

Wylfa Newydd Project Signposting Report for the Environment Statement (ES)

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1 About this Report

1.1 Purpose and Applicability

- 1.1.1 Horizon Nuclear Power Wylfa Limited (Horizon) is proposing to construct, operate and maintain a new nuclear power station on land west of Cemaes on Anglesey; the Wylfa Newydd Project. The Wylfa Newydd Project will require a Marine Licence from Natural Resources Wales (NRW) under the Marine and Coastal Access Act 2009 (as amended) (MCAA) to allow for the construction and maintenance of Licensable Marine Activities associated with the Project.
- 1.1.2 Horizon is applying to NRW for this Marine Licence. These Licensable Marine Activities will be undertaken seawards of mean high water spring tides (MHWS), include or are associated with the Project's major marine infrastructure items - notably the Marine Off-Loading Facility (MOLF), the CWS and breakwaters - and comprise the following types of activities:
- Marine Works, including temporary and permanent marine works.
 - Dredging and the deposit (i.e. disposal) of dredged material at sea.
- 1.1.3 The scope of the Licensable Marine Activities proposed under Horizon's Marine Licence application – including the proposed Marine Works, dredging works and deposit of dredged material at sea – is described in detail in document ML-PLD-01-PDR – Marine Licence Application - Schedule of Licensable Marine Activities.
- 1.1.4 Horizon is also applying to the Secretary of State for a Development Consent Order (DCO) under the Planning Act 2008 for the construction, operation and maintenance of the new nuclear power station.
- 1.1.5 Due to the nature of the proposed project an Environmental Impact Assessment (EIA) has been undertaken and an Environmental Statement (ES) has been prepared in accordance with the requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009. The Project is classified as an EIA project under Schedule 1, 2(b): *'Nuclear power stations and other nuclear (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load).'*
- 1.1.6 The EIA has also been undertaken and the ES prepared in accordance with the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended). Horizon has taken this approach because – at the time of undertaking the EIA and preparing the ES – it was unknown whether NRW would choose to defer to the Secretary of State's EIA consent decision (for the DCO application) under Regulation 10(1)(b) of the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended). Accordingly, if necessary, the ES will inform both Horizon's DCO applications and Marine Licence applications to the Secretary of State and NRW, respectively.

1.2 Scope

- 1.2.1 The purpose of this Signposting Report is to identify and direct the reader to the sections of the ES where information regarding Licensable Marine Activities is provided and potential environmental effects are addressed.
- 1.2.2 The ES comprises 11 volumes of which the contents are summarised in table 1-1. Not all of the volumes contain information pertinent to the Marine Licence application. Where an ES volume does not contain any information relevant to Licensable Marine Activities, it is highlighted in table 1-1 below.

Table 1-1 Summary of Environmental Statement volumes and applicability to the Marine Licence application

Volume	Description	Contents	Relevant to Marine Licence application?
A	Introduction to the Wylfa Newydd Project and approach to the EIA	Introduces the Environmental Statement, and assessment process, provides a description of the Wylfa Newydd Project and the surrounding environmental context, identifies strategic alternatives and summarises the consultation undertaken to date with stakeholders, including EIA Scoping	Yes. See section 2 of this Signposting Report
B	Introduction to the environmental topics	Provides the underlying technical information for each topic that is common to the assessment, such as topic definitions, topic specific legislation, policy, guidance and assessment methods and key points arising in consultation that have guided the topic specific assessment work	Yes. See section 3 of this Signposting Report
C	Project-wide effects	Presents the assessment of those environmental effects that are more appropriately considered at a project-wide level rather than for each component development in turn. These are traffic-related effects which are assessed by means of a project-wide traffic model (including the effects on traffic and transport per se, as well as the effects of changes in traffic on air quality, on noise and on public access and recreation), as well as some aspects of socio-economics and waste and materials management which consider effects at a regional spatial scale. This is	No. All assessments relate to land-based activities. Note that chapter C6 describes materials arising during construction which includes dredge spoil (Table C6-6) but then refers to volume D, chapter D13 for more information on management. Since more detailed information is provided in other chapters of the ES, this volume and associated chapters are not specifically indicated as being relevant to the Marine Licence application

Volume	Description	Contents	Relevant to Marine Licence application?
		not the cumulative effects assessment, which is reported in volume I, as described below	
D	Wylfa Newydd Development Area (WNDA) Development	Reports the assessment of effects resulting from the Power Station, Marine Works, other on-site development and the Site Campus	Yes. See section 5 of this Signposting Report
E	Off-Site Power Station Facilities	Reports the assessment of the effects resulting from the Alternative Emergency Control Centre, Environmental Survey Laboratory and Mobile Emergency Equipment Garage	No. All activities require works above mean high water springs (MHWS). As a result, this volume does not contain information on Licensable Marine Activities
F	Park and Ride	Reports the assessment of the effects resulting from the Park and Ride facility at Dalar Hir	No. All activities require works above MHWS. As a result, this volume does not contain information on Licensable Marine Activities
G	A5025 Off-line Highway Improvements	Reports the assessment of the effects resulting from the A5025 Off-line Highways Improvements	No. All activities require works above MHWS. As a result, this volume does not contain information on Licensable Marine Activities
H	Logistics Centre	Reports the assessment of the effects resulting from the Logistics Centre at Parc Cybi	No. All activities require works above MHWS. As a result, this volume does not contain information on Licensable Marine Activities
I	Cumulative effects	Presents the assessment of cumulative effects. Intra-project effects are reported where receptors would be affected by more than one of the component developments within the Wylfa Newydd Project. Inter-project effects are reported where receptors	Yes. See section 6 of this Signposting Report

