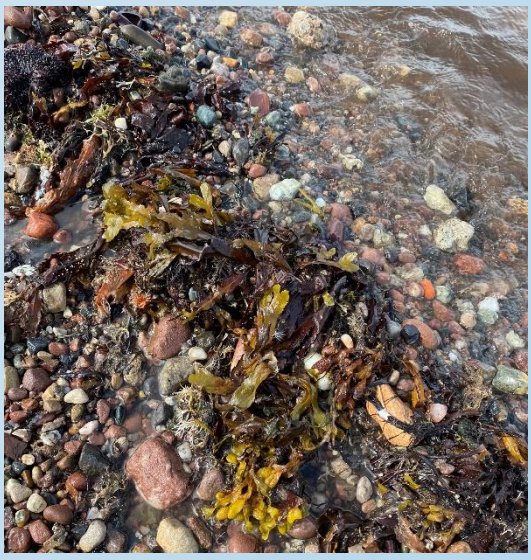
EDF Energy Nuclear Generation Limited

Decommissioning of Hunterston B Nuclear Power Station

Habitats Regulations Appraisal Report



WSP Environment & Infrastructure Solutions UK Limited – June 2023

Please Note: This Habitat Regulations Appraisal (HRA) Report was prepared in advance of the preparation of the Environmental Statement commencing and the description of Proposed Works for which consent is being sought for confirmed. At the time of writing, this HRA Report was based on the information presented in the EIA Scoping Report, submitted by EDF to the ONR on 01 August 2022, which presented an Indicative Decommissioning Works Area boundary (IDWA) which defined the area within which the decommissioning and dismantling activities would be located.

Whilst there have been minor amendments to the description of the Proposed Works for which consent is being sought since the submission of the EIA Scoping Report, these are considered to be non-material in nature and represent an evolution of the Proposed Works design and implementation methodologies. These amendments do not integrally change the conclusions of this report.

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Document revisions

No.	Details	Date
1	Draft	May 2022
2	Final	June 2023

Executive Summary

EDF Energy Nuclear Generation Limited (hereafter referred to as 'the Applicant') is applying for consent from the Office for Nuclear Regulation (ONR) to decommission Hunterston B (HNB) Nuclear Power Station in North Ayrshire (the 'Proposed Works').

Under Regulation 63 of the Habitats Regulations, a person applying for any consent, permission or other authorisation for a plan or project must provide such information as the Competent Authority (in this case, the Office for Nuclear Regulation) may reasonably require for the purposes of the assessment or to enable them to determine whether an appropriate assessment is required. Thus, the Applicant is responsible for assembling and describing all the relevant information required to enable the competent authorities to carry out their Habitats Regulations Appraisal (HRA) responsibilities.

This HRA Report has been produced, and details the scope, approach and conclusions of the HRA, in respect to the impact of the Proposed Works on the qualifying interest features of all European Sites screened into the assessment, either alone or in combination with other plans or projects. The report concludes that there are no likely significant effects (LSE) on any qualifying interest features of any European Sites within the new national site network (either alone or in-combination); as such it is not necessary to move from Stage 1 ("screening") to the next stage ("Appropriate Assessment").

Contents

1. Introduction

1.1 Background

1.1.1 This report forms one of a suite of documents, which has been prepared to accompany an application to the Office for Nuclear Regulation (ONR) for consent under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 2018 (EIADR)[1] to decommission Hunterston B (HNB) Nuclear Power Station (hereafter referred to as the 'Proposed Works').

1.1.2 The Proposed Works will include the dismantling and deconstruction of buildings and structures in areas within and outside of the Nuclear Site License (NSL) boundary that are part of HNB. To assist the identification of these areas, an Indicative Dismantling Works Area (hereafter referred to as the 'Works Area') has been identified. The NSL boundary, which lies within the Works Area, is referred to as the 'Site'. The Site and Works Area boundaries are shown on **Figure 2.1**.

1.1.3 This HRA Report should be read in conjunction with the description of the Proposed Works provided in the Scoping Report (Document Ref. No: 808125-WOOD-XX-XX-RP-O-00001_S3_CO1), specifically Chapter 2: The Decommissioning Process and with respect to relevant parts of the following chapters:

- Scoping Report Chapter 5: Air Quality (due to the potential for emissions and dust associated with the Proposed Works to negatively affect habitats, flora and fauna); and
- Scoping Report Chapter 7: Terrestrial Biodiversity (due to the close interactions and crossover of European Sites and ecological features);
- Scoping Report Chapter 8: Marine Biodiversity (due to the close interactions and crossover of European Sites and ecological features);
- Scoping Report Chapter 11: Soils, Geology and Hydrogeology (due to the close association between some habitats, flora and fauna, and local hydrology);
- Scoping Report Chapter 13: Landscape and Visual Amenity (due to the close association between some landscape receptors and ecological features (habitats/flora) and the potential for overlapping embedded environmental measures, mitigation and enhancements);
- Scoping Report Chapter 14: Noise and Vibration (due to the potential for fauna to be disturbed or displaced by noise and vibration associated with the Proposed Works, but noting that potential effects on biodiversity has been primarily reported within Chapters 7 and 8 of the Scoping Report).
- Scoping Report Chapter 15: Traffic and Transport (due to the potential for disturbance associated with the Proposed Works to negatively affect habitats, flora and fauna, potential for traffic/plant emissions to negatively affect habitats, flora and fauna, and potential for road traffic collisions with fauna associated with the Project).

[1] The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) (Amendment) Regulations 2018. UK Statutory Instruments 2018 No. 834. Available online at: https://www.legislation.gov.uk/uksi/2018/834/contents/made. Accessed 6 January 2023.

1.1.4 The Proposed Works are located within 20 km of two European Sites[2], namely:

- Renfrewshire Heights Special Protection Area (SPA); and
- Arran Moors SPA.

1.2 Purpose of this Report

1.2.1 In addition to the assessment of potential effects on these sites (Renfrewshire Heights SPA and Arran Moors SPA), which will be addressed in the Environmental Statement (ES), under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)[3] and Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended)[4] (the Habitats Regulations), a person applying for any consent, permission or other authorisation for a plan or project must provide such information as the Competent Authority may reasonably require for the purposes of the assessment or to enable them to determine whether an appropriate assessment is required. Thus, the applicant is responsible for assembling and describing all the relevant information required to enable the Competent Authority to carry out their HRA responsibilities.

1.2.2 The ONR is the Competent Authority for the purposes of the Habitats Regulations in relation to the Proposed Works. The Habitats Regulations require competent authorities, before granting consent for a plan or project, to carry out an Appropriate Assessment (AA) in circumstances where the plan or project is likely to have a significant effect on a European Site (either alone or in combination with other plans or projects).

1.2.3 The purpose of this report therefore, is to provide the Competent Authority with sufficient information to undertake its own HRA process for the Proposed Works. This report covers HRA Stage 1, Screening, only; however, for completeness, the full HRA process has been described within Chapter 2.

[2] Under The Conservation of Habitats and Species Regulations 2017, European sites are defined as Special Areas of Conservation (SACs), candidate SACs, Sites of Community Importance, SPA and European Marine Sites (EMS), which are marine areas designated as SACs and SPAs. UK policy extends the requirements pertaining to European sites to include Ramsar sites and potential SPAs, and this would include proposed extensions or alterations to existing SPAs.
[3] The Conservation (Natural Habitats, &c.) Regulations (1994) Available online at: https://www.legislation.gov.uk/uksi/1994/2716/contents/made (Accessed November 2022).
[4] The Conservation of Habitats and Species Regulations 2017 (2017) Available online at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made (Accessed November 2022).

2. The HRA Process Overview

2.1 Background

2.1.1 Council Directives 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora ("the Habitats Directive")[5] and 2009/147/EC on the conservation of wild birds ("the Birds Directive")[6] provide for the designation of sites for the protection of certain species and habitats. The sites designated under these Directives are collectively termed European Sites and form part of a network of protected sites across Europe, known as the Natura 2000 network. In Scotland, these are implemented through the Conservation (Natural Habitats &c.) Regulations 1994 and the Conservation of Habitats and Species Regulations 2017 (together referred to as the Habitats Regulations) and the Conservation of Offshore Marine Habitats and Species Regulations 2017[7] (referred to as the Offshore Habitats Regulations). The four-stage process of determining the absence of adverse effects on European Sites under the Habitats Directives/Regulations is known as a Habitats Regulations Appraisal (HRA).

2.1.2 In the UK, the Habitats Regulations transpose these Directives into national law and apply up to the 12 nautical mile limit of territorial waters.

2.1.3 Following the UK's exit from the European Union, changes with regards to the legislation sites were designated under were made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[8]. As a result of the UK's exit, SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network. However, the 2019 Regulations have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs and SPAs, and new SACs and SPAs designated under these Regulations.

2.1.4 Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

2.1.5 The UK Government is also a signatory to the Convention on Wetlands of International Importance 1972 ("the Ramsar Convention")[9]. Within the Scottish Planning Policy,[10] the Scottish Government sets out their policy that the Habitats Regulations should also apply to sites identified as Ramsar sites (under the Ramsar Convention on Wetlands of International Importance), as quoted below, from Policy 211:

"*All Ramsar sites are also Natura 2000 sites … and are protected under the relevant statutory regimes*".

2.1.6 For the purposes of this HRA, in line with the Habitats Regulations and relevant Government policy, the term "European Sites" and new national site network includes

[5] Council Directive 92/43/ECC (1992) on the conservation of natural habitats and of wild fauna and flora. Available online at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043 (Accessed November 2022).
[6] Directive 2009/147/EC of the European Parliament and of the Council (2009) on the conservation of wild birds. Available online at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147 (Accessed November 2022).
[7] The Conservation of Offshore Marine Habitats and Species Regulations (2017) Available online at: https://www.legislation.gov.uk/uksi/2017/1013/contents/made (Accessed November 2022).
[8] The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019) Available online at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573 (Accessed November 2022).
[9] Ramsar Convention (1971) Available online at: https://www.ramsar.org/document/present-text-of-the-convention-on-wetlands (Accessed November 2022).
[10] Scottish Government (2014) Scottish Planning Policy. Available online at: https://www.gov.scot/publications/scottish-planning-policy/ (Accessed November 2022).

SACs, candidate SACs ("cSAC"), possible SACs ("pSAC"), SPAs, potential SPAs ("pSPA"), Sites of Community Importance ("SCI"), listed and proposed Ramsar Sites and sites identified or required as compensatory measures for adverse effects on any of these sites.

2.1.7 Amongst other things, the Habitats Regulations define the process for the assessment of the implications of plans or projects on European Sites.

2.1.8 HRA can involve up to four stages, as detailed in **Box 1**.

Box 1 Stages of HRA

Stage 1 – Screening:

This stage identifies whether a plan or project is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects. Where Likely Significant Effects (LSE) cannot be ruled out at this stage the European sites will be "screened in" and assessed further.

Stage 2 – Appropriate Assessment:

Where there are LSE, this stage considers the impacts of the plan or project on the integrity of the relevant European sites, either alone or 'in combination' with other projects or plans, with respect to the sites' structure and function and their conservation objectives. Where there are adverse impacts, it also includes an assessment of the potential mitigation for those impacts.

Stage 3 – Assessment of Alternative Solutions:

Where adverse impacts (on the integrity of the site) are predicted, this stage examines (whether there are) alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of European sites.

Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain:

This stage assesses compensatory measures where it is deemed that the project or plan should proceed for imperative reasons of overriding public interest (IROPI).

2.1.9 Stages 1 and 2 are covered by Regulation 63 and Stages 3 and 4 are covered by Regulation 64 and 68.

2.1.10 With respect to Stage 2, the integrity of a European Site relates to the site's conservation objectives and has been defined in guidance as "*the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated*"[11]. An adverse effect on integrity, therefore, is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. The HRA screening process uses the threshold of Likely Significant Effect (LSE) to determine whether effects on European Sites should be the subject of further assessment. The Habitats Regulations do not define the term LSE. However, in the Waddenzee case (Case C-127/02)12 the European Court of Justice found that an LSE should be presumed, and an AA carried out. If it cannot be

[11] Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, at section 4.6.3 (Updated Version, November 2018).
[12] Judgment of the Court (Grand Chamber) of 7 September 2004. Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij. Reference for a preliminary ruling: Raad van State - Netherlands. Case C-127/02.

concluded on the basis of objective information that the plan or project will not have significant effects on the conservation objectives of the site concerned, whether alone or in-combination with any other project, AA will be required. The Advocate General's opinion of the Sweetman case (Case C-258/11)13 further clarifies the position by noting that for a conclusion of an LSE to be made "*there is no need to **establish** such an effect... it is merely necessary to determine that there **may** be such an effect*" (original emphasis).

2.1.11 For the reasons highlighted above the assessment process follows the precautionary principle throughout and the word 'likely' is regarded as a description of a risk (or possibility) rather than in a legal sense an expression of probability.

2.1.12 Screening can be used to screen-out European Sites and elements of works from further assessment, if it is possible to determine that significant effects are unlikely (e.g. if sites or interest features are clearly not vulnerable (exposed and / or sensitive) to the outcomes of the proposal due to the absence of any reasonable impact pathways).

2.1.13 The screening process has two potential conclusions, namely that the proposed development, alone or in combination with other developments, could result in:

- No LSE on any of the designated features of the site; or
- An LSE is identified or cannot be ruled out that may have significant adverse effect on one or more of the qualifying features of the site and hence a significant effect on site integrity.

2.1.14 Only the last of these outcomes will trigger an AA. If one or more LSE are identified, or cannot be ruled out, it is then necessary to proceed to Stage 2 and produce an AA.

2.1.15 On 12 April 2018, the Court of Justice of the European Union (CJEU) issued a judgment on Case C323/17 (People over Wind, Peter Sweetman v Coillte Teoranta) which stated (at paragraph 41)[14]:

"*Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site*."

2.1.16 This means that any mitigation relating to protected sites under the Habitat Regulations 2017 Regulation 63 (1)[2] will no longer be considered at the screening stage but taken forward and considered at the appropriate assessment stage to inform a decision on whether no adverse effects on site integrity can be demonstrated.

2.1.17 The screening assessment provided within this HRA takes into account the CJEU ruling on 'People over Wind'.

[13] Judgment of the Court (Third Chamber), 11 April 2013 Peter Sweetman and Others v An Bord Pleanála. Request for a preliminary ruling from the Supreme Court (Ireland) Case C-258/11.
[14] C-323/17 People over Wind and Sweetman (2018) Available online at: https://curia.europa.eu/juris/liste.jsf?language=en&num=C-323/17 (Accessed November 2022).

2.2 HRA Screening Steps

2.2.1 This HRA Report is intended to cover HRA Stage 1 - Screening only.

2.2.2 Screening aims to determine whether the Proposed Works will have any LSE on any European Site as a result of its implementation. It is intended to be an informed coarse filter for identifying effects (positive and negative) that may occur, to allow the assessment stage to focus on the most important aspects.

