

3.2.5 DCLG Guidance recognises that the topics on which agreement might be reached in any particular instance (or those areas where agreement might not be reached) will depend on the matters at issue and the circumstances of the case.

3.2.6 Horizon shared with NRW, amongst other statutory consultees, the draft application documents to support the DCO application that they requested in September and October 2017. Specifically, NRW were provided with copies of the following documents:

- Relevant Environmental Statement chapters and appendices
- Shadow Habitat Regulations Assessment
- Water Framework Directive Compliance Assessment
- Code of Construction Practice and sub-CoCPs
- Code of Operational Practice
- Landscape and Habitat Management Strategy

3.2.7 NRW provided comments on these documents and the comments made were taken into account in the development of final documents to support the DCO. These documents also served to develop, and inform on-going discussions associated with, this SoCG.

4 Current Position

4.1.1 The following schedule sets out the position of NRW alongside Horizon's position following issue and review of the DCO application.

4.1.2 It sets out matters by topic area and provides an indication of whether the issue is agreed (green), not agreed (red) or ongoing (amber).

4.1.3 For ongoing issues, the intention is to provide a final position in subsequent versions of this SOCG.

4.1.4 The SoCG table below includes references to NRW's Written Representation, to assist the Examining Authority. For clarity, Horizon has not had sight of these at the time of submission of this draft SoCG.

Table 4-1 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within Environmental Statement Volume C – Project Wide Effects

Environmental Statement Volume C – Project Wide Effects							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Air Quality							
NRW1	Baseline / Methodology / Modelling	Protected sites (SAC / SPA / SSSI)	APP-091 6.3.4 ES Volume C – Project-wide effects C4 – Air Quality Effects of Traffic	Agreed	It is agreed that sufficient information is provided in the ES and supporting information to inform the assessment of impact for air quality on protected sites.		No further action
NRW2	Assessment / Mitigation	Protected sites (SAC / SPA / SSSI)	APP-091 6.3.4 ES Volume C – Project-wide effects C4 – Air Quality Effects of Traffic	Agreed	It is agreed that protected sites (including Malltraeth Marsh SSSI, Coedydd Afon Menai SSSI, and Beddmanarch-Cymyran SSSI) will not be damaged by the emissions from construction or operational traffic.		No further action
Waste							
NRW3	Baseline / Methodology / Modelling	Waste generation	APP-093 6.3.6 ES Volume C – Project-wide Effects C6 – Waste and Materials Management APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	Detailed information is not yet available in ES chapter C6 to demonstrate how construction generated waste will be managed. It would be appropriate for further detail on waste management methodologies to be set out in a Site Waste Management Plan (SWMP) and governed through the Code of Construction Practice (CoCP) which should be approved by the discharging authority.	Horizon's proposals for managing waste during the construction phase are set out in section 9 (pages 58-63) of the Wylfa Newydd Code of Construction Practice (APP-414). This document will be updated at Deadline 4 to include a commitment to produce a Site Waste Management Plan.	NRW to review the Wylfa Newydd CoCP submitted at Deadline 4.
NRW4	Assessment	Waste generation	APP-093 6.3.6 ES Volume C – Project-wide Effects C6 – Waste and Materials Management APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	The assessment of available waste management capacity will need to be updated prior to and throughout the construction phase, to ensure that appropriate decisions on waste management routes are taken for the duration of the scheme. The principles of the Waste Hierarchy will need to be applied at all times. The above will need to be set out in a Site Waste Management Plan within the CoCP.	Horizon's proposals for managing waste during the construction phase are set out in section 9 (pages 58-63) of the Wylfa Newydd Code of Construction Practice (APP-414). This document will be updated at Deadline 4 to include a commitment to produce a Site Waste Management Plan.	NRW to review the Wylfa Newydd CoCP submitted at Deadline 4.
NRW5	Mitigation	Waste generation	APP-093 6.3.6 ES Volume C – Project-wide Effects C6 – Waste and Materials Management APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	Detailed waste management methodologies should be set out in the Site Waste Management Plan (SWMP) which will be governed through the Code of Construction Practice (CoCP) and the Main Site Sub-CoCP) which will need to be approved by the discharging authority.	Horizon's proposals for managing waste during the construction phase are set out in section 9 (pages 58-63) of the Wylfa Newydd Code of Construction Practice (APP-414). This document will be updated at Deadline 4 to include a commitment to produce a Site Waste Management Plan.	NRW to review the Wylfa Newydd CoCP submitted at Deadline 4.

Table 4-2 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within Environmental Statement Volume D – Main Site

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Air Quality							
NRW6	Baseline / Methodology / Modelling	Construction – protected sites (SAC / SPA / SSSI)	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality	Agreed	It is agreed that sufficient information is provided in the ES and supporting information to inform the assessment of impact on protected sites during construction.		No further Action
NRW7	Baseline / Methodology / Modelling	Operational combustion (back-up generators) – protected sites (SAC / SPA / SSSI)	APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality APP-141 6.4.22 ES Volume D – WNDA Development App D5-3 – Main Site Operational Dispersion – EIA – Dispersion Modelling Report of the Emissions to Air Arising from Operation Combustion Plant	Ongoing	NRW do not agree that the modelling has considered the worst-case scenario. Further information and / or modelling is required to demonstrate whether the modelled outputs represent the worst-case scenario. NRW consider that the impacts of the Operational Combustion emissions will be subject to an Environmental Permit and may be more appropriately assessed under that regime.	Horizon has prepared a response to the Schedule 5 notice for additional information for the Environmental Permit issued by NRW on 17 October 2018 which addresses NRW's concerns regarding modelling of the worst-case scenario for operational combustion emissions. The response was issued to NRW on the 13th November 2018. Although this is being addressed via the Environmental Permit regime, it also applies to the DCO application.	NRW to consider the information issued in response to the Schedule 5 request.
NRW8	Assessment	Construction dust – protected sites (SAC / SPA / SSSI)	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that detailed monitoring and mitigation proposals for dust generated during the construction works should be approved by the discharging authority, in consultation with NRW. NRW consider that construction dust can be managed to avoid adverse effects on protected sites.	Horizon has set out the proposals for monitoring and mitigating dust during construction in the Wylfa Newydd Code of Construction Practice (APP-414, section 7.5 on pages 44-45) and the Main Power Station Site sub-CoCP (APP-415, section 7.6 on pages 19-21). Since the submission of the DCO application, Horizon has shared proposals with IACC and NRW to provide further detail in respect of the following: • Number, location and type of monitoring stations; • Monitoring data management system and web access to data; • Monitoring thresholds to act as trigger levels; • Further details of the response if a trigger level is exceeded; and • Compliance targets. These proposals are now included in Section 7 of the updated Main Power Station Site sub-CoCP and Section 7 of the updated Wylfa Newydd CoCP that have been submitted at Deadline 2. These matters are now therefore submitted for	Provision for including submission of the detailed dust monitoring and mitigation measures to NRW for agreement.

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
						approval as part of the DCO application rather than being submitted for approval by IACC at a later date. The exception to this is the detail in respect of the micro-siting of the monitoring stations which will be submitted for approval by IACC at a later date. As mentioned in the Wylfa Newydd CoCP (APP-414), the CoCP and the Main Power Station Site sub-CoCP (APP-415) secure Horizon's commitment to mitigating construction-related environmental effects, including dust, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'air quality management strategy' contained in the Wylfa Newydd CoCP and the Main Power Station Site sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	
NRW9	Assessment	Construction emissions – Cemlyn Bay SSSI / SAC	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality	Agreed	NRW agree with the conclusions of the Shadow HRA and ES that emissions from construction plant and machinery will not have adverse effects on site integrity of Cemlyn Bay SAC / SSSI.		No further action
NRW10	Assessment	Construction emissions – Tre'r Gof SSSI	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that detailed mitigation will need to be approved by the discharging authority, in consultation with NRW, to ensure that the emissions from construction plant and machinery will not damage the SSSI features.	Horizon have set out the proposed mitigation measures to minimise vehicle and plant emissions during construction in section 7.5 of the Wylfa Newydd Code of Construction Practice (APP-414, pages 40-41) and section 7.5 of the Main Power Station Site sub-CoCP (APP-415, pages 18-19). An amended version of the CoCP and sub-CoCP will be submitted at Deadline 2 which will include improved vehicle and plant emissions commitments.	NRW to review amended CoCP and sub-CoCPs

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW11	Assessment	Construction emissions – Cae Gwyn SSSI	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW does not agree with the conclusion of the ES that habitat changes as a result of the exceedances would not constitute damage to the SSSI features. Additional information is required to demonstrate that Cae Gwyn SSSI would not be damaged by the predicted exceedances	Horizon has committed to additional mitigation regarding reducing the emissions of NOx from construction plant in the DCO submission which will act to reduce adverse air quality effects at all ecological receptors. This will be secured in the revised Main Power Station Site sub-CoCP (APP-415) to be submitted at Deadline 2. A revised air quality assessment screens out Cae Gwyn SSSI from requiring further ecological assessment in all aspects except nitrogen deposition, which is only above critical load value during construction year 2 (peak earthworks and marine works), and only by 2%. This revised assessment will be submitted to the Examining Authority at Deadline 3.	NRW to review amended CoCP and sub-CoCPs
NRW12	Assessment	Construction – other protected sites (SAC / SPA / Ramsar / SSSI)	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality	Agreed	It is agreed, except in respect of Cae Gwyn as noted in SOCG issue NRW11, that the main site construction emissions will not have adverse effects on protected sites.		No further action
NRW13	Assessment	Operational (back-up generators) – protected sites (SAC / SPA / SSSI)	APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality APP-141 6.4.22 ES Volume D – WNDA Development App D5-3 – Main Site Operational Dispersion – EIA – Dispersion Modelling Report of the Emissions to Air Arising from Operation Combustion Plant	Ongoing	In view of SOCG issue NRW7 in relation to modelling of the operational combustion emissions, NRW is not in agreement with the predicted emissions outlined in the ES and Shadow HRA. NRW is therefore not in agreement with the conclusions. NRW consider that the impacts of the Operational Combustion emissions will be subject to an Environmental Permit and may be more appropriately assessed under that regime.	As per response to NRW7, Horizon has prepared a response to the Schedule 5 notice for additional information for the Environmental Permit issued by NRW on 17 October 2018 which addresses NRW's concerns regarding modelling of the worst-case scenario for operational combustion emissions. The response was issues to NRW on the 13th November 2018. Although this is being addressed via the Environmental Permit regime, it also applies to the DCO application.	NRW to consider the information issued in response to the Schedule 5 request.
NRW14	Mitigation	Construction dust – protected sites (SAC / SPA / SSSI)	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that detailed dust mitigation measures will need to be set out in the Main Power Station Site Sub-CoCPs which should be approved by the discharging authority in consultation with NRW.	Horizon has set out the proposed dust mitigation measures for construction in the Wylfa Newydd Code of Construction Practice (APP-414, section 7.5 on pages 44-45) and the Main Power Station Site sub-CoCP (APP-415, section 7.6 on pages 19-21). As mentioned in the Wylfa Newydd CoCP (APP-414), the CoCP and the Main Power Station Site sub-CoCP (APP-415) secure Horizon's commitment to mitigating construction-related environmental effects, including dust, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. It is Horizon's view that the 'air quality management strategy' contained in the Wylfa Newydd CoCP	NRW to review amended CoCP and sub-CoCPs

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
						and the Main Power Station Site sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. Since the submission of the DCO application, Horizon has shared proposals with IACC and NRW to provide further detail in respect of the following: • Number, location and type of monitoring stations; • Monitoring data management system and web access to data; • Monitoring thresholds to act as trigger levels; • Further details of the response if a trigger level is exceeded; and • Compliance targets. These proposals are now included in Section 7 of the updated Main Power Station Site sub-CoCP and Section 7 of the updated Wylfa Newydd CoCP that have been submitted at Deadline 2. These matters are now therefore submitted for approval as part of the DCO application rather than being submitted for approval by IACC at a later date. The exception to this is the detail in respect of the micro-siting of the monitoring stations which will be submitted for approval by IACC at a later date. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW15	Mitigation	Construction emissions – Tre'r Gof SSSI	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology	Ongoing	Table 9-10 of ES chapter D9 states that an additional mitigation measure (regime of annual cutting of vegetation) will be undertaken to reduce the increased biomass which is predicted to occur as a result of the emissions. NRW consider that detailed mitigation should be set out in the Sub-CoCP and approved by the discharging authority in consultation with NRW.	The Main Power Station Site sub-CoCP (APP-415) secures the additional mitigation of annual vegetation cutting (paragraph 11.15.1). As mentioned in the Wylfa Newydd CoCP (APP-414), the CoCP and the Main Power Station Site sub-CoCP (APP-415) secure Horizon's commitment to mitigating construction-related environmental effects, including emissions, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'air quality management strategy' contained in the Wylfa Newydd CoCP and the Main Power Station Site sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	NRW to review amended CoCP and sub-CoCPs

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW16	Mitigation	Construction emissions – Cae Gwyn SSSI	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology	Ongoing	NRW advise that additional mitigation measures may be needed to mitigate possible damage to the SSSI features. In view of the nature of the SSSI features and underlying hydrogeology, it is unclear if mitigation measures (e.g. vegetation cutting) can feasibly mitigate the predicted impacts. Note that the Southern basin which is most vulnerable to nutrient pollution is not amenable to harvesting.	Horizon has committed to additional mitigation to reduce the emissions of NOx from construction plant which will act to reduce adverse air quality effects at all ecological receptors. This will be secured in the revised Main Power Station Site sub-CoCP to be submitted at Deadline 2. The mitigation comprises a commitment for 90% of Non Road Mobile Machinery (NRMM) to meet stage IV emissions standards and 10% of NRMM to meet stage IIIB emissions standards. In addition marine plant will comply with Tier III International Maritime Organisation (IMO) emissions standards. A revised air quality assessment screens out Cae Gwyn SSSI from requiring further ecological assessment in all aspects except nitrogen deposition, which is only above critical load value during construction year 2 (peak earthworks and marine works), and only by 2%. This revised assessment will be submitted to the Examining Authority for examination at Deadline 3.	NRW to review amended CoCP and sub-CoCPs
Tre'r Gof SSSI							
NRW17	Assessment	Air quality effects on Tre'r Gof SSSI	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-124 6.4.5 ES Volume D – WNDA Development D5 – Air Quality	Agreed	For air quality effects on Tre'r Gof SSSI please see SOCG issues NRW10 and NRW15 above in the Air Quality section		No further action
NRW18	Baseline / Methodology / Modelling	Baseline hydrological and hydrogeological information – Conceptual Site Model	APP-158 6.4.30 ES Volume D – WNDA Development App D8-5 – Tre'r Gof Hydro ecological Assessment	Do not agree	NRW do not agree that sufficient baseline information is available to inform the modelling and assessment of impact. NRW do not agree that the Conceptual Site Model produced is sufficient to undertake meaningful assessment of risks to the SSSI from dewatering. We welcome acknowledgement in NRW19 of the importance of groundwater contribution to the site however. We advise that available data is re-examined to refine baseline understanding, and if necessary augmented, to the extent required to inform monitoring and mitigation of the potential effects of dewatering activities at the site, both during construction and operation. Please see section 7.13 of NRW's Written Representations	Horizon does not agree that there is insufficient baseline information to inform the modelling and assessment of impact at Tre'r Gof. Within the Tre'r Gof catchment, a number of monitoring programmes have been undertaken since 2012 as set out APP-158. We note that NRW have recognised in past meetings that there will be a degree of uncertainty in the conceptual model. This is a large amount of monitoring and baseline data in a catchment which covers only 1km^2 with Tre'r Gof SSSI itself occupying only 0.1km^2. Horizon also recognises that, even with the large amount of monitoring installations in the catchment, the hydrogeology and hydro-ecology of Tre'r Gof is complex and has explicitly recognised uncertainty in the Tre'r Gof conceptual model based on the data. We note that NRW are in broad agreement with the modelling	No further action identified

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						approach for the wider zone of influence and accept the modelling outputs are likely to be of the right order of magnitude at a regional scale. Horizon would agree that the model and monitoring cannot fully characterise the small, but critical, groundwater flows that maintain the rare GWDTE assemblages and have relied upon site specific interpretation to understand these in detail.	
NRW19	Assessment	Damage to SSSI features	APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater	Ongoing	NRW agree with the conclusion in the ES that there may be significant effects on Tre'r Gof SSSI. Impacts on the SSSI include impacts on water quantity (changes in catchment) and water quality (run-off from mounds and changes in drainage). NRW consider that dewatering has the potential to damage the SSSI interest. We welcome recognition that groundwater provides critical support to the SSSI and the stated re-assessment of the potential impacts of dewatering on the site. However, we have not received the additional information to date, and therefore maintain that sufficient assessment of the risks from dewatering to the SSSI has not been provided to date. Please see section 7.13 in NRW's Written Representations	As described in Chapter D8 of the Environmental Statement (APP-127, paragraphs 8.5.53 to 8.5.56), Horizon's modelling predicts a maximum drawdown at Tre'r Gof compared to baseline from dewatering of the Power Station site of up to 0.51m to 0.88m, for the wet and dry periods respectively. This is at its greatest extent during the construction period. Post construction, during the long-term operation of the Power Station, the model predicts that there is only minor drawdown on Tre'r Gof. Horizon has assessed this as a minor adverse dewatering impact. The magnitude of change of the construction works on bedrock groundwater inputs to streams that flow into the high value Tre'r Gof SSSI is considered to be small with an overall minor adverse effect, meaning it is not significant. The key area where interpretation of significant impact differs between Horizon and NRW is the importance of direct bedrock groundwater influence on the qualifying interests of Tre'r Gof SSSI. Horizon continues to work with NRW in respect of this issue including through engagement relating to Water Abstraction Licence applications.	Horizon to prepare and NRW to review the Hydrogeological Impact Assessment expected to be submitted in February 2019.
NRW20	Mitigation	Damage to SSSI features	APP-128 6.4.9 ES Volume D – WNDA Development APP-128 D9 – Terrestrial and Freshwater Ecology APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW do not agree that all reasonable and feasible mitigation have been considered to mitigate the predicted impacts on Tre'r Gof SSSI. We welcome proposals for monitoring and mitigation of risks to groundwater supply from activities on site, including dewatering. NRW is awaiting the additional information to be provided by Horizon with respect to additional mitigation proposed.	A hydrogeological impact assessment (HIA) which will govern dewatering is under preparation for the abstraction licence application(s). A dewatering monitoring and mitigation strategy is under preparation as a key part of the HIA and is a requirement of the abstraction licence permit application. This will include the potential for direct and indirect impact upon Tre'r Gof of dewatering of bedrock groundwater. The abstraction licence is expected to be submitted to NRW in February/March 2019.	Horizon to prepare and NRW to review the Hydrogeological Impact Assessment expected to be submitted in February/March 2019.