Volume	Description	Contents	Relevant to Marine Licence application?
		would be affected by both the Wylfa Newydd Project and at least one external project	
J	Environmental commitments and summary of residual effects	Summarises how environmental commitments would be managed and includes a table setting out the predicted significant residual effects of the Wylfa Newydd Project	Yes. See section 7 of this Signposting Report

2 Volume A

2.1 Introduction

2.1.1 Volume A of the ES introduces the ES and the EIA process, provides a description of the Wylfa Newydd Project and the surrounding environmental context, identifies strategic alternatives and summarises the consultation undertaken to date with stakeholders, including EIA Scoping.

2.2 Chapters relevant to the Marine Licence application

2.2.1 Since volume A provides an outline background to the Wylfa Newydd Project, it is considered that all chapters are relevant to the Marine Licence application as shown in table 2-1. Further detail on each chapter is provided in section 2.3 below.

Table 2-1 Structure of volume A and relevance to Marine Licence application

Volume	Chapter	Description	Relevant to Marine Licence application?
A	A1	Introduction	Yes. Provides background to the Project with a description of the Licensable Marine Activities
	A2	Project overview and introduction to the development	Yes. This chapter provides further detail about the elements of the Project. It also sets out the Licensable Marine Activities
	A3	Environmental context	Yes. Provides background to the Project and information on the overall area alongside relevant conservation designations
	A4	Strategic alternatives	Yes. Provides background and outlines the need for the Project and the reasons for its proposed location near Wylfa Head within the WNDA
	A5	Overarching environmental legislation, policy and guidance	Yes. Reviews the legislative and policy framework underpinning the environmental assessment
	A6	Environmental Impact EIA Scoping Report and Addendum	Yes. Describes the scoping process and the scoping opinions sought

Volume	Chapter	Description	Relevant to Marine Licence application?
	A7	Consultation with environmental stakeholders	Yes. Describes consultation that has been undertaken to inform the impact assessment

2.3 Volume A chapter signposting

- 2.3.1 Volume A comprises seven chapters. Chapter A1 introduces the ES (section 1.1), including the requirement for a Marine Licence (paragraph 1.1.3) and provides an outline background to the project (section 1.2). Specific reference to the Marine Licence is made in paragraph 1.2.7. Section 1.3 describes the components of the Wylfa Newydd Project (including a specific section on Licensable Marine Activities (paragraph 1.3.8)) and section 1.4 outlines the purpose and content of the ES. Additional assessments to support the application for development consent (such as the Shadow Habitats Regulations Assessment) are outlined in section 1.5. Figure A1-1 shows the various project components on Anglesey that make up the Wylfa Newydd Project.
- 2.3.2 Chapter A2 provides further detail about the elements of the Wylfa Newydd Project. Section 2.1 lists where detailed descriptions of each element of the Wylfa Newydd Project are located.
- 2.3.3 Section 2.2 describes the Power Station Site, other on-site developments and Marine Works (paragraphs 2.2.3 to 2.2.5). Section 2.3 identifies the Licensable Marine Activities, including the temporary and permanent marine works, the dredging works, and the deposit (disposal) of dredged material at the Holyhead North Disposal Site (site code IS043). Sections 2.4 and 2.5 do not identify any Licensable Marine Activities because they cover Off-site Power Station Facilities and Associated Development respectively. Section 2.6 presents an outline programme of construction and operation including a table showing the construction timeline in figure A2-6. Section 2.7 details likely numbers of construction workers which feed into the various environmental assessments. Section 2.8 details the separate DCO project known as the North Wales Connection Project which provides for the electrical energy connection into the National Grid.
- 2.3.4 The information provided in chapter A3 describes the environmental context of the Isle of Anglesey and the areas around the Wylfa Newydd Project development sites. Section 3.1 introduces the chapter and section 3.2 presents the environmental context of the Isle of Anglesey; location, history and culture, socio-economic and transport context. Section 3.3 includes a description of the WNDA (containing the Power Station, other on-site development, Marine Works (and associated Licensable Marine Activities) and the Site Campus) and the ecological conservation designated sites of the WNDA. The location of the designated sites is shown on figure A3-2. Sections 3.4 and 3.5 do not include any Licensable Marine Activities

because they cover Off-site Power Station Facilities and Associated Development respectively.

