

THOMAS  TELFORD

CORPACH  
MARINA



# Thomas Telford Corpach Marina

Marine Licence Application (Dredging)

Supporting Document

June 2020

 **northern light** 

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This document has been produced Northern Light Consulting Ltd for Caol Regeneration Company Ltd solely for the purpose of supporting the application for a Marine Licence for Dredging under the Marine (Scotland) Act 2010.

As it is not proposed that the dredged material is deposited at sea, a full BPEO is not required.

## **1. Executive Summary**

It is intended to construct a car park, slipway and pontoons at the Pier at Corpach, Loch Linnhe.

To achieve the depth of water which is required for the use of the marina by boats which have a large draught, it is necessary to dredge the seabed up to a depth of 1 metre.

The dredging plan has been analysed using AutoCAD Civil3D and the volume of dredged arisings has been calculated as being: 2,800 m<sup>3</sup>

The construction of the car park requires an amount of fill to be placed and this has been calculated to be approximately: 4,960 m<sup>3</sup>

It is recommended that a cost effective and environmentally friendly solution would be to reuse the dredged material as fill material for the car park.

## 2. Introduction

This report supports an application for a licence for Dredging and Deposit of Solid Waste in the Territorial Sea and UK Controlled Waters Adjacent to Scotland under the Marine (Scotland) Act 2010, Part 4, Marine licensing.

It is the intention of Caol Regeneration Co. Ltd (CRL) to dredge the seabed which is present at Loch Linnhe in order to facilitate the berthing of large draught leisure vessels at Corpach, near Fort William. It is intended to construct a car park, slipway and pontoons at the Pier at Corpach, Loch Linnhe, to create a marina facility for outdoor marine pursuits for both leisure and educational purposes.

This report examines the following options for disposal of dredged arisings:

- Sea disposal of the dredged material at a registered and open disposal site.
- Landfill disposal of the material on mainland Scotland;
- Reuse of the dredged material as fill for the car park;

This report makes the following considerations and examines the following data:

- Soil sampling results
- Economic considerations
- Social considerations
- Environmental considerations

The total volume of the dredged material is approximately 2,800m<sup>3</sup>. The materials are naturally occurring seabed materials which are described more fully later in this text.

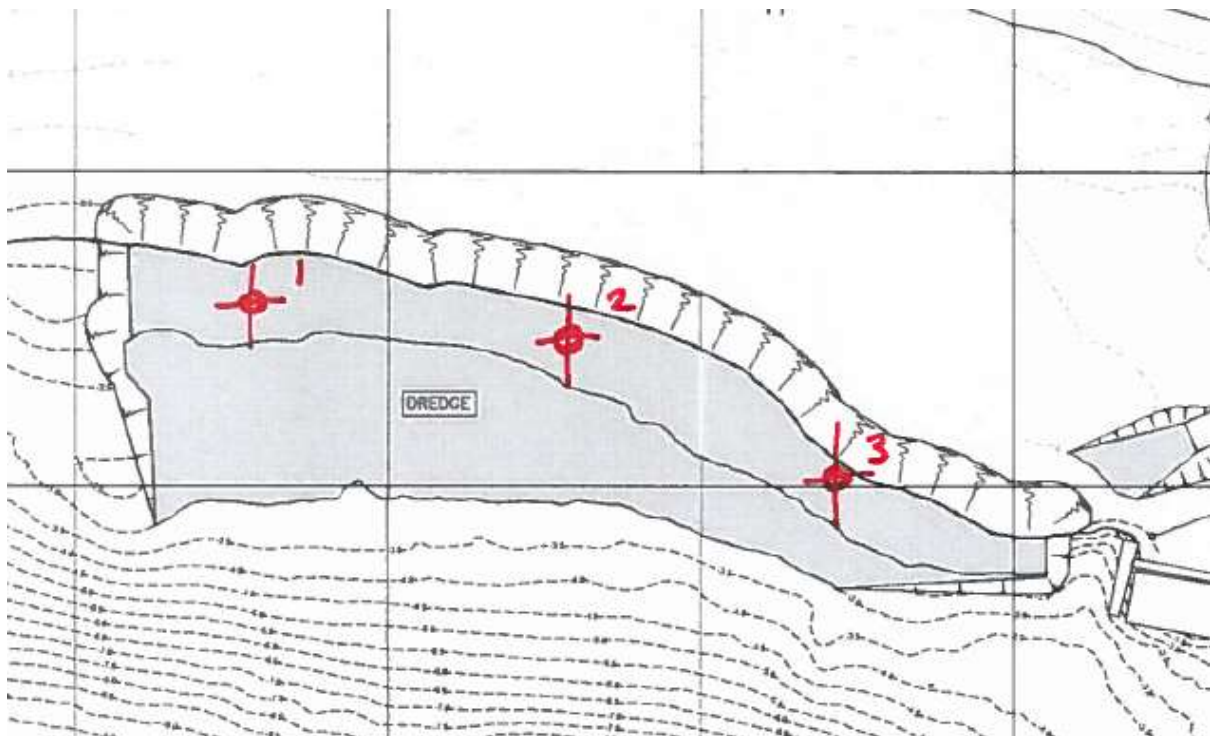
The cost of dredging and reclaiming land to form the marina car park, including construction of a new slipway, and a new culvert to maintain an existing watercourse, based on re-use of the dredged material as fill, is £1.4m.

