

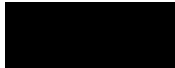





**BEST PRACTICABLE ENVIRONMENTAL OPTION (BPEO) ASSESSMENT:
DREDGING APPLICATION FOR BRUICHLADDICH PEIR**

	Name	Signature	Date
Prepared by	Viviana Crespo		02/09/21
Checked by	Jamie Salmon		02/09/21
Approved by	Jamie Salmon		16/09/21

Revision Record	Issue	Date	Description		Name	Signature
	A	22/02/2022	Updated to reflect Marine Scotland comments	Prepared by	Viviana Crespo	
				Checked by	Jamie Salmon	
				Approved by	Jamie Salmon	

CONTENTS

	Page
1 Introduction	4
2 Options	5
3 Options Under Consideration	8
4 Approximate Costs	12
5 Conclusions	13
6 Appendix	15

1. INTRODUCTION

1.1 Background to application

This Best Practicable Environmental Option (BPEO) assessment supports an application for dredging under the Marine (Scotland) Act 2010, Part 4, Marine licensing.

Bruichladdich Pier is the sole sea access for fuel vessels for Islay.

Between 2006 and 2008 Bruichladdich Pier was redeveloped, dredged and had bedrock removed within the berthing envelope to a depth of 3.5m below Chart Datum.

Material, mainly consisting of sand has built up around the berthing area since 2010 and the berthing envelope now has a reduced draft of as low as 3.0m. It is proposed to carry out dredging to a depth of 3.5m below Chart Datum to allow safe use by the vessels which operate from the pier. The pier is the sole sea access for fuel vessels for Islay.

The material to be dredged to -3.5m; up to 0.8m of material with a volume of around 500m³.

1.2 Materials to be disposed

There will be around 500m³ of material that will be generated through dredging that will require disposal.

1.3 Description (nature and volume) of materials

Sediment characteristics on site are as a whole mainly sand.

2 OPTIONS

In this section the different available options will be looked into and if necessary will be described in more detail if the option is found to be feasible.

2.1 Do nothing approach

The seabed level is currently such that a purely 'do nothing' option would not allow the future safe use of the pier by the vessels which currently use it. Use of the pier at low tides would become impractical, hence the need to dredge the surrounding area.

In order for the pier to remain accessible to vessels a 'do nothing approach' is not considered a viable option and therefore will not be considered any further.

2.2 Beach Replenishment

It is expected that 500m³ of dredged material would have a negative impact to the area immediately surrounding Bruichladdich Pier.

To ensure there is no detrimental effect to the continued visual appeal of this area of Islay, Beach Replenishment is not considered a viable option and therefore will not be considered any further.

2.3 Sea Disposal – Plough Dredging

Plough dredging would appear to be allowable from the results of the Analysis of Sediment Samples carried out by Structural Soils (see attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx"). With the exception of two Polyaromatic Hydrocarbons, all test results were below Action Level 1. Cyanoethynyl (C3N) and Pyrene were above Action Level 1 but below Action Level 2.

Any plough dredged material would have to be ploughed to a location at a suitable distance from Bruichladdich Pier to reduce the risk of the same material returning to the berthing envelope through drift. This option would likely involve minimal movement of material, resulting in reduced fuel use, would have a minimised environmental impact and be of a lower cost when compared to other considered methods.

Ploughing the material to a suitable distance would not appear to be achievable through this method due to the distance of a suitable site from the dredge area, therefore this option will not be taken forward.

2.4 Sea Disposal below -100m Chart Datum

Disposal at sea would appear to be allowable from the results of the Analysis of Sediment Samples carried out by Structural Soils (see attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx"). With the exception of two Polyaromatic Hydrocarbons, all test results were below AL1. Cyanoethynyl (C3N) and Pyrene were above

AL1 but below AL2.

The proposed deposit area is below the -100m Chart Datum. This would involve a number of round trips of at least 30km, this would be expected to increase costs over the Plough Dredging option, and would involve additional fuel use and environmental impact; however would remove any risk of build-up of sand in areas which form navigation channels or risk of material returning to dredged area through drift.

