Appendix 6: Risk Assessment for Annex IV Species

MWP

Annex IV Fauna Risk Assessment

Proposed Maintenance Dredging, Aughinish, Co. Limerick

Limerick County Council

November 2023

Contents

Figures

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MWP, Engineering and Environmental Consultants
Address: Reen Point, Blennerville, Tralee, Co. Kerry, V92 X2TK, Ireland

www.mwp.ie

1. Introduction

MWP was commissioned by Aughinish Alumina Limited (AAL) to carry out baseline surveys, assess the impact on the environment and develop their Dumping at Sea (DaS) and Marine Usage License (MUL) applications for an 8 years period Their current maintenance dredging licenses (DaS Permit Nr. S0026-01 and Foreshore (FS) Licence Nr. FS006578) expire on the 31st Aug 2024. AAL have a need to dredge to achieve design depth at the outer berth (A) and the inner berth (C) on the jetty and remove the accumulated silt at the cells (B) and along the approach arm (D). The conditions of AAL's current DaS permit and FS licence allows them to use a plough dredger for two 5-day periods per annum. This has proved inadequate to deal with sediment that has accumulated in the above-mentioned areas. AAL is therefore proposing to use additional dredge/dump technologies and sites to remove the accumulated sediments.

This Annex IV Risk Assessment has been prepared by MWP to assess whether the proposed development at AAL is in accordance with the system of strict protection established for Annex IV species, under the European Union Habitats Directive (92/43/EEC), whether a derogation licence is required under this Directive, and if so, whether the criteria are met to enable the granting of such a licence.

1.1 Outline of the Proposed Development Works

The AAL jetty was constructed in the early 1980's and there has been a need for ongoing maintenance dredging since 2016 when a DaS permit (Nr. S0026-01) and FL (Nr. FS006578) was granted to provide for ongoing maintenance dredging activity. This permit and license covers an 8-year period, which will expire in August 2024. There is a need for a new MUL from MARA to allow for ongoing maintenance dredging for a period of 8 years.

The current (2016) DaS permit and FL allowed for dredging by means of plough dredging at three defined locations (A-C) as shown on Figure 1-1 below.

- Area A is the main jetty berth where the larger ships berth to discharge raw materials.
- Area B is what is called the Cells which is the land-based area where the work boats that transfer crew is based.
- Area C is known as the inner berth, and this is used for smaller ships for the delivery of process materials and export of finished product.

The current permit and licence allows for two dredge periods per year, and each period has a duration of 4-5 days and could only take place when the jetty was free due to a shut down for maintenance. This is a challenging window to dredge within. In addition, having only the plough dredge technology restricted the process of maintenance dredging in a marine environment which is very dynamic.

AAL have an ongoing need to undertake maintenance dredging to ensure that the accumulation of sediment around the jetty and ship berths does not impede the docking of ships, and to allow the work crew boat to move between the shore and the berths at the end of the jetty. They need to achieve design depth at the outer and inner berths (A & C) on the jetty, remove the accumulated silt at the cells (Area B) and along the approach arm (Area D) in order to allow the work crew boat to operate. The conditions of AAL's current DaS permit only allows them to use a plough dredger for limited periods per annum, and this has proved inadequate to deal with the sediment that has accumulated in the above-mentioned areas. AAL is therefore proposing to use additional dredging technologies to remove the accumulated sediments.