### 3. Seabed Sample Recovery

Sampling requirements were agreed with Marine Scotland in advance of seabed sediment sampling and analysis. Sampling was undertaken on the 9<sup>th</sup> of January 2020 at 11:00am using a grab sample. The locations selected were within the dredge area. The locations at which samples were recovered are:

Sample Ref	Easting	Northing
1	209378	776679
2	209428	776673
3	209471	776651

**Table 1: Sample Location**



**Figure 1: Sample Location relative to Dredge area**

#### **4. Seabed Sediment Sample Analysis**

Suitable disturbed samples were recovered from site during the exploratory works and sent to Bam Ritchies, a UKAS registered testing laboratory. The testing suite comprised PSD sieve analysis.

Suitable disturbed samples were recovered from site during the exploratory works and sent to i2 Analytical Ltd, a UKAS registered testing laboratory. The testing suite comprised metals, organotin compounds, total organic carbon, PAH speciated, PCB speciated, TPH C10-C40 and asbestos screen.

A full set of results can be found in the Pre-Dredge Sampling Report by Blake Geoservices. An extract from the report is reproduced in Table 2.

The sediment samples showed that the material to be dredged is predominantly naturally occurring gravel and sand with a small percentage of fines.

Note that none of the sediment samples are contaminated above Marine Scotland LOT Revised Action Level 1.

Lab Sample Number				1411242	1411243	1411244		
Sample Reference				Sample 1	Sample 2	Sample 3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				09/01/2020	09/01/2020	09/01/2020		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	25		
Moisture Content	%	N/A	NONE	17	24	13		
Total mass of sample received	kg	0.001	NONE	1.3	1.2	1.3		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected		
<b>General Inorganics</b>								
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.2	1.1	1.3		
<b>Speciated PAHs</b>								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	1.3	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.36		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.32		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.24		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.23		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
<b>Total PAH</b>								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	1.33	2.08		
<b>Heavy Metals / Metalloids</b>								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.3	5.1	4.4		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	19	26		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	5.2	5.2	7.7		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	11	11		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	11	13		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	42	49		
<b>Petroleum Hydrocarbons</b>								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10		
<b>PCBs</b>								
PCB Congener 028	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
PCB Congener 052	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007	< 0.007		
<b>Organotins</b>								
TBT (Tributyl Tin)	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01		
TPT (Triphenyl Tin)	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01		

## **5. Dredging Method**

The contractor will undertake the dredging of the marina basin using a long reach excavator mounted on a barge. Other than the excavator, the barge will be kept free of plant and materials so as to provide storage space for the excavated material.