- 2.3.5 Chapter A4 outlines the need for the Wylfa Newydd Project and the reasons for its proposed location. It also describes the strategic thinking that has shaped the development of the Wylfa Newydd Project. Section 4.1 introduces the chapter and section 4.2 describes alternatives to nuclear and large-scale electricity generation. Section 4.3 discusses the Power Station site location. Sections 4.4, 4.5 and 4.6 then discuss the Off-Site Power Station Facilities, Site Campus and Transport respectively.
- 2.3.6 Chapter A5 provides details on overarching environmental legislation, policy and guidance for the Wylfa Newydd Project. Reference is made to the MCAA and relevant regulations in section 5.2 'legislation'. Here, the requirement for a Marine Licence and the Licensable Marine Activities under the MCAA are described (paragraphs 5.2.9 to 5.2.10). Other legislation relevant to the marine licensing process is also provided here, including the requirements of the various regulations implementing the EIA Directive, Habitats Directive, Birds Directive and the Water Framework Directive (WFD). Environmental permitting is introduced here.
- 2.3.7 Relevant policy to the Wylfa Newydd Project is outlined in section 5.3 and guidance in section 5.4.
- 2.3.8 Chapter A6 outlines the requirements of EIA scoping and the process undertaken for the Wylfa Newydd Project. Whilst detail of technical scope is provided later in the ES (volume B), this chapter describes the environmental topics identified during the scoping process. The 2017 scoping opinion discussions are relevant to the Marine Licence application (section 6.1, paragraphs 6.1.8 to 6.1.11) Table A6-1 in section 6.2 presents the topics scoped in and for which components of the Wylfa Newydd Project they relate to.
- 2.3.9 Chapter A7 describes the various consultation activities undertaken to help understand the potential environmental effects likely to arise from the Wylfa Newydd Project. Section 7.1 outlines how the Wylfa Newydd Project EIA has been undertaken in accordance with the advice presented in Planning Inspectorate Advice Note Seven. Sections 7.2 to 7.4 detail the three stages of pre-application consultation and section 7.5 outlines other environmental stakeholder engagement.

3 Volume B

3.1 Introduction

3.1.1 Volume B of the ES provides the underlying technical information for each topic that is common to the assessment of all developments, such as topic definitions, topic specific legislation, policy, guidance and assessment methods and key points arising in consultation that have guided the topic specific assessment work. Note that the assessment of each topic is provided in volume D.

3.2 Chapters relevant to the Marine Licence application

3.2.1 Since volume B contains all technical topics, this section details those that are relevant to the Marine Licence application. A summary of chapters and comments as to their relevance is provided in table 3-1.

Table 3-1 Structure of volume B and relevance to Marine Licence application

Volume	Chapter	Description	Relevant to Marine Licence application?
B	B1	Introduction to the assessment process	Yes. This chapter details the assessment process
	B2	Introduction to the environmental assessments – socio-economics	No. There are no socio-economic implications in relation to Licensable Marine Activities
	B3	Introduction to the environmental assessments – traffic and transport	No. Although there is reference to the percentage of materials to be transported by sea, the assessment regarding increases in vessels and navigation is provided in the shipping and navigation chapter B15
	B4	Introduction to the environmental assessments – public access and recreation	Yes. Covers the assessment in relation to recreational use of the sea (such as fishing for example) which potentially could be affected by Licensable Marine Activities
	B5	Introduction to the environmental assessments – air quality	Yes. This chapter is included because it contains information about air quality effects associated with marine vessel movements
	B6	Introduction to the environmental assessments – noise and vibration	No. The marine environment chapters, B13 and D13 consider noise and vibration effects on the marine environment associated with Licensable Marine Activities
	B7	Introduction to the environmental assessments – soils and geology	Yes. There is reference to the construction of the cooling water outfall within the assessment chapter (D7) which is a licensable marine activity
	B8	Introduction to the	No. All assessments related to Licensable

Volume	Chapter	Description	Relevant to Marine Licence application?
		environmental assessments – surface water and groundwater	Marine Activities are covered in the marine specific topic chapter B13
	B9	Introduction to the environmental assessments – terrestrial and freshwater ecology	No. Concentrates on impacts associated with activities that are not Licensable Marine Activities
	B10	Introduction to the environmental assessments – landscape and visual	Yes. Inclusion of seascape character is included here which could potentially be affected by Licensable Marine Activities
	B11	Introduction to the environmental assessments – cultural heritage	Yes. Marine archaeological features are discussed in this chapter which could potentially be affected by Licensable Marine Activities
	B12	Introduction to the environmental assessments – coastal processes and coastal geomorphology	Yes. Covers specific issues on coastal processes and geomorphology which could potentially be affected by Licensable Marine Activities
	B13	Introduction to the environmental assessments – the marine environment	Yes. Covers specific issues in the marine environment such as marine ecology and water quality which could potentially be affected by Licensable Marine Activities
	B14	Introduction to the environmental assessments – radiological effects	Yes. Covers marine sediment sampling. Note that information in relation to dredged sediment being disposed of to sea is presented within report: ML-OTH-01-DSC – HOLYHEAD NORTH IS043 DISPOSAL SITE CHARACTERISATION REPORT, submitted as part of the Marine Licence application
	B15	Introduction to the environmental assessments – shipping and navigation	Yes. Specific information included in this chapter which is relevant to Licensable Marine Activities
	B16	Introduction to the environmental assessments – waste and materials management	No. The disposal of dredged material is discussed in B13