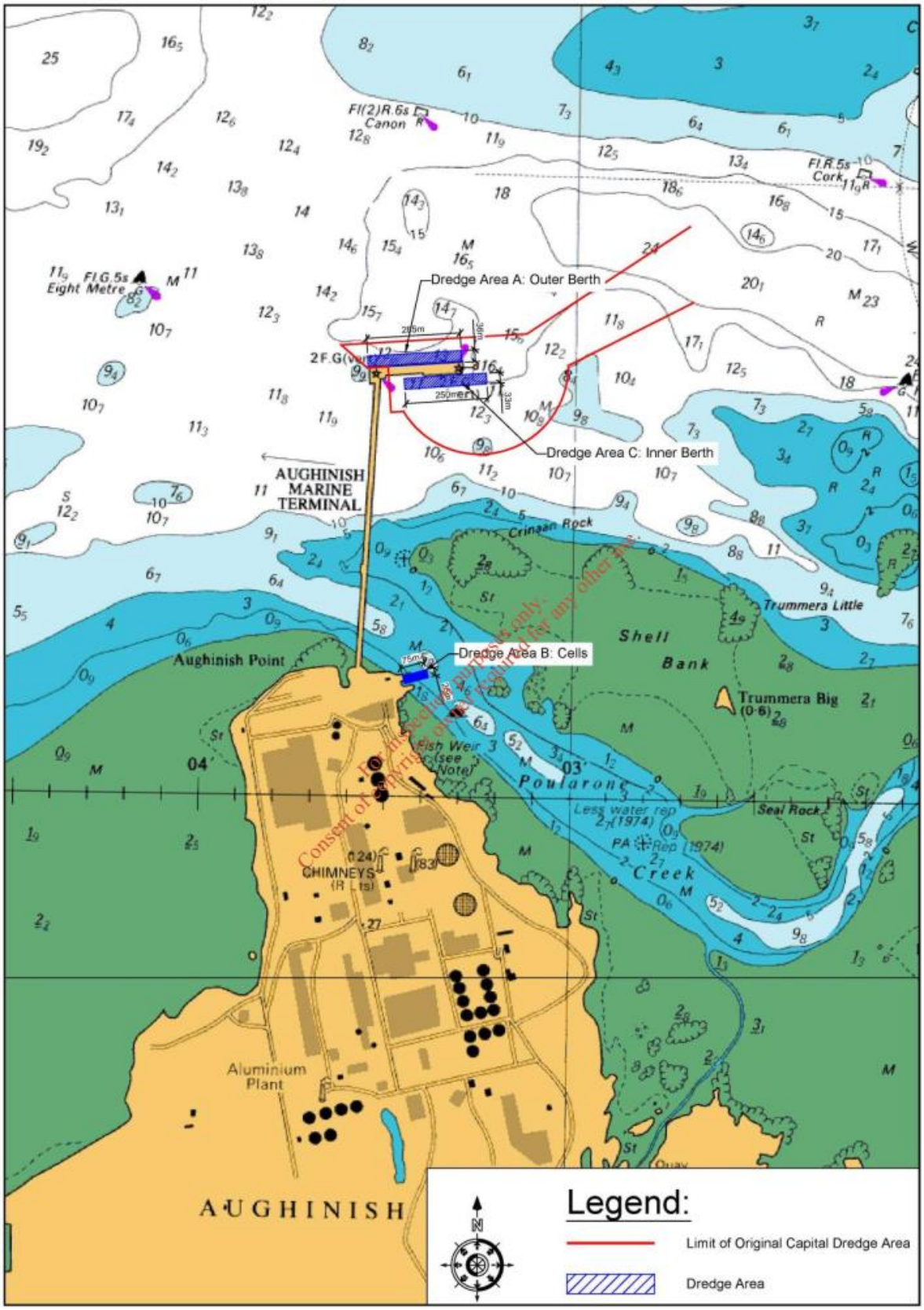

Figure 1-1 Map of current 2016 DaS permit dredge site locations

AAL are requesting changes with regard to their current DaS permit (Nr. S0026-01) namely:

1. Using a Trailer Suction Hopper Dredging (TSHD) at sites A and C and dumping this dredge material at the proposed EPA dumping site in the Shannon Estuary, which the SFPC are already permitted to dump at.
2. Using a long-arm reach excavator on a barge (LR/B) to move away sediment that has accumulated under and adjacent to the jetty structures. This sediment would then either be removed by the TSHD or spread by the plough dredger.
3. Dredge/Dump site D – on the eastern side of the jetty approach arm. Dredging in this area is needed to enable the mooring boat passage from the cells (site B) to the jetty (Sites A and C). Sediment has accumulated in this area and is hampering the passage of the mooring boat.

These loading/dredge sites are also mapped in **Figure 1-2**.