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Tre'r Gof SSSI Compensation							
NRW21	Baseline / Methodology / Modelling	Fen creation and enhancement	APP-190 6.4.56 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume I APP-191 6.4.57 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume II	Ongoing	NRW do not agree, in the absence of sufficient and robust baseline hydrological and hydrogeological information, that there is sufficient information to inform the preparation and design of fen habitat creation. No hydrological baseline information for the Cors Gwawr and Cae Canol-dydd compensation sites is provided in the ES; however, this information is critical in informing the likely success of the compensation.	Due to land access no baseline information was available for inclusion in the DCO application when it was submitted. Baseline hydrological and hydrogeological monitoring has since been installed at the Cors Gwawr and Cae Canol-dydd SSSI compensation sites and data is currently being collected. The results will be shared with NRW and the DCO examination at Deadline 6. The outline design of the compensation fen habitat is based on detailed vegetation surveys and preliminary soil and hydrology surveys. The outline design will be refined as further detailed soil and hydrology data become available to ensure the schemes are deliverable.	Baseline hydrological and hydrogeological monitoring data from the Cors Gwawr and Cae Canol-dydd SSSI compensation sites.
NRW22	Assessment	Fen creation and enhancement	APP-190 6.4.56 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume I APP-191 6.4.57 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume II	Ongoing	NRW do not agree, based on the available information, that it can be concluded that the fen habitat creation works will deliver sufficient compensation in terms of habitat quality (type of fen) and quantity (extent of fen). Please see section 7.14 in NRW's Written Representations	Initial hydrogeological data has been shared with NRW. Whilst it is acknowledged that it is insufficient on its own to conclude that the full extent of the fen habitat creation can be delivered, it indicates that the sites are suitable for fen habitat creation. The ongoing monitoring data will be used to inform the detailed design to maximise the amount of fen habitat that can be created. Horizon is confident that, with additional data informing the application of a gradual, phased, adaptive approach to the design and implementation of the compensation works, the proposals will result in the establishment of high quality habitat to adequately compensate for the predicted effects on Tre'r Gof SSSI. Discussions with NRW will continue on the emerging detailed design.	Baseline hydrological and hydrogeological monitoring data from the Cors Gwawr and Cae Canol-dydd SSSI compensation sites.
NRW23	Mitigation	Fen creation and enhancement	APP-190 6.4.56 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume I APP-191 6.4.57 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume II APP-415 8.7 Main Power Station Site sub-CoCP	Agreed	It is agreed that there will need to be an adaptive management strategy (APP-415, paragraph 11.7.2, page 38-39) focussed on delivering the agreed quantity and quality of compensation, given the uncertainties inherent in habitat creation schemes.		No further action

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NRW24	Baseline / Methodology / Modelling	Environmental impacts of fen creation works	APP-137 6.4.18 ES Volume D - WNDA Development App D1-2 Ecological Compensation Sites: Assessment of Environmental Effects APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	No baseline information was available for the sites (including hydrological / hydrogeological data or protected species information). It is agreed that pre-commencement surveys will need to be undertaken to inform the detailed mitigation (APP-415, paragraph 11.7.2 page 38-39). In terms of flood risk, a backwater analysis will need to be carried out to determine the extent of water level increases for a range of events (including the more frequent events). Water tables levels will be increased and will have an impact on land drainage which will need to be managed – see Mitigation. Detailed mitigation measures will need to be set out in a detailed Sub-CoCP and approved by the discharging authority	Horizon have undertaken a Flood Consequences Assessment for the Ecological Compensation Sites which forms Annex 2 of APP-137. Paragraph 1.12.67 states that an adaptive management approach would be followed such that there would be no detrimental change to flood risk to the Corsydd Mon SAC or the Cors Bodeilio SSSI (also a component of the Corsydd Mon SAC). These are the only two receptors at risk of flooding from the Ecological Compensation Sites.	NRW to confirm the FCA is sufficient.
NRW25	Assessment	Environmental impacts of fen creation works	APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that impacts on environmental receptors, through agreement of a detailed Sub-CoCP, to be approved by the discharging authority in consultation with NRW, can be ruled out.	Horizon considers that the proposed mitigation measures for the Ecological Compensation Sites, secured in section 11.7 of APP-415, are sufficient. Amended versions of these documents have been submitted at Deadline 2.	NRW to review amended CoCP and sub-CoCPs
NRW26	Mitigation	Environmental impacts of fen creation works	APP-190 6.4.56 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume I APP-191 6.4.57 ES Volume D – WNDA Development App D9-23 – SSSI Compensation Strategy – Volume II	Ongoing	NRW consider that through agreement of a detailed Sub-CoCP to be approved by the discharging authority in consultation with NRW, impacts on other environmental receptors can be mitigated.	Proposed mitigation measures for the Ecological Compensation Sites are secured in section 11.7 of APP-415 which is a control document.	SSSI Compensation Sites sub-CoCP

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Cae Gwyn SSSI							
NRW27	Assessment	Air quality effects	N / A	Ongoing	For air quality effects on Cae Gwyn SSSI please see SOCG issues NRW11 and NRW16 above in the Air Quality section		Please see actions for NRW 11 and NRW16
NRW28	Baseline / Methodology / Modelling	Impacts on water quality and water quantity	APP-159 6.4.31 ES Volume D – WNDA Development App D8-6 – Cae Gwyn Hydroecological Assessment APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW do not agree with the Conceptual Site Model undertaken for Cae Gwyn SSSI. The baseline data for Cae Gwyn is insufficient and, as a result, the Conceptual Site Model is flawed. NRW is in general agreement with the groundwater modelling undertaken. However, it should be noted that the groundwater model is appropriate on a regional scale only. Despite the above disagreement on the CSM, NRW considers that the risk of impact to Cae Gwyn is low. Please see section 7.15in NRW's Written Representations	Groundwater level data and water quality sampling of surface water and shallow groundwater were carried out for several years in two shallow/weathered bedrock groundwater monitoring boreholes installed within the vicinity of Cae Gwyn SSSI, in piezometers installed into the peat and soils within the four basins identified in Cae Gwyn SSSI, on Outfall channel / Nant Caerdegog Isaf, Nant Caerdegog Isaf (800m downstream), ponds and drains. The conceptual model confirms that this site is at least partly supported by bedrock groundwater, particularly during the wetter winter months. The bedrock groundwater models show the groundwater drawdown for the construction phase dewatering would be up to 0.02m at the north of the SSSI. We note that NRW accept the broad outputs of the model regarding regional drawdown, but that this cannot address detailed site specific impacts. As such we agree with NRW that the risk of impact to Cae Gwyn is low. Nonetheless monitoring is secured in the Main Power Station Site sub-CoCP which will monitor for any effects from the dewatering to confirm or otherwise the impacts on Cae Gwyn and allow for mitigation needs to be assessed (APP-415, paragraph 10.4.6, page 31).	Horizon and NRW to continue discussions on groundwater modelling.
NRW29	Assessment	Impacts on water quality and water quantity	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	It is agreed that Cae Gwyn SSSI is unlikely to be damaged by changes to water quantity (including dewatering) or by changes to water quality. This conclusion is on the basis of detailed monitoring and mitigation being set out in a detailed Sub-CoCP and approved by the discharging authority.	Although additional mitigation measures (APP-128, Table D9-10) are proposed to mitigate hydrological impacts to Cae Gwyn SSSI, the ES concludes that there would be only a minor effect to Cae Gwyn SSSI (APP-128, paragraph 9.5.85). Proposed mitigation measures for water quality impacts at Cae Gwyn SSSI are secured in APP-414 (paragraph 10.4.1) and APP-415 (paragraph 10.2.11 and 11.16.1) which are control documents.	NRW to review amended CoCP and sub-CoCPs.
NRW30	Mitigation	Impacts on water quality and water quantity	APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	Detailed monitoring and mitigation measures will need to be set out in the sub-CoCP and approved by the discharging authority in consultation with NRW. It is agreed that monitoring should be undertaken during the main construction phase to validate the predictions of the groundwater model.	Ground water monitoring is proposed and secured in the Main Power Station Site sub-CoCP which will monitor for any effects from the dewatering to confirm or otherwise the impacts on Cae Gwyn and allow for mitigation needs to be assessed (APP-415, paragraph 10.4.6, page 31).	Groundwater monitoring and mitigation proposals.

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European and Nationally protected species							
NRW31	Baseline / Methodology / Modelling	Baseline surveys	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology	Agreed	It is agreed that sufficient baseline information is presented in the ES to inform the impact assessment for European Protected Species (bats, otters, great crested newts, cetaceans), national fully protected species (water voles, red squirrels) and Schedule 1 listed birds (chough, barn owl) which may be affected as a result of the project.		No further action
NRW32	Assessment	Impacts on protected species	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-187 6.4.53 ES Volume D – WNDA Development App D9-20 – Draft Bat Mitigation Licence APP-188 6.4.54 ES Volume D WNDA Development App D9-21 – Draft Great Crested Newt Licence APP-335 6.7.32 ES volume G – A5025 Off-line Highway Improvements App G9-11 – A5025 Draft Great Crested Newt Mitigation Licence APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that, subject to the agreement of detailed mitigation measures, to be approved by the discharging authority in consultation with NRW, that the project is unlikely to be detrimental to the Favourable Conservation Status of protected species. Impacts on protected species may be subject to species derogation licences from NRW. The DCO application includes draft European Protected Species mitigation licence applications submitted in support of the application for development consent (Wylfa Newydd Development draft bat mitigation licence application APP-187; Wylfa Newydd Development draft great crested newt mitigation licence application APP-188; A5025 draft great crested newt mitigation licence application APP-335). See SOCG issue NRW33.	Horizon considers that the mitigation measures for European Protected Species, secured in the Main Power Station Site sub-CoCP (APP-415) in the respective sections for each species, are sufficient.	NRW to review amended CoCP and sub-CoCPs.

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SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW33	Mitigation	Mitigating impacts on protected species	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that the outline mitigation measures identified in ES chapter D9 are appropriate and that detailed mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority in consultation with NRW For terrestrial protected species, NRW does not agree that the monitoring proposals are appropriate to inform long-term management of the affected species. NRW are awaiting a note updating Horizon's monitoring proposals to address this issue	Mitigation measures for European Protected Species are secured in the Main Power Station Site sub-CoCP (APP-415) in the respective sections for each species. Horizon has agreed to amend the monitoring proposals and these will be included in the Main Power Station Site sub-CoCP (APP-415) which will be submitted at Deadline 2. The amendments will bring the monitoring proposals in line with discussions held with NRW during a teleconference on 14th September 2018.	NRW to review amended CoCP and sub-CoCPs.
Migratory & Marine Fish							
NRW34	Baseline / Methodology / Modelling	Migratory fish Section 7 fish	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Agreed	It is agreed that sufficient baseline information is presented in the ES to inform the impact assessment.		No further action
NRW35	Assessment	Migratory fish Section 7 fish	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that, subject to the agreement of detailed mitigation measures set out in a detailed Sub-CoCP and CoOP, and approved by the discharging authority in consultation with NRW, that the project is unlikely to have significant impacts on migratory fish and / or Section 7 fish.	As mentioned in the Wylfa Newydd CoCP (APP-414), the CoCP and the Main Power Station Site sub-CoCP (APP-416) secure Horizon's commitment to mitigating construction-related environmental effects, including impacts on fish, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'ecology and landscape management strategy' contained in the Wylfa Newydd CoCP and the Marine Works sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	NRW to review amended CoCP and sub-CoCPs.
NRW36	Mitigation	Migratory fish Section 7 fish	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and	Ongoing	It is agreed that the outline mitigation measures identified in ES chapters D9 and D13 are appropriate. NRW consider that the detailed mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority, in	As mentioned in the Wylfa Newydd CoCP (APP-414), the CoCP and the Main Power Station Site sub-CoCP (APP-416) secure Horizon's commitment to mitigating construction-related environmental effects, including impacts on fish, demonstrating	NRW to review amended CoCP and sub-CoCPs.

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
			Freshwater Ecology APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment		consultation with NRW,	that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'ecology and landscape management strategy' contained in the Wylfa Newydd CoCP and the Marine Works sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	
Marine environment- benthic ecology							
NRW37	Baseline / Methodology / Modelling	Main site – impacts on benthic Annex I and Section 7 habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Agreed	It is agreed that sufficient baseline information, and modelling undertaken, is presented in the ES to inform the assessment of impact on benthic habitat.		No further action
NRW38	Baseline / Methodology / Modelling	Holyhead North – impacts on benthic Annex I habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Ongoing	It is agreed that, although there is limited information on the extent of benthic habitats at the disposal site (and subject to the requirements explained below), that there is sufficient baseline information presented in the ES to inform the impact assessment and to identify appropriate mitigation. NRW consider that pre-commencement surveys of the disposal site will be required for the areas that will be used for rock dumping in order to ensure avoidance of areas of Annex 1 reef (notably *Sabellaria* reef). Sufficient information is already present for sediment disposal areas.	The ES (APP-132, paragraphs 13.7.48 – 13.7.58) considers that any loss of S*abellaria* reef due to rock disposal would not be noticeable and no further mitigation or monitoring is proposed.	Horizon and NRW to continue discussions.
NRW39	Assessment	Main site – impacts on benthic Annex I and Section 7 habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Not agreed	NRW do not agree with the conclusions of the ES. NRW do not consider that Horizon have assessed all of the impacts on intertidal and subtidal habitats cumulatively. These include the direct and indirect effects during construction and during operation. The ES states that there will be 'moderate adverse effect from the direct loss of subtidal and intertidal habitats of conservation importance under the footprint of the Marine Works'. However, NRW disagree with the downgrading from Moderate adverse to negligible as a result of the mitigation (Marine Ecological Enhancements). See SOCG issue	The marine environment assessment presented in chapter D13 of the Environmental Statement (APP-132) identified a total of 13 impact pathways via which potential effects to benthic habitats could occur within the Wylfa Newydd Development Area. The assessment presented in section 13.6 of chapter D13 (APP-132), concluded that the Wylfa Newydd Project could potentially result in two significant effects representing a medium magnitude of change and a moderate adverse effect to benthic habitats. Firstly, from the direct loss of habitats and species under the footprint of the Marine Works, and secondly, from the potential introduction of invasive non-native species during Main Construction. When taking into consideration the	No further action identified

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
					NRW50 below.	additional mitigation presented in section 13.8 of chapter D13 of the Environmental Statement (APP-132), it was concluded that in both cases, the residual effects would represent a small magnitude of change and a minor non-significant effect. Two additional minor non-significant effects to benthic habitats were identified due to the discharge of Cooling Water and the associated thermal and Total Residual Oxidants (TRO) (see paragraphs 13.6.679, 13.6.690, 13.6.784 and 13.6.789 of chapter D13 of the Environmental Statement) (APP 132). No other topic assessments presented within the Environmental Statement identified effects to benthic habitats. It is noted that 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). Whilst effects of smaller magnitude may occur further afield, these would remain reasonably localised, covering a subtidal and intertidal area of 4.2ha and 0.3ha, respectively (see paragraphs 13.6.679 and 13.6.690 of chapter D13 of the Environmental Statement) (APP-132). The subtidal and intertidal habitats (including those of conservation importance) that would be affected cumulatively by the Project are considered common on a regional scale and therefore any loss would not result in wider effects on the structure and function of benthic habitats. Consequently, there is not considered to be a combined effect to benthic habitats. Horizon's position regarding the mitigation items is provided in issue NRW50 below.	
NRW40	Assessment	Holyhead North – impacts on benthic Annex I habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Ongoing	NRW consider that, subject to detailed mitigation measures being approved by the discharging authority in consultation with NRW, that the project is unlikely to have significant impacts on Annex I habitat.	The ES (APP-132, paragraphs 13.7.48 – 13.7.58) considers that any loss of S*abellaria* reef due to rock disposal would not be noticeable and no further mitigation or monitoring is proposed.	Horizon and NRW to continue discussions.

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW50	Mitigation	Main site – impacts on benthic habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment WN0902-JAC-PAC-TEC-00011 Memorandum on Marine Ecological Enhancement Mitigation	Ongoing	NRW do not consider that sufficient information has been presented to demonstrate that all reasonable and feasible mitigation measures will be implemented to offset the likely impacts on Annex I (ca. 20) and Section 7 (ca. 3 ha intertidal, 0.7 ha subtidal) habitats. The mitigation measures presented (and the level of detail provided on these) in the Marine Enhancement Report remain insufficient to offset the loss of reef habitat of conservation importance. Further details of the feasibility appraisal undertaken for each of the presented mitigation options should be provided and feasible mitigation to be implemented. Monitoring will also need to be undertaken. Please see section 7.18 in NRW's Written Representations.	The direct losses of intertidal and subtidal habitats are assessed in DCO ES chapter D13 and in the WFD compliance assessment. There would be a total loss of approximately 30.5ha of marine habitat, of which, 20ha have been classified as subtidal and intertidal habitats of conservation importance. The loss of habitats results from the footprint of the permanent and temporary marine works. This loss of habitat of conservation importance is assessed as being a moderate adverse effect within chapter D13 of the DCO ES. Additional mitigation through ecological enhancement will be provided to increase the diversity and biomass of ecological communities on the new marine structures resulting in a reduction of the effect on subtidal and intertidal habitats of conservation importance to minor adverse. Further details of the proposals for marine ecological enhancement of the breakwater have been provided to NRW in the form of a memorandum. The memorandum provides an appraisal of the available measures and the feasibility and constraints of implementing for the Wylfa Newydd Project to satisfy the requirements of Test (a) of Article 4(7) of the WFD; to ensure that all practicable mitigation measures have been included in the project.	Horizon and NRW to continue discussions.
NRW51	Mitigation	Holyhead North – impacts on benthic habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority in consultation with NRW. The detailed mitigation will need to include pre-commencement benthic surveys (pre-disposal) to be undertaken within 1 year of disposal taking place. This is to identify the extent of any benthic habitats of conservation importance and enable micro-siting of rock disposal to minimise impacts on these.	The ES (APP-132, paragraphs 13.7.48 – 13.7.58) considers that any loss of benthic habitat due to rock and sediment disposal would not be minor and no further mitigation or monitoring is proposed.	Horizon and NRW to continue discussions.
Invasive Non-Native Species (INNS)							
NRW52	Baseline / Methodology / Modelling	Terrestrial INNS	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology	Agreed	It is agreed that sufficient baseline information is provided in the ES to inform assessments of the impacts of terrestrial INNS and identify appropriate mitigation.		No further action
NRW53	Baseline / Methodology / Modelling	Marine INNS	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Agreed	It is agreed that sufficient baseline information is provided in the ES to inform assessments of the impacts of marine INNS and identify appropriate mitigation.		No further action
NRW54	Assessment	Terrestrial INNS	APP-414 8.6 Wylfa Newydd Code of Construction Practice s	Ongoing	NRW consider that, subject to the agreement of a detailed biosecurity risk assessment which will need to be approved by the discharging authority in consultation with NRW, that the risk of introduction of and / or spread of INNS will be minimised.	Horizon are proposing to prepare a revised biosecurity risk assessment and method statement as stated in the Wylfa Newydd CoCP (APP-414, paragraphs 11.2.41-11.2.46) and the proposals will include submission to, and agreement with NRW.	NRW to confirm mitigation is sufficient.

