Appendix 5: Supporting Information for Screening of Appropriate Assessment (SISAA)

MWP

Supporting Information for Screening for Appropriate Assessment Report

Proposed Maintenance Dredging, Aughinish, Co. Limerick

Aughinish Alumina Limited

Nov 2023

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1. Summary of Findings

1.1 Screening for Appropriate Assessment Report

Project Title	Proposed Maintenance Dredging, Aughinish, Co. Limerick
Project Proponent	Aughinish Alumina Ltd
Project Location	Shannon Estuary, Aughinish, Co. Limerick
Conclusion	It has been objectively concluded that that the proposed programme of dredging works, either on its own, or in combination with the other plans or projects, identified in **Section 4.3**, is not likely to have significant effects on the following Natura 2000 sites, in view of the sites' conservation objectives: • Barrigone SAC (000432) • Askeaton Fen Complex SAC (002279) • Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161) • Curraghchase Woods SAC (000174) However, it has been concluded that significant effects ensuing from the proposed maintenance dredging of the seabed in the Shannon Estuary, either on its own, or in combination with other plans or projects, cannot be ruled out at this stage, on the Lower River Shannon SAC (002165) and the River Shannon and River Fergus Estuaries SPA (004077) in light of those sites' conservation objectives. Further assessment is, therefore, required to determine whether the project is likely to adversely affect the integrity of the Lower River Shannon SAC (002165) and the River Shannon and River Fergus Estuaries SPA (004077) sites in view of those sites' conservation objectives. To that end it will be necessary to prepare a Natura Impact Statement to assist the competent authority to conduct the appropriate assessment of the implications of the proposed programme of dredging works for those Natura 2000 sites.

2. Introduction

2.1 Purpose of Assessment

This report has been prepared to provide a sufficient level of information to the Environmental Protection Agency (EPA) and the Maritime Area Regulatory Authority (MARA) on which to base a screening for Appropriate Assessment (AA) of a proposal to undertake maintenance dredging of the seabed in the Shannon Estuary, at Aughinish, Co. Limerick. The report comprises:

- a description, in **Section 4.2**, of the proposed development, particularly those aspects or elements that could interact with the receiving environment.
- the identification, in **Section 6**, of the Natura 2000 sites that could, in light of the nature, size and location of the project, and the sensitivities of the ecological receptors for which the sites are selected, be exposed to impacts ensuing from its construction, operation and decommissioning, where the latter is proposed.
- the identification, in **Section 6.2**, of the impacts that are reasonably foreseeable as potentially ensuing from it.
- a determination, in **Section 6.3**, as to whether these predicted impacts, either alone or in combination with the other plans or projects, identified in **Section 5**, are likely to have significant effects on the Natura 2000 sites identified in **Section 6**, in view of those sites' conservation objectives.

2.2 Legislative Context

The requirement for Appropriate Assessment of the implications of plans and projects on the Natura 2000 network of sites comes from Article 6(3) of the Habitats Directive[1].

Natura 2000 is a European network of important ecological sites. The Habitats Directive (92/43/EEC) placed an obligation on Member States of the EU to establish the Natura 2000 network. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (2009/147/EC) [2], and Special Areas of Conservation (SACs), established under the Habitats Directive itself.

Under the Planning and Development Act 2000 (amended) (Section 177U), a Local Authority is required to carry out a Screening for appropriate assessment of a proposed development prior to issuing consent to assess, in view of best scientific knowledge (and the sites conservation objectives), if that project or plan, individually or in combination with other plans or projects is likely to have a significant effect on a Natura 2000 site.

If it is determined that an appropriate assessment is required in respect of the proposed development, a Natura Impact Statement (NIS) must be prepared. In the case of a proposed development, the application for consent must be accompanied by a NIS. The NIS will assist the competent authority to conduct the appropriate assessment.

2.3 Stages of Appropriate Assessment

The AA process is a three-stage process with issues and tests at each stage (EC 2021; EC 2022). An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

3. Assessment Methodology

3.1 Appropriate Assessment Guidance

This screening for Appropriate Assessment, or Stage 1, has been undertaken with regard to the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC 2001, 2021), the European Commission Guidance '*Managing Natura 2000 Sites*' (EC 2000, 2018), *Appropriate Assessment of Plans & Projects - Guidance for Planning Authorities* prepared by the NPWS (DoEHLG, 2009) and *Appropriate Assessment Screening for Development Management* prepared by the Office of the Planning Regulator (OPR, 2021).

3.2 Consultation

The following consultations have been undertaken in support of this application:

1. EPA pre-application meetings held on the 4th of March,2022 and the 28th of September 2023
1. The Marine Institute was contacted for guidance on surveys in February 2022 and on the 3rd of March 2023

[1] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Transposed into Irish law as the European Communities (Birds and Natural Habitats) Regulations 2011 ,as amended.
[2] This replaced Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds which is no longer in force (repealed by 32009L0147). https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A31979L0409

2. MARA (7th of September 2023)
3. Shannon Foynes Port Company (8th of April,2022 and the 19th of September 2023)

3.3 Desk Study

In order to complete the Screening for AA report, certain information on the existing environment is required. A desk study was carried out to collate available information on the site's natural environment. This comprised a review of the following publications, data and datasets:

- OSI Aerial photography and 1:50000 mapping, and other online mapping sources (online).
- National Parks and Wildlife Service (NPWS) (online).
- National Biodiversity Data Centre (NBDC) (online).
- BirdWatch Ireland.
- Teagasc soil area maps (NBDC website).
- Geological Survey Ireland (GSI) area maps (online).
- Marine Institute (MI) (confirmed marine sediment quality parameters).
- Environmental Protection Agency (EPA) water quality data (online).
- Shannon International River Basin District (ShIRBD) datasets (Water Framework Directive).
- Other information sources and reports footnoted in the course of the report.

3.4 Screening for Appropriate Assessment

The task of establishing whether a plan or project is likely to have an effect on a Natura 2000 site(s) is based on a preliminary impact assessment using available information and data, including that outlined above, and other available environmental information, supplemented as necessary by local site information and ecological surveys. This is followed by a determination of whether there is a risk that the effects identified could be significant. The precautionary principle approach is required.