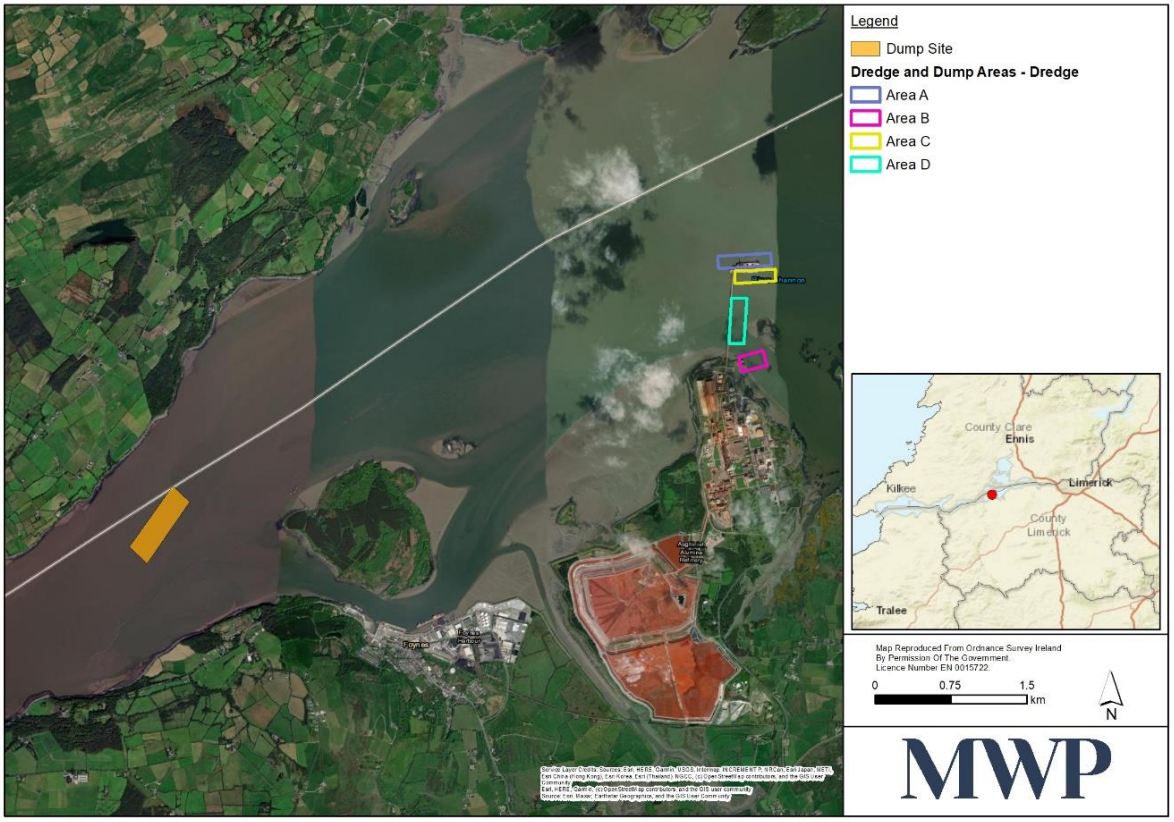

Figure 1-2 Location of proposed dumping site in the Shannon Estuary relative to the four dredge/dump sites at the AAL Jetty.

In order to provide extra flexibility in the dredging process it is intended to have provision in the DaS permit to dredge/dump twice a year. Each campaign would have a maximum duration of 21 days. Dredging operations will take place for 24 hrs per day during each 21-day cycle.

1.1.1 Site Description

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 1-3**). Delivery of raw materials including bauxite and export of finished product alumina is facilitated via a deep-water jetty

which extends into the sub-tidal waters of the Shannon Estuary as shown in Plate 1-1Error! Reference source not found.

Plate 1-1 View of refinery with deep water jetty

The dredge/dump sites are located within the River Shannon and River Fergus Estuaries SPA (Site Code IE004077) and Lower Shannon SAC (Site Code IE002165).