3.3 Volume B chapter signposting

3.3.1 The following paragraphs signpost to the chapters that have been identified as relevant in table 3-1 above.

Introduction to the assessment process (B1)

- 3.3.2 This chapter sets out the overall assessment principles that have been followed for the Wylfa Newydd Project EIA and, therefore, are relevant to the Marine Licence application; as they provide an introduction to the assessment process. Note, however, that topic specific assessment requirements, where different to those outlined in this chapter, are provided within the topic specific chapters. This is explained in section 1.1 (Introduction).
- 3.3.3 The processes followed to determine the scope of the EIA are provided in screening (section 1.2) and scoping (section 1.3). Section 1.4 then describes the method used in relation to:
- describing existing environmental conditions;
 - spatial and temporal scope;
 - Rochdale Envelope and assessed impact scenario;
 - uncertainty and limitations;
 - prediction and evaluation of effects;
 - significance of environmental effects (including the value and/or sensitivity of the receptor, magnitude of change and determination of significance);
 - mitigation;
 - cumulative effects;
 - the form of the ES;
 - transboundary effects;
 - climate change; and
 - the welsh language.
- 3.3.4 Section 1.5 outlines specialist qualifications of those undertaking the EIA.

Public access and recreation (B4)

- 3.3.5 This chapter provides an introduction to the technical basis for the public access and recreation assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 4.2); key points arising in consultation that have guided the public access and recreation assessment (section 4.3); and assessment methodologies and criteria (section 4.4). This chapter is relevant to the Marine Licence application as it outlines the assessment methodology in relation to recreation, which includes sea fishing for example, which is an activity that potentially could be impacted by Licensable Marine Activities.

Air quality (B5)

- 3.3.6 This chapter provides an introduction to the technical basis for the air quality assessment for the Wylfa Newydd Project. It includes a summary of

legislation, policy and guidance (section 5.2); key points arising in consultation that have guided the air quality assessment (section 5.3); and assessment methodologies and criteria (section 5.4). This chapter is relevant to the Marine Licence application because it contains information about air quality effects associated with marine vessel movements and details the assessment process which has fed into the assessment of effects of air quality on marine receptors (B13).

Soils and geology (B7)

- 3.3.7 This chapter provides an introduction to the technical basis for the soils and geology assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 7.2); key points arising in consultation that have guided the soils and geology assessment (section 7.3); and assessment methodologies and criteria (section 7.4). This chapter is relevant to the Marine Licence application because it describes the way in which the construction of the cooling water outfall through the cliff face has been assessed.

Landscape and visual (B10)

- 3.3.8 This chapter provides an introduction to the technical basis for the landscape and visual assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 10.2); key points arising in consultation that have guided the landscape and visual assessment (section 10.3); and assessment methodologies and criteria (section 10.4). This chapter is relevant to the Marine Licence application because it describes the way in which seascape character potentially affected by Licensable Marine Activities has been assessed.

Cultural heritage (B11)

- 3.3.9 This chapter provides an introduction to the technical basis for the cultural heritage assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 11.2); key points arising in consultation that have guided the cultural heritage assessment (section 11.3); and assessment methodologies and criteria (section 11.4). This chapter is included because it considers marine archaeological remains and references the work undertaken to look at the potential of the construction of the MOLF to affect the wreck 'Mary Sutherland' as well as other unknown archaeological remains (see table B11-4).

Coastal processes and coastal geomorphology (B12)

- 3.3.10 This chapter provides an introduction to the technical basis for the coastal processes and coastal geomorphology assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 12.2); key points arising in consultation that have guided the coastal processes and coastal geomorphology assessment (section 12.3); and assessment methodologies and criteria (section 12.4). It is relevant to the

Marine Licence application because it assesses the potential effects of the Licensable Marine Activities.

Marine environment (B13)

3.3.11 This chapter provides an introduction to the technical basis for the marine environment assessment for the Wylfa Newydd Project. It covers the following topics:

- Water quality.
- Sediment quality.
- Marine ecology (plankton, benthic habitats and species, marine fish, marine mammals and seabirds).

3.3.12 It includes a summary of legislation, policy and guidance (section 13.2); key points arising in consultation that have guided the marine environment assessment (section 13.3); and assessment methodologies and criteria (section 13.4). Note that the assessment methodology in relation to disposal to sea is also covered in this chapter alongside the assessment of effects associated with the WNDA. It is therefore relevant to the Marine Licence application.