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW55	Assessment	Marine INNS	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW consider that, subject to detailed biosecurity risk assessment being approved by the discharging authority in consultation with NRW, that the risk of ingress of and / or spread of INNS will be minimised.	Horizon are proposing to prepare a revised biosecurity risk assessment and method statement as stated in the Wylfa Newydd CoCP (APP-414, paragraphs 11.2.41-11.2.46) and the proposals will include submission to, and agreement with NRW. Paragraphs 11.2.41 – 11.2.46 set out the details which will be included in the biosecurity risk assessment and method statement. Additional biosecurity measures, specific to the marine works, are set out in Section 11.3 of APP-416.	NRW to confirm mitigation is sufficient.
NRW56	Mitigation	Terrestrial INNS	APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that detailed INNS mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority in consultation with NRW	Horizon are proposing to prepare a biosecurity risk assessment and method statement (APP-414, paragraphs 11.2.41-11.2.46) which will set out the detailed INNS mitigation measures. APP-414 is a control document. The proposals will include submission to, and agreement with NRW..	NRW to confirm mitigation is sufficient.
NRW57	Mitigation	Marine INNS	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that detailed INNS mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority in consultation with NRW. The detailed risk assessment will need to include measures relating to the management of biosecurity measures for vessel activities. This includes management of vessels to and from the Port of Holyhead in relation to preventing the spread of *Didemnum vexillum* and appropriate management of hopper water discharge for dredging activities.	Horizon are proposing to prepare a biosecurity risk assessment and method statement (APP-414, paragraphs 11.2.41 – 11.2.46) and the proposals will include submission to, and agreement with NRW. Paragraphs 11.2.41 – 11.2.46 set out the details which will be included in the biosecurity risk assessment and method statement. Additional biosecurity measures, specific to the marine works, are set out in Section 11.3 of APP-416.	NRW to confirm mitigation is sufficient.
Protected landscapes – AONB							
NRW58	Baseline / Methodology / Modelling	Impacts on the Ynys Môn AONB	APP-129 6.4.10 ES Volume D – WNDA Development D10 – Landscape and Visual	Agreed	It is agreed that sufficient baseline information on the Ynys Môn / Isle of Anglesey AONB is presented in the ES and that the assessment methodology has followed best practice.		No further action
NRW59	Assessment	Impacts on the Ynys Môn AONB	APP-129 6.4.10 ES Volume D – WNDA Development D10 – Landscape and Visual	Agreed	It is agreed that the ES and its assessment of Landscape and Visual effects relating to the Ynys Môn / Isle of Anglesey Area of Outstanding Natural Beauty (AONB) accurately reflects the predicted effects.		No further action
NRW60	Mitigation	Impacts on the Ynys Môn AONB	APP-129 6.4.10 ES Volume D – WNDA Development D10 – Landscape and Visual	Ongoing	NRW consider that detailed proposals will need to be submitted to ensure mitigation of impacts upon the AONB are fully developed. Detailed mitigation measures will need to be set out in the relevant Sub-CoCPs and approved by the discharging authority.	Horizon's mitigation proposals for impacts to the AONB will be implemented through the design of the restored landscape of the Wylfa Newydd Development Area. DCO Requirement WN9 specifies that the Final Landscape and Habitat Scheme will be submitted to IACC for approval.	NRW to confirm mitigation is sufficient.
Flood Risk							
NRW61	Baseline / Methodology / Modelling	Main site flood risk	APP-160 – APP-166 6.4.32 ES Volume D – WNDA Development App D8-7 – Surface Water and Groundwater Modelling Results	Agreed	It is agreed that the flood modelling has been undertaken appropriately and followed best practice.		No further action

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW62	Assessment	Main site flood risk	APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-150 6.4.29 ES Volume D – WNDA Development App D8-4 Flood Consequences Assessment	Agreed	It is agreed that the ES and FCA concludes, through modifying and increasing catchment areas at the Wylfa Newydd main site, that the project may cause increased flood risk to 3rd parties.		No further action
NRW63	Mitigation	Main site flood risk	APP-150 6.4.29 ES Volume D – WNDA Development App D8-4 Flood Consequences Assessment APP-167 6.4.33 ES Volume D – WNDA Development App D8-8 – Summary of Preliminary Design for Construction Surface Water Drainage	Ongoing	NRW do not agree with the conclusion of the FCA that the outline landform and drainage scheme can be revised at detailed design stage so as not to exacerbate any existing flood risk. NRW is concerned that no mitigation is presented as part of the DCO application to demonstrate that measures can be delivered to mitigate the increased flood risk. Please see section 7.1 in NRW's Written Representations	Investigations of available options indicate that space is available within the red-line boundary of the site to provide additional attenuation of surface water runoff that would provide a greater design standard than that currently simulated in hydraulic modelling. Options are being further developed and will be presented to the Examining Authority to demonstrate that increased flood risk can be managed and that the proposals are compliant with TAN15.	Horizon to amend proposals for Mound A drainage to show no increase in downstream flooding to replace the design in: APP-167 6.4.33 ES Volume D – WNDA Development App D8-8 – Summary of Preliminary Design for Construction Surface Water Drainage
Contaminated land / Groundwater protection							
NRW64	Baseline / Methodology / Modelling	Baseline information on contaminated land and groundwater.	APP-126 6.4.7 ES Volume D – WNDA Development D7 – Soils and Geology APP-143 6.4.24 ES Volume D – WNDA Development APP D7-1 – Soils and Geology Baseline Conditions Report	Agreed	It is agreed that sufficient baseline information on contaminated land and groundwater is presented in the ES to inform the assessments.		No further action
NRW65	Assessment	Conclusion of the contaminated land impact assessment.	APP-126 6.4.7 ES Volume D – WNDA Development D7 – Soils and Geology	Agreed	It is agreed that the conclusions of the ES accurately reflect the predicted effects on contaminated land and groundwater from the construction and operation of the power station.		No further action

Environmental Statement Volume D – Main Site							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW66	Mitigation	Contaminated land mitigation.	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-415 8.7 Main Power Station Site sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be set out in the Sub-CoCPs and approved by the discharging authority in consultation with NRW.	Horizon consider that all proposed mitigation measures relating to contaminated land, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Main Power Station Site sub-CoCP (APP-415), are sufficient.	NRW to review amended CoCP and sub-CoCPs
Geological sites							
NRW67	Assessment / Mitigation	Geological Conservation Review sites	APP-126 6.4.7 ES Volume D – WNDA Development D7 – Soils and Geology	Agreed	It is agreed that the coastline within the Wylfa Newydd Development Area has not been notified as a Geological Conservation Review site.		No further action

Table 4-3 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within Environmental Statement Volume E – Off Site Power Station Facilities

Environmental Statement Volume E – Off-Site Power Station Facilities							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
HRA							
NRW68	Assessment	SAC / SPA / Ramsar sites in Wales	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that the proposed Off-Site Power Station Facilities is unlikely to adversely affect any SAC, SPA or Ramsar site in Wales.		No further action
SSSIs							
NRW69	Assessment	SSSIs	APP-247 6.5.9 ES Volume E – Off-Site Power Station Facilities: AECC ESL and MEEG A9 – Terrestrial and Freshwater Ecology	Agreed	It is agreed that the proposed Off-Site Power Station Facilities is unlikely to damage any SSSIs.		No further action
WFD							
NRW70	Assessment	WFD Waterbodies	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that the proposed Off-Site Power Station Facilities is not likely to result in deterioration of any quality elements and that the works would not prevent any of the WFD water bodies from achieving Good Status or Potential.		No further action

Environmental Statement Volume E – Off-Site Power Station Facilities							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
European and nationally protected species							
NRW71	Assessment	Assessment of protected species.	APP-247 6.5.9 ES Volume E – Off-Site Power Station Facilities: AECC ESL and MEEG A9 – Terrestrial and Freshwater Ecology	Agreed	It is agreed that the conclusions of the ES for the proposed works accurately conclude that the proposal will not be detrimental to the Favourable Conservation Status of protected species.		No further action
NRW72	Mitigation	Mitigation for protected species.	APP-417 8.9 Off-Site Power Station Facilities sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority, in consultation with NRW.	Horizon considers that the proposed mitigation measures set out in APP-417 (paragraphs 11.3.1 – 11.4.1), for protected species at the Off-Site Power Station Facilities, are sufficient. Paragraph 11.3.1 specifies that appropriate treatments for otter and water vole would be agreed with NRW. Paragraph 11.4.1 specifies that if demolition works could impact bat roosts, the works would be subject to a European Protected Species licence which would be determined by NRW. As mentioned in the Wylfa Newydd CoCP (APP-414), and the Off-site Power Station Facilities sub-CoCP (APP-417) secure Horizon's commitment to mitigating construction-related environmental effects, including protected species, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'ecology and landscape management strategy' contained in the Wylfa Newydd CoCP and the Off-site Power Station Facilities sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	NRW to review amended CoCP and sub-CoCPs.

Environmental Statement Volume E – Off-Site Power Station Facilities							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Protected landscapes							
NRW73	Assessment	Ynys Môn AONB	APP-248 6.5.10 ES Volume E – Off-Site Power Station Facilities: AECC ESL and MEEG E10 – Landscape and Visual	Agreed	It is agreed that the ES accurately concludes that the proposal is unlikely to affect the special qualities of the AONB.		No further action
Flood risk							
NRW74	Assessment	Flood Consequences Assessment	APP-254 6.5.16 ES Volume E – Off-Site Power Station Facilities: AECC ESL and MEEG App E8-1 MEEG / AECC / ESL – Flood Consequences Assessment	Agreed	It is agreed that the site is not within Zone C1 / C2, is not at risk of fluvial or tidal flooding, and will not result in increased fluvial flooding elsewhere.		No further action
Pollution prevention / environmental management							
NRW75	Assessment	Assessment of pollution impacts	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-417 8.9 Off-Site Power Station Facilities sub-CoCP	Ongoing	NRW consider that the ES accurately concludes that, through the agreement of detailed mitigation measures, the construction and operational impacts of the proposal will be managed appropriately.	Horizon considers that mitigation measures for pollution impacts, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Off-Site Power Station Facilities sub-CoCP (APP-417), are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW76	Mitigation	Securing pollution prevention mitigation	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-417 8.9 Off-Site Power Station Facilities sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and CoOP approved by the discharging authority in consultation with NRW.	Horizon considers that mitigation measures for pollution impacts, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Off-Site Power Station Facilities sub-CoCP (APP-417), are sufficient.	NRW to review amended CoCP and sub-CoCPs.
Contaminated land / groundwater							
NRW77	Assessment	Assessment of ground conditions	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-417 8.9 Off-Site Power Station Facilities sub-CoCP	Ongoing	It is agreed that the ES accurately concludes that, through the agreement of detailed mitigation measures, the construction impacts of the proposal will be managed appropriately.	Horizon considers that mitigation measures for pollution impacts, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Off-Site Power Station Facilities sub-CoCP (APP-417) are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW78	Mitigation	Mitigation of ground conditions	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-417 8.9 Off-Site Power Station Facilities sub-CoCP	Ongoing	It is agreed that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority in consultation with NRW, as a DCO Requirement.	Horizon considers that mitigation measures for pollution impacts, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Off-Site Power Station Facilities sub-CoCP (APP-417) are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Table 4-4 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within Environmental Statement Volume F – Dalar Hir Park and Ride

Environmental Statement Volumes F – Dalar Hir Park and Ride							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
HRA							
NRW79	Assessment	SAC / SPA / Ramsar sites in Wales	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	NRW agree that the proposed Offsite Power Station Facility is unlikely to adversely affect any SAC, SPA or Ramsar site in Wales.		No further action
SSSI							
NRW80	Assessment	Llyn Traffwll SSSI	APP-273 6.6.8 ES Volume F - Park and Ride F8 - Surface water and groundwater APP-274 6.6.9 ES Volume F – Park and Ride F9 – Terrestrial and freshwater ecology	Ongoing	The proposal includes a foul water treatment plant, which will discharge treated effluent (with elevated nutrients) into a watercourse upstream of Llyn Traffwll SSSI. NRW do not agree with the conclusions of the ES that there is no risk of damage to the SSSI features.	Application reference 6.6.8 ES Volume F - Park and Ride F8 - Surface water and groundwater (APP-273) presents information on the proposed sewage treatment facilities at the Dalar Hir Park and Ride development. APP-273 describes the site as containing a package sewage treatment plant that will discharge treated runoff to the Nant Dalar Hir. As there is no foul sewer within close proximity of the Park and Ride, foul water from the building facilities would be treated via a package treatment plant before discharging to the Nant Dalar Hir. APP-273 states that discharge from the treatment plant would be subject to an Environmental Permit with conditions bespoke for the Nant Dalar Hir and downstream receptors, including Llyn Traffwll. The assessment stated that the on-site sewage treatment plant would: • be designed to treat water to appropriate standards set out in the consenting conditions (bespoke for the Nant Dalar Hir and downstream receptors, including Llyn Traffwll SSSI), of the Environmental Permit and agreed with NRW; • would be fitted with monitoring and controls to check discharge quality; and • if necessary prevent discharge of water that does not meet the limits of the Environmental Permit. Along with management and maintenance procedures for the treatment plant, the assessment concluded that the above would mean that the magnitude of change to water quality in the Nant Dalar Hir would be negligible to small and the effects would be negligible to minor; not a significant effect.	Horizon and NRW to continue discussions.
NRW81	Mitigation	Llyn Traffwll SSSI	APP-274 6.6.9 ES Volume F – Park and Ride F9 – Terrestrial and freshwater ecology	Ongoing	NRW do not agree that the mitigation specified is sufficient to demonstrate there will be no damage to the SSSI features. Further mitigation (e.g. tertiary treatment) may demonstrate no damage.	Please see response to SOCG issue NRW80	Horizon and NRW to continue discussions.

Environmental Statement Volumes F – Dalar Hir Park and Ride							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
WFD							
NRW82	Assessment	WFD Waterbodies	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that the Dalar Hir proposal is not likely to result in deterioration of any quality elements and that the works would not prevent any of the WFD water bodies from achieving Good Status or Potential.		No further action
Protected species							
NRW83	Baseline / Methodology / Modelling	Protected species at Dalar Hir	APP-274 6.6.9 ES Volume F – Park and Ride F9 – Terrestrial and Freshwater Ecology	Agreed	It is agreed that sufficient baseline information is presented in the ES to inform the impact assessment for European Protected Species (bats, otters, great crested newts), and national fully protected species (water voles) which may be affected as a result of the Dalar Hir proposals.		No further action
NRW84	Assessment	Impacts on protected species	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-418 8.10 Park and Ride sub-CoCP	Ongoing	NRW considers that, subject to detailed mitigation measures being approved by the discharging authority in consultation with NRW, that the project is unlikely to be detrimental to the Favourable Conservation Status of protected species. Impacts on protected species may be subject to species derogation licences from NRW.	Horizon considers that the proposed mitigation measures, set out in sections 11.3 – 11.5 inclusive in APP-418 and section 11.2 of APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW85	Mitigation	Mitigating impacts on protected species	APP-187 6.4.53 ES Volume D – WNDA Development App D9-20 – Draft Bat Mitigation Licence APP-188 6.4.54 ES Volume D WNDA Development App D9-21 – Draft Great Crested Newt Licence APP-335 6.7.32 ES volume G – A5025 Off-line Highway Improvements App G9-11 – A5025 Draft Great Crested Newt Mitigation Licence APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-418 8.10 Park and Ride sub-CoCP APP-029 3.1 Draft Development Consent Order	Ongoing	NRW does not agree that the monitoring proposals are appropriate to inform long-term management of the affected species. NRW agree that the outline mitigation measures identified in ES chapter D9 are appropriate but that detailed mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority, in consultation with NRW. NRW considers that the detailed landscape and habitat masterplan for the site will need to be approved by the discharging authority in consultation with NRW. The detailed masterplan will need to provide suitable habitat for GCNs and water voles following decommissioning of the site.	Horizon has agreed to amend the monitoring proposals and these will be included in the Park and Ride sub-CoCP (APP-418) which will be submitted at Deadline 2. The amendments will bring the monitoring proposals in line with discussions held with NRW during a teleconference on 14th September 2018. Proposed mitigation measures are set out in sections 11.3 – 11.5 inclusive in APP-418, and section 11.2 of APP-414. DCO Requirement PR3 requires the Park and Ride facility to be constructed in accordance with the Approved Detailed Design Drawings. Any change to this must be in accordance with the principles set out in Volume 3 of the DAS and must be approved by IACC.	NRW to review amended CoCP and sub-CoCPs.

Environmental Statement Volumes F – Dalar Hir Park and Ride							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Protected landscapes							
NRW86	Assessment	Ynys Mon AONB	APP-275 6.6.10 ES Volume F - Park and Ride F10 - Landscape and visual	Agreed	It is agreed that the conclusions of the ES that the proposal is unlikely to affect the special qualities of the AONB		No further action
Flood risk							
NRW87	Baseline / Methodology / Modelling	Flood risk at Dalar Hir	APP-218 6.6.16 ES Volume F - Park and Ride App F8-1 - Dalar Hir - Flood Consequence Assessment	Agreed	It is agreed that the modelling undertaken is sufficient to inform the Flood Consequence Assessment. From the works undertaken on flood risk to the other receptors we would suggest that the modelling work reflects the existing and proposed situation. It is therefore suggested that the baseline / methodology / modelling is fit for purpose. The site is not modelled by NRW's nationalised modelling technique (JFlow) for catchments in excess of 3km^2).		No further action
NRW88	Assessment / Modelling	Flood risk at Dalar Hir	APP-281 6.6.16 ES Volume F - Park and Ride App F8-1 - Dalar Hir - Flood Consequence Assessment	Ongoing	NRW has significant concerns that the proposal will result in unacceptable increased flood risk. NRW is awaiting additional information from Horizon to address this matter	The proposals at Dalar Hir have been amended and additional modelling undertaken. The results of the additional modelling were presented to NRW at a flood risk meeting on 14th September 2018 where it was agreed, subject to NRW's review of the revised FCA, that the flood risk was acceptable. The amended Dalar Hir FCA will be submitted to the Examining Authority at Deadline 2.	NRW to review the amended Dalar Hir FCA.
Pollution prevention / environmental management							
NRW89	Baseline / Methodology / Modelling	Pollution prevention	APP-273 6.6.8 ES Volume F - Park and Ride F8 - Surface water and groundwater	Agreed	It is agreed that there is sufficient information to inform the impact assessment and mitigation measures required in relation to pollution prevention / environmental management.		No further action

Environmental Statement Volumes F – Dalar Hir Park and Ride							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW90	Assessment	Pollution prevention	APP-274 6.6.9 ES Volume F – Park and Ride F9 – Terrestrial and freshwater ecology APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-418 8.10 Park and Ride sub-CoCP	Ongoing	NRW do not agree with the conclusions of the ES in relation to water quality impacts (see comments above relating to Llyn Traffwll SSSI (SOCG issue NRW80). NRW do not agree that the foul drainage connection to the nearby watercourse will have insignificant impacts on water quality. NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority in consultation with NRW.	Please see response to SOCG issue NRW80. As mentioned in the Wylfa Newydd CoCP (APP-414), and the Park and Ride sub-CoCP (APP-418) secure Horizon's commitment to mitigating construction-related environmental effects, including protected species, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'water management strategy' contained in the Wylfa Newydd CoCP and the Park and Ride sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	Horizon and NRW to continue discussions.
NRW91	Mitigation	Pollution prevention	APP-274 6.6.9 ES Volume F – Park and Ride F9 – Terrestrial and freshwater ecology	Ongoing	NRW do not agree that there is mitigation specified to mitigate water quality impacts (see comments on SSSI above, SOCG issue NRW80).	Please see response to SOCG issue NRW80	Horizon and NRW to continue discussions.
Contaminated land / groundwater							
NRW92	Assessment	Contaminated land / groundwater	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW agree with the conclusions of the ES. NRW consider that through the agreement of detailed mitigation measures, the construction impacts of the proposal will be managed appropriately.	Horizon considers that the proposed mitigation measures, set out in section 9.4 of APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW93	Mitigation	Contaminated land / groundwater	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in section 9.4 of APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Table 4-5 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within Environmental Statement Volume G – A5025 Offline Highways Improvements