2.2.3 This report follows the procedures for screening described by the European Commission in the guidance document *'Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*'.[15] These steps are:

- Step 1: Determining whether the project or plan is directly connected with or necessary for the management of the site.
- Step 2: Describing the project (or plan).
- Step 3: Identifying the potential effects on European Sites.
- Step 4: Assessing the presence of Likely Significant Effects on European Sites.

Step 1

2.2.4 Regulation 63 of the Habitats Regulations[2Error! Bookmark not defined.] applies to plans or projects that are not directly related to the conservation management of a Natura 2000 site. This first step of the screening process is therefore to identify whether the plan or project in question is related to the conservation management of any European Sites.

2.2.5 The European Commission guidance makes it clear that, for a project or plan to be 'directly' connected with or necessary to the management of a European Site, the management must refer to measures that are for conservation purposes, with the 'directly' element referring to measures that are solely conceived for the conservation management of a site and not direct or indirect consequences of other activities.

2.2.6 The Proposed Works comprise a 'plan or project', for the purpose of the Habitat Regulations, but are not directly connected with or necessary for the management of any European Site. An AA may, therefore, still be required and so it is necessary to proceed to Step 2 of the Screening Process.

Steps 2 - 4

2.2.7 **Chapter 3** presents a description of the Proposed Works, supported by **Appendix 3A**. The identification of potential effects is presented in **Chapter 4**, and **Chapter 5** sets out the conclusions from the screening process.

[15] European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Available online at: https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf (Accessed November 2022).

3. HRA Screening Step 2: Description of the Proposed Works

3.1 Introduction

3.1.1 This step requires an understanding of the location and description of the elements of the Proposed Works that could result in effects on a European Site or land functionally linked to that site. The description must identify the elements of the Proposed Works that may directly affect a European Site (e.g. land-take), those that may indirectly affect a European Site (e.g. emissions to air) and those that may act in-combination with other plans or projects.

3.1.2 The descriptions presented here are supported by additional information provided within **Appendix 3A**.

3.2 Site location and Context

3.2.1 HNB is located on the west coast of Scotland on the Firth of Clyde (see **Figure 3.1**), opposite the islands of Great and Little Cumbrae. It is approximately 7 km south/south-west of the seaside town of Largs, approximately 3.5 km to the south-west of West Kilbride, and lies within the jurisdiction of North Ayrshire Council (NAC).

3.2.2 It neighbours the Hunterston A (HNA) Nuclear Power Station which ceased generation in 1990 and is currently being decommissioned. Both stations are largely surrounded by land in agricultural use with regular, medium sized fields divided by drainage ditches and hedges. The coastal foreshore of Hunterston Sands and mudflats to the north and west of the Site, and the Southannan Sands and raised beach to the north-east, are prominent features in the local landscape.

3.2.3 In the immediate vicinity, much of the land at the power station has formed part of the Hunterston estate dating from around the 12th Century. The historic Hunterston House and the neighbouring Hunterston Castle remain part of the Hunterston estate, to the east of the Site. To the north of the station access road (Power Station Road) lies Hunterston Port, a deep-water port and former coal terminal.

3.2.4 To the south are 132 kV and 400 kV substations which connect the station to the national transmission network. Additionally, a High Voltage Direct Current (HVDC) converter station are located to the south of the Site to support the export of electricity to the rest of the UK, mainly generated by wind power from across Scotland.

3.2.5 The Power Station Road connects directly to the A78 which is part of the Scottish Trunk Road Network. The main vehicle access from Glasgow is provided via this route in combination with the A737. The nearest train station to the Site is located in Fairlie. There is a railhead nearby at Hunterston Port that is utilised for the transportation of spent fuel flasks to the nuclear fuels reprocessing plant in Sellafield.

Site description

3.2.6 The Site is located on a gentle, north facing slope which rises from an elevation of approximately 5 m Above Ordinance Datum (AOD) close to the northern boundary of the Site to approximately 25 m AOD at its southern boundary. The area within the Site

predominantly features built form of the reactor building and adjoining turbine hall, and an expansive range of smaller ancillary buildings, warehouses and tanks. These are set within operational land-uses comprising access roads and service yards all bound by security fencing. The remaining areas within the Nuclear Site Licence (NSL) boundary comprise staff car parks located within the north-western corner of the Site, amenity grassland with some tree cover along the southern edge of the reactor building and the southern perimeter of the Site.

3.2.7 The Site covers approximately 30 hectares (ha) and is shown on **Figure 3.2**. The Works Area denotes the indicative area required for the deconstruction of HNB that includes buildings and structures outside the licensed site that are part of the power station and will be dismantled. The Works Area covers approximately 34.5 ha.

3.2.8 The layout of the Works Area may be considered in three parts for the purposes of decommissioning and is shown on **Figure 3.2**:

- The Radiation Controlled Area (RCA) - consists of the reactor building (containing the two reactors) and a number of other buildings containing plant and structures that have the potential to contain radioactive contamination. The reactor building contains, amongst other plant, two pre-stressed concrete pressure vessels containing the reactor cores; the vessels also serve as biological shields. The RCA includes such areas as the fuel cooling ponds, used to store spent (used) nuclear fuel prior to transportation to Sellafield, the debris vaults and other radioactive waste treatment and storage plant and buildings.
- The Conventional Area - consists of the area outside of the RCA that is not within the marine environment. It includes ancillary plant and buildings such as the turbine hall and services building, cooling water systems and numerous other buildings, compounds, roadway, hardstandings which make up the operational site. This also includes areas outside of the security fence such as the car parks, and other structures that require removal as part of the Proposed Works such as the Sewage Treatment Plant and the electricity transmission buildings.
- The Marine Area – consists of the cooling water systems, the Hunterston jetty which also contains the HNA station Intake structure and area required on land to enable the decommissioning of these elements of HNB.

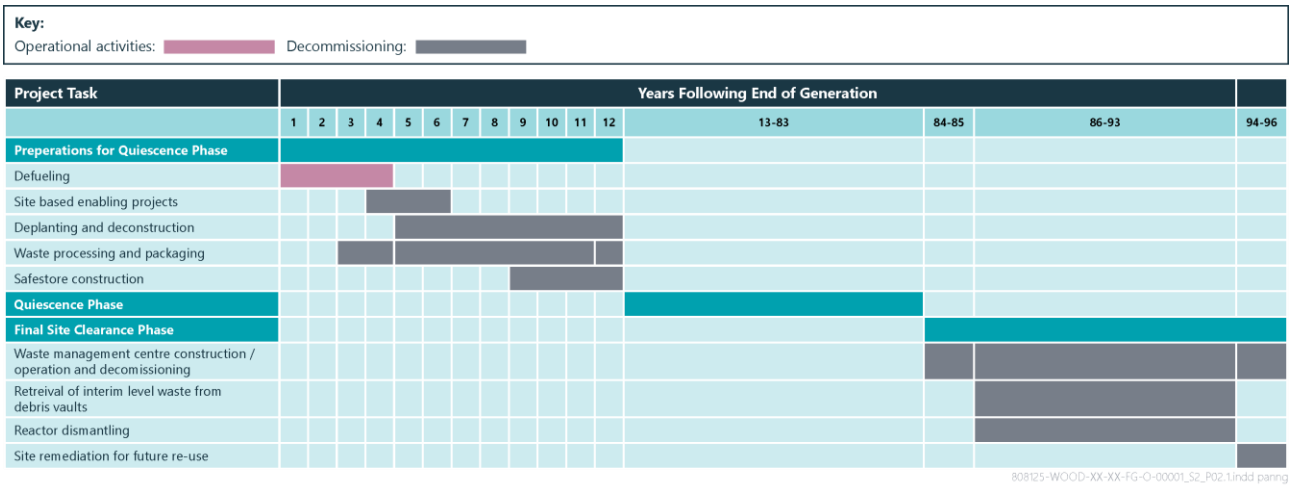
3.3 Description of the Decommissioning Process

3.3.1 The decommissioning of HNB will be undertaken in three phases:

- Preparations for Quiescence phase;
- Quiescence phase; and
- Final Site Clearance.

3.3.2 The following sections summarise the activities that will take place during each of these phases and the relevant timescales associated with each phase, with further detail located in **Appendix 3A**. The timing of these activities is shown on **Graphic 3.1** which outlines the high-level decommissioning programme.

Graphic 3.1 The decommissioning programme



Preparations for Quiescence Phase

3.3.3 Preparations for Quiescence Phase is the first phase of decommissioning and is expected to take up to 12 years after the End of Generation (EoG) at the Site.

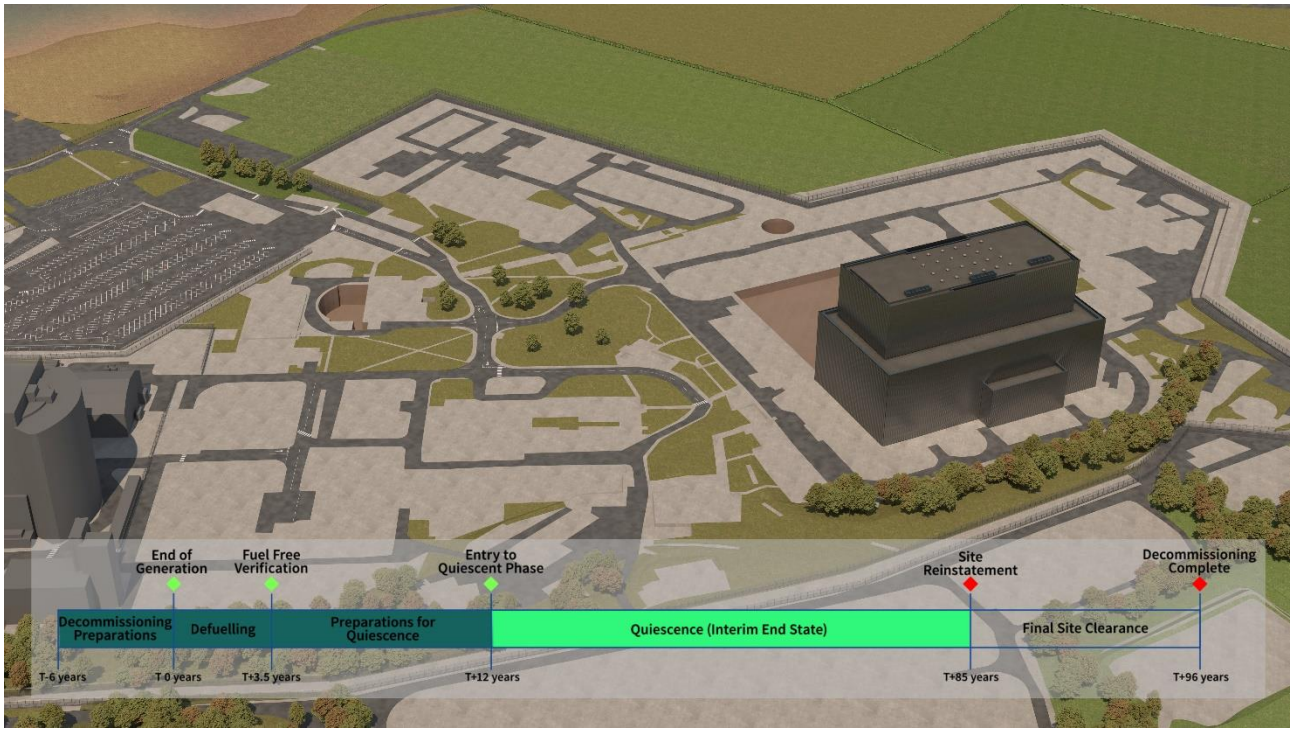
3.3.4 The purpose of this phase is to reduce the hazard presented by the radioactive and non-radioactive materials and wastes on the Site, and to make preparations to place the Site into a passively safe and secure state.

3.3.5 Whilst much of the Site will have been dismantled by the end of this phase, it is intended that the entire nuclear site license boundary is retained and land would not be released for future use until after the Quiescence phase during the Final Site Clearance phase.

3.3.6 **Graphic 3.2** provides an illustration of the current site appearance (6 months after EoG). **Graphic 3.3** illustrates how the site will change in appearance by the end of the Preparation for Quiescence Phase.

Graphic 3.2 Site in current state (6 months after EoG)

Graphic 3.3 End of Preparation for Quiescence (12 years after EoG)



Waste Management

3.3.7 During the Preparations for Quiescence Phase, the Site will generate radioactive and conventional (i.e. non-radioactive) wastes. Waste management during decommissioning will continue to follow the principles of the waste hierarchy and be undertaken in-line with other industry guidance and relevant waste legislation. The decommissioning works in the

Preparations for Quiescence Phase will generate Low Activity Waste (LAW) and limited quantities of Higher Activity Waste (HAW) classified as Intermediate Level Waste (ILW).

3.3.8 To assist in processing waste associated with the Preparations for Quiescence Phase, an Operational Waste Processing Facility (OWPF) and Decommissioning Waste Processing Facility (DWPF) will be required on-site (see **Appendix 3A**).

Deplanting and Deconstruction

3.3.9 During the Preparations for Quiescence Phase most of the existing buildings will be demolished. Some partial dismantling and removal of plant will occur on and within the reactor buildings with the reactors, the concrete pressure vessels, the boilers and Higher Activity Debris Vaults (HADVs) remaining within a Safestore structure. There will be movement of plant and demolition wastes around the Site, and the use of cranes and other engineering equipment will be required to undertake the works. Existing ground contamination will be remediated on a risk-based approach during this phase. Where possible, demolitions will be to ground level only although some voids can be expected. The approach to filling of voids created by the deplanting and deconstruction activities is being developed in accordance with the waste hierarchy, optimising the use of site won material and avoiding the use of imported material where possible, and having regard to groundwater management considerations. Further information specific to the conventional area and RCA is located in **Appendix 3A**.

Marine Environment

3.3.10 During the Preparations for Quiescence Phase, marine structures associated with the operation of HNB will be decommissioned. To reduce the environmental impact associated with removing the cooling water tunnels, it is proposed that marine structures, namely the intake and jetty are removed to seabed level and that the tunnels are left in-situ below the seabed.

3.3.11 The method for undertaking these works is subject to further consideration. At the intake structure, demolition to seabed level will likely involve the use of breakers and excavators based operating from pontoons to assist the removal of the intake structure.

3.3.12 The outfall will be left in-situ, with dive teams deployed to construct a plug at the entry to the outfall. The tunnel will then be dewatered from the outfall land shaft. Tunnels on the landward side of the intake and outfall cooling water land shafts will be filled with imported grout and site won material to prevent collapse and maintain their structural integrity.

Safestore Construction

3.3.13 The Safestore structure will have a 100-year design life and is designed to be robust, weatherproof, and secure against intrusion for the duration of Quiescence.

3.3.14 The height and footprint of the Safestore is subject to further consideration. This footprint includes the majority of the existing reactor building. This houses the two reactors, the HADVs and also includes the cooling ponds and existing Active Effluent Treatment Plant (AETP). The height of the Safestore is anticipated to be no greater than the existing reactor building at 66.5 m above existing ground-level.