Once the potential impacts that may arise from the proposal are identified the significance of these is assessed through the use of key indicators:

- Habitat loss and alteration
- Disturbance and/or displacement of species
- Habitat or species fragmentation
- Water quality

4. Screening for Appropriate Assessment

Screening for AA determines the need for a full AA and consists of a number of steps, each of which is addressed in the following sections of this report:

1. Establish whether the proposal to undertake maintenance dredging of the seabed in the Shannon Estuary is necessary for the management of a Natura 2000 site.
2. Description of the proposal to undertake maintenance dredging of the seabed in the Shannon Estuary.
3. Identification of Natura 2000 sites potentially affected.
4. Identification and description of individual and cumulative impacts of the proposal to undertake maintenance dredging of the seabed in the Shannon Estuary.
5. Assessment of the significance of the impacts on the integrity of Natura 2000 sites
6. Conclusion of screening stage

4.1 Management of Natura 2000 Sites

The proposed development is not connected with or necessary to the conservation management of a Natura 2000 site.

4.2 Description of Plan/Project

4.2.1 Description of the Location of the proposed dredging works

4.2.1.1 Aughinish Alumina Limited Refinery

Aughinish Alumina Ltd. (AAL) is the largest alumina refinery in Europe. Situated at Aughinish Island, Co. Limerick, it is approximately 3.5 km north-east of Foynes, 12.5 km south-west of Shannon, and 27 km west of Limerick City (see Figure 4-1). Delivery of bauxite and export of finished product alumina requires a deep-water jetty which extends into the sub-tidal waters of the Shannon Estuary as shown in

Photograph 4-1. The 285 m outer berth handles vessels up to 90,000 dwt with 12.4 m depth alongside, while the inner berth caters for vessels up to 40,000 dwt and up to 180 m long with 11 m depth alongside[3].The jetty is accessed from land via a causeway which extends northwards for c.940 m from the plant into the estuary.

Photograph 4-1: View of refinery with deep water jetty

[3] https://www.sfpc.ie/terminals/aughinish/

The Shannon Estuary is the largest estuary in Ireland and one of the most important deep-water channels in the country. All marine activities conducted in it are under the control of Shannon Foynes Port Company (SFPC). In order to maintain design depths and provide safe navigation, maintenance dredging is routinely carried out at various locations in the Shannon Estuary as part of maintenance operations.

A Dumping at Sea (DaS) Permit (Nr. S0026-01) and Foreshore Licence (Nr. FS006578) which permit the current ongoing maintenance dredging at AAL will expire in August 2024. There is, therefore, a need for a new DaS permit and Marine Usage Licence (MUL) to allow for ongoing maintenance dredging and an application will be submitted seeking a DaS Permit and MUL for a further period of 8 years. The proposed dredging sites, illustrated in **Figure 4-2**, are located within the immediate vicinity of the jetty. The location of the proposed dumping site, relative to the AAL refinery, is illustrated in **Figure 4-3**.

Figure 4-1: Location of Aughinish Alumina Ltd. Refinery

4.2.1.2 Habitats

Habitat distribution mapping indicates that distribution of two of the annexed habitats for which the Lower River Shannon SAC is selected extend to the area adjacent to the jetty (Maps 4 and 5: NPWS, 2012a). These habitat types are 'Estuaries [1130]' and 'Mudflats and sandflats not covered by seawater at low tide [1140]'. Additional mapping indicates that the waters that encompasses the jetty comprise the "Subtidal sand to mixed sediment with *Nephtys* spp. community complex" (Map 6b: NPWS, 2012c). The intertidal areas adjacent to the east of the jetty and along the shore of Aughinish Island comprise "Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex" (Map 6b: NPWS, 2012c). This latter community complex overlaps with the area mapped as the annexed habitat type 'Mudflats and sandflats not covered by sea water at low tide [1140]' (Map 5: NPWS, 2012a). The majority of the estuary extending away from the AAL jetty is sub-tidal, which enables marine vessels transiting through the waters of the estuary to off-load and on-load cargo at the jetty. The land immediately adjacent to the jetty and within the footprint of the AAL facility is classified as an 'Industrial and commercial' with 'Inter-tidal flats' extending along the shoreline to the east and west of the facility. Pre-dominant land-use in the greater area is given over to agriculture, classified as 'Pastures'[4].

[4] CORINE (2018) Available at https://gis.epa.ie/EPAMaps/

4.2.2 Purpose of the Project

The purpose of maintenance dredging is as follows:

- to maintain design and navigational depths for shipping.
- to allow for the full use of the length of the jetty structure and manoeuvring area.
- To allow for efficient berth occupancy rates
- to allow the crew work boat to move between the cells and the outer and inner berths.

The river systems that drain to the estuary introduce vast volumes of sediment into the estuary on an ongoing basis and the movement of this sediment load from upper reaches to lower is a fundamental element of the dynamics of the estuarine system, as are fluctuations in the patterns of deposition of the sediments within the estuary. Within the confines of the immediate environs of the AAL jetty, the jetty itself constitutes a barrier to lateral movement of sediments and this leads to accumulations of sediments which result in raised areas or mounds occurring on the seabed.

In order to maintain design depths and provide safe navigation at the jetty, there is a need for ongoing maintenance dredging. This maintenance dredging is required to adjust these bed levels, as build-up over time results in insufficient water depths to allow large cargo vessels access to berthing facilities at the jetty. In 2016 a Dumping at Sea (DaS) permit (Nr. S0026-01) and Foreshore Licence (Nr. FS006578) were granted to provide for ongoing maintenance dredging activity, and these will expire in August 2024. There now is a need for a new permit to allow for ongoing maintenance dredging and an application will be submitted seeking a DaS permit for a further period of 8 years. A new Marine Usage Licence (MUL) from Maritime Area Regulatory Authority (MARA) will also be required. The previous permit allowed for two dredge periods per year, and each period had a duration of 4-5 days and could only take place when the main jetty berth was free due to a shut down for maintenance. This was a challenging window to dredge within, with berth occupancy rates of up to 95%. In addition, using only the plough dredge technology restricted the process of maintenance dredging in a marine environment which is very dynamic.

The application associated with this AA Screening Report will include the plough dredge which is currently permitted under the existing permit, and Trailing Suction Hopper Dredger (TSHD) and long-arm reach excavator/barge (LR/B) which will facilitate localised movement of material on the seabed. The use of a long reach machine on a barge is necessary to move material that is not accessible to the plough dredge or TSHD, e.g., material under the jetty structure or close to jetty structures. These two dredging technologies are more appropriate to the actual sedimentation processes occurring at the AAL jetty and will provide greater flexibility in the dredging campaigns going forward.