Environmental Statement Volumes G – A5025 Offline Highways Improvements							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
HRA							
NRW94	Assessment	SAC / SPA / Ramsar sites in Wales	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW consider that, subject to the agreement of detailed mitigation measures the proposed A5025 highway improvements is unlikely to adversely affect any SAC, SPA or Ramsar site in Wales.	Horizon considers that the proposed mitigation measures, set out in sections 11 of APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW95	Mitigation	SAC / SPA / Ramsar sites in Wales	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority, in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in sections 11 of APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
SSSI							
NRW96	Assessment	Beddmanarch-Cymyran SSSI	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW consider that, subject to the agreement of detailed mitigation measures, the proposed A5025 highway improvements is unlikely to damage the SSSI interest.	Horizon considers that the proposed mitigation measures, set out in sections 11 of APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW97	Mitigation	Beddmanarch-Cymyran SSSI	APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority, in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in sections 11 of APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
WFD							
NRW98	Assessment	WFD Waterbodies	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	NRW agree that the proposed A5025 Highway Improvements is not likely to result in deterioration of any quality elements and that the works would not prevent any of the WFD water bodies from achieving Good Status or Potential.		No further action
European and Nationally protected species							
NRW99	Baseline / Methodology / Modelling	Baseline surveys	APP-312 6.7.9 ES Volume G - A5025 Off-line Highway Improvements G9 - Terrestrial and freshwater ecology	Agreed	It is agreed that sufficient baseline information is presented in the ES to inform the impact assessment for European Protected Species (bats, otters, great crested newts), and national fully protected species (water voles) which may be affected as a result of the A5025 Highway Improvements.		No further action

Environmental Statement Volumes G – A5025 Offline Highways Improvements							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW100	Assessment	Impacts on protected species	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW consider that, subject to the agreement of detailed mitigation measures in consultation with NRW, that the project is unlikely to be detrimental to the Favourable Conservation Status of protected species. Note, impacts on protected species may be subject to species derogation licences from NRW	Horizon considers that the proposed mitigation measures, set out in sections 11.3 – 11.7 inclusive in APP-420 and section 11.2 of APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW101	Mitigation	Mitigating impacts on protected species	APP-187 6.4.53 ES Volume D – WNDA Development App D9-20 – Draft Bat Mitigation Licence APP-188 6.4.54 ES Volume D WNDA Development App D9-21 – Draft Great Crested Newt Licence APP-335 6.7.32 ES volume G – A5025 Off-line Highway Improvements App G9-11 – A5025 Draft Great Crested Newt Mitigation Licence APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP APP-029 3.1 Draft Development Consent Order	Ongoing	NRW does not agree that the monitoring proposals are appropriate to inform long-term management of the affected species. [Note – awaiting note updating Horizon's monitoring proposals to address this issue – should then be agreed] NRW agree that the outline mitigation measures identified in ES chapter G9 are appropriate and that detailed mitigation measures will need to be set out in the Sub-CoCP and approved by the discharging authority in consultation with NRW. NRW agree that the detailed landscape and habitat masterplan for the site will need to be agreed by the discharging authority in consultation with NRW. The detailed masterplan will need to provide suitable habitat for GCNs and water voles following decommissioning of the site.	Horizon has agreed to amend the monitoring proposals and these will be included in the A5025 Off-line Highway Improvements sub-CoCP (APP-420) which will be submitted at Deadline 2. The amendments will bring the monitoring proposals in line with discussions held with NRW during a teleconference on 14th September 2018. Proposed mitigation measures are set out in sections 11.3 – 11.7 inclusive in APP-420, and section 11.2 of APP-414. DCO Requirement OH2 requires the Park and Ride facility to be constructed in accordance with the Approved Detailed Design Drawings. DCO Requirement OH3 requires any change to this to be in accordance with the principles set out in Volume 3 of the DAS and these must be approved by IACC.	NRW to review amended CoCP and sub-CoCPs.
Protected landscapes							
NRW102	Baseline / Methodology / Modelling / Assessment / Mitigation	Ynys Mon AONB	APP-313 6.7.10 ES Volume G - A5025 Off-line Highway Improvements G10 - Landscape and visual	Agreed	NRW agree with the conclusions of the ES that the proposal is unlikely to affect the special qualities of the AONB		No further action

Environmental Statement Volumes G – A5025 Offline Highways Improvements							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Flood risk							
NRW103	Assessment / Modelling	Breach modelling at Valley		Ongoing	NRW does not agree with the modelling undertaken. The tidal breach scenario has not been modelled. NRW advise that should a failure (breach) occur to the defences affording tidal protection to the area, then existing properties (and land) may be inundated to deeper flooding following the development in Section 1.	Horizon have undertaken further modelling to show the flood risk for a breach scenario and have shared the results with NRW at a meeting on the 14th September 2018. The modelling results have been submitted to NRW in the form of a technical note for their review and consideration.	NRW to review the technical note on the Valley breach flood risk modelling.
NRW104	Assessment / Modelling	Flooding of third party land at Llanfachraeth	APP-323 6.7.20 ES Volume G – A5025 Off-line Highway Improvements App G8-1 – A5025 Off-line Highway Improvements – Flood Consequences Assessment	Ongoing	The proposal is not compliant with TAN15 in terms of flood risk. Mitigation measures have either not been provided, are unclear, or no evidence has been provided to demonstrate that the proposal would comply with TAN15. We advise that the FCA is unacceptable to NRW in terms of addressing the flood risks of the proposal.	The modelling that Horizon have undertaken (APP-323) shows that there is predicted to be a small increase (+0.01m to +0.09m) under fluvial flooding scenarios (APP-323, table G8-01.19) to an agricultural field but no impact (0.00m) on an existing property. Discussions with the landowner about possible compensation are ongoing.	Horizon and NRW to continue discussions.
Pollution prevention / environmental management							
NRW105	Baseline / Methodology / Modelling	Pollution prevention / environmental management	APP-310 6.7.7 ES Volume G - A5025 Off-line Highway Improvements G7 - Soils and geology	Agreed	NRW agree that there is sufficient information to inform the impact assessment and mitigation measures required in relation to pollution prevention / environmental management		No further action
NRW106	Assessment	Pollution prevention / environmental management	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW agree with the conclusions of the ES. NRW consider that, through the agreement of detailed mitigation measures, the construction and operational impacts of the proposal will be managed appropriately.	Horizon considers that the proposed mitigation measures, set out in APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW107	Mitigation	Pollution prevention / environmental management	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority, in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
Contaminated land / groundwater							
NRW108	Assessment	Contaminated land / groundwater	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW agree with the conclusions of the ES. NRW considers that, through the agreement of detailed mitigation measures, the construction impacts of the proposal will be managed appropriately.	Horizon considers that the proposed mitigation measures, set out in APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Environmental Statement Volumes G – A5025 Offline Highways Improvements							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW109	Mitigation	Contaminated land / groundwater	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-420 8.12 A5025 Off-line Highway Improvements sub-CoCP	Ongoing	NRW agree that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority, in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in APP-420 and APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Table 4-6 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within Environmental Statement Volume H – Logistics Centre

Environmental Statement Volumes H – Logistics Centre							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
HRA							
NRW110	Assessment	SAC / SPA / Ramsar sites in Wales	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that the proposed Logistics Centre is unlikely to adversely affect any SAC, SPA or Ramsar site in Wales.		No further action
SSSI							
NRW111	Assessment	SSSIs	APP-363 6.8.9 ES Volume H - Logistics Centre H9 - Terrestrial and freshwater ecology	Agreed	It is agreed that the proposed Logistics Centre is unlikely to damage any SSSIs.		No further action
WFD							
NRW112	Assessment	WFD Waterbodies	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that the proposed Logistics Centre is not likely to result in deterioration of any quality elements and that the works would not prevent any of the WFD water bodies from achieving Good Status or Potential.		No further action
European and Nationally protected species							
NRW113	Assessment	Impacts on protected species	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW agree with the conclusions of the ES. NRW consider that the proposed works, through the agreement of detailed and routine mitigation measures, that the proposal will not be detrimental to the Favourable Conservation Status of protected species.	Horizon considers that the proposed mitigation measures, set out in section 11.2 of APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW114	Mitigation	Protected species	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in section 11.2 of APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Environmental Statement Volumes H – Logistics Centre							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
Protected landscapes							
NRW115	Assessment	Ynys Mon AONB	APP-364 6.8.10 ES Volume H - Logistics Centre H10 - Landscape and visual	Agreed	It is agreed that the proposed Logistics Centre is unlikely to affect the special qualities of the AONB		No further action
Flood risk							
NRW116	Assessment	Flood risk	APP-362 6.8.8 ES Volume H - Logistics Centre H8 - Surface water and groundwater	Agreed	NRW agree that the site is not within Zone C1 / C2, is not at risk of fluvial or tidal flooding, and will not result in increased fluvial flooding elsewhere.		No further action
Pollution prevention / environmental management							
NRW117	Assessment	Pollution prevention	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW agree with the conclusions of the ES. NRW consider that, through the agreement of detailed mitigation measures, the construction and operational impacts of the proposal will be managed appropriately.	Horizon considers that the proposed mitigation measures, set out in APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW118	Mitigation	Pollution prevention	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority in consultation with NRW, as a DCO Requirement.	Horizon considers that the proposed mitigation measures, set out in APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
Contaminated land / groundwater							
NRW119	Assessment	Contaminated land	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW agree with the conclusions of the ES. NRW consider that, through the agreement of detailed mitigation measures, the construction impacts of the proposal will be managed appropriately.	Horizon considers that the proposed mitigation measures, set out in APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW120	Mitigation	Contaminated land	APP-414 8.6 Wylfa Newydd Code of Construction Practice	Ongoing	NRW consider that detailed mitigation measures will need to be specified in the detailed Sub-CoCP and approved by the discharging authority in consultation with NRW.	Horizon considers that the proposed mitigation measures, set out in APP-414, are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Table 4-7 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within the Shadow Habitats Regulations Assessment

Shadow Habitats Regulations Assessment (HRA)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
HRA – Anglesey Terns SPA (& Cemlyn Bay SSSI tern features)							
NRW121	Baseline / Methodology / Modelling	Noise and visual disturbance	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Do not agree	NRW do not consider that there is sufficiently robust information / literature / evidence available on the sensitivity of Sandwich terns to similar disturbance as proposed by the project to be able to conclude, beyond reasonable scientific doubt, that birds won't be disturbed.	Horizon's position is that the best available science with respect to the potential effect of the Project on all tern species has been used to inform the Shadow HRA and that this information is sufficiently robust. It includes all relevant literature and disturbance data from two years of monitoring the Cemlyn Bay colony. Horizon is confident in its conclusion that an adverse effect on the integrity of the Anglesey Terns SPA would not arise.	No further action
NRW122	Baseline / Methodology / Modelling	Tern foraging	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Agreed	It is agreed that sufficient baseline information on fish (as prey items) has been collected. It is agreed that sufficient information on tern foraging (through tern tracking surveys) has been collected.		No further action
NRW123	Baseline / Methodology / Modelling	Supporting habitat	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that sufficient baseline information on supporting habitat has been presented in the ES to inform the assessments.		No further action
NRW124	Baseline / Methodology / Modelling	Coastal processes effects on the shingle ridge	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-218 6.4.82 ES Volume D – WNDA Development App D12-3 Wylfa Newydd Main Site Wave Modelling Report	Ongoing	Impacts on the Esgair Gemlyn shingle ridge may potentially affect the functioning of the lagoon and the islands which the terns use for breeding. See SOCG issue NRW132 below in relation to modelling impacts on Esgair Gemlyn (Cemlyn Bay SAC / SSSI)	Since the submission of the DCO application, Horizon have undertaken further modelling assessments which couple the model for the worst case 99%ile NE wave scenario with the coastal processes model to identify any impacts to Esgair Gemlyn. The additional information was sent to NRW on 21st September 2018 and was discussed at a meeting on the 27th September 2018. This information was submitted to the Examining Authority at Deadline 2. The results show that the bed sheer stresses predicted to arise due to the marine works would not change sufficiently to cause an increase in sediment mobilisation, which could have an adverse impact on Esgair Gemlyn. Moreover, there is not predicted to be a significant change in the energetics of the water body within / adjacent to Cemlyn lagoon. Consequently, the functioning of the lagoon and islands that terns use for breeding would not be adversely affected.	NRW to consider the results of the additional modelling.

Shadow Habitats Regulations Assessment (HRA)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW125	Assessment	Noise and visual disturbance	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Do not agree	NRW considers that the evidence and mitigation presented in the Shadow HRA does not demonstrate that disturbance associated with the construction phase will not have adverse effects on the Sandwich, arctic and common tern populations at the Cemlyn colony. NRW considers that adverse effects on the SPA (relating to sensitivity of Sandwich, arctic and common terns to construction disturbance) cannot be ruled out.	Horizon's position is that the best available evidence has been used and a high degree of conservatism has been built into the Shadow HRA (e.g. regarding the generation of construction noise). This demonstrates beyond reasonable scientific doubt that no adverse effect on the integrity of the Anglesey Terns SPA, including the populations of Sandwich, Arctic and common terns, would arise because of the Project. Moreover, the mitigation proposed includes measures that would result in works being amended if disturbance reactions are observed.	No further action
NRW126	Assessment	Tern foraging	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Ongoing	Following further consideration of available data, NRW consider that there will be no adverse effects as a result of impacts on prey items (fish). NRW consider detailed monitoring and mitigation will need to be set out in the CoOP and approved by the discharging authority.	Wylfa Newydd CoCP (APP-414) and the Marine Works sub-CoCP (APP-416) secure Horizon's commitment to mitigating construction-related environmental effects, including fish, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the 'landscape and ecology management strategy' contained in the Wylfa Newydd CoCP and the Marine Works sub-CoCP contains sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	NRW to review amended CoCP and sub-CoCPs.
NRW127	Assessment	Supporting habitat	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that the Wylfa Newydd Project will not have adverse effects on supporting habitat of the Anglesey Terns SPA.		No further action
NRW128	Mitigation	Noise and visual disturbance	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Ongoing	NRW do not agree that the mitigation measures specified demonstrates that measures can be delivered to avoid adverse effects on site integrity.	Horizon has had further constructive discussion with NRW on each element of the mitigation relevant to potential noise and visual disturbance to the Anglesey Terns SPA. Horizon understands NRW's position to be that the proposed mitigation would reduce the potential effect on the breeding tern population, but NRW has a residual concern. Horizon's position is that the mitigation proposed offers sufficient certainty for a conclusion to be reached that an adverse effect on site integrity would not arise. In short, Horizon plans to monitor noise levels at the colony during breeding	Horizon and NRW to continue discussions.

Shadow Habitats Regulations Assessment (HRA)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
						seasons and maintain noise levels on site that do not cause disturbance. Regarding tern foraging, the WNDA boundary is more than 500m at its closest point to the nesting islands within Cemlyn Lagoon. A considerable body of evidence from the scientific literature suggests that visual disturbance from construction activities is highly unlikely at this distance. The effects of the works on tern foraging, therefore, would be insignificant and do not require mitigation.	
NRW129	Mitigation	Tern foraging	APP-421 8.13 Wylfa Newydd Code of Operational Practice	Ongoing	The Code of Operational Practice (CoOP) proposes to monitor the entrapment of fish. NRW consider that detailed monitoring proposals, which will be used to optimise the mitigation, should be set out in a detailed CoOP and approved by the discharging authority, in consultation with NRW.	Horizon considers that the proposals for monitoring fish entrapment in the cooling water intake, set out in paragraph 14.2.1 of APP-421, are sufficient.	Horizon and NRW to continue discussions.
HRA – Dee Estuary SPA							
NRW130	Assessment	Terns	APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Ongoing	Sandwich terns that breed at Cemlyn could also form part of the Passage Sandwich Tern feature of the Dee Estuary SPA. Abandonment of the Cemlyn population as a result of Wylfa Newydd project could therefore impact the conservation objective for the Dee Estuary SPA which is to maintain the population of passage Sandwich terns at the 5-year peak mean population of 957 individuals from 1995 – 1999. NRW therefore advises that an adverse effect on site integrity cannot be ruled out.	Given Horizon's conclusion with respect to the Anglesey Terns SPA (i.e. no adverse effect on integrity), Horizon's view is that an adverse effect on the Dee Estuary SPA can be ruled out. Notwithstanding this position, Horizon considers that NRW's concerns relating to the Dee Estuary SPA are directly linked to the effects at the Cemlyn Bay tern colony site and that, provided effects at Cemlyn Bay can be mitigated or (if required) compensated, there are no further requirements in relation to the Dee Estuary SPA.	Horizon and NRW to continue discussions.
HRA – Cemlyn Bay SAC / SSSI							
NRW131	Assessment	Air quality	N / A	Ongoing	For air quality effects on the lagoon and vegetated shingle feature of the SAC / SSSI please see SOCG issue NRW7 above in the Air Quality section.		See issue NRW7.

Shadow Habitats Regulations Assessment (HRA)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW132	Baseline / Methodology / Modelling	Coastal processes	APP-131 6.4.12 ES Volume D – WNDA Development D12 – Coastal Processes and Coastal Geomorphology APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Ongoing	NRW advises that Esgair Gemlyn, which is critical to the functioning of the lagoon and in supporting the shingle ridge vegetation, may be affected by the marine structures. Further information is required with respect to coastal processes modelling to understand whether the Wylfa Newydd project may cause an adverse effect on Esgair Gemlyn. There are still outstanding issues as follows: No coupled wave-bed shear stress modelling of a North West 99%ile storm event to show morphological impacts on Esgair Gemlyn; There are protective structures (rock foundation overlain by concrete mats) surrounding the waste water outfall pipe (adjacent the western breakwater) which will be in place for the length of the construction phase. The impact of this structure has not been modelled and assessed. There may also be an effect from the cooling water discharge on the hydrodynamics. We refer you to section 7.10 in NRW's Written Representations.	With regard to the coupled wave-bed sheer stress model, please see Horizon's Position for SOCG issue NRW124. The issue of the protective rock structures surrounding the waste water outfall pipe was discussed with NRW in a meeting on the 27th September 2018. The rock structure would be approximately 1m high and 6m wide and it was agreed that it was too small to include in the model as any effect it might have on wave conditions would be masked by the effect of the breakwater. The effects of cooling water discharge on the hydrodynamics, in light of the revised modelling, was also discussed on the 27th September 2018. It was agreed that a revised memorandum would be submitted to NRW which provided additional narrative as to why the conclusions of the Shadow HRA and ES remain valid.	NRW to consider the results of the additional modelling.
NRW133	Baseline / Methodology / Modelling	Terrestrial water quality	Groundwater APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Ongoing	The western half of Mound E drains into Cemlyn lagoon (feature of the SSSI / SAC) via Nant Cemlyn. Horizon propose to pump run-off from the mound (which will include elevated suspended solids) into the Afon Cafnan but propose to restore drainage into Nant Cemlyn when the mound is re-vegetated. NRW does not agree that sufficient baseline water quality information (including on suspended solids) is available for Nant Cemlyn. This information will be needed in order to inform when run-off from Mound E is of sufficient quality that it can be re-connected to Nant Cemlyn. We refer you to section 7.10 in NRW's Written Representations.	It is proposed (as per the Shadow HRA, APP-050 and APP-051) that runoff from Mound E would only be discharge to Nant Cemlyn when the slope of Mound E is adequately vegetated to maintain the water quality of the waterway. Horizon acknowledge NRW's concern and have agreed that monitoring Nant Cemlyn and the quality of the discharged water would be a more appropriate indicator of when to allow discharge to Nant Cemlyn. Paragraph 10.2.10 of the Main Power Station Site sub-CoCP (APP-415) will be amended to include a written scheme of baseline water quality monitoring in Nant Cemlyn to be agreed with NRW. The amended APP-415 will be submitted to the Examination at Deadline 2.	Baseline monitoring proposals for Nant Cemlyn to inform the threshold at which the discharge of runoff to Nant Cemlyn would be agreed.
NRW134	Baseline / Methodology / Modelling	Hydrology and hydrogeology	APP-128 6.4.9 ES Volume D – WNDA Development D9 – Terrestrial and Freshwater Ecology APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	The Wylfa Newydd project will affect groundwater and surface water flows into Cemlyn lagoon. It is agreed that sufficient information is available to inform the impact assessments.		No further action