Enabling Projects

3.3.15 To assist the Proposed Works, the following activities will also be required:

- creation of necessary compound and laydown areas;

- construction/installation of a Decommissioning Site Incoming Electrical Supply;
- creation of a Decommissioning Site Electrical Distribution System; and
- new active effluent discharge arrangements – This may involve the construction of a new discharge line into the Firth of the Clyde adjacent to the alignment of the HNB Cooling Water tunnel.

3.3.16 Work to identify the location of these activities and the method for how they will be implemented is ongoing.

Quiescence Phase

3.3.17 The Quiescence Phase will commence approximately 12 years after EoG, with the Site remaining in this passive condition for approximately 70 years under a regime of continuous monitoring and surveillance, with periodic care and maintenance.

3.3.18 During the Quiescence Phase, the Site will be maintained in a quiescent state to allow further radioactive decay to occur on materials within the Safestore. The design basis of the Safestore structure is that it requires only a minimal programme of work to sustain the safe, stable, passive storage conditions and the continued integrity of the Safestore and site. Remote monitoring and surveillance systems, along with the intruder resistant design of the Safestore structure will ensure that the security of the Site is maintained during the Quiescence Phase without the need for permanent site security presence.

3.3.19 There will be periodic visits by the Site Licensee to inspect and monitor the Site and its environs. This includes visual inspections, radiological and environmental monitoring, general grounds maintenance and any other activities required. During the surveillance period there may be a need for refurbishment or replacement of materials, e.g. of building cladding materials or supports.

3.3.20 At the end of this phase, the Site Licensee will carry out final decommissioning planning, to ensure that all regulatory requirements are in place for reactor dismantling and final site clearance.

Final Site Clearance

3.3.21 Final Site Clearance involving the deconstruction of the Safestore and final decommissioning is estimated to last approximately 12 years in duration and will commence up to 85 years after EoG.

3.3.22 Construction and engineering works to prepare for the final dismantling tasks will take place, to ensure the provision of the necessary infrastructure, services, and facilities, including an on-site Waste Management Centre (WMC) for the processing of reactor and debris vault wastes and facilities for processing demolition material. It is assumed that a Near-Surface Disposal Facility will be available to transfer ILW generated from Final Site Clearance activities in accordance with Scottish Government's Higher-activity Radioactive Waste Policy and Implementation Strategy[16]. An illustration of what the Site will look like during the peak of Final Site Clearance is provided in **Graphic 3.4**.

[16] Scottish Government (2016). Implementation strategy for Scotland's policy on higher activity radioactive waste. (Online). Accessible at: Implementation Strategy for Scotland's Policy on Higher Activity Radioactive Waste - December 2016 (www.gov.scot)

Graphic 3.4 Illustration of the Site at the peak of Final Site Clearance activities

3.3.23 During this period, some further land de-contamination may be required to enable the Site to reach end state and be de-licensed. The Site Licensee will maintain a Waste Management Plan, setting out how radioactive substances will be managed, and Site-Wide Environmental Safety Case, demonstrating how people and the environment will be protected from any radiological hazard.

3.3.24 Consideration will be given to final landscaping towards the end of Final Site Clearance. In light of the designation of Hunterston as a Strategic Development Area in the National Planning Framework and North Ayrshire Local Development Plan[17], it is likely that the Site will be left in a brownfield state at the end of Final Site Clearance in anticipation of future development. Upon de-licensing of the Site, the site fences will be removed, and land made available for future use.

[17] North Ayrshire Local Development Plan (2019). (Online) Available at: https://www.north-ayrshire.gov.uk/Documents/CorporateServices/LegalProtective/LocalDevelopmentPlan/ldp2.pdf (Accessed April 2022).

4. HRA Screening Step 3: Identification of Potential Effects on European Sites

4.1 European Sites included for Assessment

Overview

4.1.1 Each European Site is designated as a SAC, classified as an SPA, Sites of Community Importance (SCI) and as a matter of policy, possible SACs (pSACs), potential SPAs (pSPAs) or listed as a Ramsar Site in respect of specific 'qualifying features'. These 'qualifying features' (habitats, mosaics of habitats, species or assemblage of species, and combinations of these) are the reasons for which the site is to be protected and managed for conservation purposes.

4.1.2 For SPAs the qualifying features are the birds for which the SPA is classified, under either:

- Article 4(1) rare and vulnerable species, species in danger of extinction or requiring particular attention because of their habitat needs, listed in Annex I of the Birds Directive;[6] or
- Article 4(2) regularly occurring migratory species (e.g. on passage or over-wintering or an internationally important assemblage of birds) not listed in Annex I of the Birds Directive.

4.1.3 The qualifying features of SACs are the habitats listed in Annex I of the Habitats Directive[5] and the species listed in Annex II of the Directive.

4.1.4 The 'qualifying features' of Ramsar Sites are the list of Criteria as set out in the Convention on Wetlands of International Importance (Ramsar Convention)[9].

4.1.5 All receptors that are qualifying features of European Sites (Natura 2000/Ramsar Sites) (or support such features), and which may potentially be affected by the Proposed Works have been considered within this screening process.

Species Zones of Influence and Corresponding Study Area

4.1.6 European Sites were included for either their physical proximity to the Works Area or linkage by way of mobile fauna that represent qualifying features and/or associated functionally linked habitat that could be of importance to mobile qualifying features.

4.1.7 All terrestrial European sites featuring qualifying habitats that could be potentially affected were included if they fell within 5 km of the Works Area.

4.1.8 European Sites featuring qualifying ornithological interests within 20 km of the Works Area were identified using NatureScot's Sitelink,[18] and Conservation Objectives [19]for SPAs and

[18] Nature Scotland (2020) NatureScot SiteLink. Available online at: https://sitelink.nature.scot/home (Accessed November 2022).
[19] JNCC (2022) Special Protection Areas. Available online at: https://jncc.gov.uk/our-work/special-protection-areas/#spa-classification-selection-guidelines-for-spas (Accessed November 2022).

Information Sheets for Ramsar Sites[20] were also checked to identify terrestrial and marine bird features that are known to utilise the near and offshore marine environment (auks, wintering divers, gulls and cormorants, wintering grebes, wintering sea-ducks and breeding terns). Linkages were determined based on an understanding of potential connectivity with foraging range and movement between nesting colonies or roosting sites and foraging sites. For ornithological features that utilise functionally linked habitats outwith the European Site boundaries (such as wetland and farmland respectively), these linkages were determined based on an understanding of potential connectivity with foraging range and movement between the roosting and foraging sites and through published literature. The 20 km search distance is generally considered to be the maximum distance beyond which most non-marine species of birds would not travel on a regular basis between foraging and roost sites[21].

4.1.9 Mobile designated features of European Sites (i.e. breeding seabirds, fish or marine mammals) may interact with the Proposed Works when remote from the relevant European Site. In order to identify sites where interactions could occur outwith the defined boundaries of European Sites, the following approaches were adopted;

- For seabirds, the mean maximum foraging distances from Thaxter *et al* (2012)[22] and Woodward *et al*. (2019)[23] were used to identify SPA sites with breeding seabirds as designated features that may interact with the Proposed Works zone of influence (ZoI), i.e. the distance over which potential effects from the Proposed Works may be recorded (see **Table 4.1**);
- Passage and over-wintering concentrations of non-breeding bird qualifying features (passage and over-wintering populations) were only included if their designated site or any functionally-linked habitat overlapped with any aspect of the Proposed Works ZoI. If there is no overlap, then the species have not been included for assessment;
- For cetaceans, all European Sites which include harbour porpoise as a qualifying feature were included if they fell within a range of 200 km, selected based on the wide-ranging nature of cetaceans, enabling selection of relevant sites with potential for realistic interaction with the Proposed Works;
- For seals, a distance of 145 km has been applied for grey seal and 120 km for harbour seal, based on foraging ranges recorded by tracking studies[24]; and
- For migratory fish, all SAC designated sites which include Annex II listed fish species within the north-west region of England and south-west Scotland were included, due to the limited specific understanding of fish movements, ensuring that the potential for interaction with the Proposed Works is captured.

[20] JNCC (2016) UK Ramsar Information Sheets. Available online at: https://hub.jncc.gov.uk/assets/bc9b0905-fb63-4786-8e90-5f7851bb417d (Accessed November 2022).
[21] SNH (2016) Assessing connectivity with Special Protection Areas. Available at: https://www.nature.scot/doc/assessing-connectivity-special-protection-areas (Accessed November 2022).
[22] Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S, Roos, S., Bolton, M., Langston, R.H.W. and Burton, N.H.K. (2012). Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation. Doi: 10.1016/j.biocon.2011.12.009.
[23] Woodward, I., Thaxter, C.B., Owen, E., and Cook, A.S.C.P. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724.
[24] Sea Mammal Research Unit (SMRU) (2011). Scientific Committee On Seals (SCOS) Scientific advice on matters related to the management of seal populations: 2011. Available online at: http://www.smru.st-andrews.ac.uk/files/2016/08/SCOS-2011.pdf (Accessed November 2022)

Table 4.1 Summary of specific search distances and source information used to identify potential effects on European Sites

Species/Taxa	Approximate ZoI	Source
Hen harrier	10 km	SNH (2016)[21]
Herring Gull	59 km	Thaxter *et al* (2012)[22]; and Woodward *et al.* (2019)[23]
Common Guillemot	73 km	
Lesser black-backed gull	127 km	
Black-legged Kittiwake	156 km	
Northern Gannet	315 km	
Grey seal	145 km	Thompson *et al* (1996)[25]
Common seal	120 km	Sea Mammal Research Unit (SMRU) (2011)[24]
Cetaceans	200 km	
Migratory Fish species	All sites which include Atlantic salmon, sea lamprey, Allis shad (*Alosa alosa*) and Twaite shad within the north-west region.	MMO (2020)[26] JNCC (2022) [27]
River lamprey	Predominantly feed in estuaries, as adults. ZoI therefore restricted to Firth of Clyde and tributaries thereof.	Maitland PS (2003)[28]

4.2 Consultation

4.2.1 No specific consultation directly related to the HRA has been undertaken to date. However, the scope, approach, evidence base, and potential effects/receptors of the HRA and EIA will be discussed in consultation with stakeholders, which are anticipated to include:

- Marine Scotland;
- NatureScot; and
- SEPA.

[25] Thompson, P. M., McConnell, B. J., Tollit, D. J., MacKay, A., Hunter C., and Racey. P. A. (1996) Comparative distribution, movements and diet of harbour and grey seals from Moray Firth, NE Scotland. Journal of Applied Ecology, 33(6):1572-1584.
[26] MMO (2020) MMO1188: Habitats Regulations Assessment for the North East, North West, South East and South West Marine Plans: Screening Report and Appropriate Assessment Information Report. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/857273/AAIR_final.pdf (Accessed November 2022)
[27] JNCC (2022) Species List Available online at: https://sac.jncc.gov.uk/species/ (Accessed November 2022)
[28] Ecology of the River, Brook and Sea Lamprey. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

4.2.2 Initial consultation will be conducted around the contents of this report, following its submission, and in line with the remaining stakeholder and public consultation for the Proposed Works.

4.2.3 Following submission of the Scoping Report, a Pre-Application Opinion was provided by the ONR on 4 October 2022. Although not specifically in relation to the HRA Process, where applicable, the key points from a biodiversity perspective have been considered here, as applicable. This has included consideration of potential effects on diving birds, and noted that the Scoping Report included references to the use of explosives within the marine environment. This has subsequently been the subject of further engineering optioneering works, which has reached the conclusion that conventional methods of deconstruction will now be applied within the marine environment. Therefore, this HRA Screening Report has assumed that there will be no use of explosives within the marine environment.

4.3 European Sites Screened into the Assessment

4.3.1 There are two SPAs within 20 km; and a number of European Sites where mobile qualifying features of European Sites (including breeding seabirds, fish or marine mammals) may interact with the Proposed Works.

4.3.2 When considering the effects of the Proposed Works on European Sites, consideration has been given to the effects on qualifying interest features using terrestrial or marine habitats outwith the boundaries of the European Sites as well as within. Such habitats can be deemed to be functionally linked to the European Site. Therefore, some habitats outwith European Sites can be considered to be Functionally Linked Land (FLL). FLL in this context is defined as:

"*Areas of land or sea outside of the boundary of a European Site that may be important ecologically in supporting the populations for which the European Site has been designated or classified. Occasionally impacts to such habitats can have a significant effect upon the species interest of such sites, where these habitats are considered to be functionally linked to the European Site*" [29]

4.3.3 Details of the European Sites considered for assessment and their qualifying features are listed in **Table 4.2**. The distances provided are from the closest point of the Works Area boundary. **Figure 3.1** illustrates the location of these sites relative to the Works Area.

[29] Natural England (2016). Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Report NECR207, first published 29 February 2016.

Table 4.2 European Sites within the Study Area

Site Name	Approx. distance from the Works Area	Site Description	Qualifying features
Renfrewshire Heights SPA	11.5 km (N)	Renfrewshire Heights SPA comprises a large area of upland moorland south of Greenock. The area is mainly covered by blanket mire, wet and dry heaths, and rough grassland. Much of the heath and mire is dominated by dwarf shrubs, especially heather *Calluna vulgaris*.	**Annex 1 species:** Hen harrier (Breeding)
Arran Moors SPA	16.6 km (W)	Arran Moors SPA is an extensive area of moorland covering the majority of the southern half of the Isle of Arran and extending along the northeast coast. The Isle of Arran is in the North Ayrshire Local Authority area. The predominant habitats include extensive areas of wet and dry heath, wet and dry blanket bogs and unimproved acid grassland. There are small areas of broad-leaved woodland, typically associated with river valleys, and several small lochs in the site.	**Annex 1 species:** Hen harrier (Breeding)
Inner Hebrides and the Minches SAC	42.9 km (W)	The Inner Hebrides and the Minches SAC is a complex site which has resulted in the development of diverse marine habitats that support a variety of natural resources, in particular the harbour porpoise.	**Annex II species that are a primary reason for site selection:** Harbour porpoise
Endrick Water SAC	44.2 km (NE)	The lower reaches of the Endrick Water provide an exceptional example of the fluvial geomorphology of Scotland. The river is the largest flowing into Loch Lomond and it is both nationally and internationally-important for its population of river lamprey, brook lamprey and Atlantic salmon.	**Annex II species that are a primary reason for site selection:** River lamprey and Brook lamprey **Annex II species present as a qualifying feature, but not a primary reason for site selection:** Atlantic salmon (Q)
Ailsa Craig SPA	49.9 km (S)	Ailsa Craig SPA is an island rising to 338 m, situated in the outer part of the Firth of Clyde. Cliffs up to 100 m encircle the island and provide nesting sites for a variety of seabirds,	**Breeding**: Northern Gannet (23,000 pairs), Lesser Black-backed Gull (1,800 pairs), Common Guillemot (3,350 pairs),

