Girvan Harbour
Dredge and Disposal

Supporting Document

Wallace Stone
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Contents

1 Introduction

A Marine Licence for Dredging and Sea Disposal is sought from Marine Directorate's Licensing Operations Team (MD-LOT) under the Marine (Scotland) Act 2010 for proposed maintenance dredge works in Girvan Harbour. The application will be submitted on behalf of the Girvan Harbour Port Authority, Ayrshire Roads Alliance (ARA), and this report has been produced by Affric Limited on behalf of the Client's engineering firm, Wallace Stone, in support of the application.

In addition, a Best Practicable Environmental Option (BPEO) Report (Affric, 2023) has been produced to consider the fate of marine sediments arising from the works. The BPEO is submitted in addition to this Supporting Document as part of the Dredge and Disposal Marine Licence application.

The purpose of this Supporting Document is to provide supporting information to the marine licence application process. It includes details of the proposed maintenance dredge location, a description of the proposed maintenance dredge works, how works align with the National Marine Plan, and considers potential environmental impacts. Furthermore, it details mitigation to reduce potential negative environmental effects.

2 Project Description

2.1 Location

Girvan Harbour is located on the west coast of Scotland in the South Ayrshire Council area, at the mouth of the Water of Girvan river (Grid Reference NX 18193 98249). The harbour consists of a main channel, providing vessel access, and a sheltered inner basin (marina area). Due to fluvial influence from the Water of Girvan and associated longshore drift, the harbour is prone to siltation of both the access channel and inner basin. Both these areas require maintenance dredge works, as shown in Drawing 2411-WS-XX-XX-D-C-0051 P01 accompanying the application.

The Girvan statutory harbour boundary is available on Marine Directorate's National Marine Plan Interactive (NMPI), see Figure 2.1. Given the complex shape of the boundary and inclusion in NMPI, it was considered not appropriate to supply co-ordinates of the statutory boundary as part of the application.