For the purposes of the new DaS permit application the two main components or areas are as follows:

- The 4 Dredge/Dumping Areas around the AAL jetty (**Figure 4-2**), and
- The Dump Site off Foynes Island(**Figure 4-3**)

4.2.3 Characteristics of the Project

The application seeks to give better flexibility to the maintenance dredging process by allowing for a range of dredging technologies, wider periods for dredging, larger areas to accommodate dredging and dumping activities and the introduction of a new dredge location adjacent to the jetty approach arm (Area D, **Figure 4-2**), along with an existing Dump Site off Foynes Island in the main channel of the Shannon estuary to receive material dredged by means of a TSHD. Given that each area will have the use of a plough and other technologies the dredging area is also the dump site area as the material will be moved within the red lined area. The physical areas of dredging

within the red line areas will be less and will be focussed on high points or accumulations of material on the seabed.

4.2.3.1 Size, scale, area, land-take

Dredging Areas

The dredged areas shown in **Figure 4-2** comprise a total of 21.57 ha.

- Area A (Outer Berth) 6.3 ha — TSHD, Plough and a LR/B.
- Area B (Cells) 3.75 ha — Plough and LR/B.
- Area C (Inner Berth) 4.8 ha — TSHD, Plough and a LR/B.
- Area D (Jetty Approach Arm) 6.72 ha — Plough and LR/B.

The locations where it is proposed that plough-dredging will take place are shown in **Figure 4-2** and the quantities of material to be dredged at each area are listed in **Table 4-3**, below. The plough functions by scraping the seabed and pushing accumulated material forward. Discharge of the plough dredged material is subsurface at the termination of each run. In other words, dumping emanates from the plough dredge process, where, in effect, the dredge area acts as the dump area.

The dredging technologies of a plough and LR/B will facilitate material to be moved locally on the seabed and this will be relocated and dispersed by the plough dredger within the red line areas. The use of a LR/B is necessary to move material that is not accessible to the plough dredge or TSHD, for example material under the jetty structure or close to jetty structures.

Figure 4-2: Locations of proposed dredging areas

Photograph 4-2: View of outer berth with vessels alongside

Dump Site

When using the TSHD a dump site is required to dispose of the material. The dredged material that has been excavated from the seabed is held within the hold of the TSHD ship ready for transport away from the jetty and berths. Accordingly, an existing permitted dump site location has been identified within the Shannon Estuary and is located within an area of the currently permitted SFPC Dump Site off Foynes Island. (EPA Nr. S0009-03). The Dump Site area being sought has an area of 8.43 ha and is shown, relative to Areas A to D, in Figure 4-3, below. The proposed Dump Site will only receive material from the TSHD dredging activities from the main berth and from the inner berth, where required. A detailed view is shown in Figure 4-4. The quantities of material to be dumped at this location are listed in Table 4-2, below.

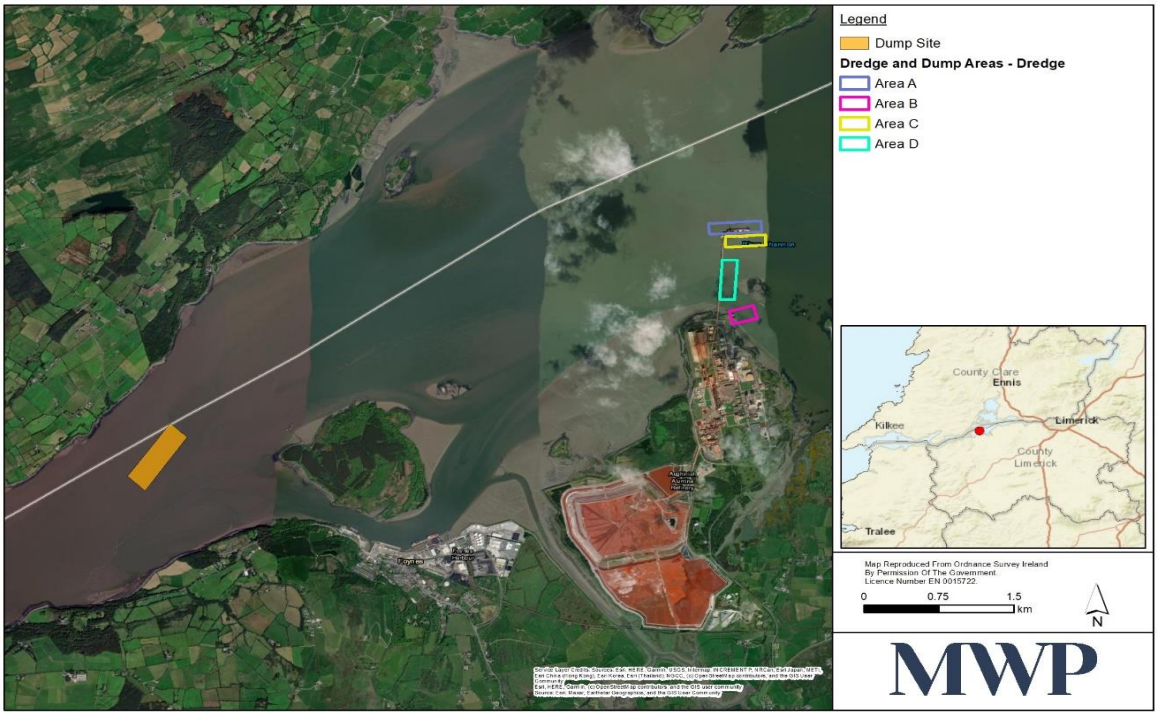


Figure 4-3: Location of proposed dumping site relative to the proposed dredge sites.