The dredging operation will not commence until the majority of the retention bund is in place, so that dredged material can be continuously deposited straight from the barge into the reclamation area by the long reach excavator. This therefore eliminates the need for a laydown area and reduces the amount of material handling required.

The dredging will generally be carried out working from the shoreside outwards, however dredging for the toe of the proposed slipway will be undertaken first to allow the slipway construction to commence.

Dredging will be a tidal operation and the programme takes cognisance of this.

## **6. Disposal Options**

### **6.1 Option 1 – Sea Disposal**

The option for sea disposal would be to take the dredged material to a licenced disposal site. There are no Marine Disposal sites for dredged material which are currently open which are in reasonable sailing distance of the Corpach site. The nearest disposal site is at Islay:

Port Ellen, Islay, “MA030”: Lat: 55.6207 Lon: -6.2010

The cost of transporting the soil to the disposal site is approximated at £250,000.00.

### **6.2 Option 2 – Landfill Disposal**

The option for landfill disposal would be to take the dredged material to a licenced disposal site. There are no licenced landfill disposal sites currently open with sufficient capacity within reasonable haulage distance of the Corpach site. As the waste is inert and non-hazardous it may be possible to secure a temporary consent within the local area, for example at a dis-used quarry.

A temporary spoil heap would be required on site, and there is no readily available location for this.

The number of HGV movements associated with disposal would be around £250, and the costs associated with this, plus landfill tax, would be at least £100,000.00.

The carbon footprint associated with the HGV movements, even if the disposal site was within 10 miles, would be in excess of 3,000 tonnes of CO<sub>2</sub>.

### **6.3 Option 3 – Re-use as Fill Material on Site**

The option to re-use the dredged material as fill on site involves depositing the material within a rock armour bund to form the new car park (as described in more detail in Section 6.4).

The material, predominantly gravel and sand with a small percentage of fines, is suitable for this application.



This option is cost negative, as re-using the material reduces the volume of fill to be imported by up to 2,800m<sup>3</sup>, realising a potential cost saving in excess of £150,000.00.

It is also the most environmentally friendly as no waste is produced, no HGV or shipping movements for disposal, and reduced HGV movements for import of fill materials.

This is the most sustainable disposal method and is the recommended course of action.

#### **6.4 Disposal Method**

The beginning of the upfilling operation in the reclamation area is dependent on other activities being completed and the programme reflects these constraints; the culvert construction has to be completed and flows turned through the completed structure to provide a dry working area, and the retention bund must be in place to hold the fill material in place and prevent wash out of finer material.

The fill material will be placed in the reclamation area by the long reach excavator from the barge. This material will then be distributed throughout the upfill area by an excavator working on the dry side of the retention bund. The upfill will be brought up in layers and compacted until formation is reached.

The rock armour placement to the outer slopes of the retention bund will also be carried out concurrently with the upfilling, while awaiting material to be deposited from the dredging operation.

Should further material be required to achieve formation once all the dredged material has been deposited, imported fill will be brought in from the previously formed site access road.

## 7. Compliance with Scotland's National Marine Plan

The National Marine Plan sets out policies and strategies to enable sustainable development and use of our marine area in a way which will protect and enhance the marine environment whilst promoting both existing and emerging industries.

*General Planning Principle 1* – a presumption in favour of sustainable development and use of the marine environment when consistent with the policies and objectives of the plan.

*This principle is especially relevant for the key growth sectors which Scotland specialises in including tourism; particularly important in more remote areas of Scotland.*

*General Planning Principle 2* – sustainable development which provides economic benefit to Scottish Communities is encouraged.

*General Planning Principle 3* – sustainable development and use which provides social benefits is encouraged.

The development of a new marina at Corpach will drive regeneration, and the growth of marine tourism in the local area, situated at the West end of the Caledonian Canal, a key transit route for leisure boats. There are no comparable marina facilities within 25 miles (one days sailing), and in “The Outdoor Capital of the UK” nowhere the public can safely and easily access the water for sailing and other boating activities

It is estimated that the new development will create new employment in the region of 14FTE.