Site Name	Approx. distance from the Works Area	Site Description	Qualifying features
		notably one of the largest Northern gannet colonies in the world. The boundary of Ailsa Craig SPA is coincident with Ailsa Craig SSSI. The seaward extension extends approximately 2 km into the marine environment to include the seabed, water column and surface.	Black-legged Kittiwake (3,100 pairs) and Herring Gull (2,250 pairs)
River Bladnoch SAC	77.3 km (S)	The River Bladnoch rises in Loch Maberry to the west of Newton Stewart and flows southeastwards, across The Machars, before entering Wigtown Bay just south of Wigtown. The fish population is managed by the Galloway Fisheries Trust and Atlantic salmon are protected through the designation of the river as a SAC.	**Annex II species that are a primary reason for site selection**: Atlantic salmon
Eileanan agus Sgeiran Lios mor SAC	91.3 km (N)	The island of Lismore on the west coast of Scotland provides the most sheltered and enclosed site for the Harbour seal. Lismore is a composite site comprising five groups of small offshore islands and skerries which are extensively used as haul-out sites by the colony. Seal numbers represent just over 1% of the UK population.	**Annex II species that are a primary reason for site selection:** Common seal
North Channel SAC	92.7 km (SW)	The North Channel SAC has been identified for the protection of harbour porpoise. The site includes locations where some of the largest groups of harbour porpoise have been observed around Northern Ireland. Habitats within the site consist mainly of coarse or sandy sediments, with patches of rock and mud. Water depths reach a maximum of 150 m along the eastern boundary, but much of the site lies between 10 m and 40 m. The site covers important winter habitat for harbour porpoise and extends from the coast into offshore waters.	**Annex II species that are a primary reason for site selection:** Harbour porpoise
Skerries and Causeway SAC	107.5 km (SW)	Skerries and Causeway SAC is a 30 km wide embayment on the North Coast of Northern Ireland comprising an area of 10,862 ha. The site is bordering the coastline and was	**Annex I habitats that are a primary reason for site selection:**

Site Name	Approx. distance from the Works Area	Site Description	Qualifying features
		designated an SAC on the following features: reef, sandbanks slightly covered by seawater at all times, submerged or partially submerged sea caves and harbour porpoise.	• Sandbanks which are slightly covered by sea water all the time • Reefs • Submerged or partially-submerged sea caves **Annex II species present as a qualifying feature, but not a primary reason for site selection**: Harbour porpoise
Solway Firth SAC	112.0 km (SE)	The Solway Firth SAC is a large shallow complex estuary with large areas of intertidal sand and mudflats along with subtidal sandbanks, reefs, saltmarsh, vegetated shingle, and fixed dunes. The site also supports river lamprey and sea lamprey.	**Annex I habitats that are a primary reason for site selection:** • Sandbanks which are slightly covered by sea water at all times • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Salicornia and other annuals colonising mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) **Annex I habitats present as a qualifying feature, but not a primary reason for site selection:** • Reefs • Perennial vegetation of stony banks • “Fixed coastal dunes with herbaceous vegetation” (“grey dunes”) **Annex II species that are a primary reason for site selection:** • Sea lamprey • River lamprey

Site Name	Approx. distance from the Works Area	Site Description	Qualifying features
Treshnish Isles SAC	125.6 km (NW)	The Treshnish Isles are a remote chain of uninhabited volcanic islands and skerries situated 3 km west of the Island of Mull. The Treshnish Isles SAC area encompasses Lunga, Fladda and the Cairn na Burgh Islands and has been designated for the internationally important colony of grey seals https://argyllmarinesac.org/halichoerus.htm and the surrounding rocky reef habitat. Numerous skerries, islets and reefs occur in the channel between Lunga and Fladda and the coastline is characterised by low cliffs and steep rocky shores.	**Annex I habitats that are a primary reason for site selection:** Reefs **Annex II species that are a primary reason for site selection:** Grey seal
River Eden SAC	146.9 km (SE)	The Eden is an outstanding floristically rich, northern river on sandstone and hard limestone. Situated within multiple National Character Areas (NCA) including, Cumbria High Fells, Orton Fells, North Pennines, Solway Basin, Border Moors and Forests, Tyne Gap and Hadrian's Wall and the Yorkshire Dales, the catchment includes headwaters running off the Yorkshire Dales, the North Pennines and the eastern fells of the Lake District and the major standing water body of Ullswater and it flows north to discharge into the Solway Estuary. The River Eden is one of the finest rivers in the UK for Atlantic salmon, bullhead and the three lamprey species found in the UK.	**Annex II species that are a primary reason for site selection:** • Atlantic salmon • Sea lamprey • River lamprey
River Derwent and Bassenthwaite Lake SAC	147.0 km (SE)	Bassenthwaite Lake in the Lake District, north-west England, is an example of a mesotrophic waterbody, an unusual type in mountain areas. It is a large lake with an extensive catchment area and consequently is subject to rapid through-flow of water and moderate nutrient status. Other notifiable features of the SAC are Atlantic Salmon, Brook, River and Sea Lamprey.	**Annex II species that are a primary reason for site selection:** • Atlantic salmon • Sea lamprey • River lamprey
River Ehen SAC	160.4 km (SE)	The River Ehen is designated for Freshwater Pearl Mussels (FWPM) and Atlantic salmon. The SAC supports the largest freshwater pearl mussel population in England. Exceptionally	**Annex II species that are a primary reason for site selection:** • Freshwater pearl mussel

Site Name	Approx. distance from the Works Area	Site Description	Qualifying features
		high densities (greater than 100 m^2) are found at some locations, with population estimates for the entire river exceeding 100,000. The conservation importance of the site is further enhanced by the presence of juvenile pearl mussels, indicating recruitment since 1990.	**Annex II species present as a qualifying feature, but not a primary reason for site selection:** • Atlantic salmon
Little Gruinard River SAC	222.6 km (N)	The Little Gruinard River supports a high-quality salmon population in a Scottish west coast spate river fed by a chain of large lochs. It is oligotrophic, with low levels of species diversity and productivity. In contrast to many west Highland systems, the catch of salmon in the Little Gruinard has not shown the same level of decline as has been reported in other areas.	**Annex II species that are a primary reason for site selection:** • Atlantic salmon

4.4 Marine Biodiversity Baseline

Data Sources

4.4.1 The principal marine ecology data sources used to inform the baseline characterisation for the HRA comprise the following:

- Marine Scotland – National Marine Plan interactive map[30]; and
- Sea Watch Foundation sightings[31].

4.4.2 In addition, site-specific surveys were undertaken in August 2020 (intertidal zone) and April/June/July 2022 (benthic), including bathymetry, sidescan sonar, drop-down video, subtidal grab sampling, water quality monitoring and habitat mapping, the results of which will be used to inform the baseline.

- EDF Energy (2022) – Site-specific HNB Intertidal Report[32]; and
- Seastar Survey Ltd 2022 (on behalf of EDF Energy) – Hunterston B Marine Habitat Mapping Survey Report.[33]

Intertidal Ecology

4.4.3 Ten habitat biotopes were recorded during the intertidal survey, undertaken in August 2020 (see **Figure 4.1**). The biotopes and key species recorded during the surveys indicate that the surveyed intertidal area is characteristic of a moderately-exposed to exposed environment.

4.4.4 A validation survey was completed in October 2022, to confirm whether there had been any significant changes to the intertidal zone in the intervening period. This survey recorded a total of eight biotopes (five hard substrate and three sedimentary), with biotopes ranging from those typical of a more exposed shore to the south, with a transition to sedimentary biotopes in the more sheltered bay at Hunterston Sands at the north end of the survey area. The survey confirmed that there have been some minor changes in the northern part of the survey area. The 2022 survey found a more mixed littoral sediment (LS.LMx.Mx) compared to the subtidal muddy sand (SS.SMu.ISaMu) that was observed in 2020. The recording of the presence of more macroalgae and boulders may be the result of better access (due to lower water levels in 2022) or may be the result of large storm events, which have washed boulders onto the sand or washed sand away from the boulders. In addition, it is noted that macroalgae harvesting, ongoing for many years along the intertidal zone adjacent to the Site, has recently ceased, which may also contribute to greater abundance being recorded during the second, validation survey.

4.4.5 Further up the shore there was barren shingle (LS.LCS.Sh.BarSh), which extended further down the shore and southward compared to the previous survey, which had a range of biotopes in this area.

[30] Marine Scotland (2022). Available online at: https://marine.gov.scot/maps/national-marine-plan-interactive-wms-and-wfs (Accessed November 2022).
[31] Sea Watch Foundation (2021). Available online at: https://www.seawatchfoundation.org.uk/wp-content/uploads/2022/01/NWDW-2021-Report_FINAL-2.pdf (Accessed November 2022).
[32] EDF Energy (2022). Site-specific HNB Intertidal Report (Report No. 42667-WOOD-XX-XX-RP-OM-0006_A_C1).
[33] Seastar Survey Ltd (2022) (for EDF Energy). Hunterston B Marine Habitat Mapping Survey Report (Report No. J/20/539, March 2022).

4.4.6 None of the changes were significantly different from the results of the 2020 Phase 1 habitat survey and the overall conclusion is that there has been no significant change in the intertidal biotope presence and distribution since 2020, except for changes noted above, which are focussed on the southern part of the bay containing Hunterston Sands.

4.4.7 No priority marine features, protected species or other notable flora or fauna were recorded during either of the intertidal surveys undertaken.

Benthic ecology

4.4.8 Benthic sampling was undertaken by Seastar Survey Ltd between April and July 2021. Surveys comprised acoustic surveys in April followed by drop-down camera and grab sampling in June and July. The dates of these surveys comply with best practice. Acoustic surveys consisted of single beam bathymetry and sidescan sonar. Drop-down camera survey captured underwater imagery (video and still photography) whilst grab surveys collected samples from each of the habitats observed for both substrate particle size analysis and macrobenthic invertebrate assessment.

4.4.9 Around the cooling water discharge infrastructure, the seabed was predominantly characterised by macrophyte-dominated sediments, with areas of high energy infralittoral rock. Two habitat types dominated: macrophyte-dominated sediments and gravelly mixed sediments. In general, the macrofauna was dominated by Annelida (35.5% of all individuals), Crustacea (29.9%), Nematoda (17.7%) and Mollusca (1.1%). Species diversity was generally high across all sampling locations but showed a large degree of variation across the survey area. Habitats in the vicinity of the Site are presented in **Figure 4.1**.

4.4.10 Additional information drawn from the Marine Scotland Maps NMPi[30], shows the extent of oyster (*Ostrea edulis*) and sea grass beds, both Priority Marine Features (PMFs), in the vicinity of the Site.

Marine mammals

4.4.11 There are no known resident[34] marine mammal populations (for example, seal haul-out sites, or a permanent cetacean population), or breeding or nursery areas in the marine environment within or adjacent to the Works Area. However, several species of marine mammal have been recorded in and around the Firth of Clyde including harbour porpoise (*Phocoena phocoena*), northern bottlenose whale (*Hyperoodon ampullatus*), killer whale (*Orcinus orca*), Risso's dolphin (*Grampus griseus*), and common minke whale (*Balaenoptera acutorostrata*), although it should be noted that all were reported in relatively low numbers[35] [36] [37].

4.4.12 Although no specific marine mammal surveys were undertaken, field observations were made during the water quality, intertidal and boat-based benthic surveys (including both hydrographic geophysical and benthic sampling works), with any sightings recorded to be

[34] For the purposes of this chapter, 'resident species' is taken to mean those species that typically occur in a water body, including those with seasonal residency, for example species which regularly migrate through a particular water body.
[35] Sea Watch Foundation (2020). South West Scotland and Inner Hebrides Recent Cetacean sightings. Available online at: https://seawatchfoundation.org.uk/legacy_tools/region.php?output_region=13 (Accessed November 2022).
[36] Hammond, P.S., et al. (2013) Cetacean abundance and distribution in European Atlantic shelf waters to inform conservation and management. Small Cetaceans in the Atlantic and North Sea (SCANS) report. Available online at: https://www.researchgate.net/publication/236889905_Cetacean_abundance_and_distribution_in_European_Atlantic_shelf_waters_to_inform_conservation_and_management (Accessed November 2022)
[37] Hammond, P.S., et al. (2021) Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Available online at: https://scans3.wp.st-andrews.ac.uk/files/2021/06/SCANS-III_design-based_estimates_final_report_revised_June_2021.pdf (Accessed November 2022)

used as anecdotal information to support baseline characterisation. No marine mammals were observed whilst the marine teams were on site during 2020-2022.

Fish

4.4.13 Fish fauna within the Firth of Clyde is described by Heath and Speirs (2011)[38], McIntyre *et al.*, (2012)[39] and within Scotland's Marine Atlas (2011)[40]. A total of 64 pelagic and demersal species have been recorded. In addition, six species of migratory (diadromous) species are known to frequent waters offshore of the Proposed Works as they migrate between marine and freshwater environments. These species include Atlantic salmon (*Salmo salar*), sea trout (*Salmo trutta*), European eel (*Anguilla anguilla*), Twaite Shad (*Alosa fallax*), river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*)[41] [42],. All six species are included within the Scottish Biodiversity List (SBL) [43]and are considered to be of principal importance for biodiversity conservation in Scotland. Marine Scotland Maps NMPi, identifies the Firth of Clyde, including the waters adjacent to HNB, as spawning grounds for sprat (*Sprattus sprattus)*, sand eel (*Ammodytes tobianus*) and haddock (*Melanogrammus aeglefinus),* and nursery grounds for whiting (*Merlangius merlangus*), sand eel, saithe (*Pollachius virens*) and herring (*Clupea harengus*).

4.4.14 The waters adjacent to HNB are not known to be a significant commercial fishing location. The historic herring fisheries have declined over the past century from long-term average landings of 14,200t in the period 1893-1960 to continually less than 1000t since 1991[39] . Similarly, cod numbers have declined in recent years and have shown little sign of recovery despite the ongoing management measures. Areas of the Firth of Clyde are closed to all fishing activity between 14 February and 30 April in 2022 and 2023 to protect cod during their spawning season[44]. The principal commercial fishing methods now target Nephrops, lobsters, squat lobsters (*Galatheidae*), crabs and scallops employing trawls, creels and dredgers.

4.4.15 Commercial fishing boats operate from Millport (on Great Cumbrae Island), Rothesay (on the Island of Bute), Ardrossan and Largs[45].