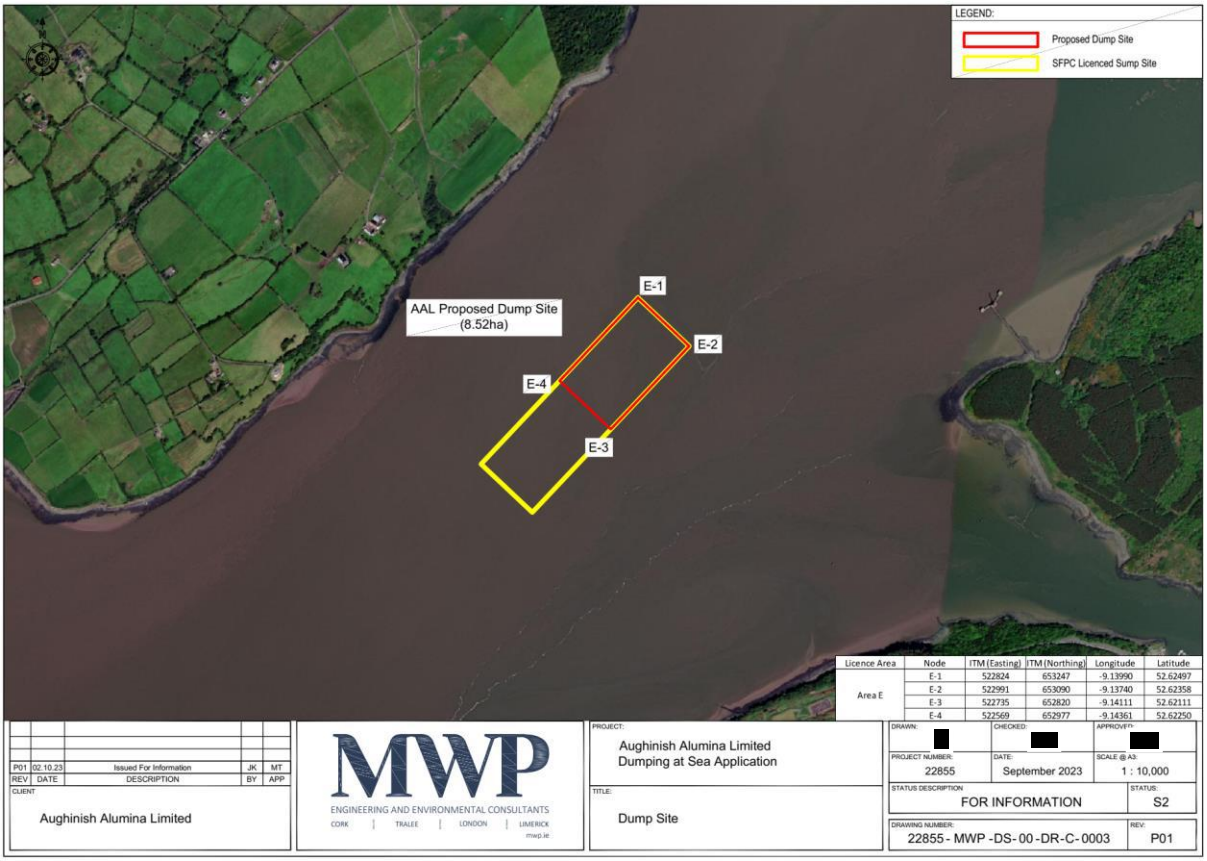
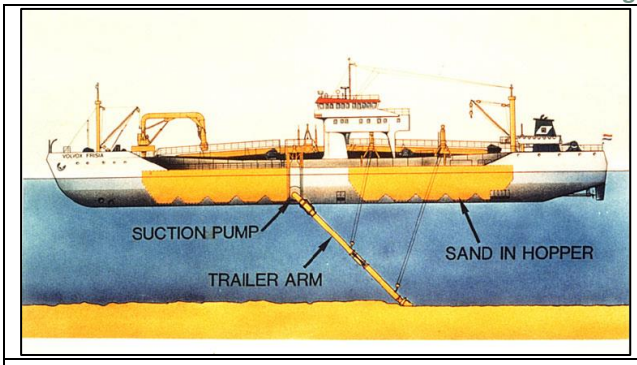


Figure 4-4: Detailed view of proposed Dump Site currently used by the SFPC

4.2.3.2 Description of resource requirements (water resources, construction material, human presence, etc.,)

Images and illustrations of the dredge technologies are provided in **Table 4-1**. A THSD will be utilised for Areas A and C, shown in **Figure 4-2**, where a larger dredge campaign is required to take the bed level down to the required design/operational depth. In this scenario it may be necessary to remove 1 to 2 m of material. For that depth and volume of dredging the TSHD is the best solution. The TSHD is only expected to be used every few years within the overall 8 year cycle.

Table 4-1: Dredging Vessels

	
Drawing of a Trailing Suction Hopper Dredger (TSHD)	**Photograph of a TSHD**
	
Long Arm Reach operating from a Barge	**Plough Dredger**

4.2.3.3 Details of physical changes that will take place during the various stages of implementing the proposal

Plough dredgers are hydrodynamic dredgers[5] that mobilise material underwater and then use the bed slopes and natural water currents to move the material to adjacent areas within the dredge footprint. The process moves, rather than removes, the bed material, thereby flattening areas where sediment has accumulated without the need to lift material from the seabed and place it elsewhere. This means they require no disposal sites as they level the seabed, towed behind a suitable boat.

TSHD are classified as hydraulic dredgers, i.e., dredgers which make use of centrifugal pumps. They excavate sediment from a borrow area and then can transport the material to the placement area, which, in the case of this proposal, will be a designated and licensed dump site. These craft have articulated dredging pipes, known as “drag arms”, that extend to the seabed. At the end of the drag arm, a drag head is attached. Trailers move at low speeds suctioning up the seabed material through the drag heads and pipes to the hopper i.e., storage areas in the hull for keeping dredged material. The TSHD will work within the berth/dredge area and remove material

[5] Details on dredging technologies adapted from: https://www.iadc-dredging.com

from the seabed down to the desired level. It is thereafter assisted by a plough for bed levelling, and in some instances, there may be a need to deploy a LR/B to move hard to reach material under or alongside the jetty.

These technologies will result in the introduction of suspended sediment into the water column.

When the hopper is filled to capacity, the TSHD will move down river to the proposed Dump Site. When the vessel arrives at the Dump Site it will travel through and within the area in a defined pattern and the bottom opening doors of the vessel will allow material to be dropped to the seabed. The material as it drops to the seabed will also have a proportion of fine silt that will go into suspension in the water column. The heavier fraction will fall to the bed first and then over time the other lighter particles will settle out of suspension and onto the seabed. A proportion of the material will also disperse with the currents and tidal change regime.

There are two distinct areas where material will be dumped comprising the Dump Site, shown Figure 4-3, and the four dredge areas at the AAL jetty shown in Figure 4-2. Dumping at the jetty emanates from the plough dredge process, where in effect your dredge area acts as your dump area. Table 4-2 details the volume of material that will be dredged by means of the TSHD and brought to the Dump Site. Table 4-3 details the volumes of material to be plough dredged within the four dredge areas at the AAL jetty. It is envisaged that a maximum volume of 53,846 tonnes per annum could be deposited at the proposed Dump Site. This volume will vary year to year depending on the dredging cycle, deposition rates and requirements within the main berth.