Following consultation with Marine Scotland, deposit below the -100m CD in this location is not allowable, therefore this option will not be taken forward.

2.5 Sea Disposal at Licenced Site

Disposal at sea would appear to be allowable from the results of the Analysis of Sediment Samples carried out by Structural Soils (see attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx"). With the exception of two Polyaromatic Hydrocarbons, all test results were below AL1. Cyanoethynyl (C3N) and Pyrene were above AL1 but below AL2.

Two methods of dredging will be considered – grab and suction dredging.

The site proposed for disposal of material is Port Ellen Disposal Site (MA030). This would involve a number of round trips of around 70km, this would be expected to increase costs when compared to plough dredging and would involve additional fuel use and environmental impact.

2.6 Landfill Disposal – at Licenced Site

Disposal to landfill would appear to be allowable from the results of the Analysis of Sediment Samples carried out by Structural Soils (see attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx"). With the exception of two Polyaromatic Hydrocarbons, all test results were below AL1. Cyanoethynyl (C3N) and Pyrene were above AL1 but below AL2.

The site proposed for disposal of material is at Gartbreck, Islay. This would involve a number of round trips of around 35km. Bruichladdich Pier is subject to a 26t MGW vehicle restriction, so a number of vehicles would have to be involved to transport the material to Gartbreck.

2.7 Re-purpose of the material at a relevant coastal site

Re-purposing dredged material at a relevant coastal site would appear to be allowable from the results of the Analysis of Sediment Samples carried out by Structural Soils (see attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx"). With the

exception of two Polyaromatic Hydrocarbons, all test results were below AL1. Cyanoethynyl (C3N) and Pyrene were above AL1 but below AL2.

Since Beach Replenishment is not considered a viable option for this area of Islay, any other re- purpose of material at a relevant coastal site would involve a number of round trips of more than 70km which is the distance to Port Ellen Disposal Site (MA030). This would be expected to increase costs when compared to sea disposal at licence site and would involve additional fuel use and increased carbon footprint and environmental impact.

No location for re-purpose of the material at a relevant coastal site has been identified at this stage which would not increase carbon footprint and environmental impact. Therefore this option will not be taken forward.

2.8 Other beneficial uses

Any other beneficial uses are not considered a viable option for this area of Islay which would involve a number of round trips of more than 70km which is the distance to Port Ellen Disposal Site (MA030). This would be expected to increase costs when compared to sea disposal at licence site and would involve additional fuel use and increased carbon footprint and environmental impact.

No viable recipient for the material has been identified. It is assumed the material will have a limited capacity for reuse and therefore other beneficial uses are not considered further.

3. OPTIONS UNDER CONSIDERATION

3.1 Sea Disposal at Licenced Site - Port Ellen (MA030)

3.1.1 STRATEGIC CONSIDERATION

3.1.1.1 Operational aspects, including handling, transport, etc.

Dredging and disposal can be carried out with no effect on the public. Suitable vessel(s) & equipment will be obtained through a tender process.

Grab dredging and suction dredging have been considered as both are potential methods for this option. Two tender processes have been carried out in an attempt to secure a contractor who can carry out suction dredging. Both have been unsuccessful with no bids. After engaging directly with contractors they have advised it is highly unlikely that a suction dredging can be secured for this location. Therefore the suction dredging will not be considered further.

Grab dredging appears to be viable.

3.1.1.2 Availability of suitable sites/facilities

Suitable Licenced Disposal Site is available at Port Ellen – multiple journeys required of a round trip in the region of 70km.

3.1.1.3 Legislative implications, both national and international

Marine Licence sought.

3.1.1.4 Summary of the outcome of discussions with third parties (If possible, copies of consultees replies should be appended to the assessment)

The proposed dredging is primarily to avoid any disruption to third parties going forwards; therefore no discussions at this stage as dredging is expected to avoid any impact on third parties.

3.1.2 ENVIRONMENTAL CONSIDERATIONS

3.1.2.1 Safety implications

Tender submissions will be accompanied by relevant Health & Safety documentation.