Shadow Habitats Regulations Assessment (HRA)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW135	Assessment	Coastal processes	APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Ongoing	NRW does not agree that adverse effects on site integrity of Cemlyn Bay SAC / SSSI can be ruled out. Further information is required with respect to coastal processes modelling, as identified above, in order to inform the assessments in the Environmental Statement and Shadow HRA.	As described above in SOCG issues NRW132 and NRW124, further modelling has been undertaken to address NRW's concerns about the integrity of Esgair Gemlyn. The results confirm the conclusions set out in the ES and Shadow HRA. In this context adverse effects on the integrity of the Cemlyn Bay SAC can be ruled out.	NRW to confirm the additional modelling is sufficient.
NRW136	Assessment	Terrestrial water quality	APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Ongoing	NRW does not agree that adverse effects on site integrity of Cemlyn Bay SAC / SSSI can be ruled out. Further information is required to demonstrate that Cemlyn Lagoon will not be affected by impacts on water quality due to surface water run-off from Mound E - see 'Mitigation' below.	See Horizon's response to SOCG issue NRW133 above.	See issue NRW133
NRW137	Assessment	Hydrology and hydrogeology	APP-127 6.4.8 ES Volume D – WNDA Development D8 – Surface Water and Groundwater APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that impacts on hydrology and hydrogeology will not affect the functioning of the lagoon feature and that there will not be adverse effect on site integrity as a result of this pathway.		No further action
NRW138	Mitigation	Coastal processes	N / A	Ongoing	Ongoing – subject to updated assessments to be submitted by HNP.	As described above in SoCG issues NRW124 and NRW132, further modelling has been undertaken to address NRW's concerns about the integrity of Esgair Gemlyn. NRW are currently reviewing the additional information which is also submitted to the Examining Authority at Deadline 2.	NRW to consider the additional information.
NRW139	Mitigation	Terrestrial water quality	APP-6.4.33 ES Volume D – WNDA Development App D8-7 – Summary of Preliminary Design for Construction Surface Water Drainage	Ongoing	The project design has been amended so that no construction water discharge is now proposed to be discharged into Nant Cemlyn via discharge location E1 until vegetation has been re-established on the western slope of Mound E. Further clarity is required in relation to the mitigation measures detailed in 7.4.5 of the Shadow HRA and in relation to the drainage proposed on and around Mound E. It appears to NRW that pumping capacity is limited and that in extreme events some runoff will enter Nant Cemlyn; clarification is required on the level and frequency of such occurrence.	In addition to the information set out in Horizon's Position to SOCG issue NRW133 above, Horizon can confirm that the Mound E drainage system is designed to accommodate a 1 in 30 year (plus a 20% uplift for climate change) event; and, although the Mound has been designed to encourage water to flow towards the drainage ponds (which are designed to accommodate a 1 in 100 year (plus 20%) event), the drains would overtop in the face of an event larger than 1 in 30 (plus 20% uplift) years, and some of this water (not diverted to the ponds or soaked away by the 15m vegetated buffer strip) would reach the Nant Cemlyn.	NRW to confirm proposals are sufficient.

Shadow Habitats Regulations Assessment (HRA)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
HRA – Marine mammal features of Welsh SACs (including North Anglesey Marine SCI)							
NRW140	Baseline / Methodology / Modelling	Disturbance / Injury / Mortality Fish Prey Supporting habitat	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Agreed	It is agreed that sufficient information has been collected and / or is available to inform the assessment of impacts as a result of the construction and operation of Wylfa Newydd.		No further action
NRW141	Assessment	Disturbance / Injury / Mortality Fish Prey Supporting habitat	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that, subject to the implementation of detailed mitigation measures, the construction and operation of Wylfa Newydd will not have adverse effects on site integrity of SACs with marine mammal features in Welsh waters.	Horizon considers that the mitigation measures for marine mammals, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Marine Works sub-CoCP (APP-416), are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW142	Mitigation	Disturbance / Injury / Mortality	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be set out in the Marine Works Sub-CoCP and approved by the discharging authority in consultation with NRW.	Horizon considers that the mitigation measures for marine works, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Marine Works sub-CoCP (APP-416), are sufficient.	NRW to review amended CoCP and sub-CoCPs.
HRA – Chough features of Welsh SPAs (including Glannau Ynys Gybi SPA)							
NRW143	Baseline / Methodology / Modelling	Breeding chough Foraging chough	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that sufficient information is presented in the ES and supporting information to inform the assessment of impacts as a result of the construction and operation of Wylfa Newydd.		No further action
NRW144	Assessment / Mitigation	Breeding chough Foraging chough	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that the construction and operation of Wylfa Newydd will not have adverse effects on site integrity of chough SPAs in Wales.		No further action
HRA - Other European Sites in Wales							
NRW145	Assessment		APP-050 / 051 5.2 Shadow Habitats Regulations Assessment Report	Agreed	It is agreed that the construction and operation of Wylfa Newydd will not have adverse effects on site integrity of other SPAs, SACs and Ramsar sites in Wales i.e. other than those specifically referred to above.		No further action

Table 4-8 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within the Water Framework Directive compliance assessment

Water Framework Directive (WFD)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
WFD – Skerries coastal water body							
NRW146	Baseline / Methodology / Modelling	Waterbody / Quality Elements	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-444 8.26 Water Framework Directive Compliance Assessment	Ongoing	NRW agree that sufficient baseline and / or modelling information is available to inform the assessment of impact on The Skerries Coastal Water Body in terms of the hydromorphological quality element. NRW do not agree that sufficient baseline and / or modelling information is available to inform the assessment of impact on The Skerries Coastal Water Body in terms of the biological quality element. Further information is required in terms of operational water discharge. NRW note that for the 23ºC absolute temperature target mixing zone, the hydrodynamic model uses a background temperature of 16.44ºC. The applicant has produced further statistical modelling (WYL-PD-PAC-REP-00012, version 2.0) using more up-to-date data (1993 to 2013 or 2003-2012) where the 98%ile is 16.6ºC or 16.7ºC, respectively. We note that using the more up to date data could impact on the area extent calculated for absolute temperature / mixing zone. See section 7.4 of NRW's Written Representations.	SOCG issues NRW39 and NRW50 present information associated with this issue. Where NRW identifies specific requirements, Horizon is collating this material and will submit it to NRW and the DCO examination at Deadline 6 for consideration.	Horizon and NRW to continue discussions.
NRW147	Assessment	Hydromorphological Quality Elements	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that the WFD Compliance Assessment accurately concludes that the hydromorphological conditions quality element may deteriorate from high to good status.		No further action
NRW148	Assessment	Biological Quality Elements (benthic invertebrates)	APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment APP-444 8.26 Water Framework Directive Compliance Assessment	Ongoing	NRW does not agree with the conclusions of the WFD Compliance Assessment. NRW advise that further information is required to demonstrate that benthic invertebrates would not be at risk of deterioration.	Please see Horizon's response to SOCG issues NRW39 and NRW50.	Horizon and NRW to continue discussions.
NRW149	Mitigation	Waterbody / Quality Elements	APP-414 8.6 Wylfa Newydd Code of Construction Practice APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be set out in the detailed Marine Works Sub-CoCP and approved by the discharging authority in consultation with NRW.	Horizon considers that mitigation measures for marine works, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Marine Works sub-CoCP (APP-416), are sufficient.	NRW to review amended CoCP and sub-CoCPs.

Water Framework Directive (WFD)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW150	Article 4(7) Derogation Information	Hydromorphological Quality Elements	APP-445 8.27 Water Framework Directive Information to Support Article 4(7) Derogation	Ongoing	NRW agrees that, for this quality element, there will be a need for a derogation under Article 4(7) of the WFD. NRW does not agree that sufficient information is provided in the Article 4(7) Information report. Further information (including quantitative) is required on technical feasibility and disproportionate costs. Information will also be required with regard to mitigation proposed as part of the marine ecological enhancements proposals.	Horizon is progressing work to feed into the development of a derogation under Article 4(7) of the WFD and this will be submitted into the Examination at Deadline 6. This work relates to test (a) all practicable mitigation measures and test (d) significantly better environmental options. The scope of this work has been shaped by discussions held between Horizon and NRW. Discussions of scope focused on how best to present material when considering technical feasibility, disproportionate cost.	Additional information to support Article 4(7) derogation.
NRW151	Article 4(7) Derogation Information	Biological Quality Elements (benthic invertebrates)	APP-445 8.27 Water Framework Directive Information to Support Article 4(7) Derogation	Ongoing	Any requirement for Article 4(7) derogation will be confirmed following provision of additional information to inform the WFD Compliance Assessment (see SOCG issue NRW150 above).	Following discussions with NRW at a meeting on the 10th September, Horizon are currently preparing additional information to supplement the Article 4(7) derogation report. This will be provided to NRW and submitted to the DCO Examination at Deadline 6.	Additional information for the Article 4(7) derogation report
WFD – Anglesey North coastal water body							
NRW152	Baseline / Methodology / Modelling	Waterbody / Quality Elements	N / A	Ongoing	The Anglesey North WFD water body is currently failing for mercury. Further information is required to assess the impact on load and distribution of additional mercury due to the cooling water discharge. The application does not provide an assessment of the impact of the cooling water discharge upon coastal processes. It is unclear whether the water discharge velocities and volumes over the water column could have a detectable change on the local dynamics; stratification, scour and sediment movement for an appreciation of impact. See section 7.4 of NRW's Written Representations.	Horizon has received more detailed feedback from NRW regarding the H1 assessment through the Environmental Permitting process. Horizon continues to liaise with NRW to address concerns regarding the H1, including consideration of mercury. SOCG issues NRW39 and NRW50 present information associated with this issue.	Additional information requirements as specified by NRW.
NRW153	Assessment	Waterbody / Quality Elements	WYN-JAC-PAC-TEC-00027 – Supplementary Information on Coastal Processes to Support Wylfa Newydd EIA and Shadow HRA	Ongoing	NRW does not agree with the conclusion of the WFD Compliance Assessment that there is no risk of deterioration to the water body. The issues identified above will need to be addressed to inform the assessment.	Please see Horizon's response to SOCG issues NRW39 and NRW50.	Additional information requirements as specified by NRW.
NRW154	Mitigation	Waterbody / Quality Elements	APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be set out in the detailed Marine Works Sub-CoCP and approved by the discharging authority in consultation with NRW.	Horizon considers that the mitigation measures for marine works, secured through the Wylfa Newydd Code of Construction Practice (APP-414) and Marine Works sub-CoCP (APP-416), are sufficient.	NRW to review amended CoCP and sub-CoCPs.
NRW155	Article 4(7) Derogation Information	Waterbody / Quality Elements	APP-445 8.27 Water Framework Directive Information to Support Article 4(7) Derogation	Ongoing	Any requirement for Article 4(7) derogation will be confirmed following provision of additional information to inform the WFD Compliance Assessment (see above).	Horizon notes that NRW and the Secretary of State, as the competent authorities in respect of applications relating to the Wylfa Newydd Project, are ultimately responsible for assessing WFD compliance, including in respect of any Article 4(7) derogation.	Additional information requirements as specified by NRW and / or PINS.

Water Framework Directive (WFD)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
						In order to assist this process, Horizon has prepared the Water Framework Directive Compliance Assessment (APP-444) and Information to Support Article 4(7) Derogation (APP-445). Horizon continues to liaise with NRW to ensure that materials can be made available to inform the assessment to inform this work.	
WFD – Ynys Môn minor ground water body							
NRW156	Baseline / Methodology / Modelling	Waterbody / Quality Elements	APP-158 6.4.30 ES Volume D – WNDA Development App D8-5 – Tre'r Gof Hydroecological Assessment	Ongoing	NRW does not agree with the Conceptual Site Model for Tre'r Gof SSSI. We also note that the impacts of the outfall tunnel construction dewatering could be significant and has not been included in the assessments to date. We agree with the overall outcomes of the WFD Compliance Assessment, but insufficient information is available to inform assessment of all pathways, which has implications for monitoring / mitigation and the Article 4(7). See section 7.4 of NRW's Written Representations.	Horizon considers that its Conceptual Site Model for Tre'r Gof SSSI, and groundwater in general, is robust. However, actions described for SOCG issue NRW20 explain how Horizon has worked to accommodate NRW's position by progressing further work.	Horizon to prepare and NRW to review the Hydrogeological Impact Assessment expected to be submitted in February.
NRW157	Assessment	Saline intrusion	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that the WFD Compliance Assessment accurately concludes that there is potential for the Wylfa Newydd Project (including dewatering effects) to cause a deterioration in the Ynys Môn Secondary groundwater body due to saline intrusion. This effect is relevant to both quantitative and chemical tests for saline intrusion.		No further action
NRW158	Assessment	Groundwater Dependent Terrestrial Ecosystem (GWDTE)	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that the Wylfa Newydd Project could cause deterioration in the status of the Ynys Môn Secondary groundwater body with respect to the effects on Tre'r Gôf Site of Special Scientific Interest (SSSI) GWDTE.		No further action
NRW159	Mitigation	Waterbody / Quality Elements	APP-416 8.8 Marine Works sub-CoCP	Ongoing	NRW consider that detailed mitigation measures will need to be set out in the detailed Sub-CoCPs and agreed in consultation with NRW. NRW do not agree that sufficient mitigation and monitoring have been proposed.	As noted in SOCG issue NRW20, Horizon have agreed that a proposal for groundwater monitoring and mitigation will be submitted, as part of the hydrogeological impact assessment (HIA), to NRW and the DCO examination in February 2019 for consideration.	Groundwater monitoring and mitigation proposals and feasibility study.

Water Framework Directive (WFD)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW160		Article 4(7) Derogation Information	APP-444 8.26 Water Framework Directive Compliance Assessment APP-445 8.27 Water Framework Directive Information to Support Article 4(7) Derogation	Ongoing	NRW agrees that for the Ynys Môn secondary groundwater body, there will be a need for derogation under Article 4(7) of the WFD. NRW does not agree that sufficient information is provided in the Article 4(7) Information report. Further quantitative information is required on technical feasibility and disproportionate costs	As noted in SOCG issue NRW20, Horizon have agreed that a proposal for groundwater monitoring and mitigation will be submitted to NRW and the DCO examination for consideration in February 2019. The proposal will include a feasibility study of all mitigation options and will provide a rationale for why certain mitigation options have been excluded. Horizon and NRW have discussed how best to approach considerations of technical feasibility and disproportionate cost. Horizon have extended the consideration of test (a) all practicable mitigation measures and test (d) significantly better environmental options, to include certain aspects where it consider the project to be compliant with the WFD (e.g. dewatering, cooling water discharge tunnels).	Groundwater monitoring and mitigation proposals and feasibility study.
WFD – Cemlyn Lagoon coastal water body							
NRW161	Assessment	Waterbody / Quality Element	APP-444 8.26 Water Framework Directive Compliance Assessment	Ongoing	NRW does not agree with the conclusions of the WFD Compliance Assessment that the Cemlyn Lagoon coastal water body is not at risk of deterioration. We refer you to SOCG issues NRW132, NRW133, and NRW135 above in relation to Cemlyn Bay SAC / SSSI.	SOCG issue NRW124, NRW132, NRW133 and NRW135 summarise Horizon's position with respect to Cemlyn Lagoon and Esgair Gemlyn. Horizon notes that NRW and the Secretary of State, as the competent authorities in respect of applications relating to the Wylfa Newydd Project, are ultimately responsible for assessing WFD compliance, including in respect of any Article 4(7) derogation. In order to assist this process, Horizon has prepared the Water Framework Directive Compliance Assessment (APP-444) and Information to Support Article 4(7) Derogation (APP-445). Horizon continues to liaise with NRW to ensure that materials can be made available to inform the assessment to inform this work.	See issues NRW124, NRW132, NRW133 and NRW135
WFD – Cemaes bathing water							
NRW162	Baseline / Methodology / Modelling	Water quality	APP-444 8.26 Water Framework Directive Compliance Assessment APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Ongoing	NRW does not agree that the sewage modelling has been conducted appropriately. NRW advises that further modelling should be undertaken to examine how both the construction sewage discharge and site campus discharges (via the Dŵr Cymru Welsh Water (DCWW) sewage works) impact the Bathing Water. NRW also advises that further information is required regarding the suspended sediment modelling undertaken.	Horizon met NRW and DCWW on the 1st October 2018 where the need and requirements for a Bathing Water Compliance Assessment were discussed. The issue of Bathing Water Compliance was discussed with NRW and DCWW and the modelling will be reviewed. Advection dispersion modelling is proposed to predict the combined effects of the Horizon and DCWW discharges. This will be developed in conjunction with NRW and DCWW specialists and the results reviewed to examine the significance of the discharge on the Bathing Water. This work will be submitted to NRW and the DCO examination for consideration.	Additional modelling on bathing water quality.

Water Framework Directive (WFD)							
SOCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW163	Assessment	Water quality	APP-444 8.26 Water Framework Directive Compliance Assessment APP-132 6.4.13 ES Volume D – WNDA Development D13 – The Marine Environment	Ongoing	NRW does not agree with the conclusion that "there are no effects predicted on the bathing water at Cemaes, and that the Wylfa Newydd Project is considered to be compliant with the Bathing Water Directive". NRW consider that discharges of elevated suspended solids and sewage discharges into the marine environment has the potential to affect Cemaes Bathing Water.	It is Horizon's assertion, as presented in summary in the WFD Compliance Assessment, that the project will not risk further deterioration in bathing water quality. Horizon concludes that its assessment is conservative due to the assumptions incorporated into the modelling and assessment work. As noted with respect to SOCG issue NRW162, Bathing Water Compliance was discussed with NRW and DCWW and the modelling will be reviewed. This work will be submitted to NRW and the DCO examination for consideration.	Additional modelling on bathing water quality.
NRW164	Mitigation	Water Quality	APP-444 8.26 Water Framework Directive Compliance Assessment	Agreed	It is agreed that in the eventuality that additional modelling indicates there is a risk to Cemaes Bathing Water, as a result of the works proposed in the DCO application, then mitigation will need to be implemented.		Additional modelling on bathing water quality.

Table 4-9 Statement of Common Ground between the Natural Resources Wales and Horizon on issues contained within the draft Development Consent Order

Draft Development Consent Order							
SoCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW165	Baseline / Methodology / Modelling / Assessment / Mitigation	Marine jurisdiction	N / A	Ongoing	NRW is working with IACC, Welsh Government and Horizon to consider whether Horizon's proposal is acceptable and if so, how the proposal could be practically implemented. NRW aims to reach agreement between parties prior to the end of Examination		NRW to continue discussions with relevant stakeholders.

