



Marine Strategy Framework Directive (MSFD) Assessment

Maintenance Dredging at Sarsfield Lock, Limerick City

Waterways Ireland

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1. Introduction

This document has been prepared to assess the compliance of the proposed maintenance dredging works at Sarsfield Lock, Limerick City, Co. Limerick, with the requirements of the Marine Strategy Framework Directive (MSFD; Directive 2008/56/EC). The MSFD establishes a framework to achieve or maintain 'Good Environmental Status' (GES) of marine waters through the protection, preservation and sustainable use of the marine environment.

The purpose of this assessment is to determine whether the proposed activity has the potential to adversely affect marine environmental conditions or conflict with the achievement of GES, having regard to the nature, scale, duration and location of the works. The assessment has been undertaken in support of the proposed Maritime Usage Licence (MUL), and a Dumping at Sea (DaS) (S0040-01) application has already been submitted for the works to the EPA.

2. Description of the Proposed Activity

The proposed project comprises routine maintenance dredging within the River Shannon at locations upstream and downstream of Sarsfield Lock, Limerick City. The works are required to maintain navigable depths within the existing river channel and restore them to historical levels.

Dredging will be undertaken using a DOP pump mounted on a pontoon raft, operating from a number of temporary set-up locations. Fine sediments will be removed from the riverbed and pumped via floating discharge pipes to three designated in-channel discharge locations within the River Shannon. Fine sediment discharge will be timed to coincide with ebb tide conditions to promote effective dispersion within the natural flow regime of the river. A small quantity of coarser granular material (approximately 70 m³) will be encountered within the dredge areas and will be removed separately using a long-reach excavator. This material will be handled independently of the fine sediments.

The works form part of an eight-year maintenance dredging programme, with dredging anticipated to occur on an annual basis over a limited seasonal window. All works will be confined to the existing navigation channel, and no permanent land-take or new infrastructure is being proposed.

3. MSFD Context

The Marine Strategy Framework Directive (Directive 2008/56/EC) aims to protect the marine environment across European waters and to achieve or maintain GES by addressing pressures arising from human activities. In Ireland, the MSFD is implemented through a series of Marine Strategies, including the assessment of environmental status, the identification of pressures and impacts, and the establishment of monitoring programmes and measures.

Activities such as maintenance dredging and sediment disposal have the potential to interact with the marine environment through temporary disturbance of the seabed, changes in sediment dynamics, and short-term increases in suspended sediment concentrations. As such, projects of this nature require consideration under the MSFD to ensure that they do not compromise the achievement of GES.

This assessment has been informed by relevant supporting documentation submitted for the DaS application including the Natura Impact Statement (NIS), sediment characterisation reports, and hydrodynamic and sediment transport modelling, as well as the Screening Information for Screening for Appropriate Assessment (SISAA) which is being submitted as part of the MUL application. These documents provide baseline information on the receiving environment and the potential pathways for environmental effects.

4. Relevant MSFD Descriptors

The MSFD defines eleven qualitative categories/descriptors to describe Good Environmental Status (GES). Not all descriptors are relevant to every activity. Having regard to the nature of the proposed maintenance dredging works at Sarsfield Lock, the assessment focuses on those descriptors expected to be influenced by the activity.

The MSFD Descriptors considered most relevant to this project are listed below. However, in the interest of completeness, the assessment in Section 5 is provided for all descriptors outlined in the MSFD.

- **Descriptor 1 – Biological Diversity:** Maintenance dredging may temporarily and locally disturb marine habitats and species in the River Shannon.
- **Descriptor 2 – Non-indigenous Species:** Vessels and equipment have the potential to introduce non-indigenous species if not properly cleaned and maintained.
- **Descriptor 3 – Population of commercial fish/shellfish:** Operation may impact commercial operations for fish and shellfish operations.
- **Descriptor 6 – Seafloor Integrity:** Dredging directly interacts with the seabed and may temporarily alter its structure within the immediate footprint of the works.
- **Descriptor 7 – Hydrographical Conditions:** Short-term, localised changes to sediment transport and turbidity may occur within the tidal river environment as a result of the works.
- **Descriptor 8 – Contaminants:** Potential contaminant release from sediments and accidental spills from plant and equipment.
- **Descriptor 11 – Underwater Noise:** Temporary underwater noise may be generated within the works area as a result of vessel movements and dredging operations.