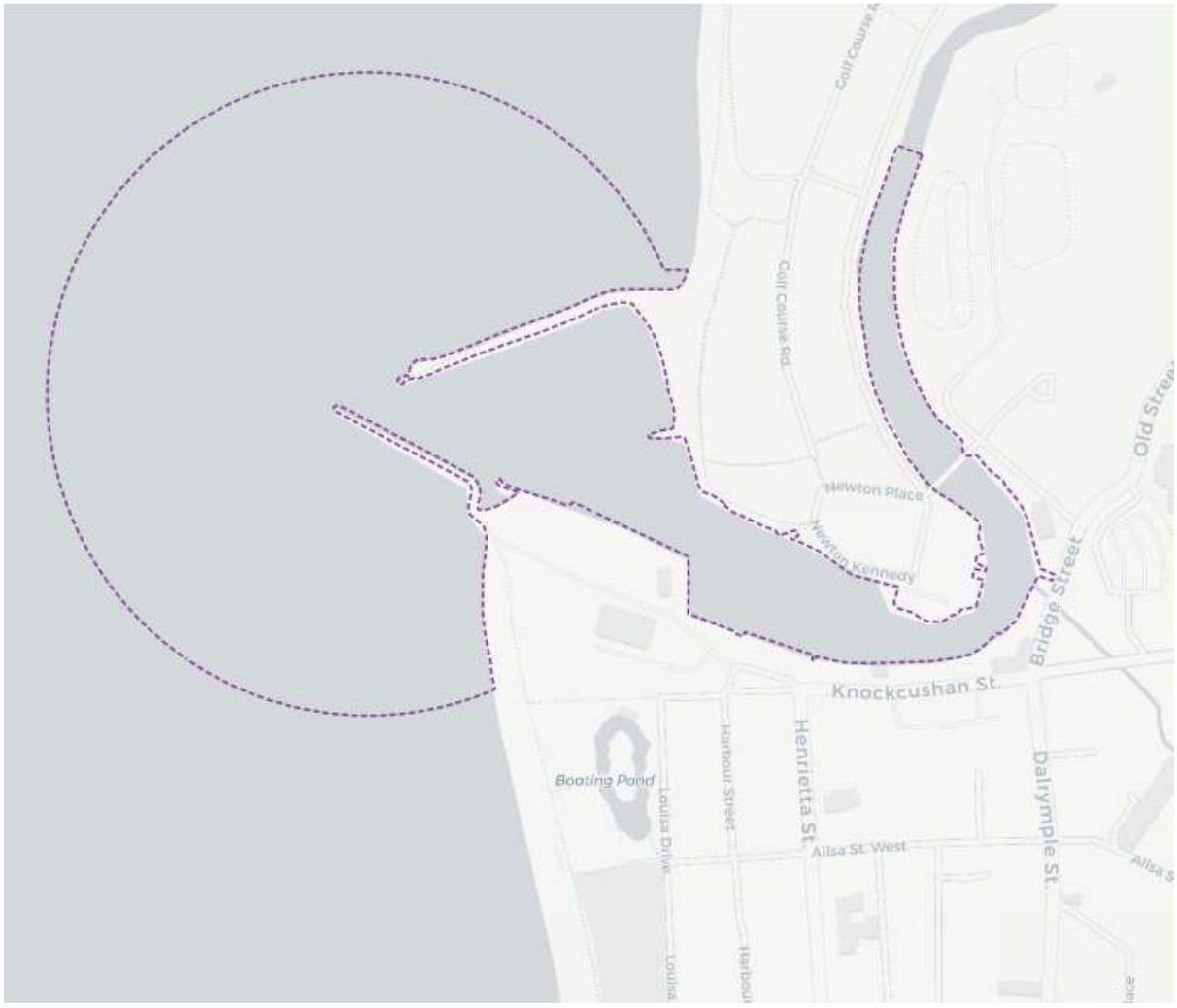

Figure 2.1: Girvan Harbour Boundary, Source: NMPI.

2.2 Project Need

Access along the main channel and within the inner basin of Girvan Harbour has become impeded due to decreased draft available as a result of sediment build up. This has implications for all harbour users. Girvan Harbour accommodates commercial fishing, marine tourism and Royal National Lifeboat Institution (RNLI) vessels, and recreational craft. The main channel also provides access to an adjacent commercial boatyard. Particular concern has been raised by the Girvan RNLI whom have All Weather Class and Inshore Lifeboats based in the harbour. Their ability to launch at all tidal states is key to local marine safety, especially as the next nearest station is 35km away in Troon. Hence for commercial, recreational and marine safety reasons, it is imperative that regular maintenance dredges are completed to ensure appropriate water depths are available for all users.

2.3 Maintenance Dredge Description

Dredging and disposal will be undertaken between 16th September and 31st May, starting in 2023. Dredging operations will most likely utilise a backhoe dredger on a stationary vessel. A split-hopper barge or equivalent bottom opening vessel will be utilised, so that dredge material is released from the bottom of the vessel at disposal. Vessels transferring material from the dredge site to the disposal site will be required to adhere to a fixed route, speed and

direction. The proposed disposal site is Girvan MA025, approximately 2 nautical miles (nm) west of the dredge site.

The annual maximum dredge quantity is expected to be 25,000m^3, equating to 61,250 tonnes wet weight. Given the pattern of previous dredge campaigns, the first year of the maintenance dredge works is expected to require removal of the largest quantity of material. In subsequent years less material may need to be removed in order to maintain suitable draft in the main channel and inner basin. Over the 3-year licence period, up to a total of 75,000m^3 of material, equating to an estimated maximum 183,750 tonnes wet weight, is expected to be removed.

The dredge areas are as shown in Drawing 2411-WS-XX-XX-D-C-0051 P01. The two areas which require maintenance dredge from 16th September 2023 are as follows:

a) Main channel on the approach to Girvan Harbour to be dredged to a depth of -2.0m Chart Datum (CD); and
b) Inner basin of Girvan Harbour to be dredged to a depth of -1.5m CD.

3 Scotland's National Marine Plan

As the proposed maintenance dredge works will be conducted entirely below Mean High Water Springs (MHWS) and within 12 nautical miles (nm) of the Scottish Coastline, the project falls within the remit of the Marine (Scotland) Act 2010. The 2015 Scottish National Marine Plan (NMP) covering inshore waters is a requirement of the Act. The NMP lays out the Scottish Minister's policies for the sustainable development of Scotland's seas and provides General Planning Principles (GENs). Many of the GENs are specific to environmental topics, and are identified in Table 3.1, along with how the proposed Girvan Harbour maintenance dredge works meet the requirements of a specific GEN of the NMP.

In addition, the applicable NMP Shipping, Ports, Harbours and Ferries Objectives are outlined in Table 3.2.