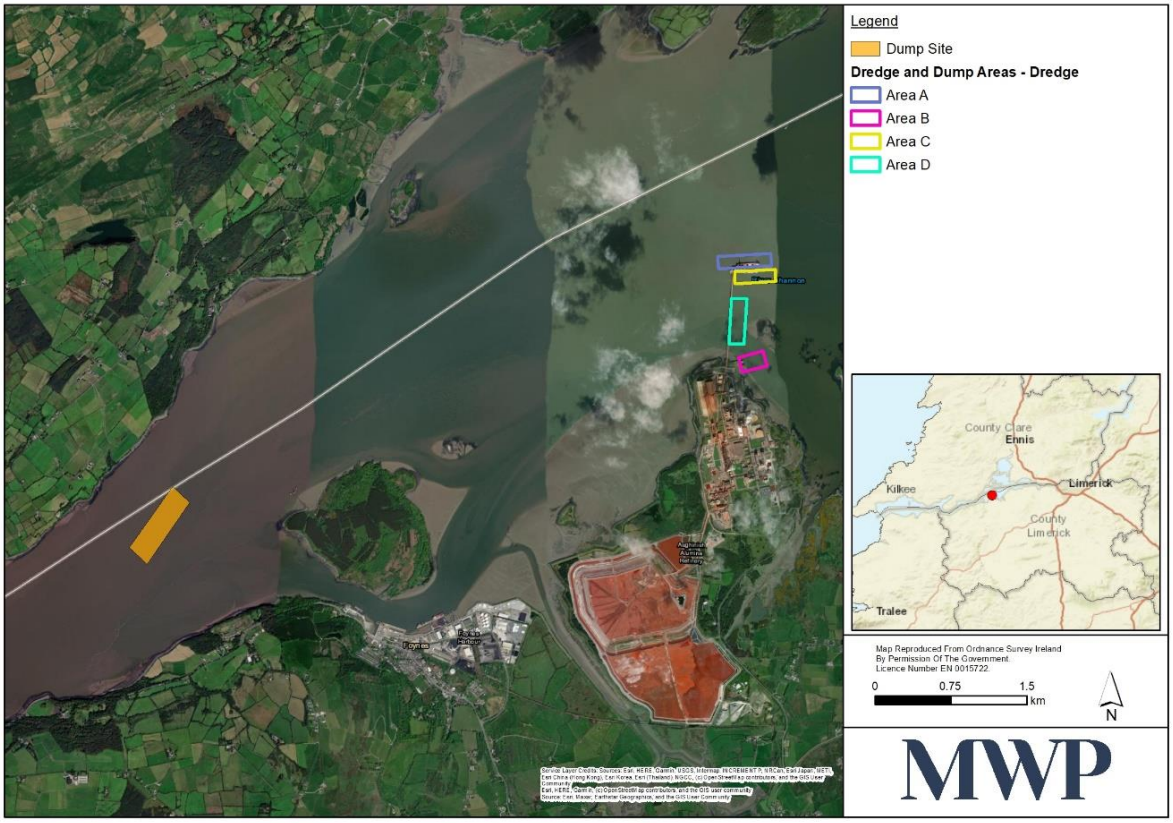

Figure 1-3: Location of proposed dumping site in the Shannon Estuary relative to the four dredge/dump sites at the AAL Jetty.

1.2 Legislation

Under Article 12 and 13 of the Habitats Directive, European Union (EU) Member States must establish systems of strict protection for animal and plant species which are particularly threatened, and which are listed on Annex IV of the Habitats Directive. Article 16 provides for derogations from these provisions under limited circumstances. Article 12, 13, and 16 of the Habitats Directive are transposed into Irish law by Regulations 51, 52 and 54 of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

Annex IV species are afforded strict protection throughout their range, both inside and outside of designated protected areas. It is an offence to deliberately kill, injure or disturb a specimen in the wild, or damage or destroy a breeding site or resting place of an Annex IV animal species. The granting of another statutory consent (e.g. a foreshore licence or lease) does not remove the obligation to obtain a derogation licence, and as such, an application for derogation may have to be made to the National Parks and Wildlife Service (NPWS) under Regulation 54, as well as a foreshore licence or lease application. If satisfied that the application meets the criteria for derogation, the Minister may grant a derogation licence, which may be subject to such conditions, restrictions, limitations, and requirements as the Minister considers appropriate, and these will be specified in the licence.