Table 4-2: Quantity to be Loaded and Dumped at Sea

Location	Maximum annual quantity (tonnes wet)	Total Maximum quantity to be dumped over 8 years (tonnes wet)
SFPC - Site "C" Foynes Island - Mid Channel	53,846	430,771
Total	**53,846**	**430,771**

Table 4-3: Quantity of Material to be Plough-dredged

Location	Maximum annual quantity (tonnes wet)	Total Maximum quantity to be dumped over 8 years (tonnes wet)
A (Outer Berth)	13,309	106,470
B (Cells)	2,520	20,160
C (Inner Berth)	5,962	47,693
D (Approach Arm)	7,920	63,360
Total	**29,710**	**237,683**

4.2.3.4 Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)

In order to provide flexibility in the dredging process, it is intended to have provision in the DaS permit to dredge/dump twice a year over a period of 8 years (2025- 2033). While the dredge plan will vary from year to year, each biannual dredge campaign will have a maximum duration of 21 days and dredging operations will take place for 24 hrs per day during each 21-day cycle.

The specific locations and quantities of sediment that need to be dredged will vary considerably between campaigns and years depending on the methods and technology used, and the weather and logistical factors such as the availability of the jetty and TSHD. The volumes to be removed will also be influenced by the natural cycle of deposition of material on the seabed at each location over time. While the dredge plan will vary from year to

year, each biannual dredge campaign will have a maximum duration of 21 days and dredging operations will take place for 24 hrs per day during each 21-day cycle.

The TSHD is expected to be used every few years within the overall 8 year cycle. This technology may also be required in the inner berth.

4.2.3.5 Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network

Seabed sediments from the jetty area excavated by the TSHD that will be dumped at sea will comprise a maximum annual of 53,846 tonnes (wet). Total Maximum quantity to be dumped over 8 years 430, 771 tonnes (wet).

4.2.3.6 Additional services required to implement the project

Dredge activity monitoring by Marine Mammal Observer.

Archaeologogical monitoring

5. Identification of Other Projects or Plans or Activities

EC (2018) refers to the cumulative impacts due to other plans or projects 'that are currently under consideration together with the effects of any existing or proposed projects or plans'. As the underlying intention of the in-combination provision is to take account of cumulative effects (DoEHLG, 2010) it is necessary to identify not only these aforementioned projects or plans but all likely sources of effects in the existing environment (DoEHLG, 2010) with which the proposed development could interact synergistically to cause in-combination impacts that will have adverse effects on the integrity of the Natura 2000 sites identified in Table 6-2, above.

5.1.1 Plans

The term plan has, for the purposes of Article 6(3), a potentially broad meaning, including land-use or spatial plans and sectoral plans (e.g. for transport, energy, waste management, water management, forest management, etc.) (EC, 2021). A review of the relevant plans that could potentially interact with the proposed project was undertaken. Plans that could interact synergistically with the project include:

- Limerick Development Plan 2022-2028
- Clare County Development Plan 2017–2023
- Strategic Integrated Framework Plan for the Shannon Estuary 2013-2020

5.1.2 Projects

Projects are defined (EC, 2021) as undertakings that involve construction works, installations and other interventions in the natural environment, including regular activities aimed at utilising natural resources. A search of the adjacent local authorities' on-line planning enquiry systems determined that there are an abundance of permissions and applications associated with projects distributed throughout the wider geographical area. As would be expected these are primarily for minor development works typical of rural settings with a mix of small towns and villages, interspersed with dispersed dwellings, where agriculture is the dominant activity. The projects include, *inter alia*, dwelling houses with ancillary works (WWTS, extensions, landscaping, etc.), farm structures (silage pits, sheds, etc.).

There are two exceptions, notable because of its proximity and the characteristics of the works involved. These are described in Sections 5.1.2.1 & 2,below.

5.1.2.1 AAL Bauxite Expansion Planning Application

The AAL planning application to ABP (PA91.312146 and 318302) is for an expansion of the Bauxite Residue Disposal Area, an extension to the existing Salt Cake Disposal Cell and an extension of the permitted borrow pit at their facilities on Aughinish Island. This application is under consideration by ABP.

5.1.2.2 SFPC Foynes Port capacity extension

The permitted[6] works consist of:

- Construction of an open-piled jetty structure with suspended 116.5 m concrete deck connecting the West Quay to the East Jetty.
- Quayside furniture, including quay fenders, mooring bollards, safety ladders, toe rail and lighting columns.
- Construction and remedial works to both the existing West Quay and East Jetty ends to facilitate structural tie-in of the proposed new jetty structure.
- Removal of the existing small craft landing pontoon walkway from its current position affixed to the shore between the West Quay and the East Jetty and provision of a new, small craft, landing pontoon and walkway affixed to the western side of the West Quay wall.
- All associated site development works.

The development will include a phased expansion of the port estate, on 33.95 ha of land immediately adjacent to the east of that existing, to provide serviced industrial land and to accommodate marine-related industry, port-centric logistics, and associated infrastructure that will be provided in accordance with a development framework programme prepared for the overall expansion area.

5.1.3 Other Activities

5.1.3.1 Dredging and Dumping Activities in the Estuary

SFPC is permitted to conduct annual dredging campaigns, estimating between 75,000 and 150,000 wet tons of material per annum. This includes dumping material at the dump site off Foynes Island – that AAL are now proposing to use part of (see Figure 2-4). Waterways Ireland is planning a campaign near Limerick city above Shannon Bridge, but details and licensing status are unclear.

5.1.3.2 Estuary Operations

The Shannon Estuary is one of the most important navigation channels in the country as the deep waters provide access by some of the largest marine vessels entering Irish waters to ports such as Shannon and Foynes as well as numerous industries located along the estuary's shores. Due to the level of industry in the region significant numbers of vessels utilise the channel, including cargo vessels which berth at the existing deep-water jetty at Aughinish, and as such activity associated with these vessels could potentially result in in-combination effects as a result of the proposal.