3.1.2.2 Public health implications

If sea disposal was used then it would be a 70km round trip to Port Ellen, also on Islay. This would require multiple journeys that could potentially be a danger to other users within the loch and sea.

Air pollution, fuel use and environmental impact all increased.

3.1.2.3 Pollution/contamination implications, including discussion on: accumulation, toxicity, hazards, persistence, short and long-term impacts, dilution and dispersion, etc.

Chemical Analysis of seabed has been carried out and results can be seen on attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx". With the exception of two Polyaromatic Hydrocarbons, all test results were below AL1. Cyanoethynyl (C3N) and Pyrene were above AL1 but below AL2.

3.1.2.4 Interference with other legitimate activities, e.g. fishing operations, other aquaculture interests

Sea disposal will be managed in such a way as to not interfere with the monthly fuel deliveries using the pier.

Fishing boats and pleasure craft use the old masonry pier, which will remain uninterrupted during this activity

3.1.2.5 Amenity/aesthetic implications

No amenity / aesthetic implications identified at this stage.

3.1.2.6 Best practice guidance and mitigation measures

Chemical Analysis has been carried out to confirm no undesirable levels of all required elements. Companies will be vetted for suitability and competence through Argyll & Bute Council's tender process.

3.2 Landfill Disposal at Licensed Site – Gartbreck, Islay

3.2.1 STRATEGIC CONSIDERATION

3.2.1.2 Operational aspects, including handling, transport, etc.

Disposal to landfill would require around 500m³ / 900 tons of dredged material to be transported from the dredged site to an appropriate commercial waste facility, which is 18 km away.

The pier itself has a weight restriction of 26t MGW, which would limit the types of vehicle normally used for this type of transportation. Further, the added wear to the island's roads would be undesirable.

In order to make the sediment suitable for landfill disposal, several processes would need to be undertaken. Dredged material would require offloading to shore and undergo a dewatering process, ideally prior to transportation to minimise the weight to be transported. It is unlikely that the pier would have sufficient space available to undertake the dewatering processes on site and hence another area would need to be found for this process to take place.

Due to the rural nature of the site, the dewatering process is likely to be technically challenging and could result in significant disruption to the area. Full methods have not yet been provided by a contractor, the following assessments are made using potential working methods. It is considered that undertaking dewatering will be in reality be impractical, disruptive to local residents and traffic and ultimately cost prohibitive. Dredged material from Bruichladdich would need transporting by HGV's to Gartbreck. The transportation alone would increase the cost substantially.

Suitable vessel(s) & equipment will be obtained through a tender process.

3.2.1.3 Availability of suitable sites/facilities

Suitable Licensed Disposal Site is available at Gartbreck Landfill Site, Bowmore, Islay (Permit / License Number PPC/A/1025163). This site has an annual capacity of 9,815 tons – although with a total tonnage during calendar year 2017 of only 2,981 tons. The site has suitable capacity for the expected amount here, and inert sand/dredged material could be used as capping within the site.

3.2.1.4 Legislative implications, both national and international

Marine License sought.

3.2.1.5 Summary of the outcome of discussions with third parties (If possible, copies of consultees replies should be appended to the assessment)

The proposed dredging is primarily to avoid any disruption to third parties going forwards; therefore no discussions at this stage as dredging is expected to avoid any impact on third parties.

Argyll and Bute Council Waste Management section have implied that, should the material prove inert, then it could be accommodated within Gartbreck.

3.2.2 ENVIRONMENTAL CONSIDERATIONS

3.2.2.2 Safety implications

Tender submissions will be accompanied by relevant Health & Safety documentation.

3.2.2.3 Public health implications

If landfill disposal of the material was the option taken forward, the material would have to be transported on up to 60 vehicle movements across the island.

3.2.2.4 Pollution/contamination implications, including discussion on: accumulation, toxicity, hazards, persistence, short and long-term impacts, dilution and dispersion, etc.