5. Assessment of Descriptors

This section assesses the potential effects of the proposed maintenance dredging works at Sarsfield Lock against the relevant Marine Strategy Framework Directive (MSFD) descriptors, having regard to the scale, duration and location of the works, and their potential to affect GES.

5.1 Biological Diversity

The proposed maintenance dredging works will occur within the existing navigation channel of the River Shannon, an area that is already subject to regular vessel movements, tidal exchange and historical dredging activities. The works may result in temporary and localised disturbance to aquatic species, including fish and invertebrates, arising from increased turbidity, noise and vessel activity.

However, these effects will be short-term, reversible and confined to the immediate vicinity of the works. No permanent loss of habitat or long-term effects on species distribution or abundance are anticipated. The availability of extensive alternative habitats upstream and downstream within the Shannon Estuary further limits the potential for adverse effects on biodiversity. Accordingly, the proposed works are not considered likely to compromise GES in respect of biodiversity.

5.2 Non-Indigenous Species

While vessel activity associated with the works has the potential to facilitate the introduction or local transfer of non-indigenous species, for example via hull fouling or equipment movement, and dredging activity facilitating localised redistribution of any non-indigenous species already present within sediments, the proposed works are small-scale, short-term, and confined to previously disturbed areas. The ship and equipment will be appropriately cleaned and sanitised before mobilisation. No importation of sediments or long-distance vessel movements are proposed, and therefore the likelihood of introducing or spreading non-indigenous species as a result of the project is considered low and will not affect GES.

5.3 Population of commercial fish/shellfish

No commercial shellfish harvesting takes place within the immediate works area at Sarsfield Lock. The nearest designated shellfish waters are located at the West Shannon Ballylongford Designated Shellfish Area, which lies approximately 58 km west of the project site. Within this area, licensed aquaculture sites are located approximately 28 km and 34 km downstream of Sarsfield Lock. A single licensed aquaculture site operated by ESB Fisheries Conservation for Atlantic Salmon is located approximately 15 km upstream of the project site. Given the direction of tidal flow, the limited scale and duration of dredging, and the rapid dilution and dispersion of suspended sediments, no pathway exists for the proposed works to adversely affect this upstream site or effect the GES status.

5.4 Elements of the Marine Food Web

The proposed maintenance dredging is not envisioned to have a negative effect on the elements of the marine food web. The works may result in temporary and localised disturbance to lower-trophic-level components of the food web, including benthic invertebrates and plankton, primarily due to short-term increases in turbidity and sediment resuspension. Any such effects will be spatially limited to the immediate works area and short-term in duration. The dredging footprint is confined to previously disturbed sediments, and benthic communities are expected to recolonise naturally following completion of works.

5.5 Eutrophication

The maintenance dredging works do not result in nutrient inputs to the marine environment. The activity involves only the redistribution of naturally occurring sediments within the existing navigation channel, and sediment characterisation demonstrates that nutrient concentrations are not elevated to levels that could contribute to eutrophication.

During dredging and sediment discharge, there may be a temporary and localised increase in suspended sediments, resulting in short-term turbidity within the immediate vicinity of the works. However, this does not represent nutrient enrichment and does not promote primary productivity. Any turbidity increases are expected

to be short-lived, with rapid dilution and dispersion occurring within the tidally dynamic river and estuarine environment.

5.6 Sea Floor Integrity

The removal of accumulated fine sediments from the dredge areas will result in temporary and localised disturbance to seabed sediments and benthic communities, with effects confined to the immediate footprint of the works.

The dredging areas are confined to previously disturbed and naturally silt-accumulating sections of the navigation channel, and no new areas of seabed will be affected. Any disturbance to seabed habitats is expected to be short-term, with natural recolonisation occurring following completion of works. Given the limited spatial extent, the temporary nature of the disturbance, and the absence of permanent alteration to seabed structure, the proposed works are not considered likely to adversely affect seabed integrity at a scale relevant to Good Environmental Status.