4.4.16 Basking shark (*Cetorhinus maximus*) are regularly recorded around the outer Firth of Clyde, mostly between April and October. It is listed within the SBL and protected within the 12 nautical miles limit off Scotland under the Wildlife and Countryside Act 1981[46], which was amended post-Devolution through the Natural Environment (Scotland) Act

[38] Heath, M.R. and Speirs, D.C. (2011) Changes in species diversity and size composition in the Firth of Clyde demersal fish community (1927-2009). Available online at: https://royalsocietypublishing.org/doi/full/10.1098/rspb.2011.1015 (Accessed November 2022).
[39] McIntyre, F., Fernandes, P.G. and W. R. Turrell (2012). Clyde Ecosystem Review. Scottish Marine and Freshwater Science Report Vol. 3 No. 3. The Scottish Government; Edinburgh.
[40] Marine Scotland (2011) Scotland's Marine Atlas -Productive Seas Assessment. Available online at: https://marine.gov.scot/maps/1011 (Accessed November 2022).
[41] Jackson, F.L., Millidine, K.J., Glover, R.S., Fryer, R.J., Malcolm I.A. (2022) NEPS Fish Species Presence/Absence 2018, 2019, 2021. DOI: 10.7489/12404-1
[42] O'Reilly M., Nowacki S., and Elliott M., (2016). A Citizen Science approach to monitoring migratory lampreys under the Water Framework Directive, with some new accounts of Sea Lampreys (Petromyzon marinus) from south west Scotland. The Glasgow Naturalist Volume 26, Part 2, 102-105
[43] NatureScot (2020). Scottish Biodiversity List. Available online at: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list (Accessed November 2022)
[44] Marine Scotland Directorate (2022). Sea Fish (Prohibition on Fishing) (Firth of Clyde) (No. 2) Order 2022 Scottish statutory instrument. Available online at: https://www.legislation.gov.uk/ssi/2022/35/made (Accessed November 2022).
[45] Cefas (2007) Centre for Environment, Fisheries & Aquaculture Science Final Report. Available online at: https://www.cefas.co.uk/publications/environment/Hunterston-2007.pdf#page=24&zoom=100,93,761 (Accessed November 2022).
[46] Wildlife and Countryside Act 1981. Available online at: https://www.legislation.gov.uk/ukpga/1981/69/contents (Accessed November 2022)

2011[47] and the Nature Conservation (Scotland) Act 2004[48]. Basking shark are considered vulnerable on a global level and declining numbers within the UK have resulted in the species being classified as 'endangered' on the IUCN Red List[49]. No observations of basking shark were recorded whilst the marine teams were on site for water quality, intertidal and boat-based benthic surveys between 2020-2022.

4.5 Marine and Intertidal Ornithology Baseline

Data sources

4.5.1 The principal marine and intertidal ornithology data sources used to inform the baseline characterisation for the HRA comprise the following:

- Information regarding European Sites was acquired using the NatureScot (formerly Scottish Natural Heritage) Sitelink web-based application[18];
- JNCC Seabird Monitoring Programme database[50] (drawing on data from the last seabird census, of 1998-2002, and any counts undertaken between 2014 and 2021); and
- Wetland Bird Survey (WeBS) data was obtained from the British Trust for Ornithology (BTO)[51], focusing on peak counts from 2014/15 to 2018/19 and most recent counts from 2019/2020.

Seabird Monitoring Programme (JNCC)

4.5.2 The Seabird Monitoring Programme (SMP) is an ongoing annual monitoring programme, established in 1986, of 25 species of seabird that breed regularly in Britain and Ireland. The SMP counts of breeding seabird species (in pairs) for colonies within 10 km of the Site. The colonies are shown in order of their approximate distance from the Site to the centre of the colony. The number of pairs is shown for the period in which the last full seabird census was carried out in 1998-2002[52] and any counts undertaken between 2014 and 2021.

4.5.3 The nearest herring gull colonies were recorded approximately 2.6 km to the west on Little Cumbrae Island (2,000 recorded between 1998 – 2002) and 250 in 2021; the nearest lesser black-backed gull colonies were also recorded on Little Cumbrae Island (1,200 recorded between 1998 – 2002) and 132 in 2021. Other herring gull colonies were recorded on Horse Island approximately 8.7 km to the south-south-east of the Site (1,245 were recorded in 2017); and other lesser black-backed gull colonies were recorded on Horse Island (901 were recorded in 2017), and 2,677 were recorded on Ardrossan Harbour between 1998 – 2002. These birds are not considered to be connected with any European Sites, including Ailsa Craig SPA.

[47] Wildlife and Natural Environment (Scotland) Act 2011. Available online at: https://www.legislation.gov.uk/asp/2011/6/contents (Accessed November 2022)
[48] Nature Conservation (Scotland) Act (2004) Available online at: https://www.legislation.gov.uk/asp/2004/6/contents (Accessed November 2022)
[49] IUCN (2022). The IUCN Red List of Threatened Species. Available online at: https://www.iucnredlist.org/ (Accessed November 2022)
[50] Joint Nature Conservation Committee (2021). Seabird Monitoring Programme, Available online at: https://jncc.gov.uk/our-work/seabird-monitoring-programme/ (Accessed January 2023)
[51] British Trust for Ornithology (2022). Wetland Bird Survey Available online at: https://www.bto.org/our-science/projects/wetland-bird-survey (Accessed November 2022).
[52] Mitchell P.I. et al. (2004) Seabird Populations of Britain & Ireland. Available online at: https://www.researchgate.net/publication/247457145_Seabird_Populations_of_Britain_Ireland (Accessed November 2022).

SWSEIC data

4.5.4 SWSEIC hold a large number of records of bird species, including species of conservation concern, potentially within or close to the Site since 2009. Breeding and non-breeding species of notable conservation status, potentially occurring within/near the Site (within NGR 1 km square NS1851 or 2 km tetrad square NS15V) since 2009 were recorded.

4.5.5 During the 2019 breeding season, two herring gulls were recorded within the same grid square as the Site; and one kittiwake was recorded within 1 km of the Site.

Wetland Bird Survey

4.5.6 The Wetland Bird Survey (WeBS) is the monitoring scheme for non-breeding waterbirds in the UK (coordinated by the BTO), which aims to provide the principal data for the conservation of their populations and wetland habitats. Average peak counts of bird species by count sector within 5km of the Site were recorded between 2014/15-2018/19 and additional year counts in 2019/20. A 5-year mean figure was used where available, although for some count sectors only a shorter timeframe was available. Any species that was recorded singly only once over the 5-year period was excluded.

4.5.7 A 5-year mean of two kittiwake were recorded at Hunterston Sands count sector; 25 herring gull at Hunterston Sands count sector, 35 at Hunterston to Fairlie count sector, and 28 at Great Cumbrae Island count sector; and five or less lesser black backed gull recorded at Hunterston Sands, Hunterston-Fairlie and Great Cumbrae Island count sectors.

4.5.8 None of these records relate to the breeding population of European Site qualifying species populations including those of Aisla Craig SPA.

4.6 Terrestrial and Freshwater Ecology Baseline

Data sources

4.6.1 The principal terrestrial ecology and ornithology data sources used to inform the baseline characterisation for the HRA process comprise the following:

- Information regarding European Sites was acquired using the NatureScot Sitelink[53] web-based application;
- Ayrshire County Bird Reports (2014, 2015-16 and 2017)[54] [55] [56];
- North Ayrshire Council – Nature Conservation sites website[57];
- Hunterston B Decommissioning EIA Baseline Report: Breeding and Non-breeding Birds[58].

[53] Nature Scotland (2020) NatureScot SiteLink. Available online at: https://sitelink.nature.scot/home (Accessed November 2022).
[54] Ayrshire Birding (2017) Ayrshire Bird Report 2014. Available online at: https://www.ayrshire-birding.org.uk/2017/09/ayrshire-bird-report-2014/ (Accessed November 2022).
[55] Ayrshire Birding (2019) Ayrshire Bird Report 2015 and 2016. Available online at: https://www.ayrshire-birding.org.uk/2019/03/ayrshire-bird-report-2015-16/ (Accessed November 2022)
[56] Ayrshire Birding (2022) Ayrshire Bird Report 2017. Available online at: https://www.ayrshire-birding.org.uk/2022/03/ayrshire-bird-report-2017/ (Accessed November 2022)
[57] North Ayrshire Council (2022). Nature conservation sites. Available online at: https://www.north-ayrshire.gov.uk/planning-and-building-standards/conservation/nature-conservation-sites.aspx (Accessed November 2022)
[58] Wood (2020). Hunterston B Decommissioning EIA Baseline Report: Breeding and Non-breeding Birds. EDF Energy.

Non-breeding bird surveys

4.6.1 Monthly (October 2018 to March 2019) non-breeding bird surveys were undertaken within the HNB Site by Clyde Ecology Ltd. This represents the third set of winter surveys, with previous surveys having been completed during the winters of 2014-15 and 2016-17 respectively.

4.6.2 No hen harriers were recorded during the survey programme. A peak count of 11 lesser black-backed gull and 53 herring gull were recorded within the HNB Site in Winter 2018/19. These birds are not considered to be connected with any European Sites, including Ailsa Craig SPA.

Breeding bird surveys (EDF)

4.6.3 Breeding bird surveys were undertaken within the HNB Site in 2002, 2003 and 2011, and have been completed biennially since 2015. In 2019 (the most recent survey for which results are currently available), five survey visits were carried out from April-June. A total of 52 species were recorded during the breeding bird survey and there was evidence of breeding/holding territory within the Study Area for 27 of these species. The breeding bird community within the Study Area primarily comprises low numbers of common and widespread species that are typical of the county (Ayrshire) and the habitats present (scrub, trees, hedgerows and manmade structures).

4.6.4 Six breeding pairs of lesser black-backed gull and twelve breeding pairs of herring gull were recorded breeding within the Site on buildings. These are not considered linked with the Aisla Craig SPA population.

4.6.5 There are no historical records of hen harrier within 3 km of the Site.

4.7 Potential Impact Pathways

4.7.1 This step identifies whether impacts of the Proposed Works described in Step 2 (see **Chapter 2**) has the potential to result in LSE on the qualifying features of these European Sites.

4.7.2 The main mechanisms by which the Proposed Works could affect European Sites are through either direct or indirect impact pathways and associated potential effects are presented in **Table 4.3**.

Zone of Influence

4.7.3 The spatial scope of any HRA should be based on the likely environmental outcomes of the scheme, its Zone of Influence (ZoI) and the interest features of the European Sites that may be affected and their potential vulnerabilities. Many European Site interest features (particularly animal species) may use or be reliant on non-designated habitats outside of a European Site during their life-cycle. Developments some way from a European Site can therefore have an effect if its interest features are reliant on the habitats being affected by the development.

4.7.4 Where applicable, the threats, pressures and activities listed within the Natura 2000 Standard Data forms have also been considered, as well as the project- and species-specific ZoI (see **Section 4.1**).

4.7.5 Drawing on the effects which have the potential to arise as a result of the Proposed Works (see **Section 4.1**), specific ZoI have been established. For each potential effect, the

'worst-case scenario' has been considered, ensuring that zones capture all relevant sites for which a potential interaction may exist. These are also presented in **Table 4.3**.

4.7.6 Where sensitivities and ZoI overlap, this denotes the presence of a potential pathway of effect, which shall be subsequently described and assessed further within this Screening Report (see **Chapter 5**).

Table 4.3 Potential impact pathways, effects and Proposed Works ZoI

Activity	Potential impact pathway	Associated effects considered within this assessment	Proposed Works Zone of Influences
Works to remove existing marine infrastructure	Disturbance / degradation/loss of marine habitats. Increased levels of suspended sediment as a result of disturbance to the seabed. Increased underwater noise levels. Changes in water quality due to disturbance of the seabed. Introduction / spread of invasive and non-native species (INNS). Increased levels of noise, vibration, light in the terrestrial environment.	Adverse effects on marine species due to physical habitat loss / disturbance. Adverse effects on marine habitats and species through smothering. Disturbance to noise-sensitive marine species / indirect effects due to changes in prey availability. Adverse effects on marine species due to changes in marine water quality. Adverse effects on ornithology receptors due to habitat change. Disturbance to sensitive ornithology receptors. Out-competition / physical harm to native ecological receptors. Indirect effects on prey species.	The ZoI for direct effects on benthic habitats, i.e. focused on habitat loss, direct disturbance and degradation, as a result of the Proposed Works, has been taken to be the immediate footprint of the Proposed Works, a 50 m buffer around the intake/jetty, and a 25 m around the outfall infrastructure. With minimal seabed disturbance predicted during the Proposed Works, this is considered sufficient to capture temporary disturbance during the Proposed Works, as well as permanent changes, following physical removal of marine infrastructure. At the time of writing, the methodology for the physical removal of marine infrastructure has not been confirmed; however, there is the potential that methods such as vibro-piling will be applied, along with other traditional demolition methodologies, both land- and marine-based. Based on the hearing capacity of noise-receptive fish species a ZoI of 10 km from the source of any potential noise-generation (i.e. the seaward extent of the Works Area) has been established, based on predicted noise levels from the Proposed Works. Detailed modelling of airborne noise, or distribution of light arising from demolition

Activity	Potential impact pathway	Associated effects considered within this assessment	Proposed Works Zone of Influences
			works associated with the Proposed Works has not been undertaken as part of this assessment process. Based on previous experience of comparable projects, however, and professional judgement, a distance of 500 m has been applied as a ZoI for light and visual disturbance associated with the Proposed Works. This may include activities such as evening/night-time/poor weather working on the Site or within the coastal zone. It is considered that this will also encapsulate potential issues arising from airborne noise, again, arising from demolition activities within the marine and coastal environment. Disturbance of the seabed during works in the marine environment has the potential to disturb marine sediments, resulting in a general uplift in levels of total suspended sediment (TSS). Depending on the chemical composition of the seabed, this may also result in materials entering the water column. Applying a precautionary approach, the geographic extent of any increase in suspended sediment concentrations due to the disturbance of the seabed is not expected to extend more than 10 km from the Proposed Works, with the majority of particles (~90%) tending to be deposited

Activity	Potential impact pathway	Associated effects considered within this assessment	Proposed Works Zone of Influences
			within 1 km of works[59]. On this basis, a ZoI for potential changes in key water quality parameters (including TSS, salinity, dissolved oxygen, and levels of contaminants/nutrients) of 10 km has been established
Land-based activities associated with the Proposed Works	Release of contaminated run-off into the marine environment. Changes in water quality (including increase levels of suspended sediment). Introduction / spread of invasive and non-native species (INNS).	Adverse effects on marine habitats and species through smothering. Adverse effects on marine species due to changes in marine water quality. Out-competition / physical harm to native ecological receptors.	The ZoI for direct effects on benthic habitats, i.e. focused on habitat loss, direct disturbance and degradation, as a result of the Proposed Works, has been taken to be the immediate footprint of the Proposed Works, a 50 m buffer around the intake/jetty, and a 25 m around the outfall infrastructure.
Construction of new effluent discharge infrastructure within the marine environment.	Disturbance / degradation/loss of marine habitats. Increased levels of suspended sediment as a result of disturbance to the seabed. Increased underwater noise levels. Changes in water quality due to disturbance of the seabed. Introduction / spread of invasive and INNS.	Adverse effects on marine species due to physical habitat loss / disturbance. Adverse effects on marine habitats and species through smothering. Disturbance to noise-sensitive marine species / indirect effects due to changes in prey availability. Adverse effects on marine species due to changes in marine water quality. Adverse effects on ornithology receptors due to habitat change.	The ZoI for direct effects on benthic habitats, i.e. focused on habitat loss, direct disturbance and degradation, as a result of the Proposed Works, has been taken to be the immediate footprint of the Proposed Works, a 50 m buffer around the intake/jetty, and a 25 m around the outfall infrastructure. With minimal seabed disturbance predicted during the Proposed Works, this is considered sufficient to capture temporary disturbance during the Proposed Works, as well as permanent changes, following physical removal of marine infrastructure.