[6] Bord Pleanála Case reference: PA91.301561

5.1.3.3 Diffuse and Point Sources of Pollution

5.1.3.3.1 *Agriculture*

Agriculture is the dominant activity in the geographical area surrounding the estuary and is considered the main pressure on surface water quality in the various river systems draining to the it. As a result, there is potential for the proposed dredging and dumping at sea to contribute to in-combination impacts on the quality of marine waters within the relevant Natura 2000 sites. This derives from the potential for sediments and other pollutants entering the estuary waters as a result of the dredging and dumping at sea. Within this landscape commercial woodland plantations are also present but the distribution of these is relatively diffuse in the flood plain of the River Deel that extends eastwards from the ridge of the Mullaghareirk Mountains that tracks southwards from the coast.

5.1.3.3.2 *Aquaculture*

There are four aquaculture sites in the vicinity of AAL. These comprise both intensive and extensive mussel and oyster sites, the closest of which is located approximately 550 m to the east. The closest designated shellfish waters are ca. 27 km west of AAL at Ballylongford. A study of the marine atlas showed that the closest fishing ground is Pot fishing for shrimp ca.19.6 km west of AAL.

5.1.3.3.3 *Urban Waste Water*

Raw sewage, from an Agglomeration[7] with a Population Equivalent (PE)[8] of 592, is discharged to the estuary at Foynes[9] (Reg No. D0502-01) at a location approximately 4.5 southwest of the AAL jetty.

5.1.3.3.4 *EPA Licensed Facilities*

Industrial and waste facilities are classed into different sectors depending on the nature of their activity and its potential impact on the environment. There are two Licensed Waste facilities within the port area in Foynes that are registered by the EPA, however, neither are currently active. One issued to Greenport Environmental Limited was withdrawn and the other issued to Irish Bulk Liquid Storage was never active. There are further three in Limerick City, one in Ennis and another in Kilkee.

There is an Industrial Emissions Licensed (IEL) facility [License No. P0035-07[10]] situated within the refinery. The Licence grants AAL permission to carry out the following activities in accordance with the requirements and conditions set out in the Licence:

- The production of inorganic chemicals;
- The combustion of fuels installations with a total rated thermal input of 50 MW or more; and
- The recovery or disposal of waste.

Submitting an Annual Environmental Report (AER), a summary of environmental information for a given year, is a requirement of all EPA licences. Each AER includes:

- Details of the licence holder's environmental goals achieved goals to maintain compliance and/or improve their environmental performance;

[7] An urban settlement (village, town or city area) which is connected through a pipe network to a wastewater treatment plant.
[8] Wastewater treatment plants are described in terms of their designed treatment capacity, which is generally expressed as PE
[9] https://gis.epa.ie/EPAMaps/SewageTreatment
[10] Class of Activity: Sectors 2 (Energy), 5 (Chemicals) and 11 (Waste)

- Answers to questions regarding their facility's activities;
- Tables of results from monitoring emissions such as air, water, noise, and odour; and
- Details of waste generated, accepted and treated.

6. Identification of Natura 2000 Sites

6.1.1 Zone of Impact Influence

The screening stage of AA involves compiling a 'long list' of European sites within a zone of potential impact influence for later analysis which may or may ultimately not be significantly impacted upon by the proposal. All Natura 2000 sites within 15 km of the proposal location will be characterised in the context of the rationale for designation and qualifying features, in accordance with NPWS guidance. In line with the precautionary principle, during the preparation of this report, Natura 2000 sites that lie outside 15 km that may be significantly impacted as a result of the proposed works were also considered. Following this, the potential impacts associated with the proposal will be identified before an assessment is made of the likely significance of these impacts.

As described above, the test for the screening for appropriate assessment is to assess, in view of best scientific knowledge, if the development, individually or in combination with other plans/projects, is likely to have a significant effect on a Natura 2000 site. If there are any significant, potentially significant, or uncertain effects, it will be necessary to proceed to appropriate assessment and submit an NIS.

6.1.2 Identification of Natura 2000

Adopting the precautionary principle in identifying potentially affected European sites, it has been decided to include all SACs and SPAs within a 15 km radius of the proposal site. Table 6-1, below, lists SACs and SPA within 15 km or the anticipated zone of influence of the proposal site and indicates their proximity to the location of the where it is proposed to undertake maintenance dredging of the seabed.

Table 6-1: Natura 2000 sites within 15 km radius of proposal site

Site Name	Proximity of site to nearest point of designated site
Lower River Shannon SAC (002165)	Proposed maintenance dredging will occur within this SAC.
River Shannon and River Fergus Estuaries SPA (004077)	Proposed maintenance dredging will occur within this SPA.
Barrigone SAC (000432)	SAC is located 3.8 km to the southeast.
Askeaton Fen Complex SAC (002279)	SAC is located 8.7 km to east.
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	SPA is located 10.1 km to southwest.
Curraghchase Woods SAC (000174)	SAC is located 12.4 km to southeast.

6.1.3 Characteristics of Natura 2000 Sites

Table 6-2 lists the Qualifying Interests (QI) for which the SACs, and the Special Conservation Interests (SCI) for which the SPAs, are selected. Information pertaining to designated sites is from site synopses, conservation objectives and other information available on www.npws.ie.

Table 6-2: Natura 2000 sites with QI/SCI for which sites are selected

Site Name	SCI/QI[11]
Lower River Shannon SAC (002165)	**Coastal and Halophytic Habitats** • Sandbanks which are slightly covered by sea water all the time [1110] • Estuaries [1130] • Mudflats and sand flats not covered by seawater at low tide [1140] • Coastal lagoons [1150]* • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] **Riparian Habitat** • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] **Terrestrial Habitats** • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]* **Aquatic species** • Freshwater pearl mussel *(Margaritifera margaritifera)* [1029] • Sea lamprey *(Petromyzon marinus*) [1095] • Brook lamprey *(Lampetra planeri*) [1096] • River lamprey *(Lampetra fluviatilis)* [1099] • Atlantic salmon *(Salmo salar*) [1106] (**only in fresh water)** • Common bottlenose dolphin *(Tursiops truncates)* [1349] **Terrestrial-aquatic species** • Otter *(Lutra lutra*) [1355]
River Shannon and River Fergus Estuaries SPA (004077)	• Cormorant (*Phalacrocorax carbo*) [A017] • Whooper swan (*Cygnus cygnus*) [A038] • Light-bellied brent goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056] • Scaup (*Aythya marila*) [A062] • Ringed plover (*Charadrius hiaticula*) [A137] • Golden plover (*Pluvialis apricaria*) [A140] • Grey plover (*Pluvialis squatarola*) [A141] • Lapwing (*Vanellus vanellus*) [A142] • Knot (*Calidris canutus*) [A143] • Dunlin (*Calidris alpina*) [A149] • Black-tailed godwit (*Limosa li*mosa) [A156] • Bar-tailed godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Greenshank (*Tringa nebularia*) [A164] • Black-headed gull (*Chroicocephalus ridibundus*) [A179] • Wetland and Waterbirds [A999]
Barrigone SAC (000432)	**Terrestrial Habitats** • *Juniperus communis* formations on heaths or calcareous grasslands [5130]

[11] Asterisk indicates a priority habitat i.e., a natural habitat type in danger of disappearance.