1.3 Methodology

This Annex IV Risk Assessment was based on a review of available data sources and literature. Data was obtained from the National Biodiversity Data Centre (NBDC) records available on-line. Records of turtles were obtained from the Irish Marine Turtle Database through records from NBDC.

In addition, the following reports were reviewed:

- Marine Mammal Risk Assessment on Proposed Maintenance Dredging and Disposal at Sea at Aughinish Jetty, Co. Limerick, IWDG Consulting (O'Brien, 2023);
- Marine Mammal Observer Survey data carried out by IWDG Consulting as part of the Aughinish Alumina Limited (AAL) Annual Environmental Report (AER) for the purposes of the Dumping at Sea (DaS) permit (2016-2022); and
- Natura Impact Statement (NIS), Proposed Maintenance Dredging, Aughinish, Co. Limerick. (MWP, 2023).

1.4 Relevant Annex IV Species

Of the animal and plant species listed on Annex IV known to occur in Ireland, the following species have been identified as being relevant to the proposed development:

- All cetacean species,
- All turtle species, and
- Otter (*lutra lutra*).

2. Risk Assessment

2.1 Baseline

2.1.1 Cetaceans

To date 26 species of cetaceans have been recorded in Irish waters and two regularly occurring seal species, the Grey Seal (*Halichoerus grypus*) and Harbour Seal (*Phoca vitulina*) (Berrow 2001; O'Brien et al., 2009).

2.1.1.1 Grey Seal and Harbour Seal

As outlined in the Marine Mammal Risk Assessment report (O'Brien, 2023), the NBDC online database was accessed for Grey and Harbour seal records in the vicinity of the proposed works.

Only two records of harbour seals were recorded in the Inner Shannon Estuary within the NBDC database, none of which occur within the area of the proposed works. The last seal survey undertaken in the Shannon Estuary was in 2012, when a single harbour seal was sighted.

During the 2012 aerial survey, no grey seals were recorded in the Shannon Estuary. Some records exist for the species from telemetry data on the NBDC database showing the presence in June and July 2009.

2.1.1.2 Bottlenose Dolphins

The location of the AAL Jetty and the proposed works are within the Lower River Shannon SAC, with species of interest including the bottlenose dolphins (*Tursiops truncatus*).

Static Acoustic Monitoring (SAM) was carried out around the estuary as part of the Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary, where a number of deepwater ports were the focus of long-term monitoring. Based on the SAM data from AAL data from 2011 to 2014, a good picture of bottlenose dolphin activity at the site is available (O'Brien, 2023). Bottlenose dolphins were found to be present on 21% of days monitored at AAL. It's likely to encounter dolphins at the site across all seasons. Additionally, detections have been recorded across all tidal states but significantly more during a neap tide, and during ebbing tides, and significantly more detections recorded during night-time hours, which could explain the low number of visual records upriver (O'Brien, 2023).

In addition, observations from MMO Surveys undertaken during each annual dredging period as part of the AAL AER by IWDG Consulting (2016 to 2022) are provided in Table 2-1.

Table 2-1: Observations of common bottle nose dolphins 2016 - 2022

Year	No of Observations	Details	Description	Individuals active prior to start up
2016	1	12 individuals including one juvenile and one calf on August 25th	At a distance of approximately 1 km from vessel while operations were ongoing.	No
2017	0			
2018	2	3 individuals on April 20th 6 individuals on August 21st	April 20th: At a distance of approximately 250 m from vessel while operations were ongoing.	No

Year	No of Observations	Details	Description	Individuals active prior to start up
			August 21st: At a distance of approximately 200 m from vessel while operations were ongoing.	
2019	0			
2020	2	4 individuals on July 1st 5 individuals on July 3rd	July 1st: At a distance of approximately 400 m from vessel while operations were ongoing. July 3rd: At a distance of approximately 400 m from vessel while operations were ongoing.	No
2021	0			
2022	2	2 individuals at 09:44 3 individuals at 13:15	While operations were ongoing.	

No observations of common bottle nose dolphins were recorded in three of the seven years of monitoring. The number of observations and the numbers of individuals recorded in any one year is low.