[59] BERR (2008). Review of Cabling Techniques and Environmental Effects applicable to the Offshore Wind farm Industry. Technical Report, Department for Business Enterprise and Regulatory Reform (BERR), in association with Defra, 164pp

Activity	Potential impact pathway	Associated effects considered within this assessment	Proposed Works Zone of Influences
	Increased levels of noise, vibration, light in the terrestrial environment.	Disturbance to sensitive ornithology receptors. Out-competition/physical harm to native ecological receptors. Indirect effects on prey species.	Disturbance of the seabed during works in the marine environment has the potential to disturb marine sediments, resulting in a general uplift in levels of total suspended sediment (TSS). Depending on the chemical composition of the seabed, this may also result in materials entering the water column. Applying a precautionary approach, the geographic extent of any increase in suspended sediment concentrations due to the disturbance of the seabed is not expected to extend more than 10 km from the Proposed Works, with the majority of particles (~90%) tending to be deposited within 1 km of works[60]. On this basis, a ZoI for potential changes in key water quality parameters (including TSS, salinity, dissolved oxygen, and levels of contaminants/nutrients) of 10 km has been established.

[60] BERR (2008). Review of Cabling Techniques and Environmental Effects applicable to the Offshore Wind farm Industry. Technical Report, Department for Business Enterprise and Regulatory Reform (BERR), in association with Defra, 164pp

4.8 In Combination Effects

4.8.1 As part of the HRA screening process, information on other projects and plans that have been subject to a HRA in relation to the European designated sites being assessed is required to allow an assessment of any 'in-combination' effects of the proposed development (in this case the Proposed Works) with other schemes that may affect the European Sites.

4.8.2 The screening assessment provided within this HRA Report also adopts a strong precautionary principle; if a pathway of effect is established between the Proposed Works and a European Site, then that site is taken through to appropriate assessment. Only those qualifying features and European Sites where it can be demonstrated that there is no likelihood of an LSE occurring have been screened out.

4.8.3 The types of projects and plans included within the assessment of in-combination effects are:

- projects that are under installation;
- permitted application(s) not yet implemented;
- submitted application(s) not yet determined; and
- all refusals subject to appeal procedures not yet determined.

4.8.4 A list of sites included within the in-combination assessment is presented within **Appendix 4A**, along with justification as to whether they have the potential to result in LSE when considered together with spatial and temporal elements of the Proposed Works.

4.8.5 The sites that are to be included within the in-combination assessment are then considered with regard to the identified potential effects, designated sites, and qualifying features.

5. HRA Screening Step 4: Assessing the presence of Likely Significance Effects on European Sites

5.1 Introduction

5.1.1 This step identifies whether the Proposed Works described in Step 2 (see **Chapter 3**) and potential effects described in Step 3 (**Chapter 4**) have the potential to cause LSE on the qualifying features of those European Sites within the Study Area and ZoI. Where there is no overlap between the ZoI and species search areas, they have not been carried forward into the Screening assessment. This includes primarily habitats and non-mobile features.

5.1.2 Each site, qualifying features and screening rationale are detailed in **Table 5.1**. Sites considered within this Screening exercise are presented in **Figures 5.1 and 5.2**.

Table 5.1 European Sites, relevant qualifying features, and potential for LSE

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
Renfrewshire Heights SPA	Hen harrier	Direct effects through disturbance.	The SPA lies approximately 11.5 km from the Proposed Works, within the 20 km search area for European Sites with ornithological qualifying interest.	LSE are screened out for breeding hen harrier at this European Site. The Proposed Works lie outside the core foraging range for the species, which is 2 km from the SPA, and outside the maximum range of 10 km from the SPA. The desk study did not identify any records within 3 km of the Site and this species, which in the British Isles nests and roosts on open/upland moors, was not recorded during the surveys. The Site and habitats within the Study Area are not connected with the SPA and there is no potential for LSE at this European Site.	**NO**
Arran Moors SPA	Hen harrier	Direct effects through disturbance.	The SPA lies approximately 17.3 km from the Proposed Works, within the 20 km search area for European Sites with ornithological qualifying interest.	LSE are screened out for breeding hen harrier at this European Site. The Proposed Works lie outside the core foraging range for the species, which is 2 km from the SPA, and outside the maximum range of 10 km from the SPA. The desk study did not identify any records within 3 km of the Site and this species, which in the British Isles nests and roosts on open/upland moors, was not recorded during the surveys. The Site and habitats within the Study Area are not connected with the SPA and there is no potential for LSE at this European Site.	**NO**
Inner Hebrides and the Minches SAC	Harbour porpoise	Disturbance to noise-sensitive marine species/indirect effects due to changes in prey availability.	The SAC lies approximately 43 km from the Proposed Works, and falls within the potential species ZoI for disturbance through underwater noise and changes in marine water quality.	LSE are screened out for harbour porpoise at this European Site. Although there is the potential for the mobile species to be in the vicinity, the Works Area is not in an area of sea noted as being of importance for the species. Further, no marine mammals were observed during marine survey works at the Site, and there are existing barriers (i.e. islands, and the main shipping lane into the River Clyde). Based on the above, and the scale/nature of the Proposed Works, there is no potential for LSE at this European Site.	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
		Adverse effects on marine species due to changes in marine water quality.			
Endrick Water SAC	River lamprey	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Indirect effects through impacts on prey availability – fish species. Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 44 km upstream from the Proposed Works and falls within the potential species ZoI for disturbance to habitats and through underwater noise and changes in marine water quality.	Although mature river lamprey, may spend one to two years foraging within the Firth of Clyde estuaries that may include areas covered by the ZoI of the Proposed Works, this is not considered key foraging habitat for the species. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**
Endrick Water SAC	Atlantic salmon	Direct effects through disturbance and potential habitat degradation.	The SAC lies approximately 44 km upstream from the Proposed Works and falls within the potential species ZoI for disturbance to habitats and through	Although the site lies upstream from the works, and Atlantic salmon may be travelling ‘upstream’ from the Proposed Works, the main migratory route to and from the SAC is not	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
		Direct effects through changes to ambient marine water quality Direct effects resulting from propagation of waterborne noise.	underwater noise and changes in marine water quality.	expected to fall within the ZoI of the Proposed Works[61]. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	
Ailsa Craig SPA	Northern Gannet Lesser Black-backed Gull Common Guillemot Black-legged Kittiwake Herring Gull	Indirect effects through impact on prey availability – benthic species Indirect effects through impacts on prey availability – fish species Indirect effects through impacts on prey availability – water quality changes	The SPA lies approximately 50 km from the HNB and falls within the potential species ZoI and Proposed Works ZoI for: • Direct effects on benthic habitats; • Increased ambient water temperature; • Changes to water quality; • Changes to salinity levels; • Changes to total suspended sediment (TSS)/increased turbidity; and • Coastal processes.	LSE are screened out for these qualifying interest features at this European Site. Herring gull (12 pairs) and lesser black-backed gull (6 pairs) were both recorded breeding within the Site and wider study area during breeding season surveys. However, given the distance from the breeding colony (~49 km) and the presence of several other nearby colonies within 10 km of the IWLA, these birds are not considered associated with the SPA. BTO WeBS data (5-year mean peak counts) for the Hunterston Sands count sector also indicate that the intertidal/coastal habitats surrounding the Site do not support any of the qualifying interest species in great numbers, with no gannet or guillemot records and only low or negligible numbers of lesser black-backed gull (mean peak count – 25), herring gull (mean peak count – 1) and kittiwake (mean peak count – 2). Given the temporary nature of the Proposed Works, any low-level utilisation in this area would not result in any sustained loss of resource for these species and there is therefore no potential for LSE for this European Site.	**NO**

[61] Malcolm, I.A., Godfrey, J., and Youngson, A.F. (2010) Review of migratory routes and behaviour of Atlantic salmon, sea trout and European eel in Scotland's coastal environment: implications for the development of marine renewables. Scottish Marine and Freshwater Science, Vol. 1 No. 14.

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
River Bladnoch SAC	Atlantic salmon	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality. Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 77 km to the south of the Proposed Works (>200 km by seaward passage). Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality	LSEs are screened out for Atlantic salmon at this European Site. Although behavioural studies of salmonids returning to freshwater to spawn suggest fish may navigate inshore as they approach the coastline seeking out their natal waters[62], the Proposed Works are not within the main migratory pathway[61]. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**
Eileanan agus Sgeiran Lios mor SAC	Common seal	Disturbance to noise-sensitive marine species/indirect effects due to changes in prey availability. Adverse effects on marine species due to changes in marine water quality.	The SAC lies approximately 91 km from the Proposed Works and falls within the potential species ZoI for disturbance through underwater noise and changes in marine water quality.	LSE are screened out for common seal at this European Site. Although there is the potential for the mobile species to be in the vicinity, the Works Area is not in an area of sea noted as being of importance for the species, with no noted haul-outs in the vicinity. Further, no marine mammals were observed during marine survey works at the site. Based on the above, and the scale/nature of the Proposed Works, there is no potential for LSE at this European Site.	**NO**

[62] Davidsen, J., Rikardsen, A., Halttunen, E., Mitamura, H., Thorstad, Ev., Præbel, K., Skardhamar, J. & Næsje, T. (2013). Homing behaviour of Atlantic Salmon (Salmo salar) during final phase of marine migration and river entry. Canadian Journal of Fisheries and Aquatic Sciences. 70. 794-802.

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
North Channel SAC	Harbour porpoise	Disturbance to noise-sensitive marine species/indirect effects due to changes in prey availability. Adverse effects on marine species due to changes in marine water quality.	The SAC lies approximately 93 km from the Proposed Works, and falls within the potential species ZoI for disturbance through underwater noise and changes in marine water quality.	LSE are screened out for harbour porpoise at this European Site. Although there is the potential for the mobile species to be in the vicinity, the Works Area is not in an area of sea noted as being of importance for the species. Further, no marine mammals were observed during marine survey works at the site, and there are existing barriers (i.e. islands, and the main shipping lane into the River Clyde. Based on the above, and the scale/nature of the Proposed Works, there is no potential for LSE at this European Site.	**NO**
Skerries and Causeway SAC	Harbour porpoise	Disturbance to noise-sensitive marine species/indirect effects due to changes in prey availability. Adverse effects on marine species due to changes in marine water quality.	The SAC lies approximately 107 km from the Proposed Works and falls within the potential species ZoI for disturbance through underwater noise and changes in marine water quality.	LSE are screened out for harbour porpoise at this European Site. Although there is the potential for the mobile species to be in the vicinity, the Works Area is not in an area of sea noted as being of importance for the species. Further, no marine mammals were observed during marine survey works at the Site, and there are existing barriers (i.e. islands, and the main shipping lane into the River Clyde. Based on the above, and the scale/nature of the Proposed Works, there is no potential for LSE at this European Site.	**NO**
Solway Firth SAC	River lamprey	Direct effects through disturbance. Direct effects through changes	The SAC lies approximately 112 km to the south-east of the Proposed Works, and ~275km via marine passage. Migratory fish may potentially traverse through	LSEs are screened out for river lamprey at this European Site on the basis of their limited migratory behaviour in coastal waters. The site is located a significant distance from the Proposed Works and river lamprey are reported only to rarely stray outside of their 'natal' estuary. On this basis, there is no potential for LSE at this European Site.	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
		to ambient marine water quality. Indirect effects through impacts on prey availability – fish species. Direct effects resulting from propagation of waterborne noise.	the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.		
Solway Firth SAC	Sea lamprey	Direct effects through disturbance. Direct effects through changes to ambient marine water quality Indirect effects through impacts on prey availability – fish species Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 112 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	Although there is relatively little known about the migration routes of sea lamprey, they have been recorded in both shallow coastal and deep offshore waters. Populations may form one panmictic stock with one common management unit that may extend from the Celtic Sea to waters off the north-west of Scotland. Given the large-scale of this population, the area of sea potentially affected by the Proposed Works represents only a small proportion of the population's range. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
Treshnish Isles SAC	Grey seal	Disturbance to noise-sensitive marine species/indirect effects due to changes in prey availability. Adverse effects on marine species due to changes in marine water quality.	The SAC lies approximately 126 km from the Proposed Works and falls within the potential species ZoI for disturbance through underwater noise and changes in marine water quality.	LSE are screened out for grey seal at this European Site. Although there is the potential for the mobile species to be in the vicinity, the Works Area is not in an area of sea noted as being of importance for the species, with no noted haul-outs in the vicinity. Further, no marine mammals were observed during marine survey works at the site. Based on the above, and the scale/nature of the Proposed Works, there is no potential for LSE at this European Site.	**NO**
River Eden SAC	Atlantic salmon	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 147 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	LSEs are screened out for Atlantic salmon at this European Site. Although behavioural studies of salmonids returning to freshwater to spawn suggest fish may navigate inshore as they approach the coastline seeking out their natal waters, the Proposed Works are not within this main migratory channel[61]. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**
River Eden SAC	Sea lamprey	Direct effects through disturbance and	The SAC lies approximately 147 km to the south-east of the Proposed Works. Migratory fish may	Although there is relatively little known about the migration routes of sea lamprey, they have been recorded in both shallow coastal and deep offshore waters. Populations may form one panmictic stock with one common	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
		potential habitat degradation. Direct effects through changes to ambient marine water quality Indirect effects through impacts on prey availability – fish species Direct effects resulting from propagation of waterborne noise.	potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	management unit that may extend from the Celtic Sea to waters off the north-west of Scotland. Given the large-scale of this population, the area of sea potentially affected by the Proposed Works represents only a small proportion of the population's range. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	
River Eden SAC	River lamprey	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Indirect effects through impacts on prey	The SAC lies approximately 147 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	LSEs are screened out for river lamprey at this European Site on the basis of their limited migratory behaviour in coastal waters. The site is located approximately 147 km from the Proposed Works and river lamprey are reported only to rarely stray outside of their 'natal' estuary. Based on the above there is no potential for LSE at this European Site.	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
		availability – fish species Direct effects resulting from propagation of waterborne noise.			
River Derwent and Bassenthwaite Lake SAC	Atlantic salmon	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 147 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	LSEs are screened out for Atlantic salmon at this European Site. Although behavioural studies of salmonids returning to freshwater to spawn suggest fish may navigate inshore as they approach the coastline seeking out their natal waters, the Proposed Works are not within this main migratory pathway[61]. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**
River Derwent and Bassenthwaite Lake SAC	Sea lamprey	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality	The SAC lies approximately 147 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise	Although there is relatively little known about the migration routes of sea lamprey, they have been recorded in both shallow coastal and deep offshore waters. Populations may form one panmictic stock with one common management unit that may extend from the Celtic Sea to waters off the north-west of Scotland. Given the large-scale of this population, the area of sea potentially affected by the Proposed Works represents only a small proportion of the population's range. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
		Indirect effects through impacts on prey availability – fish species Direct effects resulting from propagation of waterborne noise.	and changes in marine water quality.	noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	
River Derwent and Bassenthwaite Lake SAC	River lamprey	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Indirect effects through impacts on prey availability – fish species Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 147 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	LSEs are screened out for river lamprey at this European Site on the basis of their limited migratory behaviour in coastal waters. The site is located approximately 147 km from the Proposed Works and river lamprey are reported only to rarely stray outside of their 'natal' estuary. Based on the above there is no potential for LSE at this European Site.	**NO**

Site	Qualifying Features	Environmental change and potential effect	ZoI interactions	Screening Rationale	Potential for LSE
River Ehen SAC	Atlantic salmon	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 160 km to the south-east of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	LSEs are screened out for Atlantic salmon at this European Site. Although behavioural studies of salmonids returning to freshwater to spawn suggest fish may navigate inshore as they approach the coastline seeking out their natal waters, the Proposed Works are not within this main migratory route[61]. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**
Little Gruinard River SAC	Atlantic salmon	Direct effects through disturbance and potential habitat degradation. Direct effects through changes to ambient marine water quality Direct effects resulting from propagation of waterborne noise.	The SAC lies approximately 223 km to the north of the Proposed Works. Migratory fish may potentially traverse through the Proposed Works ZoI when migrating to/from the SAC with potential for disturbance to habitat and through underwater noise and changes in marine water quality.	LSEs are screened out for Atlantic salmon at this European Site. Although behavioural studies of salmonids returning to freshwater to spawn suggest fish may navigate inshore as they approach the coastline seeking out their natal waters, the Proposed Works are not within this main migratory route[61]. Based on the above, the scale/nature of the Proposed Works, and the attenuation of underwater noise transmission due to both the local bathymetry and presence of existing natural barriers there is no potential for LSE for this European Site.	**NO**

5.2 In-combination assessment

5.2.1 The potential for other plans and projects to act in-combination with the Proposed Development has been considered based upon the relevant details presented within **Appendix 4A**. Further narrative on these projects is provided below.