5.7 Alteration of Hydrographical Conditions

The proposed dredging will result in minor, localised changes to bed levels within the existing navigation channel. These changes are intentional and necessary to maintain navigable depths and do not represent a permanent alteration of the wider hydrographical regime of the River Shannon.

Sediment discharge will occur within the main channel and will be timed to coincide with ebb tide conditions, promoting dispersion within the natural flow regime. Hydrodynamic and sediment transport modelling indicates that any changes to sediment dynamics will be localised and temporary, with no significant alteration to wider estuarine processes.

The works are therefore not considered likely to result in significant or permanent changes to hydrographical conditions and are compatible with the achievement of GES.

5.8 Concentration of Contaminations

Comprehensive sediment characterisation has been undertaken to inform the Maritime Usage Licence (MUL) application and MSFD assessment. The results confirm that the sediments to be dredged are clean and uncontaminated, with concentrations of metals, organic contaminants and other substances below relevant guideline and action levels for disposal at sea.

As such, dredging and in-channel sediment discharge will not result in the mobilisation or release of contaminants at concentrations that could adversely affect water quality, sediments, or marine biota. The activity does not introduce new contaminant sources, and no importation of contaminated material is proposed.

There is a low risk of accidental fuel or oil spills associated with the operation of dredging plant, barges and support vessels. However, this risk will be managed through the implementation of standard industry best practice, including appropriate storage and handling of fuels, controlled refuelling procedures, and the availability of spill response equipment. In the unlikely event of a minor spill, rapid dilution within the tidal river environment would limit the potential for adverse effects.

5.9 Contaminants in fish/seafood for human consumption

Sediment characterisation undertaken for the project confirms that the material to be dredged is clean and uncontaminated, with concentrations of metals and organic substances below relevant guideline thresholds for disposal at sea. As such, there is no mechanism by which the proposed works could result in the mobilisation of contaminants into the aquatic food chain.

No commercial fishing or shellfish harvesting occurs within the immediate works area. The assessment of commercial fisheries is undertaken in **Section 5.3**.

Given the substantial distances between the works area and commercial fishing or shellfish harvesting locations, together with the temporary and localised nature of sediment disturbance, rapid dilution and dispersion within the River Shannon, and the expected absence of contaminant release, the chance of a plausible pathway for the proposed works to affect contaminant levels in fish or seafood intended for human consumption is deemed low.

5.10 Marine Litter

The activity is limited to sediment removal and in-channel discharge within the existing navigation channel of the River Shannon. No construction materials, packaging, plastics or other waste streams are intended to enter the water environment as part of the works.

There is a low risk of accidental litter generation associated with routine dredging operations, such as packaging materials, consumables or minor equipment loss. However, this risk will be managed through the implementation of standard good practice measures, including appropriate waste management procedures on vessels, secure storage of materials, and removal of all waste from site for disposal at licensed facilities.

All plant, pontoons, floating pipes and ancillary equipment will be temporary and fully removed on completion of works, ensuring that no residual debris or materials remain within the river channel.

5.11 Introduction of energy including underwater noise

Noise levels will be comparable to those generated by routine navigation and port activities within the River Shannon. Noise emissions will be short-term, intermittent and localised, occurring only during active dredging periods. No impulsive noise sources are proposed, and no long-term or continuous noise generation will occur.

Given the limited duration and scale of the activity, underwater noise from the proposed works is not considered likely to result in significant adverse effects on marine receptors or to compromise GES.

6. Cumulative Effects

The proposed maintenance dredging does not represent an intensification of existing activities and is not expected to give rise to significant cumulative effects.

The only MARA-determined application in the vicinity of the proposed works is a Maritime Area Consent (MAC) for the provision of a floating pontoon and cantilever platform for rescue services (Ref: MAC240037), located approximately 600 m downstream of the project site.

No other dredging activities are scheduled to take place in proximity to the site at the same time as the proposed works. In particular, no capital dredging or harbour development-related dredging is proposed or anticipated within the vicinity of the site concurrently with this activity.

7. Conclusion

The proposed maintenance dredging is compatible with the objectives of the Marine Strategy Framework Directive and will not compromise the achievement or maintenance of Good Environmental Status.