Radiological effects (B14)

3.3.13 This chapter provides an introduction to the technical basis for the radiological effects assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 14.2); key points arising in consultation that have guided the radiological effects assessment (section 14.3); and assessment methodologies and criteria (section 14.4). It is relevant to the Marine Licence application as it describes the assessment methodology and consultation responses in relation to the potential for the release of contaminated sediment during construction of marine structures (see Table B14-4).

Shipping and navigation (B15)

3.3.14 This chapter provides an introduction to the technical basis for the shipping and navigation assessment for the Wylfa Newydd Project. It includes a summary of legislation, policy and guidance (section 15.2); key points arising in consultation that have guided the shipping and navigation assessment (section 15.3); and assessment methodologies and criteria (section 15.4). It is relevant to the Marine Licence application as it covers marine navigation.

4 Volume D

4.1 Introduction

4.1.1 Volume D of the ES assesses the WNDA Development Site by topic.

4.2 Chapters relevant to the Marine Licence application

4.2.1 Chapters relevant to the Marine Licence application build on those identified in volume B and are listed in table 4-1 below.

Table 4-1 Summary of volume D chapters and relevance to Marine Licence application

Volume	Chapter	Description	Relevant to the Marine Licence application?
D	D1	WNDA Development – proposed development	Yes
	D2	WNDA Development – alternatives and design evolution	Yes
	D3	WNDA Development – socio-economics	No
	D4	WNDA Development – public access and recreation	Yes
	D5	WNDA Development – air quality	Yes
	D6	WNDA Development – noise and vibration	Yes.
	D7	WNDA Development – soils and geology	Yes
	D8	WNDA Development – surface water and groundwater	No
	D9	WNDA Development – terrestrial and freshwater ecology	No
	D10	WNDA Development – landscape and visual	Yes
	D11	WNDA Development – cultural heritage	Yes
	D12	WNDA Development – coastal processes and coastal geomorphology	Yes
	D13	WNDA Development – the marine environment	Yes
	D14	WNDA Development – radiological effects	Yes. Note information in relation to dredged sediment for disposal to sea is also presented within the Disposal Site

Volume	Chapter	Description	Relevant to the Marine Licence application?
			Characterisation Report (section 7.4) that is submitted as part of the Marine Licence application
	D15	WNSA Development – shipping and navigation	Yes
	D16	WNSA Development – combined topic effects	Yes

4.3 Volume D Chapter Signposting

4.3.1 The following paragraphs signpost the chapters that have been identified as relevant in table 4-1 above.

Proposed development (D1)

4.3.2 This chapter describes the physical characteristics and functions of the WNSA Development during construction, operation and decommissioning. Section D1.1 introduces the chapter and defines the four geographical areas (Power Station Site, WNSA, WNSA Development and Ecology mitigation areas). It then describes the WNSA Development (which includes the Power Station and Marine Works) in more detail.

4.3.3 Section 1.2 describes how embedded mitigation is covered in the assessment. Section 1.3 then describes the application of the Rochdale Envelope and cross references to chapter B1, volume B. Site location and environmental context are then discussed in section 1.4 with an overview of the construction schedule provided in section 1.5. Section 1.6 provides an overview of Power Station, both construction and operation, and section 1.7 describes the Marine Works and operation of the marine facilities. Section 1.8 describes the Site Campus and section 1.9 other on-site development. The latter two sections are not relevant to the Marine Licence application.

Alternatives and design evolution (D2)

4.3.4 This chapter outlines the site selection process and design evolution for the WNSA Development, and describes how design considerations, consultation responses and environmental constraints have influenced the decision-making process. Section 2.2 outlines the way in which alternative sites and locations have been considered and references chapter A4 of the ES for further detail. Design evolution is outlined in section 2.3 and describes the way in which the site boundary has increased to include construction and marine working areas. It also outlines the way in which the boundary of the WNSA has evolved through the different stages of pre-Application consultation.

Public access and recreation (D4)

- 4.3.5 This chapter describes the assessment of potential public access and recreation effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. The study area is described in section 4.2 and extends north into the Irish Sea, incorporating Cemlyn Bay and Cemaes Bay, along with some additional smaller coves. The baseline environment is described in section 4.3 in which a section on onshore recreation (which describes the use of the beaches, paragraphs 4.3.41 to 4.3.47) is included in addition to a specific section on offshore recreation (paragraphs 4.3.55 to 4.3.66) both of which could be impacted by licensable marine activities.
- 4.3.6 Section 4.4 sets out the design basis for the assessment of effects and identifies the realistic assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation. The assessment of effects is considered in section 4.5, with two sections detailing the potential effects on beach recreation (4.5.65 to 4.5.72 construction and 4.5.98 to 4.5.100 operation) and effects on offshore recreation (paragraphs 4.5.74 to 4.5.86 construction and 4.5.101 operation). Transboundary effects are also considered here. Additional mitigation recommended is provided in section 4.6 and residual effects are reported in section 4.7. Table D4-4 summarises the effects on public access which includes offshore recreation.