5.2.2 In the marine environment, and in relation to non-ornithological qualifying features (i.e. marine mammals, fish, and benthic species / habitats), the projects with the greatest potential to result in in-combination effects is ongoing development at the Hunterston Deep Water Port and Bulk Terminal, and the Hunterston Construction Yard, both of which have potential to expand and/or refurbish their infrastructure within the coming years. At the time of writing, precise details of the planned works at the two sites are not known; however, the potential for in-combination effects has been discounted on the basis of the small area to be affected by the Proposed Works, and the short-term nature of these works.

5.2.3 In the marine/intertidal environment, specifically in relation to ornithological qualifying features, there are three projects with the greatest potential for interactions with these species: Hunterston Deep Water Port and Bulk Terminal, a Fastrig Wing Sail Test Facility at Hunterston Construction Yard and a cryogenic energy storage facility at Hunterston Construction Yard. However, the potential for in-combination effects has been discounted given the distance from the nearest European site (Ailsa Craig SPA >50km) and the lack of functional linkage between these development proposals and the site's qualifying features.

5.2.4 In the terrestrial environment, specifically in relation to ornithological qualifying features, the potential for in-combination effects can be discounted given the distance from the nearest European site (Renfrewshire Heights SPA >14km) and the lack of functional linkage between any of the proposals and the site's qualifying features.

6. Potential LSEs on European Sites

6.1 Screening Outcome

6.1.1 Stage 1 of the HRA process, the four-step screening assessment, identifies the likely impacts upon a European Site of a project or plan, either alone or 'in combination' with other projects or plans, and considers whether these impacts are likely to be significant.

6.1.2 Based upon the discussions presented, and the conclusions reached in **Chapter 5** and **Table 5.1**, there is no potential for LSEs to occur in relation to any potential effect pathways on the qualifying features on any European Site within the Study Area. The relevant European Sites comprise the following:

- Renfrewshire Heights SPA
- Arran Moors SPA
- Inner Hebrides and the Minches SAC
- Endrick Water SAC
- Ailsa Craig SPA
- River Bladnoch SAC
- Eileanan agus Sgeiran Lios mor SAC
- North Channel SAC
- Skerries and Causeway SAC
- Solway Firth SAC
- Treshnish Isles SAC
- River Eden SAC
- River Derwent and Bassenthwaite Lake SAC
- River Ehen SAC
- Little Gruinard River SAC

6.1.3 As there are no pathways for LSEs there is no potential for any in-combination LSEs for any features of any European Sites, and therefore there is no requirement for Stage 2 of HRA, Appropriate Assessment, to be undertaken.

Appendix 3A
Supporting description of the Proposed Works

Preparations for Quiescence Phase

Operational Waste Processing Facility

The OWPF is required for the processing of accumulated operational wastes on the station and ILW generated from decommissioning activities during the Preparations for Quiescence Phase. The types of waste to be processed are expected to include miscellaneous contaminated items including: desiccant, catalyst, resins, sludges, and sands.

Studies are ongoing to confirm whether waste generated from the Proposed Works during the Preparations for Quiescence Phase will require an OWPF. Options to either utilise existing Magnox waste processing facilities at HNA or to include a facility for processing and packaging operational waste within the DWPF are being considered.

Should a new building be required, it will be located in the position shown on **Figure 3.3**. The building will consist of a metal-clad portal frame structure on a concrete floor with a maximum floorspace of 1,200 m^2 and maximum height of approximately 15 m. The construction (if required) and commissioning of the OWPF may overlap with the end of the defueling process to ensure the facilities' readiness for the start of deplanting and deconstruction.

Following the completion of active area deplanting, the OWPF will be decommissioned and the building deconstructed.

Decommissioning Waste Processing Facility

The DWPF is needed to process primarily Lower Activity Waste (LAW) generated from plant removal and deconstruction that will commence following defueling to enable waste consignments off-site. The DWPF will be accommodated on site by re-furbishing existing buildings used for the processing and packaging of LAW, located to the north of the reactor building and turbine hall (see **Figure 3.3**).

Most conventional wastes will be consigned in accordance with the waste hierarchy directly from the workface, however, conventional wastes from active areas are expected to be routed through the DWPF for assurance monitoring to confirm that they are out of scope of Radioactive Substances Regulations. LAW wastes processed in the DWPF will be sorted according to physical, chemical and radio-chemical characteristics. Some active area deplanting waste, assumed to be LAW, could be reassessed as Higher Activity Waste (HAW) which may then require processing elsewhere in the DWPF or be transferred to the OWPF. As currently happens during operations, metallic waste will be consigned for treatment and recycling where practicable, wastes that can be incinerated will be sent for incineration and other wastes will be sent for disposal. Decontamination processes and volume reduction techniques will be employed where appropriate to reduce the volume of radioactive waste to be disposed.

The DWPF will not be required following the end of deplanting and deconstruction and will therefore be decommissioned and deconstructed at the end of the Preparations for Quiescence Phase.

Storage of ILW

It is assumed for the purposes of this HRA report that HNB ILW waste requiring storage processed during the Preparations for Quiescence Phase will be stored in the HNA ILW store. This assumption is subject to further development work and the necessary regulatory approvals. It is assumed that the limited quantities of ILW generated which requires storage at the existing HNA ILWS will be transferred to the facility through an existing gate between the HNB and HNA sites and thus will not require movements on the local highway network.

The Scottish Government's policy for long-term management of higher-activity radioactive waste is that higher activity waste should be in near-surface facilities. It is anticipated that waste stored in the interim at HNA ILW Store, along with ILW generated from decommissioning activities in the Final Site Clearance Phase will be transferred to a near-surface facility.

Conventional Area

The majority of the conventional (non-radioactive) buildings on site will be amongst the first structures to be demolished. It is expected that after deplanting and any other internal clean-up is complete, demolition will be carried out using conventional methods. The exact method to be used will be determined with the appointed contractor at the time. Standard mobile cranes will be used on site on a regular basis. Heavy plant may be cut or split into components or sub-component parts prior to removal.

The non-radioactive plant and buildings, such as the turbine hall, circulating water system, and ancillary buildings, will be dismantled. Existing systems, plant and equipment may be dismantled in-situ, or broken into parts to be taken elsewhere on site for further processing. All redundant buildings and structures within the Conventional Area will be demolished to ground level with concrete slabs left in-situ.

Basement areas and tunnels will be backfilled and regraded using material produced from the decommissioning process on the Site.

Radiation Controlled Area

During this period, the RCA outside of the Safestore footprint will be fully de-planted and deconstructed. Within the Safestore footprint, approximately one third of the dry fuel route plant and approximately three quarters of the reactor building auxiliary plant will be removed. Buildings housing plant will be removed to ground-level and concrete slabs will be left in-situ.

Appendix 4A
Projects and plans considered within the in-combination assessment

The below table presents the projects and plans considered within the in-combination assessment (see **Sections 4.8 and 5.2** for further details regarding approach and findings).

ID	Council	Application Reference	Address/Post code	National Grid Reference	Description of development
1	North Ayrshire	22/00209/EIA	Site to the north of Lawhill Farmhouse West Kilbride North Ayrshire	NS 21925 48255	EIA Scoping Opinion request for 49.9MW Solar Farm Development.
2	North Ayrshire	22/00133/PPPM	Former Coal Terminal Hunterston West Kilbride Ayrshire	NS 20155 53275	Planning permission in principle for the erection of a high voltage cable manufacturing facility, including detailed planning permission for the construction of a 185m high extrusion tower with associated factories, research and testing laboratories, offices with associated stores, transport, access, parking and landscaping with on-site generation and electrical infrastructure and cable delivery system.
3	North Ayrshire	21/01174/PPM	Site to the north of Summerlea Road and west of Snowdon Terrace Seamill West Kilbride Ayrshire	NS 19759 48256	Erection of 220 dwelling houses and associated infrastructure and landscaping
4	North Ayrshire	21/00109/EIA	Hunterston Construction Yard Fairlie Largs Ayrshire	NS 18625 53053	Request for EIA Screening Opinion in relation to the replacement and enlargement of existing jetty at Hunterston Marine Yard.
5	North Ayrshire	21/00107/EIA	Hunterston Construction Yard Fairlie Largs Ayrshire	NS 18625 53053	Request for EIA screening opinion for the renewal of planning permission 18/00132/PP for the erection of Caisson gates and removal of existing bund.
6	North Ayrshire	21/00622/EIA	Hunterston Construction Yard Fairlie Largs Ayrshire	NS 18625 53053	EIA Screening Request for a proposed 49.9MW cryogenic energy storage facility.
7	North Ayrshire	21/00480/EIA	Former Coal Terminal Hunterston West Kilbride Ayrshire	NS 19820 52384	EIA screening request for proposed synchronous compensator.
8	North Ayrshire	21/00160/EIA	Millport Flood Works Stuart Street Millport Ayrshire	NS 16039 54785	Request for EIA Screening Opinion for proposed Flood Alleviation Scheme in Millport.

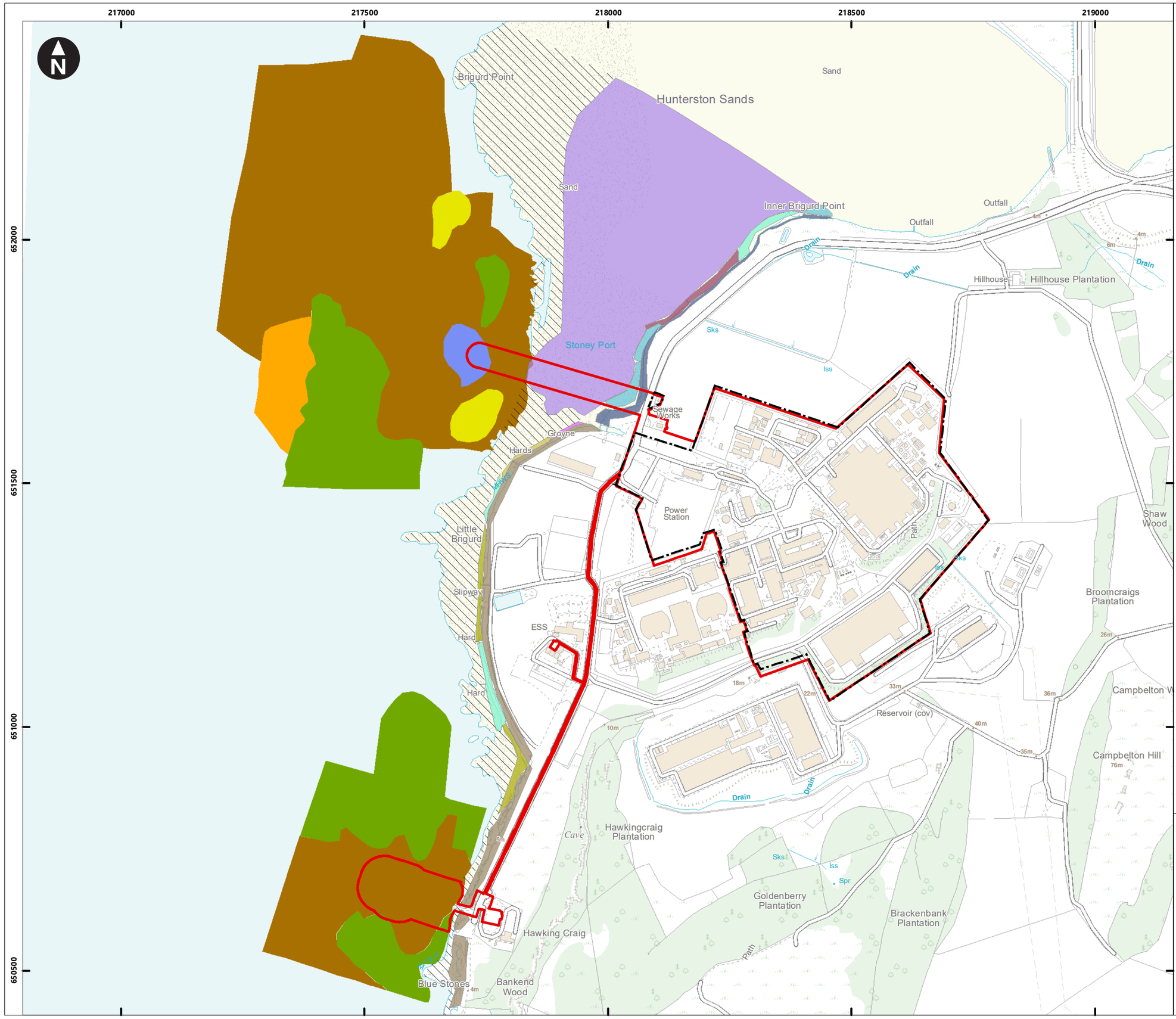
ID	Council	Application Reference	Address/Post code	National Grid Reference	Description of development
9	North Ayrshire	20/00213/EIA	Ardrossan Harbour Montgomerie Street Ardrossan Ayrshire KA22 8LY	NS 22955 42391	Request for EIA Screening Opinion for liquid natural gas bunkering facility for the Ardrossan to Arran Ferry Service.
10	North Ayrshire	19/00087/EIA	Site to West of Hawk Craig Millport Isle of Cumbrae		Request for EIA screening opinion for proposed fish farm.
11	North Ayrshire	19/00086/EIA	Site to north-east of University Marine Biological Station Marine Parade Millport Isle of Cumbrae	NS 17734 54787	Request for EIA screening opinion for proposed fish farm.
12	Argyll and Bute Council	17/02586/MIN	Kingarth Quarry Kingarth Isle of Bute Argyll and Bute	NS 09560 56044	Continuation of winning and working of sand and gravel and infill operations including proposed extension area.
13	Argyll and Bute Council	18/01228/PNELEC	Land At Bruchag Kingarth Isle of Bute Argyll And Bute	NS 11526 57291	Proposed 11KV overhead line and underground cable works.
14	North Ayrshire	20/00386/LUE	Largs Academy and Kelburn Primary School Flatt Road Largs Ayrshire	NS 20820 59477	Erection of 122 dwellings including sheltered, supported, amenity, wheelchair and general needs: associated energy centre building, housing a biomass district heating system providing heating and hot water. The sheltered housing block includes associated common rooms and ancillary spaces. The supported accommodation unit has a staff office/ base which allows 24-hour care to be provided for those living within the block. The site was also compromise roads, parking and landscaping.
15	North Ayrshire	23/00187/EIA	Biglees Quarry West Kilbride Ayrshire	NS 20956 51566	Request for EIA Screening Opinion for proposed mineral extraction and blending of manufactured green aggregate with extracted stone
16	North Ayrshire	23/00178/EIA	Site To North Of Girthill Farm Saltcoats Ayrshire	NS 26724 47042	Request for EIA Scoping Opinion for the realignment of the B714 between Sharphill Roundabout and Hillend Roundabout