Table 3.1: Applicable Scottish National Marine Plan GENs

General Planning Principles	Requirements	Girvan Harbour Maintenance Dredge Considerations
GEN 2: Economic benefits	Sustainable development and use which provides economic benefit to Scottish communities is encouraged when consistent with the objectives and policies of this Plan.	The aim of the proposed maintenance dredge works is to ensure safe navigational access to Girvan Harbour. By ensuring safe navigational access, the harbour can continue to support commercial fishing and marine tourism activities.
GEN 3: Social benefits	Sustainable development and use which provides social benefits is encouraged when consistent with the objectives and policies of this Plan.	The aim of the proposed maintenance dredge works is to provide safe navigational access to the facilities of Girvan Harbour, which are suitable for recreation and commercial uses for locals and visitors. The harbour also supports a critical emergency response function via the RNLI station.
GEN 4: Co-existence	Proposals which enable coexistence with other development sectors and activities within the Scottish marine area are encouraged in planning and decision-making processes, when consistent with policies and objectives of the Plan.	Girvan Harbour and its associated access channel can be considered a multi–user facility, utilised by the commercial fishing industry, tourism sector, a ship building enterprise and the RNLI. Dredge of the navigational channels will ensure this co-existence can continue because of safe navigational access.
GEN 6: Historic environment	Development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance.	Girvan Harbour is a historic fishing harbour active since the 17th Century, with noted features including jetty, pier and harbour beacon. The proposed maintenance dredge will not be detrimental to these heritage assets and will ensure the continued use of the harbour which adds to its positive cultural and social contribution. There are a number of 19th Century wrecks recorded within Girvan Harbour, as discussed in Section 5: Potential Impacts.
GEN 8: Coastal process and flooding	Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding.	The proposed dredge campaign is a direct response to coastal processes, and is adaptive to changes in these processes with an appropriate allowance for annual maintenance included within the licence application.

Table 3.1: Applicable Scottish National Marine Plan GENs

General Planning Principles	Requirements	Girvan Harbour Maintenance Dredge Considerations
GEN 9: Natural Heritage	Development and use of the marine environment must: (a) Comply with legal requirements for protected areas and protected species. (b) Not result in significant impact on the national status of Priority Marine Features. (c) Protect and, where appropriate, enhance the health of the marine area.	No ecological designations or Priority Marine Features are identified in the vicinity of the dredge or disposal sites. Geological Conservation Review sites and a geological Site of Special Scientific Interest are situated to the south of Girvan Harbour. The Water of Girvan is also identified as a Scottish Salmon River. These considerations are discussed in Section 5: Potential Impacts.
GEN 10: Invasive Non-Native Species	Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made.	The potential for introduction of non–native species with equipment brought in to complete the maintenance dredge requires consideration, as discussed in Section 5: Potential Impacts.
GEN 12: Water Quality and Resource	Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive, Marine Strategy Framework Directive or other related Directives apply.	Girvan Harbour is within Water Framework Directive waterbody 200014 Girvan Estuary. It is also adjacent to Girvan Bathing Waters, and two Classified Shellfish Harvesting Areas. These considerations are discussed in Section 5: Potential Impacts.
GEN 13: Noise	Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.	No significant noise associated with maintenance dredge works are anticipated, as discussed in Section 5: Potential Impacts.
GEN 14: Air Quality	Development and use of the marine environment should not result in the deterioration of air quality and should not breach any statutory air quality limits.	Girvan Harbour is located outwith any Air Quality Management Plan areas (Air Quality In Scotland, 2023). No significant effects on air quality from the proposed maintenance dredge works are predicted as discussed in Section 5: Potential Impacts.

Table 3.2: Applicable Scottish National Marine Plan Shipping, Ports, Harbours and Ferries Objective

Objective/Policy	Requirements	Girvan Harbour Maintenance Dredge Considerations
Objective 1	Safeguarded access to ports and harbours and navigational safety.	The aim of the proposed maintenance dredge works is to provide continued safe navigational access to the facilities within Girvan Harbour. Facilities include a marina and quayside utilised for emergency-service provision, commercial and recreational activities.
TRANSPORT 4	Maintenance, repair and sustainable development of port and harbour facilities in support of other sectors should be supported in marine planning and decision making.	Girvan Harbour and its associated access channel can be considered a multi–user facility, utilised by the commercial fishing industry, tourism sector, a boatyard enterprise and the RNLI. Dredge of the navigational channels will ensure this co-existence can continue because of safe navigational access.