Air quality (excluding emissions from traffic) (D5)

- 4.3.7 This chapter describes the assessment of potential air quality effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. Section 5.1 contains an introduction and signposts where the air quality assessment has linkages to other chapters within the ES (for example, chapter D13 (marine environment) includes the assessment of potential air quality effects on marine habitats and communities).
- 4.3.8 The study area is described in section 5.2 and includes the way in which the study area for emissions from construction plant, machinery and marine vessels has been determined (paragraphs 5.2.7 and 5.2.8). Section 5.3 presents the baseline environment and identifies key air quality receptors including ecological receptors. Section 5.4 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation (paragraphs 5.4.27 to 5.4.38 for detail on emissions from plant, machinery and marine vessels). The assessment of effects is considered in section 5.5 and includes the findings of the assessment of the potential air quality effects of emissions from plant, machinery and marine vessels (paragraphs 5.5.48 to 5.5.83). Additional mitigation recommended is provided in section 5.6 and residual effects are reported in section 5.7 and summarised in table D5-47.

Noise and vibration (D6)

- 4.3.9 This chapter describes the assessment of potential noise and vibration effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA.
- 4.3.10 The study area is described in section 6.2 and identifies that marine leisure activities are included as sensitive receptors within the study area (paragraphs 6.2.5). Section 6.3 presents the baseline environment based on several surveys. Section 6.4 sets out the design basis for the assessment of effects and identifies the Marine Works included in the assessment (table D6-7) and the assessed impact scenarios. It also sets out assumptions for the impact assessment, including blasting vibration and noise over-pressure (paragraphs 6.4.16 to 6.4.19) and identifies the embedded and good practice mitigation relating to construction activities (paragraphs 6.4.23 to 6.4.47). The assessment of effects is considered in section 6.5 and includes the findings of the assessment of the potential blasting vibration and noise over-pressure effects (paragraphs 6.5.46 to 6.5.47) and emissions from marine vessel movements (paragraphs 6.5.48 to 6.5.49).
- 4.3.11 Additional mitigation recommended is provided in section 6.6 and residual effects are reported in section 6.7 and summarised in table D6-35.

Soils and geology (D7)

- 4.3.12 This chapter describes the assessment of potential soils and geology effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. The study area is described in section 7.2 and the baseline environment is described in section 7.3. Section 7.4 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity, alongside impact assessment assumptions and the embedded and good practice mitigation.
- 4.3.13 The assessment of effects is provided in section 7.5 which includes the assessment of the installation (and removal) of the cooling water outfall and cofferdam on sites of geological importance (paragraphs 7.5.33 to 7.5.38). Additional mitigation, where required, is provided in section 7.6 and residual effects are reported in section 7.7. Table D7-11 summarises the results of the assessment.

Landscape and visual (D10)

- 4.3.14 This chapter describes the assessment of potential landscape and visual effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. The study area is described in section 10.2 which details the way in which the study area for seascape has been determined which is relevant to Licensable Marine Activities (specific mention of the breakwaters is made in paragraph 10.2.22).

4.3.15 The baseline environment is presented in section 10.3 (with a specific section considering offshore viewers (paragraphs 10.3.163 to 10.3.164) and section 10.4 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation. The assessment of effects is considered in section 10.5 (offshore viewers in paragraph 10.5.34) including the consideration of transboundary effects. Additional mitigation, where required, is provided in section 10.6 and residual effects are reported in section 10.7. Tables D10-16 and D10-17 summarise the results of the assessment for landscape and visual respectively in which seascape is considered.

Cultural heritage (D11)

4.3.16 This chapter describes the assessment of potential cultural heritage effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. The study area is described in section 11.2 in which it has been separated into three distinct areas. The areas relevant to the Marine Licence application include the area which extends from the Mean High Water and covers an offshore area that extends 1.2km north of Wylfa Head, bounded to the west by the western side of Cemlyn Bay and to the east by the eastern side of Cemaes Bay (paragraph 11.2.3) and the Disposal Site (paragraph 11.2.4). The baseline environment is described in section 11.3 in which a section on marine archaeological remains is included (paragraphs 11.3.51 to 11.3.63).

4.3.17 Section 11.4 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation.

4.3.18 Section 11.5 presents the findings of the assessment of effects associated with the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA, and of disposal at the Disposal Site. Marine archaeological remains are discussed in paragraphs 11.5.12 to 11.5.17 for construction and 11.5.44 to 11.5.45 for operation. The consideration of transboundary effects is also included here.

4.3.19 The additional mitigation recommended is provided in section 11.6 (marine archaeological remains in paragraphs 11.6.7 to 11.6.10) and residual effects are reported in section 11.7. Tables D11-5, D11-6 and D11-7 summarise the results of the assessment.

Coastal processes and coastal geomorphology (D12)

4.3.20 This chapter describes potential changes to coastal processes and effects on coastal geomorphology receptors resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. It also considers the

potential effects at the Holyhead North disposal site. The study area is defined as three separate study areas which are described in section 12.2. The baseline environment is described in 12.3, including a description of the baseline for designated sites and WFD water bodies. Section 12.4 sets out the design basis for the assessment of effects for construction, operation and decommissioning and identifies the assessed impact scenario for each activity.