Site Name	SCI/QI[11]
	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Limestone pavements [8240]* **Terrestrial species** • Marsh fritillary (*Euphydryas aurinia*) [1065]
Askeaton Fen Complex SAC (002279)	**Wetland habitats** • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]* • Alkaline fens [7230]
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	**Terrestrial species** • Hen harrier (*Circus cyaneus*) [A082]
Curraghchase Woods SAC (000174)	**Terrestrial habitats** • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]* • *Taxus baccata* woods of the British Isles [91J0]* **Terrestrial species** • Desmoulin's whorl snail (*Vertigo moulinsiana*) [1016] • Lesser horseshoe bat *(Rhinolophus hipposideros)* [1303]

6.1.4 Conservation Objectives

According to the Habitat's Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range when:

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable as defined below.

According to the Habitat's Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographic range when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The specific conservation objectives for each site, which are available on www.npws.ie, were accessed for the sites listed in the tables above on the September 1st 2023.

- Lower River Shannon SAC (002165) [Published on 7 August 2012].
- River Shannon and River Fergus Estuaries SPA (004077) [Published on 17 September 2012].
- Barrigone SAC (000432) [Published on 15 February 2019].
- Askeaton Fen Complex SAC (002279) [Published on 18 May 2018].
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161) [Published on 23 September 2022].
- Curraghchase Woods SAC (000174) [Published on 20 January 2023].

Conservation management plans were not available for any of these sites.

All conservation objectives together with other designated site information are available on http://www.npws.ie/protectedsites/.

6.2 Identification of Potential Impacts

Potential likely ecological impacts arising from the project are identified in this section.

Description of elements of the project likely to give rise to potential ecological impacts sites.	• **Dredging of the estuary bed at the jetty resulting in re-suspension of sediment into the water column and dispersal onto adjacent areas.** • **Disposal of dredged material at proposed Dump Site.** • **Increase in vessel movements during dredging operations.** • **Increase in noise emissions to air and water during dredging operations, from both the dredge vessel itself and the physical dredge activity.** • **Use of oils/fuels/lubricants.**
Describe any likely direct, indirect or secondary ecological impacts of the project (either alone or in combination with other plans or projects) by virtue of: • Size and scale; • Land-take; • Distance from Natura 2000 Site or key features of the Site; • Resource requirements; • Emissions; • Excavation requirements; • Transportation requirements; • Duration of construction, operation etc.; and • Other.	• The proposed dredging works will take place entirely within the boundary of two Natura 2000 sites; Lower River Shannon SAC (002165) and the River Shannon and River Fergus Estuaries SPA (004077) • Dredging activity will result in alteration of estuary bed at the dredge sites • Water quality impacts from increased suspended sediment and turbidity in the water column potentially causing habitat alteration and/or species displacement • Pollutants/harmful substances could disperse into the aquatic environment once sediments are disturbed impacting on water quality and potentially causing indirect species displacement • Deposition of dredged material, at the jetty and the 8.43 ha Dump Site, could cause habitat alteration and/or species displacement through smothering impacts on benthic in-faunal communities, potentially affecting the food resource of SCI bird species • Increased vessel movements could result in both aquatic and avian species disturbance/displacement • Fugitive noise emissions during dredging operations could lead to temporary disturbance/displacement of qualifying bird/mammal species • Accidental spills of fuels/lubricants could lead to habitat alteration and/or species displacement through adverse impacts to water quality

6.3 Assessment of Significance of Potential Impacts

This section considers the list of sites identified in Section 6, above, together with the potential ecological impacts identified in Section 6.2, and determines whether the proposed maintenance dredging of the seabed in the Shannon Estuary, on its own or in combination with the projects and plans identified in Section 5, is likely to have significant effects on any Natura 2000 site.

6.3.1 Lower River Shannon SAC (002165)

The proposed dredging works will take place entirely within the boundary of the SAC, specifically in the marine component. This SAC is selected for, *inter alia*, 11 annexed habitat types which are coastal or halophytic including 1, namely Coastal lagoons [1150], which is a priority habitat[11].

1. Sandbanks which are slightly covered by sea water all the time [1110]
2. Estuaries [1130]
3. Mudflats and sand flats not covered by seawater at low tide [1140]
4. Coastal lagoons [1150]*
5. Large shallow inlets and bays [1160]
6. Reefs [1170]
7. Perennial vegetation of stony banks [1220]
8. *Salicornia* and other annuals colonising mud and sand [1310]
9. Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

10. Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
11. Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]

The SAC is also selected for the protection of resident populations of a species that is exclusively marine in its distribution, namely common bottlenose dolphin (*T. truncates*), and 3 species that have marine phases in their life cycles: Atlantic salmon (*S. salar*) [12], sea lamprey (*P. marinus*) and river lamprey (*L. fluviatilis*).

Due to the nature and scale of the proposed works there is potential for direct habitat alteration impacts within the coastal/halophytic annexed habitat types 1 to 6, above as a result of the proposed programme of dredging on its own. Direct habitat alteration could occur through the physical alteration of the estuary bed as a result of plough-dredge activity which would serve to level the estuary bed at the dredge-sites. There is also limited potential for indirect or secondary habitat impacts on the coastal annexed habitat types 7 to 11, above. Therefore, significant impacts to habitats, either directly or indirectly, for which the site is selected cannot be ruled out. In light of this uncertainty, the likelihood of significant impacts on the species listed above also cannot be ruled out

Further assessment is, therefore, required to determine whether the project, on its own or in combination with the other plans or projects, identified in Section 5, is likely to adversely affect the integrity of the Lower River Shannon SAC (002165) in view of its conservation objectives.

To that end it will be necessary to prepare a Natura Impact Statement to assist the competent authority to conduct the appropriate assessment of the implications of the proposed programme of dredging works for this Natura 2000 site.