4 Designations

A 10km buffer has been chosen for the selection of features to be considered in this report, as the scale of the works is localised.

4.1 Designated Sites

No sites with designated ecological features below MHWS are present within the buffer zone of the proposed maintenance dredge and disposal works. The works are outwith but adjacent to the Girvan Foreshore and Woodland Point Geological Conservation Review (GCR) sites and the Girvan and Ballantrae Coast Section Site of Special Scientific Interest (SSSI). The boundary of Girvan Foreshore GCR and the SSSI lies approximately 2.1km south of Girvan Harbour mouth, and Woodland Point GCR approximately 3km south. These sites are designated for geological features, comprising of igneous and sedimentary rock formations with stratigraphical, structural and sedimentological features of international interest. Status of the SSSI features was classified as Favourable Maintained at last assessment in 2022, with no negative pressures (NatureScot, 2023).

There are no designated wrecks in the vicinity if the proposed maintenance dredge and disposal operations. There are a number of 19th Century wrecks recorded within Girvan Harbour: Agnes Kelly (Schooner), Kelvin Grove (craft), Industry (Schooner), Jim (Lugger), Primrose (Lugger), Wanderer (Lugger) and Margaret (Lugger) (Past Map, 2023). Reported wreck locations, where given, are along the north shore of Girvan Harbour, outwith the dredge area. Furthermore, no evidence of any wreck has been found during bathymetric survey works or previous dredge campaigns of the main channel and inner basin, hence none are expected to be within the proposed maintenance dredge area.

4.2 Classified Waters

Girvan Harbour is within Water Framework Directive Waterbody 200014 Girvan Estuary, identified as a heavily modified waterbody. At last classification in 2020 it was determined to be of Good status (SEPA, 2023a).

Girvan Bathing Waters (ID 46) is situated immediately to the south of Girvan Harbour, with its northern boundary situated at the harbour mouth. Maidens Bathing Waters (ID 80) is situated approximately 11 km to the north. Both areas have been classified as Sufficient at most recent assessment in 2023 (SEPA, 2023b).

The proposed maintenance dredge works are also adjacent to three Classified Shellfish Harvesting Areas identified for harvesting of Razor clams. The boundaries of Croy Bay South (ID 872) and Girvan South (ID 778) lie immediately to the north and south of Girvan Harbour mouth respectively. Croy Bay (ID 681) area is situated approximately 7.5km to the north of the harbour.

Water of Girvan, which flows into the estuary where the harbour is situated, is identified as a heavily modified waterbody due to physical alterations (Waterbody 10757), being of Moderate status at last classification (SEPA, 2023). It is also identified as a Scottish Salmon River, where salmon are present (Marine Scotland, 2023). The proposed maintenance dredge does not overlap with the identified salmon river area, nor the River Girvan Angling Club fishings on the south bank of Water of Girvan (River Girvan Angling Club, 2023).

5 Environmental Considerations

Potential impacts arising from the proposed maintenance dredge and disposal works for Girvan Harbour are described in Table 5.1, along with identified mitigation.

Table 5.1: Potential Impacts by Activity/Topic and Proposed Mitigation

Activity	Topic	Potential Impact	Mitigation Measures
Dredging activity – removal of sediment from bed of main channel / inner basis	Water quality – increased sediment loading in water column	Increased sedimentation could impact on the foraging success and behaviour of ecological receptors within the estuary area, including Atlantic salmon. It could also impact local water quality including Water Framework Directive (WFD) Waterbody Girvan Estuary, Girvan Bathing Waters and Classified Shellfish Harvesting Areas.	• Dredging will only take place outside of bathing season 1st June – 15th September to avoid potential impact on Girvan Bathing Waters; • Works will be monitored to ensure silt plumes remain localised and dissipate quickly; • Should silt plumes be persistent and widespread, methods will be reviewed; • Additional mitigation may include specific dredge techniques which allow material to settle within the bucket of a backhoe dredge prior to removal from the water.
Disposal activity – dumping of dredged material at spoil site	Water quality – increased sediment loading in water column	Increased sedimentation could impact local water quality including Girvan Bathing Waters and Classified Shellfish Harvesting Areas. It could also result in sedimentation outwith the disposal site, potentially causing sedimentation in the vicinity of the adjacent GCRs and SSSI.	• Existing licensed spoil site MA025 will be used, as per previous dredging campaigns; • A split-hopper or equivalent bottom-opening vessel will be used, a low energy process which encourages material to drop promptly to the seabed; • Dredging will only take place outside of bathing season 1st June – 15th September to avoid potential impact on Girvan Bathing Waters; • Works will be monitored to ensure silt plumes remain localised and dissipate quickly; and • Should silt plumes be persistent and widespread, methods will be reviewed.