2.1.2 Turtles

The Irish Marine Turtle Database compiles published, and non-published records of marine turtles recorded in Ireland and was reviewed as part of this assessment.

A single record of Leathery Turtle (*Dermochelys coriacea*) was recorded in 1970 Ballylongford, Shannon Estuary, approximately 28km west of the proposed development site at Aughinish. Four counts of turtles within the Cheloniidae family were also recorded in the Shannon Estuary 40 km to the west of the proposed development site.

Overall, turtles are relatively rare in Irish waters. Compared to records in the Shannon Estuary, many more records of marine turtles have been recorded in Kilbaha Bay, Co. Clare and along the shores of Loop Head, Co. Clare. In light of so few records of turtle species in the vicinity of the proposed development area at AAL, it can be considered unlikely that turtle species are likely to occur in the immediate vicinity of the proposed development area.

2.1.3 Otters

Otters are found in a number of aquatic habitats in Ireland ranging from lakes to rivers, from marshlands to canals and coastal areas where prey species are abundant. Otters are opportunistic predators and prey on a variety of fish, crab and mollusc species in coastal areas, however those residing in coastal areas require freshwater for drinking and bathing purposes. Though considered a relatively mobile species, otter territories have been defined as approximately 6.5km ± 1.0km in coastal environments whilst male territories in riverine areas have been defined as approximately 13.2 ± 5.3km in length. The higher relative degree in variation in male territory is reflected by males' quick response to social perturbation (Reid *et al.* 2013).

As outlined in the Marine Mammal Risk Assessment report (O'Brien, 2023), the NBDC online database was accessed for European otter records in the vicinity of the proposed works. No records of otters were found to exist on the NBDC database in the vicinity of the proposed works, and only 2 records at adjacent areas, but all well outside the area of the proposed works (O'Brien, 2023).

As outlined in the NIS undertaken for the proposed development, a review of observations from MMO Surveys undertaken during each annual dredging period as part of the AAL AER (2016 to 2022) found that on July 5th, 2020, a single otter was observed travelling along the wall of the Cells (Dredge Site B). It was observed walking slowly from the north shore to the southern shoreline, where it was assumed to have entered the water. Plough

dredging operations were active at the time of this sighting and the otter was active within approximately 20 m of the vessel.

2.2 Summary of Potential Impacts

Potential impacts include:

- 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 8.52 ha Dump Site of Foynes Island, 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; and
- Accidental spills of fuels/lubricants could lead to habitat alteration and/or species displacement through adverse impacts to water quality.

2.2.1 Cetaceans

As outlined in Section 2.2.1, its likely to encounter dolphins at the site across all seasons, in particular bottlenose dolphins. The most likely impact the population of bottlenosed dolphin would be potential disturbance /displacement as a result of noise emissions from dredging activity. Results from SAM data discussed in the Marine Mammal Risk Assessment (O'Brien, 2023), show that bottlenose dolphins regularly use deepwater berths that are the main shipping routes used in the estuary and so are exposed daily to shipping. Sound exposure levels from dredging operations are thought to be well below thresholds expected to cause injury to a marine mammal.

However, the risk of disturbance from noise generated dredging, from the physical presence of the dredger, and possibly from the increased water turbidity in the area of operations have the potential to cause low level disturbance such as masking or behavioural impacts such as displacement. The presence of an operational dredger at the site will lead to a small local increase in noise but given the Shannon Estuary is Ireland's premier deep-water port, and caters for ships up to 200,000 deadweight tonnage, disturbance from these operations is likely to be minimal.

In addition, the NIS carried out for the proposed works determined that while dolphins may be temporarily displaced from the area whilst dredging is taking place, or as a result of any temporary and localised increase in suspended sediment concentrations, it is expected that dolphins will quickly return to the area once dredging activity has ceased and given that suspended material will be quickly dispersed by tidal currents. Any temporary displacement will be localised to the Aughinish area and as such displacement from key areas of habitat within the estuary is not likely to occur.

The proposed development works are not considered to significantly effect Annex IV turtles under Article 12 of the Habitats Directive. Despite this, it was determined that mitigation is necessary in order to minimise the risk of permanent or temporary disturbance to the population of common bottlenose dolphins for which the Lower River Shannon SAC (002165) is selected. Mitigation for common bottlenose dolphins for which the Lower River Shannon SAC (002165) is selected as prescribed within the NIS is detailed in Section 2.3 below.