Draft Development Consent Order							
SoCG ID	**Baseline / Method / Modelling / Assessment / Mitigation**	**Issue**	**Evidence base**	**Status (Agree / Do not agree / Ongoing)**	**NRW Position**	**Horizon Position**	**Further actions required to progress discussion on the issue**
NRW166	Baseline / Methodology / Modelling / Assessment / Mitigation	CoCPs / Sub-CoCPs, CoOP and DCO Requirements	APP-029 3.1 Draft Development Consent Order	Ongoing	NRW advise that there is insufficient detail in the submitted Sub-CoCPs to demonstrate that construction activities will be managed appropriately. NRW also consider there is insufficient detail in the CoOP. See sections 4 and 5 in NRW's Written Representations. NRW advise that if the DCO is made, that detailed Sub-CoCPs, and a detailed CoOP, will need to be approved by the discharging authority, as well as NRW as a statutory consultee, ahead of the relevant activities taking place. We would expect this to be secured as a DCO Requirement. This will require an additional DCO Requirement to be incorporated into the draft DCO.	The Code of Construction Practice (APP-414) and the sub-CoCPs (APP-415 to APP-420 inclusive) secure Horizon's commitment to mitigating construction-related environmental effects, demonstrating that Horizon will control the potential impacts of the Wylfa Newydd Project on people, businesses and the natural and historical environment. Its Horizon's view that the Code of Construction Practice and the sub-CoCPs 'management strategies' contain sufficient detail to demonstrate that the mitigation described in the Environmental Statement and other assessments will be secured. However, Horizon acknowledges that these documents may be further refined during the Examination period, in response to comments from the Examining Authority and other interested parties and stakeholders, such as NRW. It is Horizon's opinion that the Code of Construction Practice and sub-CoCPs are sufficient but Horizon will continue to work with stakeholders throughout the process, which is likely to result in further refinement. Horizon considers that as these documents will be subject to rigorous scrutiny by the Examining Authority during the examination process, subsequent approvals should only be required from IACC (in consultation NRW where applicable) where Horizon is seeking amendments to the approved documents following grant of the DCO.	NRW to review amended CoCP and sub-CoCP

Appendix A – Memorandum WN0902-JAC-PAC-TEC-00011: Marine ecological enhancement mitigation

JACOBS

Memorandum

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Subject	**Marine ecological enhancement mitigation**	**Project Name**	Wylfa Newydd Project
Attention	Horizon Nuclear Power Ltd.	**Project No.**	60PO80AG
From	Jacobs UK Ltd.	**Document No.**	WN0902-JAC-PAC-TEC-00011 (Horizon)
Date	3 September 2018		60PO80AG/AQE/TM/002 (Jacobs)
Copies to	Tei Ho and Alex Herbert		

1. Introduction

On the 4th December 2017, Horizon UK Ltd. (Horizon) began engagement with Natural Resources Wales (NRW) regarding the proposal to include marine ecological enhancement measures as part of the Wylfa Newydd Project (referred to as 'the Project' hereon in). The purpose of these measures are to mitigate the significant moderate adverse effects to marine habitats and species of conservation importance from construction of the Marine Works[1], as identified within the marine environment chapter (chapter D13, Application Reference Number: 6.4.13) of the Environmental Statement.

During this initial meeting, Jacobs UK Ltd. presented the work done to date including ecological and design considerations, engineering constraints and the ecological enhancement measures under consideration. One of the actions taken away from this meeting was to provide NRW with further information regarding:

- the detailed literature review which was undertaken in April 2017 in relation to ecological enhancement measures; and
- the results of the feasibility study which was carried out in June 2017 to evaluate a number of ecological enhancement options.

The purpose of this memorandum is to provide NRW with the information requested; this is presented in Section 2 (literature review) and Section 3 (feasibility study) of this technical memo. To facilitate further engagement, any new information which has come to light since April 2017 and subsequently reviewed and assessed in relation to the Project has also been presented for completeness.

During the Statement of Common Ground (SoCG) meeting held on the 1st August, NRW made the comment that they considered there was "*insufficient detail on the proposed enhancement for marine elements to mitigate/offset damage to benthic habitats*". In response to this comment additional detail surrounding the ecological enhancement measures proposed as part of the DCO application has been included within Section 4 of this technical memo.

[1] The Marine Works includes: the permanent structures such as the breakwaters, Marine Off-Loading Facility (MOLF), cooling water intake and outfall, shore protection, and navigation aids; temporary structures such as the access ramp, barge berth, cofferdams and southern causeway; and the area that would be dredged and excavated.

Horizon is seeking ongoing consultation regarding marine ecological enhancement in order to reach an agreement with NRW that the level of mitigation proposed and the assessment presented within chapter D13 (Application Reference Number: 6.4.13) of the Environmental Statement with respect to the loss of benthic habitats and species due to construction of the Marine Works is appropriate.

2. Overview of the ecological enhancement literature review

This section provides an overview of the ecological enhancement literature review which was carried out in April 2017. The purpose of this literature review was to develop a detailed understanding of the science underpinning the concept of marine ecological enhancement and the potential measures which could be incorporated into the design of the permanent marine structures to mitigate for adverse effects to benthic habitats and species. This literature review culminated in a detailed report which aimed to achieve the following objectives:

1) to identify the key ecological and design considerations which should be borne in mind when developing ecological enhancement mitigation; and
2) to identify ecological enhancement measures that could be implemented at the design stage of the Project to achieve the ecological objectives of the mitigation.

The following sub-sections 2.1 to 2.4 summarise the contents of this detailed literature review and builds upon the information presented to NRW in December 2017.

2.1 Ecological design considerations

There has been an increasing amount of research into how the design of marine structures can be manipulated to enhance their ecological value (Moschella *et al.*, 2005; Chapman and Blockley, 2009; Martins *et al.*, 2010) and consequently, ecological enhancement measures are being considered increasingly during engineering design. In response to this, regulatory and non-governmental bodies have published limited guidance outlining recommendations for the inclusion of ecological enhancement measures in the planning and design of rock and concrete structures.

Key guidance includes the report published in 2011 by the Environment Agency's Evidence Directorate (Naylor *et al.*, 2011). The Manual on the Use of Rock in Hydraulic Engineering (CIRIA, 2009) also gives some broad considerations, as well as specific recommendations, but the most substantial piece of work on ecological enhancement of structures in Europe to date is the 'Environmental Design of Low-crested Coastal Defence Structures' (DELOS) project (www.delos.unibo.it), which ran as an international collaboration between 1998 and 2002. This study examined existing coastal defence structures in Europe and has produced the most comprehensive guidance for ecological consideration in engineering design to date (Burcharth *et al.*, 2007). This guidance (Burcharth *et al.*, 2007) along with that provided by Naylor *et al.* (2011) has been incorporated into a set of key design considerations outlined below.

Research into rocky shore ecology is also of key importance as this environment is considered to be the nearest natural equivalent to artificial structures and can therefore help identify those features of structures which could be manipulated for ecological gain (Thompson *et al.*, 2002; Chapman, 2003; Chapman and Bulleri, 2003; Moschella *et al.*, 2005). There is also an extensive literature base comparing the ecological benefits provided by artificial and natural rocky reefs. Reference is made to this research where it is believed to offer an insight into the potential capacity of the breakwater structures to operate as artificial rocky reefs.

Table 1 summarises the literature review undertaken to examine the design features which should be borne in mind when considering ecological enhancement of marine structures. Briefly, this considered:

- the position of the marine structure in the tidal frame;
- its gradient;
- its orientation and exposure to prevailing wind and wave conditions; and
- its surface and structural heterogeneity.

Table 1: A summary of the design features and associated evidence in literature which should be borne in mind when considering ecological enhancement of marine structures.

Feature	Evidence from literature	Key references
Position in the tidal frame (i.e. the area exposed/immersed)	Sessile, intertidal fauna and flora are able to withstand different degrees of stress (emersion, immersion) and therefore will only occupy a certain position along environmental gradients (e.g. high to low water mark, wave exposed to sheltered, etc.) within the tidal zone. This phenomenon is known as zonation. The position of artificial structures in the tidal frame influences the zonation of intertidal and subtidal species. If a larger proportion of the structure is located below mean tidal level then biological communities colonising the structure would be dominated by taxa such as kelps, which occur lower down in the tidal frame because of their limited tolerance to desiccation and thermal stress. Structures which sit higher within the tidal frame and therefore have a larger proportion above mean tidal level, would be colonised by biological communities dominated by taxa such as barnacles which are outcompeted at lower shore heights but are able to tolerate prolonged emersion on the high shore. Any area which sits above the mean high water spring mark is unlikely to be available for colonisation by marine organisms. The diversity of flora and fauna communities is also known to differ greatly between biotic zones, with lower regions of the shore generally exhibiting greater diversity and biomass.	Connell (1961) Lewis (1964) Dring and Brown (1982) Barnes and Hughes (1988) Evans (2015)
Gradient	Most naturally occurring rocky shores have a gentler gradient than artificial structures like breakwaters and steep sea walls. Vertical substrates support fewer mobile marine organisms due to the smaller extent of intertidal habitat available for colonisation. In addition, species resident on gentle gradients may not be able to survive on vertical surfaces, especially when the effects of wave action are significant. Whorff *et al.* (1995) for example, showed that the invertebrates and algal epiphytes associated with intertidal algal turfs were strongly influenced by the gradient of the substratum, possibly because of the amount of sediment trapped in the algal fronds. Steeper intertidal surfaces may, therefore, reduce habitat quality in addition to available area, resulting in differences in the composition of the associated communities.	Whorff *et al.* (1995) Glasby (2000) Chapman and Bulleri (2003)
Orientation and Exposure	Orientation and exposure can influence the wave and water flow dynamics around artificial structures. Orientation can also influence the degree of shading on epibenthic (surface) communities.	Underwood and Chapman (1998)

Feature	Evidence from literature	Key references
	The physical conditions experienced by organisms can differ greatly with location on the artificial structure owing to variations in orientation and exposure; this enables different species to colonise particular areas while others may be excluded. For example, reduced water movements on the leeward side of a breakwater could promote the growth of certain seaweeds (e.g. *A. nodosum* and *Fucus* spp.). Conversely increased water movement could suppress seaweed growth whilst promoting the presence of filter feeders such as mussels and barnacles. There are often significant interactions between the effects of orientation and exposure, with greater numbers of taxa and functional groups associated with rock pools positioned lower down in the tidal frame and those located in more exposed areas.	Chapman and Bulleri (2003) Moschella *et al.* (2005) Blockley and Chapman (2006) Blockley (2007) Jackson (2015) Firth *et al.* (2016b)
Structural heterogeneity	Microhabitats such as small pits and crevices are important for rocky shore biota, providing shade and refuge from desiccation, predation and disturbance. Structural heterogeneity not only increases the amount of surface area available for colonisation but also presents an increased edge effect, which facilitates the attachment and growth of benthic taxa and the development of communities on the substrate. Rock pools have been found to support more than twice the number of species than emergent areas. Similarly, more than three times the number of species (belonging to a greater number of taxonomic classes) has been found within crevices compared to adjacent rock surface.	Fairweather (1988) Gray and Hodgson (1998) Spieler *et al.* (2001) Jackson (2015) Ostalé-Valriberas *et al*., (2018)
Surface heterogeneity	The geology of the substrate (i.e. rock type and surface texture) has been shown to influence intertidal and subtidal assemblages at finer scales (millimetres). Rock type (e.g. granite and limestone) and texture can influence water drainage and ponding, which can generate microclimates as well as provide refuge for animals and plants from waves, predation, heat and desiccation stress. Moreover, a complex surface texture can increase the boundary layer near the surface thus increasing the likelihood of larval settlement compared to smooth surfaces. Substratum roughness is widely known to influence the initial settlement of marine invertebrate larvae and the subsequent development of epibenthic communities. Colonisation by barnacles, for example, is known to be strongly influenced by substratum texture with settlement and recruitment of barnacles and algal spores typically greater on rougher surfaces. The grazing efficiency of molluscs is also affected by surface roughness.	Crisp (1974) Raimoni (1988) McGuiness (1989) Fletcher and Callow (1992) Anderson and Underwood (1994) Johnson (1994) Jacobi and Langevin (1996) Hills and Thompson (1998) Lapointe and Bourget (1999) Berntsson *et al.* (2000) Wahl and Hoppe (2002) Moschella *et al.* (2005) Koehl (2007) Coombes (2011)

The key ecological and design conclusions/recommendations drawn from this review of literature were:

- to ensure a large proportion of the marine structures sit within the lower proportion of the tidal frame to maximise ecological diversity and biomass opportunities;
- to minimise the gradient of the marine structures with the purpose of increasing the surface area available within the three intertidal zones (lower, mid and high);
- to ensure a range of orientation and exposure conditions are available;
- to maximise structural heterogeneity across the surface of the marine structures, particularly within the intertidal and subtidal zone through the generation of cracks, crevices, overhangs and rock pools; and,
- to maximise surface heterogeneity to promote increased rates of colonisation and development towards communities of greater ecological value (e.g. larger biomass, diversity, the presence of rare or vulnerable species, etc.).

2.2 Invasive non-native species (INNS)

Through the ecological enhancement literature review it was identified that artificial structures often support a greater number of INNS than natural habitats as their surfaces are generally characterized by an absence of competition and predation (Glasby *et al.*, 2006; Airoldi *et al.*, 2015). They are also frequently constructed in highly disturbed environments that further favour the establishment of opportunistic species (Firth *et al.*, 2012). When multiple artificial structures are built relatively close to one another along stretches of coast comprising predominantly soft sediments, these structures can sometimes function as pathways or stepping stones, facilitating the spread and connectivity of both native and non-native marine species (Airoldi and Bulleri, 2011).

On the basis of the diversity resistance hypothesis, it is widely acknowledged that more complex or diverse communities can reduce the establishment of INNS (Stachowicz *et al.*, 2002; Arenas *et al.*, 2006; Naylor *et al.*, 2011; Firth *et al.*, 2016a). This, therefore, provides further argument for implementing ecological enhancement measures as part of the Project as these can improve the resistance of artificial structures to the establishment of INNS.

Understanding how the design of artificial structures can facilitate the introduction and establishment of key INNS of concern, and how ecological enhancement mitigation measures can be used to interrupt or obstruct interactions, could help reduce the impact of INNS on marine benthic habitats and species arising from the Project. For example, the green alga, *Codium fragile* (sub sp. *tomentosoides*) has been recorded within the Wylfa Newydd Development Area since 2015 and is known to rapidly colonise artificial structures such as breakwaters, preferring the more sheltered leeward side (Bulleri and Airoldi, 2005; Glasby *et al.*, 2006). Many other INNS considered to be key species of concern for the Project, also proliferate in sheltered harbour environments including, the leathery sea squirt, *Styela clava*, the wireweed *Sargassum muticum*, and the carpet sea squirt, *Didemnum vexillum* (Horizon, 2018). With this in mind, it may be wise to consider ecological enhancement measures which could be implemented at appropriate locations on the leeward side of the breakwater structures with the dual purpose of enhancing the ecology (i.e. habitat complexity) and minimising the risk of INNS becoming established within this region of the structures.

This illustrates the importance of considering in detail the interaction between the design of artificial structures (including ecological enhancement measures) and both the current and future ecology of the marine environment. The biosecurity risk assessment strategy for the Project outlines all the invasive non-native species of concern in north Wales (Horizon, 2018). For a vast majority of these species, their life history strategies and habitat requirements are well known and therefore it would be

possible to make assumptions about what ecological enhancement and other management measures could be implemented to minimise the risks presented by these particular INNS. It is also considered that this information should be used to help inform the type, location and extent of ecological enhancement proposed as part of the Project as well as the ecological objectives defined for these additional mitigation measures.

2.3 Timescales associated with marine ecological enhancement mitigation

In order to appropriately assess the effectiveness of ecological enhancement mitigation, it is important to understand the phasing of the Project and to be aware of the key milestones which might have a bearing on the decision as to whether the proposed mitigation is appropriate.

The construction phase would represent a period of net ecological loss under the footprint of the Marine Works, the magnitude of which can be measured by the time taken for construction to be completed which is estimated to be approximately two years. Furthermore, there would be a time lag between the effects of construction and the marine ecological enhancement measures achieving their ecological objectives. To estimate the potential duration of this time lag, it is necessary to understand rates of colonisation and community succession; these are discussed in Sections 2.3.1 and 2.3.2 below.

2.3.1 One to five years

Encrusting species such as *Corallina officinalis* and crustose brown algae of the family Ralfsiaceae, are believed to exhibit good recruitment and settlement rates on artificial surfaces (Loke *et al*., 2016). Studies have shown that new bases have appeared on sterilised plots within six months and 10% cover was reached within 12 months (Littler and Kauker, 1984). A number of studies have shown similar recovery rates, although it is unclear whether the more resistant crustose bases were thoroughly removed from the rock (Bamber and Irving, 1993). Evans *et al.* (2016) found coralline algae were notably absent following a 30-month monitoring period of artificial rock pools with only a small amount of *Lithothamnia* crust present in one artificial pool during the final survey, 30 months after construction. It is likely to take up to five years for encrusting species to become fully established on marine structures.

Ulva spp. are ephemeral seaweeds that are believed to be among the first to colonise newly available substrate, usually within weeks, depending upon availability of spores (Budd, 2007). It is, therefore, likely that species of *Ulva* and *Cladophora* would have a considerable capacity for recovery, as both genera are widespread and release motile gametes and spores making dispersal and attachment to the breakwater structures highly likely within a few years. Jackson (2015) observed a dominance of *Ulva* spp. within a year.

Fucoids (e.g. *Fucus serratus* and *Fucus vesiculosus*) recruit readily to barren areas, especially in the absence of grazers (Holt *et al.*, 1995). Jackson (2015) found fucoids replaced *Ulva* spp. on concrete armour units within one year. Although, whilst it is thought recruitment is likely to be reasonably rapid, recovery to a mature community structure is likely to take some years (Holt *et al.*, 1997). This is likely to be especially true for *Ascophyllum nodosum* which is a slow-growing species that generally exhibits poor recruitment. The reason for such poor recruitment is unclear; this species invests the same high level of energy in reproduction as other fucoids and is extremely fertile every year (Printz, 1959). However, the reproductive period only lasts for about two months which is much shorter than for other fucoids.

Within the subtidal zone, red algae have been found to colonise cleared concrete blocks within 26 weeks in the shallow subtidal (0.8 m) and 33 weeks at a depth of 4.4 m (Kain, 1975). Red algae persist throughout the early colonisation phase and have been found to increase in biomass from

0.04% to 1.5% within the first four years (Kain, 1975). Red algae produce non-motile spores and most recruitment is thought to occur within 10 m of the parent plants (Norton, 1992). This would likely delay colonisation of red algae on the marine structures, particularly for the more remote areas (e.g. western breakwater), although it is reasonable to assume red algae would be able to colonise the breakwaters within five years.

Kelp is a common subtidal species present within the footprint of the Marine Works and dominates a number of biotopes which cumulatively represent 20.0% of the total area. Kain (1975) examined recolonisation of cleared concrete blocks in a subtidal kelp forest and found a standing crop of *Laminaria hypoborea* similar to that of a virgin forest, present within 2.5 years of the blocks being cleared. Kelp species colonise at different rates which can vary temporally. Within the same study, blocks cleared in August 1969 were initially colonised primarily by *Laminaria saccharina* but subsequently colonised by *L. hypoborea*. Kain (1975) also observed temporal variations in the dominant colonists of cleared concrete blocks with brown algae dominant in the spring, green algae in the summer and red most important in the autumn and winter. The timing of construction could, therefore, have important implications for early settlers and the trajectory of community development.

Recruitment to rock pools is likely to be sporadic and variable (Metaxas and Scheibling, 1993). Initial colonisers of these environments are likely to be present within a year, whilst the development of recognisable rock pool biotopes may take up to five years. Evans *et al.* (2016) found total species richness on emergent rock reached carrying capacity (an asymptote population) after six months (24 species) but species accumulation curves for the artificial rock pools did not reach an asymptote even after 30 months of monitoring. This suggested that whilst artificial rock pools supported resident communities, they were also being used at different times of the year by transient and ephemeral taxa. It is thought that kelps could potentially colonise low shore rock pools within three to four years, depending on grazing and competition for space (Kain, 1975). Recovery of species such as *Chondrus crispus*, which is generally found on the middle to lower rocky shore and in rock pools, is likely to be relatively slow as holdfasts need to generate before thalli can grow (Holt *et al.*, 1995). However, Minchinton *et al.* (1997) documented the recovery of *C. crispus* after a rocky shore in Nova Scotia, Canada, was totally denuded by ice scouring and found that this species had re-established approximately 50% cover on the lower shore within two years.