- 4.3.21 Section 12.5 presents findings of the changes to coastal and marine processes and assessment of effects on geomorphology receptors associated with construction, operation and decommissioning at the WNDA, and disposal of dredged material at the Holyhead North Disposal Site (IS043). The consideration of transboundary effects is also included here. Additional mitigation recommended is provided in section 12.6 and residual effects are reported in section 12.7. Since this chapter focusses on Licensable Marine Activities all sections and effects are relevant to the Marine Licence application.

Marine Environment (D13)

- 4.3.22 This chapter describes the assessment of potential marine environment effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. It also considers potential effects at the Disposal Site of Holyhead North.
- 4.3.23 The study area is described in section 13.2. The baseline environment is then split into the WNDA (section 13.3) and the Disposal Site (section 13.4). Within each baseline the following topics are described:
- conservation designations;
 - water quality;
 - sediment quality;
 - phytoplankton and zooplankton;
 - marine benthic habitats and species;
 - marine fish;
 - marine mammals; and
 - seabirds.
- 4.3.24 Evolution of the baseline is also considered for both areas, specifically in relation to climate change.
- 4.3.25 Section 13.5 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation.

- 4.3.26 Sections 13.6 then describes the findings of the assessment of effects associated with the construction, operation and decommissioning of the WNDA. The following impacts are relevant to Licensable Marine Activities:
- Changes to water quality from dredging (suspended solids and release of contaminants): Paragraphs 13.6.79 to 13.6.103.
 - Changes to hydrodynamics from construction of Marine Works: Paragraphs 13.6.104 to 13.6.116.
 - Direct footprint of the Marine Works leading to mortality of species and loss of habitats and the resource provided by these habitats: Paragraphs 13.6.117 to 13.6.180.
 - Disturbance of habitats and species including from wave action, scour, smothering (from dredging and land-based sources) and deposition of dust and air pollutants: Paragraphs 13.6.181 to 13.6.238.
 - Introduction of non-native species during Main Construction: Paragraphs 13.6.239 to 13.6.262.
 - Underwater noise from Main Construction activities: Paragraphs 13.6.263 to 13.6.372.
 - Physical injury of marine mammals from vessel strikes: Paragraphs 13.6.467 to 13.6.474.
 - Changes in visual stimuli during Main Construction leading to species disturbance: Paragraphs 13.6.436 to 13.6.466
- 4.3.27 Section 13.7 describes the assessment of effects for the Disposal Site. All effects are relevant to the Marine Licence application. Any additional mitigation resulting from the assessments is then detailed in section 13.8.
- 4.3.28 Section 13.9 reports the residual effects having taken into account the embedded, good practice and additional mitigation described in previous sections and Table D13-54 summaries the findings of the overall assessment.

Radiological effects (D14)

- 4.3.29 This chapter describes the assessment of potential radiological effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. The study area is described in section 14.2 and the baseline in section 14.3. Within this baseline, information is presented regarding radiological contamination of marine sediments which could be disturbed during marine construction (paragraphs 14.3.19 to 14.3.25).
- 4.3.30 Section 14.4 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation.

4.3.31 Section 14.5 then describes the findings of the assessment of effects. Note that only the construction section is relevant to the Licensable Marine Activities in terms of potential disturbance of sediment (see paragraphs 14.5.3, 14.5.5 and 14.5.12). Any additional mitigation resulting from the assessments is then detailed in section 14.6. Section 14.7 reports the residual effects having taken into account the embedded, good practice and additional mitigation described in previous sections and table D14-25 summaries the findings of the overall assessment.

Shipping and navigation (D15)

4.3.32 This chapter describes the assessment of potential shipping and navigation effects resulting from the construction, operation and decommissioning of the Power Station, other on-site development, Marine Works and the Site Campus within the WNDA. The study area is described in section 15.2 and the baseline environment in section 15.3

4.3.33 Section 15.4 sets out the design basis for the assessment of effects and identifies the assessed impact scenario for each activity. It also sets out assumptions for the impact assessment and identifies the embedded and good practice mitigation. Section 15.5 presents the findings of the assessment of effects associated with the construction and operation of the WNDA including transboundary effects and additional mitigation is presented in section 15.6. The residual effects are then presented in section 15.7 and a summary of the findings of the overall assessment are presented in Table D15-4. Since this chapter focusses on marine vessels all sections and effects are relevant to the Marine Licence application.

Combined topic effects (D16)

4.3.34 This chapter considers those receptors that would experience more than one of the effects identified in the topic assessment chapters, and describes the predicted combined effects that would result. Section 16.2 describes the scope of the assessment and section 16.3 considers the combined effects on human receptors and non-residential receptors, the latter of which includes offshore public access and recreation receptors (see paragraphs 16.3.26 to 16.3.27). A section on other receptors references ecological receptors and outlines the findings of the assessment regarding additional disturbance affecting the terns at Cemlyn Bay. There is also a specific section detailing marine receptors (see paragraphs 16.3.68 to 16.3.70).