Activity	Topic	Potential Impact	Mitigation Measures
Operations and movement of dredge disposal vessels	Invasive Non-Native Marine Species (INNMS)	The introduction of INNMS from vessels / equipment has the potential to cause severe ecological impacts. This in turn can result in major costs due to the difficulty in trying to eradicate a species once introduced. While there are no reported INMMS within Girvan Harbour, it lies within the Clyde Scottish Marine Region classified as a 'Region of many concerns' for INNMS (Marine Scotland, 2020).	• Equipment mobilised to carry out the maintenance dredge will be inspected to ensure it is free from soilage; and • All vessels are expected to be compliant with the relevant requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 and where appropriate follow Guidelines for the Control and Management of Ships Biofouling to Minimize the Transfer of Invasive Aquatic Species (Marine Environment Protection Committee, 2011).
	Marine Navigation	Dredging vessels operating in the area may adversely affect the safety of other water users during the proposed works.	• All vessels operating in the area will be under direction of the Girvan Harbour Master; • A Notice to Mariners will be issued in advance of the works; and • Dredge/disposal vessels will adhere to a fixed route, speed and direction when carrying out operations. This will be done as far as practicably possible with regards to tidal and weather conditions.
	Containment – fuel/oils and hazardous substances	Accidental releases of hazardous materials from spills or leaks can impact upon land and/or water quality with knock on ecological implications if not dealt with promptly.	• Appropriate maintenance will be carried out on vessels, plant and machinery to minimise the risk of leaks; • Bunded fuel, oil and chemical storage will be provided, and will be locked when not in use; • Refuelling will be carried out by trained operatives following site refuelling procedures;

Activity	Topic	Potential Impact	Mitigation Measures
			• The dredge contractor will be required to align to the harbour's spill plans and spill kits will be in place with operatives trained in their use; and • All oils and chemicals will be subject to Control of Substances Hazardous Health (COSHH) assessments under the COSHH Regulations 2002.
	In-Air Noise	Plant and vessels used during the proposed dredging activity will generate noise. While this is not anticipated to differ significantly from routine vessel operations within the harbour, including previous dredge works, it will be audible to people in the Girvan Harbour area.	• Dredging activity will take place during daytime hours only, as far as practically possible; • Noise control measures will be implemented as best practice, following guidance from 'BS5228:2009 Noise and vibration control on construction and open sites': o Plant will be shut down between work periods or throttled down to a minimum; and o Regular maintenance of all equipment used on site will be conducted, including maintenance related to noise emissions.
	Waste/Litter	Waste from general site activities that is not managed appropriately may be released into the terrestrial or marine environment where it can cause harm.	• Good housekeeping on all floating plant will be employed during the works; • Plant operatives will be made aware that littering will not be tolerated; and • The use of single use plastics will be discouraged.

6 Summary

Ayrshire Roads Alliance require to undertake maintenance dredge works to Girvan Harbour inner basin and within the main channel approach to the harbour. The maintenance dredge works are viewed as critical to navigational safety and to ensure the continued security of operations supported by the harbour. This includes commercial, recreational and emergency-service users. The proposed maintenance dredge works constitute continuation of an established dredging programme, with previous campaigns of similar methodology having taken place under license from MD-LOT. Potential issues associated with the works have been identified and the appropriate mitigation proposed to minimise negative effects on stakeholders and the environment.

7 References

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8 Glossary

Acronym	Definition
ARA	Ayrshire Roads Alliance
BPEO	Best Practicable Environmental Option
CD	Chart Datum
COSHH	Control Of Substances Hazardous to Health
GCR	Geological Conservation Review
GENs	General Planning Policies
GHGs	Green House Gas emissions
INNMS	Invasive Non-Native Marine Species
MD-LOT	Marine Scotland Directorate's - Licensing Operations Team
MHWS	Mean High Water Springs
nm	Nautical Mile
NMP	National Marine Plan
NMPi	National Marine Plan Interactive
RNLI	Royal National Lifeboat Institution
SEPA	Scottish Environment Protection Agency
SSSI	Site of Special Scientific Interest
WFD	Water Framework Directive