6.3.2 River Shannon and River Fergus Estuaries SPA (004077)

While this site is not selected for any annexed habitat types it is selected for the protection of the wetland habitat in the SPA that is a resource for the regularly occurring migratory waterbirds that utilise the site and for the populations of 20 species of migratory wintering waterfowl and 1 resident, breeding & wintering species, namely cormorant (*P. carbo*) (NPWS, 2012b). These SCI are listed in Table 6-2.

The SPA site overlaps with the Lower River Shannon SAC (002165).Therefore, in light of the requirement that, in circumstances where Natura 2000 sites overlap, and when appropriate, the conservation objectives for each site should be used in conjunction with those of the overlapping or adjacent sites (NPWS 2012a; 2012b), further assessment is required to determine whether the project is likely to adversely affect the integrity of this Natura 2000 site in view of its conservation objectives.

Further assessment is, therefore, required to determine whether the project, on its own or in combination with the other plans or projects, identified in Section 5, is likely to adversely affect the integrity of the Lower River Shannon SAC (002165) in view of its conservation objectives.

To that end it will be necessary to prepare a Natura Impact Statement to assist the competent authority to conduct the appropriate assessment of the implications of the proposed programme of dredging works for this Natura 2000 site.

[12] Atlantic salmon (*S. salar*) is protected as a QI only in fresh water (NPWS, 2012a).

6.3.3 Barrigone SAC (000432)

The QI for which this Natura 2000 site is selected are:

- *Juniperus communis* formations on heaths or calcareous grasslands [5130]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Limestone pavements [8240]*
- Marsh fritillary (*Euphydryas aurinia*) [1065]

Bearing in mind the location and characteristics of the proposed programme of dredging outlined in Section 4.2, the impacts identified in Section 6.2, and the ecological sensitivities of the QI habitats and the QI species for which this site is selected, it is considered that no plausible impact pathway connects Barrigone SAC, a landlocked SAC some 3.8 km to the southeast, and the location of the proposed dredging.

It is concluded , therefore, that the proposed programme of dredging works, either on its own, or in combination with the other plans or projects, identified in Section 5, is not likely to have significant effects on this Natura 2000 site, in view of the site's conservation objectives.

6.3.4 Askeaton Fen Complex SAC (002279)

The QI for which this Natura 2000 site is selected are:

- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]*
- Alkaline fens [7230]

Bearing in mind the location and characteristics of the proposed programme of dredging outlined in Section 4.2, the impacts identified in Section 6.2, and the ground and surface water dependent character of these QI habitats, it is considered that no plausible impact pathway connects this SAC, a landlocked site, comprised of a collective of sections, some 8.7 km to the east, and the location of the proposed dredging.

It is concluded , therefore, that the proposed programme of dredging works, either on its own, or in combination with the other plans or projects, identified in Section 5, is not likely to have significant effects on this Natura 2000 site, in view of the site's conservation objectives.

6.3.5 Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)

The SCI species for which this Natura 2000 site is selected is hen harrier *(Circus cyaneus)* [A082], a species of raptor that is exclusively associated with terrestrial habitats for all aspects of its breeding and foraging ecology.

Bearing in mind the location and characteristics of the proposed programme of dredging outlined in Section 4.2, the impacts identified in Section 6.2, and the exclusively terrestrial character of this SCI species, it is considered that no plausible impact pathway connects this SPA, a landlocked SPA some 10 km to the southwest, and the location of the proposed dredging.

Due to the ranging behaviour of this species during the breeding season, there is some, albeit limited, potential that individuals from the population for which this site is selected may, on occasion, forage in the coastal hinterland adjacent to the location of the proposed dredging. However, the distance intervening between the SPA and the estuary ensures that the level of any hen harrier (*C. cyaneus*) activity will be minimal, and the foraging behaviours of this species are not associated with open waters such as the estuary. With regard to the winter period when males typically disperse to areas close to the coast, as was outlined in the preceding sentence, the foraging behaviours of this species militate against any exposure to the activities associated with the proposed dredging. In light of the foregoing, it is concluded that significant impacts on the behaviours of the population of hen harrier (*C. cyaneus*) for which this SPA site is selected are not reasonably foreseeable.

It is concluded , therefore, that the proposed programme of dredging works, either on its own, or in combination with the other plans or projects, identified in Section 5, is not likely to have significant effects on this Natura 2000 site, in view of the site's conservation objectives.

6.3.6 Curraghchase Woods SAC (000174)

The QI for which this Natura 2000 site is selected are:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]*
- *Taxus baccata* woods of the British Isles [91J0]*
- Desmoulin's whorl snail (*Vertigo moulinsiana*) [1016]
- Lesser horseshoe bat *(Rhinolophus hipposideros)* [1303]

Bearing in mind the location and characteristics of the proposed programme of dredging outlined in Section 4.2, the impacts identified in Section 6.2, and the ecological sensitivities of the QI habitats and the QI species for which this site is selected, it is considered that no plausible impact pathway connects this SAC, a landlocked site some 12.4 km to the southeast, and the location of the proposed dredging.

It is concluded , therefore, that the proposed programme of dredging works, either on its own, or in combination with the other plans or projects, identified in Section 5, is not likely to have significant effects on this Natura 2000 site, in view of the site's conservation objectives.

6.4 Conclusion

It has been objectively concluded that that the proposed programme of dredging works, either on its own, or in combination with the other plans or projects, identified in Section 5, is not likely to have significant effects on the following Natura 2000 sites, in view of the sites' conservation objectives:

- Barrigone SAC (000432)
- Askeaton Fen Complex SAC (002279)
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)
- Curraghchase Woods SAC (000174)

However, it has been concluded that significant effects ensuing from the proposed maintenance dredging of the seabed in the Shannon Estuary, either on its own, or in combination with other plans or projects, cannot be ruled out at this stage, on the Lower River Shannon SAC (002165) and the River Shannon and River Fergus Estuaries SPA (004077), in light of those sites' conservation objectives.

Further assessment is, therefore, required to determine whether the project is likely to adversely affect the integrity of the Lower River Shannon SAC (002165) and the River Shannon and River Fergus Estuaries SPA (004077) sites in view of those sites' conservation objectives. To that end, it will be necessary to prepare a Natura Impact Statement to assist the competent authority to conduct the appropriate assessment of the implications of the proposed programme of dredging works for those Natura 2000 sites.

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