ID	Council	Application Reference	Address/Post code	National Grid Reference	Description of development
17	North Ayrshire	23/00074/EIA	Site To West Of 55A Montgomerie Street Ardrossan North Ayrshire	NS 22761 42634	Request for EIA screening opinion for new Ardrossan Community Campus comprising of Early Years, Primary School. Secondary School, Additional Support Needs, Community Library, Community Sports Facilities: Swimming Pool, Sports Hall, Gymnasium, Dance Studio, Fitness studio, External Sports Pitches: 2 Full-size multi-sport pitches; 1 Muga, Co-located Public Services: Health, Social Work, Campus Police Officer, Associated Landscape and Parking spaces
18	North Ayrshire	23/00024/EIA	Site To The North East Of Wee Minnemoer Millport Isle Of Cumbrae Ayrshire	NS 17026 56885	Request for EIA screening opinion for revised solar farm application
19	North Ayrshire	22/00981/EIA	Hunterston Construction Yard Fairlie Largs Ayrshire	NS 18757 52965	EIA Screening Request for Fastrig Wing Sail Test Facility Yard
20	North Ayrshire	22/00754/EIA	Site To West Of Campbelton Farm Hunterston Estate West Kilbride North Ayrshire	NS 19030 50960	EIA screening opinion for construction of 200 Mega volt amps (MVar), 400 kilovolt (kV) shunt reactor
Local Development Plan					
21	North Ayrshire	NA1168	FORMER LARGS SCHOOL CLUSTER, FLATT ROAD	NS 20889 59491	122 Houses
22	North Ayrshire	Policy 1	Portencross Road	NS 19785 48134	175 Homes

ID	Council	Application Reference	Address/Post code	National Grid Reference	Description of development
23	North Ayrshire	SDA No 8	Cumbrae - Millport - CARS Grants area	NS 15961 54729	General Urban Area/Town Centres/Open space
24	North Ayrshire	SDA No 8	Cumbrae - Millport - Shop front improvement area	NS 16219 54960	General Urban Area/Town Centres
25	North Ayrshire	SDA No 1	Hunterston - Deep Water Port and Bulk Terminal	NS 20073 53057	Business and industry
26	North Ayrshire	SDA No 1	Hunterston - Marketable Employment Land	NS 19840 51353	Business and industry
27	North Ayrshire	SDA No 1	Hunterston - Nuclear	NS 18144 51327	Business and industry
28	North Ayrshire	NA0923	ARDROSSAN HARBOUR	NS 22688 42559	439 Homes

HRA: Figures

November 2023



Key

- Indicative Dismantling Works Area ("Works Area")
- Nuclear Site Licence Boundary ("The Site")

Biotope

- IR MIR.KR.L.dig
- IR.HIR
- IR.MIR.KR.L.dig
- LR.FLR.Eph.EphX
- LR.LLR.F.Asc.X
- LR.LLR.FVS.AscVS
- LR.MLR.BF.Fser.Bo
- LR.MLR.BF.Fser.R
- LS.LCS.Sh.BarSh
- LS.LSa.MuSa
- SS.SMu.ISaMu
- Non Accessible Subtidal Area

Marine habitat

- Sublittoral sand
- Macrophyte dominated sediment
- Low energy infralittoral rock
- High energy infralittoral rock
- Discharge boil area

0 100 200 300 400 m

Scale at A3: 1:7,500

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 2.1
Intertidal and subtidal habitats in the Hunterston B Study Area

January 2023

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214000 215000 216000 217000 218000 219000 220000 221000 222000

656000 655000 654000 653000 652000 651000 650000 649000

Key

Indicative Dismantling Works Area ("Works Area")

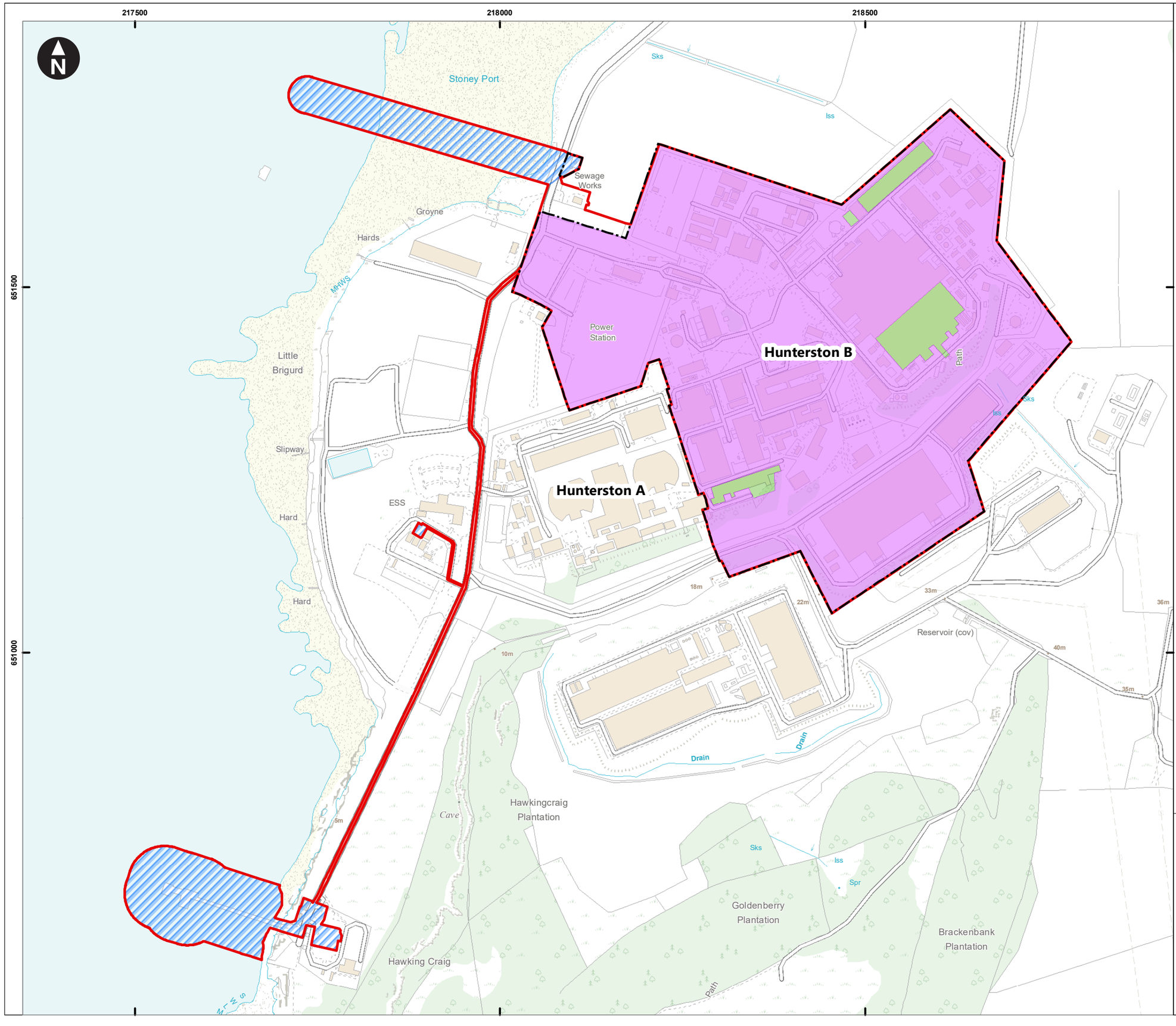
0 250 500 750 1,000 1,250 1,500 1,750 m

Scale at A3: 1:30,000

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 3.1
Site location

October 2022



Key

- Indicative Dismantling Works Area ("Works Area")
- Nuclear Site Licence Boundary ("The Site")

Works Area

- Radiation Controlled Area
- The Conventional Area
- The Marine Area

0 100 200 300 m

Scale at A3: 1:5,000

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 3.2
Site and Works Area

January 2023

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218000 218100 218200 218300 218400 218500 218600 218700 218800

651800 651700 651600 651500 651400 651300 651200 651100

N

Key

- Indicative Dismantling Works Area ("Works Area")
- Nuclear Site Licence Boundary ("The Site")
- Proposed Operational Waste Processing Facility (OWPF)
- Buildings to be re-purposed as the Decommissioning Waste Processing Facility (DWPF)
- Location of new build DWPF option

0 50 100 150 m

Scale at A3: 1:3,000

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 3.3
New OWPF / DWPF building location

January 2023

808125-WOOD-XX-XX-FG-OM-00010_S2_C02

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217500

218000

218500

651500

651000

Stoney Port

Sks

Iss

Sewage Works

Groyne

Hards

MHWS

Power Station

Main area
Estimated height 66.5m

Estimated height 20m

Path

Little Brigurd

Slipway

ESS

Hard

Hard

18m

22m

33m

36m

40m

35m

Reservoir (cov)

10m

Drain

Drain

5m

Cave

Hawkingcraig Plantation

Spr

Goldenberry Plantation

Brackenbank Plantation

Hawking Craig

Key

Indicative Dismantling Works Area ("Works Area")

Nuclear Site Licence Boundary ("The Site")

Safestore structure

0 50 100 150 200 250 300 m

Scale at A3: 1:5,000

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 3.4
Safestore dimensions

October 2022

808125-WOOD-XX-XX-FG-OM-00011_S2_C01

218000 218100 218200 218300 218400 218500 218600 218700 218800

651800 651700 651600 651500 651400 651300 651200 651100

N

Key

- Indicative Dismantling Works Area ("Works Area")
- Nuclear Site Licence Boundary ("The Site")
- HNB Proposed ILW Store New Build Option
- Existing HNA ILW Store

0 50 100 150 m

Scale at A3: 1:3,000

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 3.5
HNA ILW store and HNB proposed ILW new build option

January 2023

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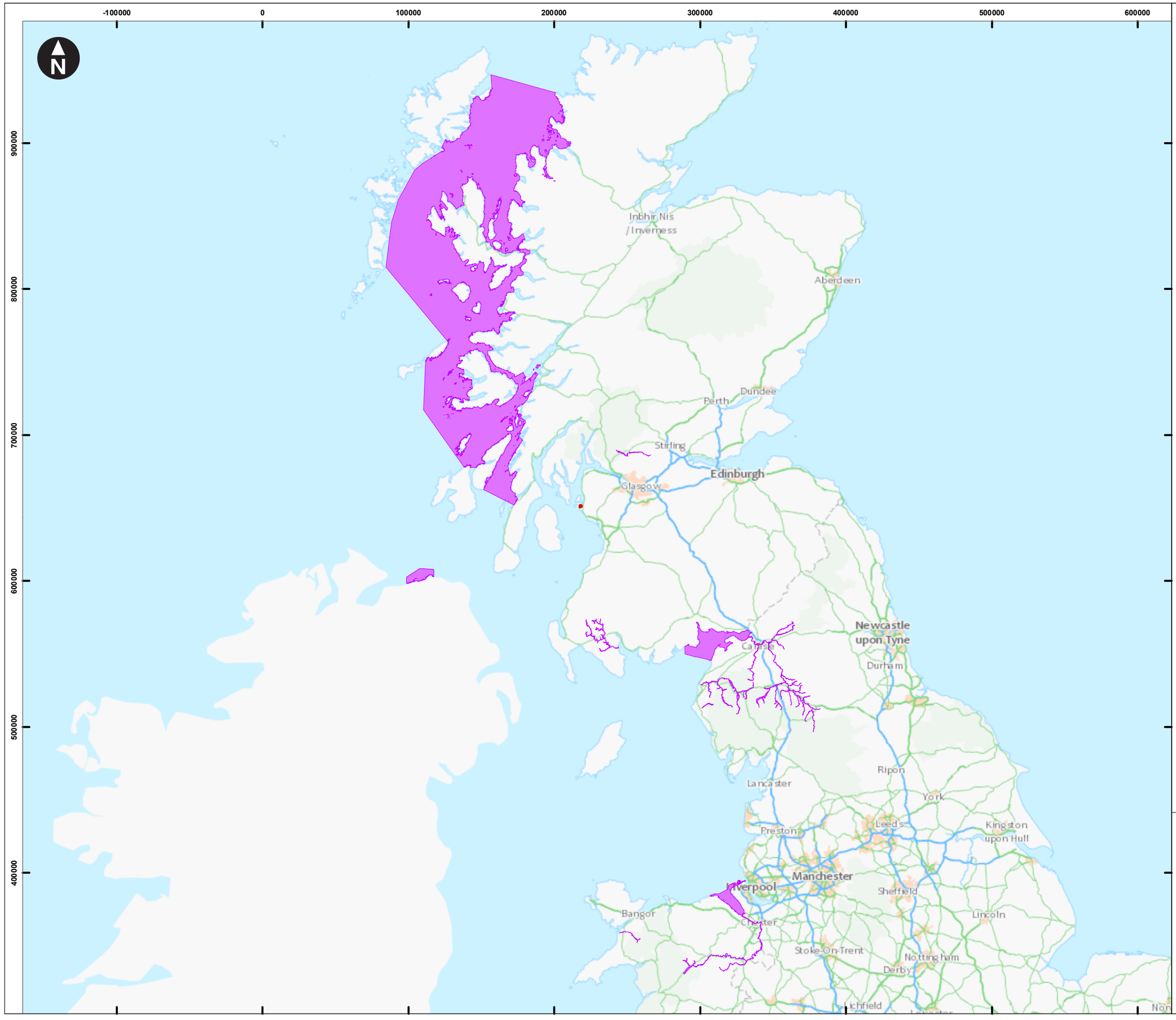

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Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 5.1
SACs considered within HRA Screening

October 2022

Key

Indicative Dismantling Works Area ("Works Area")

Ailsa Craig SPA

0 5 10 km

Scale at A3:1:250,000

Decommissioning of Hunterston B Nuclear Power Station
Habitats Regulations Appraisal Screening Report

Figure 5.2
SPAs considered within HRA Screening

October 2022

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