2.2.2 Turtles

Given the particularly low numbers of any given turtle species previously recorded in the Shannon Estuary, it is considered highly unlikely that turtles will occur in areas near the proposed development site. In consideration of the intermittent and short-term nature of the dredging/dumping activities, as well as the rarity of turtles occurring in Irish waters, it is concluded that there will be no significant disturbance to turtle species as a result of the proposed maintenance dredging/dumping.

The proposed dredge/dump works are not considered to negatively impact Annex IV turtles under Article 12 of the Habitats Directive.

2.2.3 Otters

The dredge/dump sites is located within the Lower Shannon SAC (Site Code IE002165) where otter is a Qualifying Interest species under Annex II of the Habitats Directive. As outlined in Section 2.1.3, otters have not been recorded close to the proposed works. On July 5th, 2020, a single otter was observed travelling along the wall of the Cells (at Dredge Site B). The main threat to this species from the proposal is disturbance associated with fugitive noise from dredging and human presence during the works. Some potential also resides for impacts to otters should the proposal lead to a reduction in prey availability by means of adverse water quality impacts.

As outlined in the NIS, with regard to disturbance due to fugitive noise from machinery or human activity, it is considered that any otter(s) present are already habituated to the levels of disturbance that prevail at the existing jetty and the sources of noise will be restricted to the temporary duration of the proposed programme of works. Therefore, significant disturbance or displacement impacts, from fugitive noise associated with the proposal, are not expected to occur. Given the temporary nature of the increased sedimentation associated with the proposed dredging works, particularly in light of greater existing background levels, a reduction in prey availability that could adversely affect otter potentially in the area is not expected as a result of the proposed works.

The NIS determined that the direct, indirect or secondary disturbance or displacement of the population of otter (for which the Lower River Shannon SAC (002165) is selected) are not, in view of the site's conservation objectives for this species, likely as a result of either the dredging or dumping at sea.

The proposed development works are not considered to significantly effect Annex IV otters under Article 12 of the Habitats Directive.

2.3 Mitigation Measures

2.3.1 Monitoring by Marine Mammal Observer

To minimise the risk of permanent or temporary disturbance to the population of common bottlenose dolphins for which the Lower River Shannon SAC (002165) is selected, the mitigation practices and procedures for dredging activities, outlined in DAHG (2014), and listed below, will be implemented. These measures will pertain to the dredge sites and the proposed Dump Site.

- A suitably qualified and experienced MMO will be appointed for the duration of the dredging works and will log all relevant events using standardised data forms.
- The MMO will conduct a 30-minute watch within 500 m of the dredging vessel prior to the start-up. If a common bottlenose dolphin is sighted within 500 m of the vessel, start-up will be delayed until the

mammal observed moves outside the mitigation zone, or 30 minutes has passed without the mammal being sighted within the mitigation zone.

- An agreed and clear on site communication signal will be used between the MMO and the dredging vessel as to whether the relevant activity may proceed, or not, or resume following any break in activities. It shall only commence on positive confirmation with the MMO.
- Dredging activities will only commence in daylight hours where effective visual monitoring, as preformed and determined by the MMO, has been achieved. Where effective monitoring (determined by the MMO), has not been achieved/was not possible for some reason, the sound producing activities will be postponed until effective monitoring is possible.
- This pre-start-up monitoring will be followed immediately by normal dredging activities. The delay between the end of pre-start-up monitoring and the full dredging driving must be minimised.
- Once normal dredging operations commence, there is no requirement to halt or discontinue the activity at night-time, nor if weather or visibility conditions deteriorate, nor if common bottlenose dolphins occur within a 500 m radial distance of the sound source, i.e., within the monitored zone.
- If there is a break in sound output for greater than 30 minutes (equipment failure/location change/shutdown), then pre-start monitoring will be carried out again, prior to recommencement of dredging activities.
- Any approach by common bottlenose dolphins into the immediate works area will be reported to the National Parks and Wildlife Service.
- During movement of vessels, caution will be exercised to minimize risks to common bottlenose dolphins that may avoid detection by the MMO. A speed limit of 10 knots will be considered

In addition, it is recommended that the following mitigation measures are implemented to reduce the magnitude of the impact of dredging activities associated with the works to common bottlenose dolphins :

- Minimise the duration over which these activities are taking place.
- Incorporate “ramp-up” (i.e. “soft start”) procedures whereby sound is introduced in a gradual manner to the marine environment.