In terms of fauna, gastropods and other mobile grazers (e.g. amphipods, isopods) are likely to be attracted by developing microalgae and macroalgae and could return quickly by either migration or larval recruitment. Epifaunal species vary in their recruitment rates; Sebens (1985; 1986) reported that rapid colonisers such as encrusting bryozoans, amphipods and tubeworms recolonised cleared rock surfaces within one to four months. Ascidians such as *Aplidium* spp. achieved significant cover in less than a year, and, together with *Halichondria panicea*, had reached pre-clearance levels of cover after two years. Anemones are thought to be able to colonise within four years (Sebens, 1986) but may take longer to reach mature abundances. The anemone *Urticina felina* exhibits poor recoverability due to limited dispersal and slow growth (Chia and Spaulding, 1972), though populations may recover within five years. *Mytilus edulis* populations are also considered to have a strong ability to recover from environmental disturbance (Seed and Suchanek, 1992; Holt *et al.*, 1998).

The DELOS project (Burcharth *et al.*, 2007) found the most commonly recorded fauna on low crested structures within two years of construction included barnacles (predominately *Semibalanus balanoides* and *Elminius modestus*), limpets (*Patella vulgata* and *P. depressa*) and littorinids (*Littorina littorea* and *L. saxatilis*). On the northern coast of northern Denmark, structures located within the lower tidal frame were found to be dominated by mussel *M. edulis*, particularly juveniles (<2 cm standard length) and the locally abundant bryozoan, *Electra pilosa*. Jackson (2015) reported similar findings and also observed an increase in the biomass of limpets over five years; although from four to five years, the numbers declined while the biomass still increased indicating inter-size competition (Boaventura *et al.*, 2003).

2.3.2 Five to 15 years

A number of taxa currently present within the footprint of the Marine Works are likely to take considerably longer to colonise the marine structures. For example, although the sexual spores and asexual propagules of lichens are probably widely dispersed by the wind and mobile invertebrates making colonisation of the breakwater structures likely, crustose lichen species exhibit low growth rates (0.5 - 1 mm/year) while foliose species may grow up to 2 - 5 mm/year. Fletcher (1980) suggests that newly exposed substratum needs to be modified by weathering and that initiation of new thalli is thought to take several years. Whilst increased surface heterogeneity may increase the colonisation rate of lichens to the breakwater structures, it is believed that it would take in excess of five years (Holt *et al.*, 1995).

For benthic fauna within the dredged/excavated area, the rate of recovery is dependent on a number of factors including the original faunal composition, sediment characteristics, proximity to 'healthy' populations, the size of dredge area, hydrodynamic regime and the programme of maintenance dredging (Hill *et al.*, 2011). The shortest recoveries occur in areas of highly mobile sands under conditions of strong tidal stress. These environments are characterised by opportunistic 'colonisation communities' which can recover very quickly (within six months in some instances (Newell *et al.*, 1998)). The longest recoveries occur in habitats that are less dynamic, particularly coarse sediments in areas of weak or moderate tidal stress. These environments are characterised by mature communities that include long-lived species such as bryozoans and large bivalves e.g. *Pecten* spp., *Chlamys* spp. (Hill *et al.*, 2011). The dominance of muddy sands and sandy muds within the footprint of the Marine Works coupled with the decrease in tidal stress (<1 knot) due to the presence of the breakwaters suggests that recovery is likely to take in excess of five years.

2.4 Ecological enhancement options

Ecological enhancement is a relatively new science which continues to receive considerable academic attention, with a growing number of experimental trials currently underway which are aimed at advancing knowledge of ecological enhancement measures. An increasing number of commercial trials and installations are also in existence in the UK and worldwide, but at present these remain relatively few with only four known ecologically enhanced hard coastal structures operational in the UK.

The first of these was the Shaldon and Ringmore Tidal Defence Scheme in Devon (Naylor *et al.*, 2012); however, the largest to date remains the coastal protection scheme at Hartlepool which included the creation of an 800 m granite rock revetment which was completed in 2016. This project is particularly significant as it was the first commercial example where ecological enhancement measures were included to mitigate indirect effects (from a loss of food resource) to internationally important waterbirds under the European Union Habitats Directive (European Commission., 1992). Other commercial projects which include ecological enhancement can be found on the Isle of Wight and at Bournemouth on the south coast of the UK (Arc Consulting, 2016). Worldwide, there have been a number of large scale commercial trials in Europe (Netherlands, Portugal), Middle East (Israel), North America (Seattle, New York and Vancouver) and Australia (Sydney) (see Naylor *et al.* (2011) for a detailed review).

Table 2 provides an overview of the most well-known ecological enhancement case studies to date including experimental and commercial trials. This body of evidence provides a business case for ecological enhancement, demonstrating 'proof of concept' and has been used to identify ecological enhancement options that may be relevant to the Project.

Table 2: Ecological enhancement options, including example installations, engineering performance and ecological benefits.

Option	Description	Ecological purpose	Example installations	Engineering performance	Ecological benefits
1. **To select ecologically favourable construction materials (e.g. limestone over granite or smooth pre-cast concrete) to stimulate colonisation**	Can be implemented across the whole structure or at specific locations depending on engineering constraints.	To increase surface heterogeneity at the millimetre to centimetre scale with the purpose of encouraging colonisation.	**Seawall at Hartlepool, UK** (commercial trial)	Granite was selected over more ecologically preferable (but expensive) local limestone. This construction material met the engineering performance requirements for its intended use.	Monitoring 12-18 months post-installation showed that the enhanced rock revetment supported quicker succession and had the same biotope and supported similar species densities as the baseline natural shore platform (Naylor *et al.*, 2017).
2. **To use textured armour or pre-cast units to stimulate colonisation**	Textured armour units such as specially selected natural textured rocks or pre-cast units such as ECOPODE™ manufactured by Concrete Layer Innovations (CLI) and Eco-Xbloc-I manufactured by Delta Marine Consultants (DMC).	To increase surface heterogeneity at the millimetre to centimetre scale with the purpose of encouraging colonisation. Pre-cast units available in a range of sizes (e.g. ECOPODE™) can also add structural heterogeneity at the centimetre to metre scale.	**ECOPODE™ units have been added to breakwaters in the Ospdaletti marina, Italy and coastal protection at Garachico, Tenerife** (commercial trials)	ECOPODE™ units have been subject to extensive testing to ensure their structural integrity is comparable to any other unit. Tests have included hydraulic stability, robustness and concrete strength, the results of which are available on their website (http://www.concretelayer.com/).	ECOPODE™ has been found to be naturally effective for marine life, with fish and other species rapidly recruiting to these structures due to the variety of difference sized shelters (CLI, pers. comm.).
			Eco-Xbloc-I have been trialled on a breakwater in Ijmuiden, the Netherlands (experimental trial)	The use of Eco-Xbloc-I is not considered to have a significant impact on the structural stability or the overtopping performance of the armour units.	The study in the Netherlands showed this measure to be effective in low and highly dynamic environments (Paalvast, 2011).
3. **To use pre-cast panel walls or units with tiles fitted to provide surface and structural heterogeneity**	This is the addition of textured marine or cement-based concrete tiles. Often installed on smooth plain cast concrete structures. DMC produce pre-cast Xbloc units with the embedded concrete tiles (e.g. Eco-Xbloc-II).	To increase surface heterogeneity at the millimetre to centimetre scale with the purpose of encouraging colonisation.	**Seawall at Hartlepool, UK** (commercial trial) **Seawall at Saltcoats harbour, Scotland** (experimental trial)	Commercial and experimental installations at Hartlepool and Saltcoasts were not considered to compromise the engineering performance of the structures as they were affixed onto the existing surface using natural cement and/or marine epoxy.	Ecologically enhanced tiles have been found to support greater habitat complexity, abundance and species richness compared to standard smooth plain-cast concrete (Naylor *et al.*, 2017).
			Eco-Xbloc-II have been trialled on a breakwater in Ijmuiden, the Netherlands (experimental trial)	Pre-cast units with integrated tiles (e.g. Eco-Xbloc-II) have a lower mass than conventional units. DMC has proposed increasing the thickness of the main body of the block proportionally to the number of tiles fitted; and increasing the	Establishment and growth of algae occurred almost immediately after placement and were found to be effective in low and highly dynamic environments (Paalvast, 2011).

Option	Description	Ecological purpose	Example installations	Engineering performance	Ecological benefits
				mass density of the concrete itself to improve engineering performance. Small alterations to the size of the Eco-Xblocs are not considered to affect their ability to interlock with one another and with conventional Xblocs.	
			Seawall, Seattle, USA (commercial installation)	Installation of the ecologically enhanced tiles were not considered to affect the engineering performance of the structure.	Different organisms showed different responses to surface texture (e.g. mussels preferred cobbled textures over smooth surfaces) (Goff, 2010).
			Rock rubble breakwater, Elmer, East Sussex, UK (experimental trial)	Installation of the ecologically enhanced tiles were not considered to affect the engineering performance of the structure.	Holes increased diversity of species two-fold compared to smooth concrete panels (Moschella *et al.*, 2005).
4. To retro-fit pits, cracks, crevices and grooves into armour rock	This can be achieved by drilling or scoring the armour rock.	To increase surface heterogeneity at the millimetre to centimetre scale with the purpose of encouraging colonisation.	**Coastal defence structures at Runswick Bay, North Yorkshire, Plymouth Sound, Boscombe, Poole Bay, Dorset** (experimental trials)	The size and density of the features was such that it was not considered to adversely affect the engineering performance of the armour rock.	A significant increase in species richness and species diversity was found on the ecologically enhanced rock amour compared to unenhanced controls (Jackson, 2015; Hall *et al.*, 2018).
			Shaldon and Ringmore Tidal Defence Scheme (commercial installation)	Monitoring has shown no negative effects on material integrity due to the presence of niche habitats.	Eighteen months following installation, nine invertebrate species were found associated with the enhancements. Overall, the enhancements increased abundance and diversity (Naylor *et al.*, 2012).
5. To retro-fit rock pools to armour rock	Water retaining features can be created by coring rock pools into armour rock.	To increase structural heterogeneity at the centimetre to metre scale.	**Armoured breakwater at Tywyn, Wales** (experimental trial)	The size and density of the features was such that it was not considered to adversely affect the engineering performance of the armour rock.	The pools supported higher biodiversity than surrounding surfaces without water retaining features. When comparing to natural rock pools, the artificial rock pools supported a similar number of species; however, community structure differed (Evans, 2015).

Option	Description	Ecological purpose	Example installations	Engineering performance	Ecological benefits
			Causeway, Galway Bay (experimental trial)	The City Council Engineer approved the modification of the Shepard Hill Energy Dissipation Units. The modifications also survived the winter storms of 2014.	Twelve months after installation, lower and exposed pools supported greater diversity than upper pools (Firth *et al.*, 2016a).
6. To install prefabricated rock pools or rock pool features during design	Installation of prefabricated units such as those offered by ECOncrete® and Vertipools by Artecology. These are fixed (cemented) into existing rock structures.	To increase structural heterogeneity from the centimetre to metre scale.	**ECOncrete®'s rock pools installed at the Brooklyn Bridge Park, USA** (experimental trial)	Rock pools have also developed in line with the performance requirements of specific projects. For example, in New York, rock pools were specifically designed to have up to 5 - 8% of air (freeze and thaw) resistance, 40 MPa and anti-crack structural fibres.	Found to create well-defined local ecosystems that mimic natural rock pools typical to rocky coasts, and increase local biodiversity and biological productivity (Perkol-Finkel, pers. comm.).
			Vertipools on seawall, Isle of Wight (commercial installation)	The size and density of the features was such that it was not considered to adversely affect the engineering performance of the armour rock.	Field testing has demonstrated that these features provide refuge for key species and support higher species richness than natural shore pools (Hall *et al.*, 2018).
			Artificial pools in a vertical sand stone wall, Sydney Harbour, Australia (commercial trial)	The size and density of the features was such that it was not considered to adversely affect the engineering performance of the armour rock.	Invertebrate species richness was increased after one year, with pool biodiversity greater than adjacent walls (Chapman and Blockley, 2009).
7. To install prefabricated ecologically enhanced units	Pre-cast concrete units (e.g. BIOBLOCKS™ and ECOncrete®'s armouring units) are designed to incorporate multiple habitat types on the different faces of the block. These units can be placed between existing rocks on the structures.	To increase surface and structural heterogeneity from the millimetre to metre scale.	**BIOBLOCKs at Colwyn Bay, West Wales** (academic trial)	Although constructed from marine grade concrete, no formal assessment of the structural integrity of BIOBLOCKS™ has been conducted to date. BIOBLOCKS™ were positioned on the opposite side of a groyne to the prevailing current to ensure their presence did not compromise the functioning of the breakwater as a coastal defence structure.	The BIOBLOCK™ was found to support a greater biodiversity than the surrounding rock revetment (Firth *et al.*, 2014).

Option	Description	Ecological purpose	Example installations	Engineering performance	Ecological benefits
			ECOncrete®'s armouring units, Haifa, Israel (academic trial)	ECOncrete® has undertaken structural testing of its ecological enhancement units to ensure compliance with ASTM/EN standards including, but not limited to, compressive strength (ASTM C 39 (AASHTO T 22)), water pressure penetration resistance (EN 12390-8), and chloride ion penetration resistance (ASTM C1202-12).	The abundance, richness and diversity of invertebrates and fish were higher on and around the ECOncrete®'s armouring units compared to standard units, whilst the ratio of invasive to local species was considerably lower (Sella and Perkol-Finkel, 2015).

3. Ecological enhancement feasibility study

This section provides details of the ecological enhancement feasibility study which was carried out in June 2017. This feasibility study examined the ecological enhancement measures identified in Section 2.4 and considered project specific design information (see Section 3.1) and engineering and Project constraints (see Section 3.2) in order to evaluate potentially feasible ecological enhancement measures for the Project. The outcome of this feasibility study is summarised in Table 3 (Section 3.3) below.

3.1 Design of the Marine Works

The Marine Works include two breakwater structures which would be rubble mound, overlaid with pre-cast concrete armoured Xblocs. The western breakwater would be 400 m long, comprising a 300 m southern element unconnected to the coast and a 100 m northern element. The eastern breakwater would be approximately 150 m long at the crest and connected to the shoreline by shore protection made of armour rock; the slope of armour rock and the breakwaters would be 1 in 4/3 (1 in 1.5 along the 300 m leeward face of the western breakwater). The eastern and western breakwaters would have a combined surface area of approximately 58,899 m^2. A small region on the leeward side of the western breakwater (approximately 4,755 m^2) would also be comprised of armour rock.

The MOLF would be comprised of two quays (bulk quay and Roll on Roll off (Ro-Ro) quay) and a layby berth. The bulk quay would be comprised of two berthing platforms, each with four mooring dolphins (i.e. eight in total). The area between the two platforms would represent shore protection comprising either rock revetment with a 1 in 1.5 slope and a total area of 1,171 m^2 or a continuous vertical quay wall. The Ro-Ro quay represents a 100 m long quay wall whereas the layby berth would consist of a series of berthing and mooring dolphin structures.

It is anticipated that the walls of the bulk berthing platforms and Ro-Ro quay would be constructed of pre-cast mass concrete blockwork structures. The mooring dolphins would either be similarly constructed in pre-cast mass concrete blocks or using large diameter steel mono-piles socketed into the seabed or multi-pile dolphins similarly socketed into the seabed.

3.2 Engineering and project constraints

Preliminary discussions with Horizon and their engineering partners identified that it would not be possible to influence the orientation, gradient and position of the marine structures, notably the breakwaters, owing to engineering constraints with regards to the primary aim of the breakwater structures which is to create acceptable wave conditions for the operation of the cooling water intake. An additional constraint is the requirement to ensure an even flow field and low approach velocities (<0.3 m/s) at the cooling water intake to mitigate fish entrapment.

As Xblocs are interlocking units which conform to a specific design (i.e. packing density, unit size, placement distance, etc.) defined by the project specification and the hydrodynamic conditions, it is not possible to ‘open up’ this design at the risk of compromising the integrity and primary function of the breakwater structures.

A project constraint stipulated by Horizon in accordance with the Marine Licence Application was that any marine ecological enhancement mitigation must be carried out within the Order Limits. In the event that the marine ecological enhancement measures proposed by Horizon were considered insufficient, or that the mitigation measures failed to meet their objectives, therefore triggering a requirement for further mitigation, Horizon would look to explore opportunities which did not have a physical presence within the marine environment (e.g. funding for research projects examining ecological enhancement).

3.3 Ecological enhancement options

Table 3 summarises the findings of the feasibility study which examined each ecological enhancement measure identified during the detailed literature review and assessed whether there were any engineering or project constraints which would prohibit application to the Project.

Table 3: Feasibility study of ecological enhancement measures in relation to the Project.

Option	Engineering design and constraint	Feasibility of option
1. To select ecologically favourable construction materials (e.g. limestone over granite or smooth pre-cast concrete) to stimulate colonisation	It involves considerable challenge to procure armour rock, particularly units measuring 9 m^3 and 16 m^3 including quarry production, transportation, logistics as well as placement on the breakwaters themselves. Furthermore, natural rock does not possess the same interlocking properties as engineering concrete armour units and therefore generally, armour rock units are required to be larger in order to achieve the same engineering performance. This and the aforementioned challenges were the primary reasons for the decision to use concrete armour units for the breakwater design. There are a range of types/brands of concrete armour units. Xbloc was chosen due to its previous performance record in the UK/European environment/context.	Owing to the requirement to use concrete armour units (specifically Xbloc) for the design of the breakwaters, it is not possible to alter the construction material of these structures. However, there is potential to modify the construction materials within the regions of armour rock on the inner face of the western breakwater and along the eastern margin of the eastern breakwater.
2. To use textured armoured or pre-cast units to stimulate colonisation (e.g. Eco-Xbloc-I and ECOPODE™)	No engineering constraints have been identified in relation to the use of textured pre-cast Xbloc units such as Eco-Xbloc-I as these could simply be inserted in place of standard units. However, it has been identified that this option would present a small impact to the construction schedule owing to the additional time required for casting and the requirement to produce bespoke moulds with form-liners which would require replacement on a regular basis. Given the requirement to use Xblocs over much of the surface area of the breakwaters and given the reasons described above for option 1, it would only be possible to use other textured pre-cast units (e.g. ECOPODE™) in the areas of armour rock. However, to allow the pre-cast units to be inserted in place of armour rock units, they would need to possess the same mass density (e.g. 3-6 tonnes). Pre-cast units possessing a smaller mass density than the armour	Whilst in principle, the use of Eco-Xbloc-I is feasible, there are schedule impacts associated with this option and therefore it is undesirable from a Project perspective. There are engineering and logistical constraints associated with the use of textured pre-cast units within the regions of armour rock and therefore although feasible in principle, this option is undesirable from a Project perspective.