5 Volume I

5.1 Introduction

5.1.1 Volume I of the ES reports the output of the cumulative effects assessment.

5.2 Chapters relevant to the Marine Licence application

5.2.1 A summary of chapters of relevance to the Marine Licence application is provided in table 5-1.

Table 5-1 Summary of volume I chapters and relevance to the Marine Licence application

Volume	Chapter	Description	Relevant to the Marine Licence application?
I	I1	Cumulative effects – introduction	Yes. Explains what cumulative effects are and defines terms used in cumulative impact assessment
	I2	Cumulative effects – scope	Yes. Discusses intra-project and inter-project scope of assessment
	I3	Cumulative effects – methodology	Yes. Details the methodology undertaken
	I4	Cumulative effects – intra-project cumulative effects	Yes. This chapter lists the significant intra-project cumulative effects that are predicted to result from the Wylfa Newydd Project. Some relate to Licensable Marine Activities
	I5	Cumulative effects – inter-project cumulative effects	Yes. This chapter lists the significant inter-project cumulative effects that are predicted to result from the Wylfa Newydd Project. Some relate to Licensable Marine Activities

5.3 Volume I chapter signposting

5.3.1 The following paragraphs signpost the chapters that have been identified as relevant in table 5-1 above.

Cumulative effects – Introduction (I1)

5.3.2 The definition and terms in relation to the cumulative impact assessment for this Project are defined in section 1.1. The legal requirement and policy guidance around assessing cumulative impacts is outlined in section 1.2.

Cumulative effects – Scope (I2)

- 5.3.3 The scope of intra-project cumulative effects is detailed in section 2.1 and the scope of inter-project cumulative effects is detailed in section 2.2. Lists of projects considered for inter-project effects and whether they have been scoped in or out are listed here.

Cumulative effects – Methodology (I3)

- 5.3.4 The approach to the cumulative impact assessment is detailed in section 3.1. Details of mitigation and the way in which cumulative effects have been assessed are also included here. Limitations of the cumulative assessment are outlined in section 3.2.

Cumulative effects – Intra-project cumulative effects (I4)

- 5.3.5 This chapter lists the significant intra-project cumulative effects that are predicted to result from the Wylfa Newydd Project (table I4-1). Section 4.1 provides an introduction to the assessment and details the way in which mitigation has been taken into account. Section 4.2 presents the findings of the assessment. In relation to Licensable Marine Activities, all effects are already reported in the relevant chapters (see paragraphs 4.2.41 to 4.2.44).

Cumulative effects – Inter-project cumulative effects (I5)

- 5.3.6 This chapter lists the significant inter-project cumulative effects (i.e. effects of moderate or major significance) that are predicted to result from the Wylfa Newydd Project in combination with identified reasonably foreseeable future projects (table I5-1). Section 5.1 provides an introduction to the assessment and details the way in which mitigation has been taken into account. Section 5.2 presents the findings of the assessment. Relevant paragraphs for the Licensable Marine Activities are coastal processes and coastal geomorphology (paragraphs 5.2.80 to 5.2.82), marine environment (paragraph 5.2.83) and shipping and navigation (paragraphs 5.2.85 to 5.2.89).

6 Volume J

6.1 Introduction

6.1.1 Volume J of the ES summarises how environmental commitments would be managed and includes a table setting out the predicted significant residual effects of the Wylfa Newydd Project.

6.2 Chapters relevant to the Marine Licence application

6.2.1 A summary of chapters relevant to the Marine Licence application is provided in table 6-1.

Table 6-1 Summary of volume I chapters and relevance to Marine Licence application

Volume	Chapter	Description	Relevant to the Marine Licence application?
J	J1	Environmental commitments and summary of residual effects – environmental commitments	Yes. Summarises Horizon’s commitments to provide the mitigation for potential environmental effects identified in all volumes and topic-specific chapters within the ES
	J2	Environmental commitments and summary of residual effects – summary of significant residual effects	Yes. Provides a summary of the significant residual effects

6.3 Volume J chapter signposting

6.3.1 The following paragraphs signpost the chapters that have been identified as relevant in table 6-1 above.

Environmental commitments (J1)

6.3.2 This chapter summarises Horizon’s commitments to provide the mitigation for potential environmental effects identified in all volumes and topic-specific chapters within the ES. Section J1.1 describes the three types of mitigation considered in the Wylfa Newydd Project EIA process. Section 1.2 outlines the mitigation framework and section 1.3 provides details on the delivery documents which include Environmental Management Plans. Section 1.4 then details the Mitigation Route Map (PINS Application Reference number: 8.14).

Summary of significant residual effects (J2)

6.3.3 This chapter provides a summary of the significant residual effects predicted to arise from the Wylfa Newydd Project in table J2-1. Note that no new

assessment work is presented in this chapter; instead, it brings together the findings reported separately in chapters I3, I4 and I5.

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