Local people will have the opportunity to participate in healthy outdoor water-based sports and leisure pursuits, and the marina facilities which include a cafe, will provide a valuable focal point for local people and a destination for walking and cycling.

### **Section 12. Recreation and Tourism**

The National Marine Plan has a section specifically dedicated to recreation and tourism and the development of the new marina directly addresses several objectives:

Objective 1 - Position Scotland as a world class sustainable coastal and marine tourism and recreation destination through the sustainable development of coastal and marine recreation activities and industries in Scotland.

Objective 3 - Promote diversification of the recreation and tourism sector to increase the value of assets in rural towns and exploit opportunities from future climate change.

Objective 4 - Continued and improved access to marine and coastal resources for tourism activities and recreational use.

Objective 5 - Sustainable improvement and/or development of existing or new facilities, encouraging the sharing of facilities and supporting infrastructure and the use of low carbon energy solutions.

Objective 7 - Participation in a range of waterborne recreational activities that support participation and sport development, encourage an appreciation of the environment in which they take place, contribute to life skills and support a healthier nation and increase economic benefit.

Objective 8 - Improved education and understanding of the marine environment for recreational users, including how to enjoy the resource responsibly in accordance with the Marine Wildlife Watching Code and the Scottish Outdoor Access Code.

The new marina also complies with several of the relevant Marine Planning Policies:

REC & TOURISM 1: Opportunities to promote sustainable development of marine recreation and tourism should be supported.

REC & TOURISM 3: Regional marine plans should identify areas that are of recreational and tourism value and identify where prospects for significant development exist, including opportunities to link to the National Long Distance Walking and Cycle Routes, and more localised and/or bespoke recreational opportunities and visitor attractions. *The new marina is located within 400m of National Cycle Route 7, and is on the Great Glen Way long distance walking route.*

REC & TOURISM 4: Marine and terrestrial planners, marine decision makers and developers should give consideration to the facility requirements of marine recreation and tourism activities, including a focus on support for participation and development in sport. Co-operation and sharing infrastructure and/or facilities, where appropriate, with complementary sectors should be supported as should provision of low carbon transport options. *The marina is served by several local walking/cycling routes, has a railway station within 200m, and bus routes within 400m.*

The Plan also identifies that the West coast and islands are key areas for sailing and kayaking and will provide access for these coastal and marine recreation and tourism activities.

The plan specifically highlights in Section 12.4 that “marine recreation and tourism contribute to Scotland’s coastal, island and rural communities”

and in Section 12.5 that

“Many social benefits are closely linked to the economic return of marine recreational and tourism activities, and in some cases community regeneration has been focused on developments, such as marinas. There are clear health, wellbeing and social benefits to encouraging participation in outdoor activities and it is important to recognise the advantages to society that extend beyond the considerable economic benefits derived from them.”

Section 12.10 states that

“Sailing: Scotland’s scenic sailing waters attract visitors from all over the world with the west coast of Scotland widely acknowledged to have some of Europe’s best sailing. Sailing tourism plays a role in contributing to Scotland’s economy and can generate income for remote rural areas”.

Industry projections for the future indicate that development required to meet demands should take place, and that the Clyde and the west coast should be the main focus of development with an emphasis on the creation of strategic berthing hubs/clusters to provide for visitor markets and benefit rural areas.

In summary; the proposed marina development aligns well with and is supported by the objectives and planning policies contained within Scotland’s National Marine Plan.

## **8. Conclusions and Recommendations**

This report has considered options for the disposal of dredged arisings from the proposed Corpach Marina development.

This report has considered factors including social, economic and environmental considerations.

The material to be dredged does not pose a risk in terms of contamination.

The dredging works are necessary for the new marina to be viable.

The best option for disposal of the dredged arisings, in terms of both cost and the environment, is to re-use the material as fill for the new marina car park. Other than localised disruption during the construction phase there are no significant negative impacts.

The new marina will deliver many social and economic benefits for the local community and wider area. The development of the new marina aligns well with and is supported by the objectives and planning policies contained within the National Marine Plan.