2.3.2 Bathymetric Surveys

Pre-dredge and post-dredge bathymetric surveys of the dredge/dump sites and reporting on same will be undertaken annually.

2.3.3 Sediment Sampling

Chemical and granulometric analysis of sediment samples will be collected from the dredge sites typically in years 2, 5 and 8, with associated reporting.

The locations of proposed sampling points for the chemical and granulometric analysis are illustrated in Figure 4-3, above, and are detailed in Table 2-2, below.

Figure 2-1 Sample locations

Table 2-2 Chemical and Granulometric sampling points[1] for monitoring of dredge activities

Dredge Site	Sample No.	Latitude	Longitude
A	1	52.64558	-9.05688
B	2	52.63691	-9.05795
C	3	52.64505	-9.05688
D	4	52.64094	-9.05938

2.3.4 Water Quality Measures

Baseline suspended solids sampling will be undertaken at two sampling points shown in Figure 2-2 (one upstream and one downstream of the jetty) prior to activities commencing, once every second day during dredging activities, and one week post the dredging. Reports will be provided for all sampling and analysis. The locations of the proposed sampling points are detailed in Table 2-3.

Figure 2-2 Location of the proposed suspended solids monitoring points

Table 2-3 Sampling points for monitoring of suspended solids

Sample Site	Latitude[1]	Longitude
Downstream	52.646316	-9.0067
Upstream	52.641066	-9.0448

The following water quality measures will also be carried out:

- Consultation with relevant stakeholders prior to dredging, to inform them.

[1] Coordinates in WGS84

- Preparation of contracts which meet the requirements of the MUL and DaS permit, subject to consent.
- The contractor will be fully briefed beforehand on the sensitivities of the site, and any monitoring that will be taking place.

2.3.4.1 Fuel and Oil

There will be no refuelling of the dredger at the site.

Potential leaks from vessels/boats will be mitigated by contractually requiring the contractors to only operate/supply vessels/boats that are in good working order, up to date maintenance., and free of leaks.

2.3.4.2 Emergency Plans and Procedures

The contractor will prepare an emergency response plan and set of procedures for events likely to cause pollution of the waters of the estuary with fuels/oils, spillages etc. The following accident prevention and emergency response procedures are developed and implemented by AAL and Shannon Foynes Port Company (SFPC).

- AAL Marine Emergency Plan.
- AAL Accident Prevention Policy.
- SFPC Shannon Estuary Marine Emergency Plan.
- SFPC Accident Prevention Procedure.
- SFPC Standard Operating Procedure EHS/021 – Reporting Procedures for SFPC Water Craft.
- SFPC Standard Operating Procedure EHS/054 – Accident, Incident, Near Miss Reporting.

3. Conclusion

Following review of the information submitted by the applicant and a review of available data and information regarding previous records of Annex IV species within the vicinity of the proposed development site, it is concluded that no significant disturbance, injury, death, or deterioration or destruction of habitat of Annex IV species is predicted to occur as a result of the proposed dumping at sea at Aughinish, Co. Limerick

The proposed development is not considered to significantly affect any Annex IV species afforded protection under Article 12 of the Habitats Directive.

Based on this assessment, it is the opinion of MWP that the proposed dredging and dumping activities combined with the mitigation measures outlined above complies with the system of strict protections afforded by Article 12 of the Habitats Directive to the following species found in Ireland:

• All cetacean species

• All turtle species

• Otter.

The works proposed are compliant with Regulation 51 – Annex IV animals of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2021. Regulation 51 sets out the Strict Protection requirements for Annex IV animal species and based on the assessment in Section 2 above, there is no risk to the Annex IV species given the nature of the works proposed and mitigation measures being deployed.

4. References

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