Option	Engineering design and constraint	Feasibility of option
	rock units could be added on top of the structure but it is considered a high risk that these would be washed away during storm conditions.	
3. **To use pre-cast panel walls or units with tiles fitted to provide surface and structural heterogeneity**	The addition of textured tiles recessed into pre-cast units (e.g. Eco-Xbloc-II) decreases the overall mass of the units and could have implications for their hydraulic stability. Whilst manufacturers of such products suggest marginally increasing the thickness of the main units to address this issue, there is additional concern that the tiles could de-bond over time forming a weakness plane which could cause individual units to become unstable. There is currently no evidence to suggest that the addition of tiles has no effect on the structural integrity units and therefore there is concern regarding their application to commercial projects.	This option is not considered feasible on the grounds that the structural integrity of such measures remains untested.
4. **To retro-fit pits, cracks, crevices and grooves into armour rock.**	This option would decrease the mass density of armour rock units and could have implications to their hydraulic stability. There is currently no evidence which suggests that modifications to armour rock has no effect on their structural integrity and therefore there is concern regarding the application of this option to commercial projects.	This option is not considered feasible as its implications to the structural integrity of armour rock remains untested.
5. **To retro-fit rock pools to armour rock.**	This option would decrease the mass density of armour rock units and could have implications to their hydraulic stability. There is currently no evidence which suggests that modifications to armour rock has no effect on their structural integrity and therefore there is concern regarding the application of this option to commercial projects.	This option is not considered feasible as its implications to the structural integrity of armour rock remains untested. However, this option is considered feasible if implemented under the footprint of the temporary causeway once removed.
6. **To install prefabricated rock pools or rock pool features during design.**	No engineering constraints have been identified in relation to the installation of prefabricated rock pools on the Permanent Marine Works.	This option is considered feasible.
7. **To install prefabricated ecologically enhanced units.**	Given the requirement to use Xblocs over much of the surface area of the breakwaters and given the reasons described above for option 1, it would only be possible to use other textured pre-cast units (e.g. ECOPODE™) in the areas of armour rock. However, to allow the pre-cast units to be inserted in place of armour rock units, they would need to possess the same mass density (e.g. 3-6 tonnes). Pre-cast units possessing a smaller mass density than the armour rock units could be added on top of the structure but it is considered a high risk that these would be washed away during storm conditions	There are engineering and logistical constraints associated with the use of textured pre-cast units within the regions of armour rock and therefore although feasible in principle, this option is undesirable from a Project perspective.

4. Further detail on the ecological enhancement mitigation presented in the DCO application

Within the DCO application ecological enhancement is presented as an additional mitigation measure intended to address the moderate adverse effect to subtidal and intertidal habitats and species of conservation importance arising from the direct loss of habitat under the footprint of the Marine Works (see chapter D13, Application Reference Number: 6.4.13) of the Environmental Statement.

This additional mitigation forms part of the ecology and landscape management strategy secured in the Marine Works sub-Code of Construction Practice (sub-CoCP) (Application Reference Number: 8.8) and states that:

"*Marine ecological habitat enhancements measures will be provided in suitable locations unconstrained by engineering design and functionality, to include pre-cast ecological units (e.g. rock pools or features similar to bio-blocks) and modification of the permanent artificial structures (e.g. construction material, surface roughness or the addition of surface features). The purpose of marine ecological enhancement measures would be to increase surface and structural heterogeneity, encouraging the colonisation of native marine species and the establishment of diverse and productive intertidal and subtidal habitats within the footprint of the Marine Works*" [paragraph 11.2.1].

Furthermore, as part of this strategy it is proposed that a method statement would be developed to include "*measures for the protection of existing rocky shoreline beneath the temporary causeway*" which would include "*making good of the intertidal zone on removal of the temporary causeway, to restore a natural appearance, similar to the adjacent shore, where practicable*" [paragraph 11.4.1].

During the recent SoCG meeting held on the 1st August, NRW requested additional detail regarding the ecological enhancement measures proposed within the DCO application. To expand upon paragraph 11.2.1 of the Marine Works sub-CoCP (Application Reference Number: 8.8), Horizon has provided detail about a number of specific ecological enhancement measures which would be implemented to mitigate effects to benthic habitats and species. These measures, listed here, are described in detail within the subsequent sections:

1. the addition of up to 10 pre-cast vertical rock pools on the MOLF wall;
2. seeding of the breakwaters and adjacent areas with natural rock where practicable;
3. actively maintaining surface roughness of intertidal and subtidal areas subject to dredging as part of the Marine Works;
4. monitoring of the permanent marine structures and ecological enhancement measures following construction; and
5. provision of relevant monitoring data to academic institutes to facilitate research into sustainable marine infrastructure.

In addition, Horizon has taken the opportunity to expand upon paragraph 11.4.1 of the Marine Works sub-CoCP (Application Reference Number: 8.8) and provide further detail about the shoreline protection and restoration method statement.

4.1 Pre-cast vertical rock pools

As detailed in Table 1, studies have shown that vertical substrates support fewer marine organisms, particularly mobile species, compared with substrates with a gentler gradient (Glasby, 2000;

Chapman and Bulleri, 2003). This is primarily because of the lack of physical complexity, particularly horizontal surfaces and features which provide shelter from the effects of emersion.

Intertidal rock pools are known to be important features of natural rocky shores, providing habitat for specialist fauna and flora, but also refuge during times of stress for many other species that also use the surrounding rock platform. If artificial structures can be engineered to include habitats that function as rock pools, local diversity may be enhanced and species that are generally confined to the low shore levels may be able to expand their distribution over a greater tidal range (Chapman and Blockley, 2009; Firth *et al.*, 2013; Evans *et al.*, 2016; Ostalé-Valriberas *et al*., 2018). The presence of rock pools on otherwise smooth uniform structures can also increase the edge effect facilitating the attachment of algae.

The MOLF wall is approximately 380 m long (see the detailed plans for the Marine Works, Application Reference Number: 2.6.3) and presents a surface which could be ecologically enhanced to facilitate the colonisation and establishment of marine organisms and habitats on this structure. Consequently, Horizon proposes to incorporate up to 10 pre-cast vertical rock pools similar to vertipools (Figure 1) on the MOLF wall between the fenders. The purpose of the vertipools would be to create water retaining features at points above mean high water springs to increase the surface area available for intertidal species and habitats.

Providing Horizon can confirm that these pre-cast rock pools would not inhibit the operation of the MOLF and therefore the Project schedule, these would be installed during construction. Otherwise they would be installed retrospectively once the operational phase of the MOLF is complete.

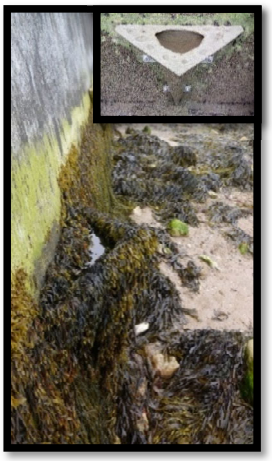

Figure 1: Pre-cast vertipools manufactured by Artecology (http://www.artecology.space/).

4.2 Seeding permanent marine structures with natural rock

Although the majority of the breakwater structures will be comprised of pre-cast concrete armoured Xbloc units, there is an area of armour rock located on the harbour side of the southern element of the western breakwater (Figure 2). This armour rock would cover a total area of 0.3 ha; of this 0.2 ha would occur within the intertidal zone whilst the remaining 0.1 ha would occur subtidally[2].

[2] Note these areas are based on the preliminary engineering design of the breakwaters and may be subject to small changes during development of the detailed design.

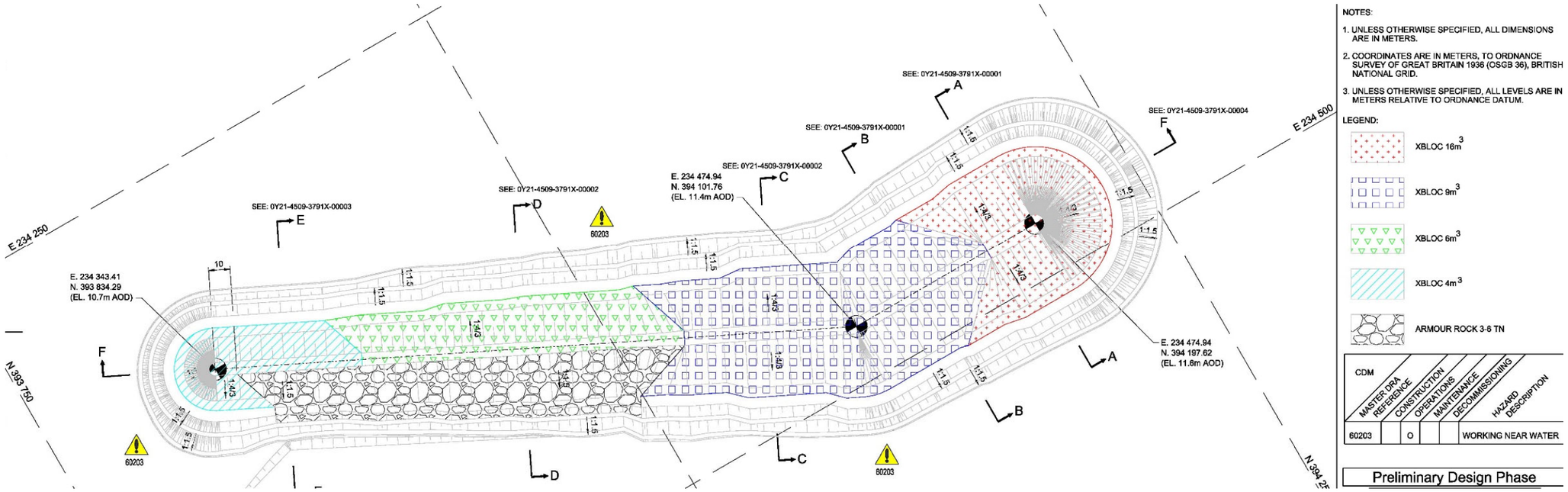

Figure 2: Preliminary engineering design of the western breakwater showing the area of armour rock.

Horizon are proposing to seed this area and any other areas of armour rock with natural rock won from the Marine Works, where practicable. The extent to which this would be feasible depends on the size of the material excavated; each rock would need to weigh 3-6 tonnes to be able to be used within the armour rock.

This excavated material would be non-uniform in shape and therefore possess both surface and structural heterogeneity that would be expected to facilitate colonisation and the establishment of intertidal and subtidal habitats at a greater rate than the adjacent pre-cast armoured Xbloc units. The location of this ecological enhancement measure on the leeward side of the western breakwater would be considered to help minimise the risk of INNS establishment, many of which are known to proliferate in sheltered harbour environments (see Section 2.2 for more information).

There are also aesthetic benefits associated with this ecological enhancement measure, with armour rock won from the site possessing an appearance more akin to the natural rocky shore found along the coast of Anglesey. It is also acknowledged that the use of material won from the site is more sustainable than importing quarried material from elsewhere.

4.3 Actively maintaining surface roughness

An area of approximately 17 ha within the harbour would be dredged and excavated during construction. For the purpose of assessment within the DCO application, this area has been assumed to be permanently lost (see chapter D13, Application Reference Number: 6.4.13, of the Environmental Statement).

On completion of the Marine Works and removal of the temporary cofferdam, this area would be largely unaffected by the remaining construction activities. During operation of the Power Station, there may be a requirement to carry out maintenance dredging within the approaches of the Cooling Water Intake channel; however, it is expected that the frequency of this activity would be low. This assumption has been made based on the hard nature of the substrate and the limited deposition that is predicted to occur within the harbour (see chapter D13, Application Reference Number: 6.4.13) of the Environmental Statement).

Horizon and their engineering partners have confirmed that as part of the dredging and excavation operations, the seabed within the harbour would not be scraped smooth but rather left with a surface roughness of ±250 mm. The purpose of this would be to provide surface heterogeneity to promote recolonisation of the area and the establishment of more complex habitats which would help reduce the risk of INNS becoming established subtidally within the harbour.

4.4 Monitoring

Within the DCO application, Horizon has made a commitment to implement a monitoring programme for INNS (see the Marine Works sub-CoCP (Application Reference Number: 8.8). As shown in Section 2.2 above, ecological enhancement measures which facilitate the development of more complex habitats can help reduce the establishment and spread of the INNS.

Given the relationship between INNS and ecological enhancement, Horizon confirms that the current commitment to monitoring for INNS would include monitoring of the ecological enhancement measures. This would have the dual purpose of assessing the benefits of ecological enhancement in relation to INNS whilst also assessing the effectiveness of the enhancement measures against a suite of clearly defined ecological goals. The monitoring data would be used to permit adaptive management and inform the decision to implement further enhancement if necessary.

4.5 Supporting academic research

Horizon recognizes that ecological enhancement is an expanding area of science which is currently receiving considerable academic attention. Of particular relevance is the European funded Ecostructure Project which represents a collaboration between three Welsh (Aberystwyth, Bangor and Swansea University) and two Irish institutions (University College Dublin and University College York).

Horizon has initiated contact with academic experts and institutes currently undertaking research in ecological enhancement to begin fostering links within the field. It is Horizon's intention to provide relevant monitoring data to academic institutes for the purpose of supporting research into sustainable infrastructure.

4.6 Shoreline protection and restoration method statement

As part of the shoreline protection and restoration method statement, Horizon proposes to restore the intertidal and subtidal area located under the footprint of the temporary causeway once this structure is removed, and the adjacent intertidal area to the east where disturbance of habitats is also likely to occur.

The restoration method statement would aim to restore a total area of 4 ha; 3 ha would be located subtidally whilst the remaining 1 ha would be located intertidally (i.e. on the foreshore). The biotopes known to be present in the area as identified during the 2014 biotope mapping survey (see appendix D13-3 Porth-y-pistyll Biotope Surveys Report, Application Reference Number: 6.4.85, of the Environmental Statement) are shown in Figure 3.

The shoreline protection and restoration method statement would aim to achieve the following:

- to restore the topography of the substrate including gradient and structural heterogeneity;
- to reinstate the 15 rock pools measuring greater than 1 m^2 that are currently known to be present within the area; and
- to develop the same or similar rock pool biotopes to those currently known to be present within the area.

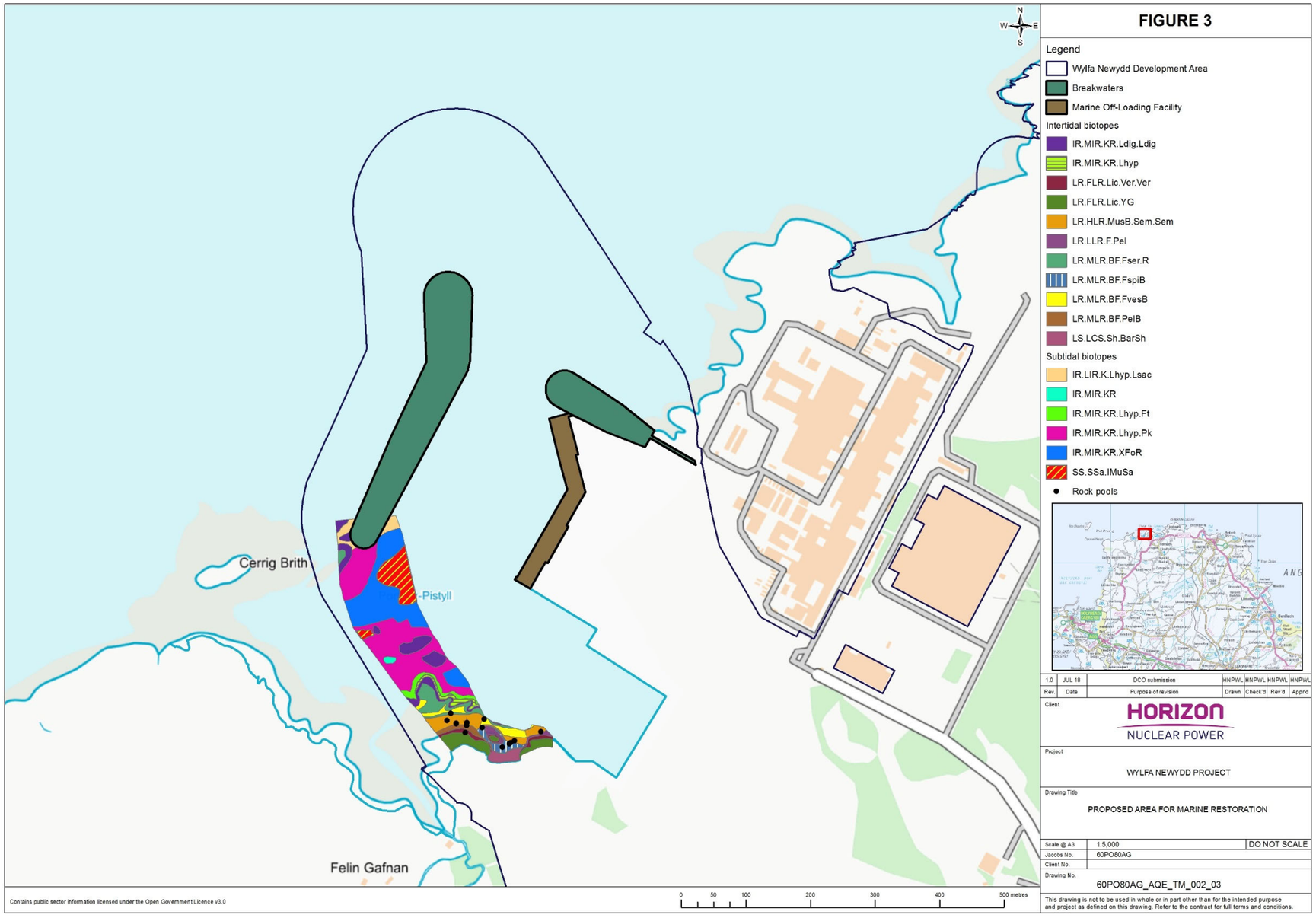

Figure 3: Intertidal and subtidal area which would be restored following removal of the temporary causeway.

The content of the shoreline protection and restoration method statement for the Project would include:

- a clear rationale as to why restoration is needed;
- an ecological description of the areas of historical state and/or trajectory;
- a statement of the goals and objectives of the restoration plan;
- explicit plans for site preparation, installation and post-installation activities;
- well-developed and explicitly stated standards with details of monitoring protocols by which the plan can be evaluated; and
- at least one control site in the vicinity, where feasible, for the purposes of comparison with the restored environment or ecosystem.

It is recognized that owing to changes to the hydrodynamic conditions within the harbour following construction of the Marine Works, it is unlikely that it would be possible to completely restore the area to its previous natural state. Therefore, the goal would be to facilitate recovery along an alternate trajectory towards a climax community which would provide comparable ecosystem processes and services.

In accordance with the guidance provided by The Society for Ecological Restoration Science & Policy Working Group (SERSPWG, 2002), the shoreline protection and restoration method statement would broadly seek to achieve habitats which:

- contain species assemblage's characteristic of the wider rocky coastline of Anglesey;
- consist of native species to the greatest practicable extent;
- contain functional groups necessary for continuous development and/or stability of communities;
- consist of a physical environment capable of sustaining reproductive populations;
- are suitably integrated into the larger ecological matrix or landscape;
- are sufficiently resilient to endure the normal periodic stress events characteristic of the area; and
- are self-sustaining to the same degree as reference habitats or environments, and have the potential to persist indefinitely under existing environmental conditions.

The monitoring programme described in Section 4.4 would also cover the area intended to be restored in order to assess the effectiveness of this mitigation measure against the broad ecological objectives described above.

5. Conclusions

This technical memo has sought to demonstrate to NRW, Horizon's understanding of ecological enhancement and how ecological enhancement measures can be incorporated into the design of the Marine Works to mitigate effects to marine habitats and species of conservation importance arising from these construction works.

Horizon has carried out an ecological enhancement feasibility study to examine whether each measure can be applied to the Project in light of the engineering and project constraints; this information is detailed in Section 3.

The information outlined in Section 4 provides additional detail in relation to ecological enhancement mitigation which is above and beyond that outlined in the DCO application (see the Marine Works sub-CoCP, Application Reference Number: 8.8). Horizon considers this additional detail to have addressed NRWs comment made during the recent SoCG meeting in relation to this topic and welcomes agreement from NRW that in light of this information, the assessment of direct habitat loss made within chapter D13 (Application Reference Number: 6.4.13) of the Environmental Statement remains appropriate.

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