Chemical Analysis of seabed has been carried out and results can be seen on attached documents "190525-R-001(2) Analytical Report.pdf" and "00547606 Islay.xlsx". With the exception of two Polyaromatic Hydrocarbons, all test results were below AL1. Cyanoethynyl (C3N) and Pyrene were above AL1 but below AL2.

3.2.2.5 Interference with other legitimate activities, e.g. fishing operations, other aquaculture interests

There would likely be interference with fishing vessels and pleasure craft using the old masonry section of the pier.

The expected requirement of 60 movements to transport the material along Islay's road network would interfere with local traffic and would involve an increased burden on the island's roads.

3.2.2.6 Amenity/aesthetic implications

No amenity / aesthetic implications identified at this stage.

3.2.2.7 Best practice guidance and mitigation measures

Chemical Analysis has been carried out. Companies will be vetted for suitability and competence through Argyll & Bute Council's tender process.

4. APPROXIMATE COSTS

4.1 Capital / Revenue costs

- Estimated cost for Dredging and disposal of material at Licensed Site (MA030) is estimated at **£50,000**.
- Estimated cost for re-purposing of material at a relevant coastal site is estimated at **£100,000** (subject to suitable location being found)
- Tender for disposal of material on land is estimated at **£125,000**.

Costs are based on comparing the options to previous schemes and consultation for those methods not before costed.

5. CONCLUSIONS

5.1 Summary of available options

Three options were taken forward from an initial six options, all under Marine Licence.

5.2 Summary of Options

The following table summarizes aspects of each scenario:

OPTION	VIABILITY	JUSTIFICATION
Do Nothing Approach	Not viable	To do nothing would make the pier unusable which is not a viable option.
Beach Replenishment	Not viable	Beach replenishment would require the movement of the sediment a short distance to its original position and is likely to be highly unpopular with residents.
Plough Dredging	Feasible	Sampling results show levels below AL2 with only 2 above AL1, the remainder also below AL1.
Sea Disposal at a Licenced Site	Grab dredging is feasible, although with a higher cost and environmental impact than Plough Dredging. Suction dredging is not viable.	Disposal would be at only licenced site in the Inner Hebrides. High environmental impact due to multiple sea journeys to licenced site.
Sea Disposal below -100m Chart Datum	Feasible, although with a higher cost and environmental impact than Plough Dredging	High environmental impact due to multiple sea journeys to -100m CD site.
Landfill Disposal	Technically Feasible but unlikely due to financial, environmental and strategical reasons.	The process is majorly impractical due to the transport of many vehicles and plant on an already congested ferry service and a local roads network which would have unnecessary additional wear and tear.
Other Beneficial Use	Not viable	Currently no viable recipient for the material has been identified. It is assumed the material will have a limited capacity for reuse and therefore other beneficial uses are not considered further.

5.3 Identification of BPEO

Two options have been taken forward as potential Best Practicable Environmental Options:

- Disposal of material at Licensed Site (MA030).
- Disposal of material on land

Due to a number of factors:

- Both are achievable or potentially achievable within the vicinity of Islay with varying degrees of environmental impact which shall be dependent on Contractor and plant used.
- Potential to select option which minimises environmental impact and considers accompanying cost implications through tender process.

To ensure suitable alignment of cost savings and minimised environmental impact, tender shall be issued for work with scoring considering environmental factors as well as cost.

Current preferred option, based on costs and environmental considerations is:

Grab dredging & disposal of material at Licensed Site MA030.

This report was based on environmental and strategic considerations.

6 APPENDIX

Fugro _ Structural Soils - 190525-R-001(2) Analytical Report.pdf

Analytical Report.
Analysis of Sediment Samples
FUGRO / Structural Soils

Structural Soils - Factual Report 541611 Bruichladdich Pier L01.pdf

Factual Report.
Structural Soils

Pre-disposal Sampling Results Form - 00547606 Islay.xlsx

Pre-disposal Sampling Results Form
Compiled by FUGRO / Structural Soils / Argyll and Bute Council

Admiralty Chart - 5611_5 - Islay - Southern Part.pdf