



Port of Cromarty Firth West Harbour BPEO Dredging Assessment

October 2018

Location Map 6: Showing alternative dredge disposal site which has the advantage to preventing coastal erosion (note North is to the top of this map). Point C is the West Harbour and Point B is the proposed dredge site. Source: <https://gridreferencefinder.com/#>

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Introduction

This document is supporting information to the Marine Scotland licence application for the maintenance dredging project planned for the Port of Cromarty Firth (PoCF) West Dock, Invergordon. It is envisaged that this would take place over 3 years. The West Dock location is shown in Figure 2 below-

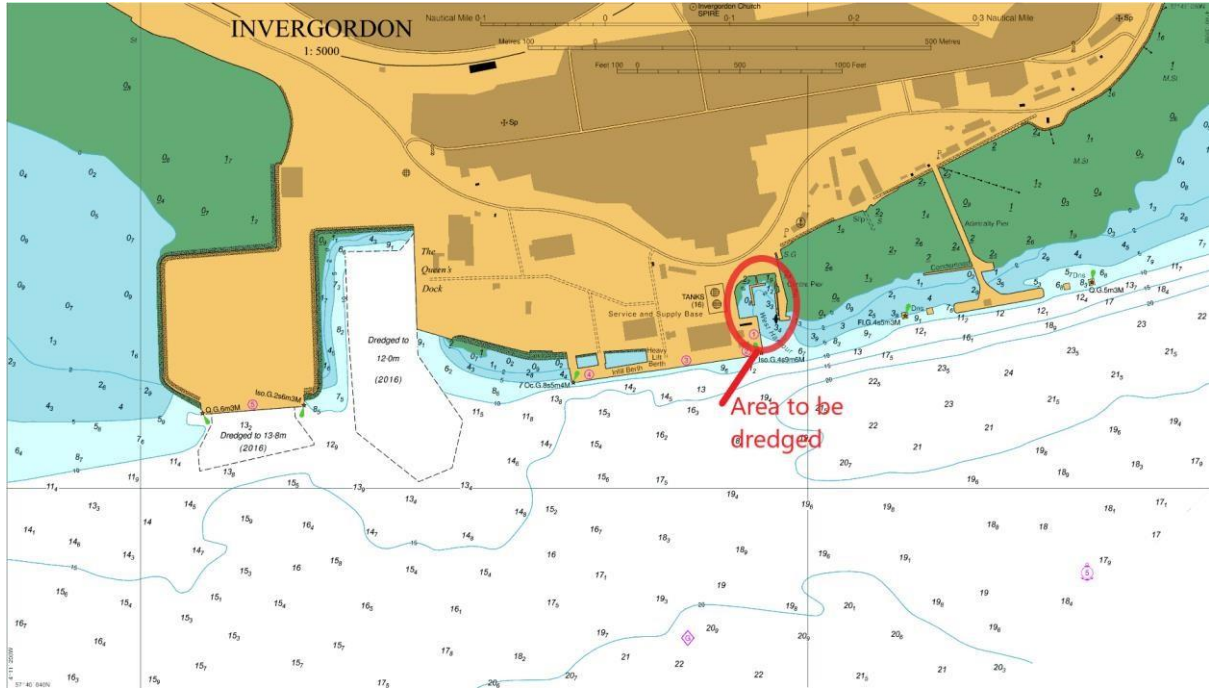


Figure 2: Showing the West Dock area to be dredged within the red circle (note North is at the top of the figure).

Dredging and Proposed Sea Disposal Operation

The maximum planned quantity of maintenance dredge spoil to be deposited at the authorised dredge spoil deposit area at Souter (Oslo Code - CR019) is up to a maximum quantity not exceeding 10,000 m³.

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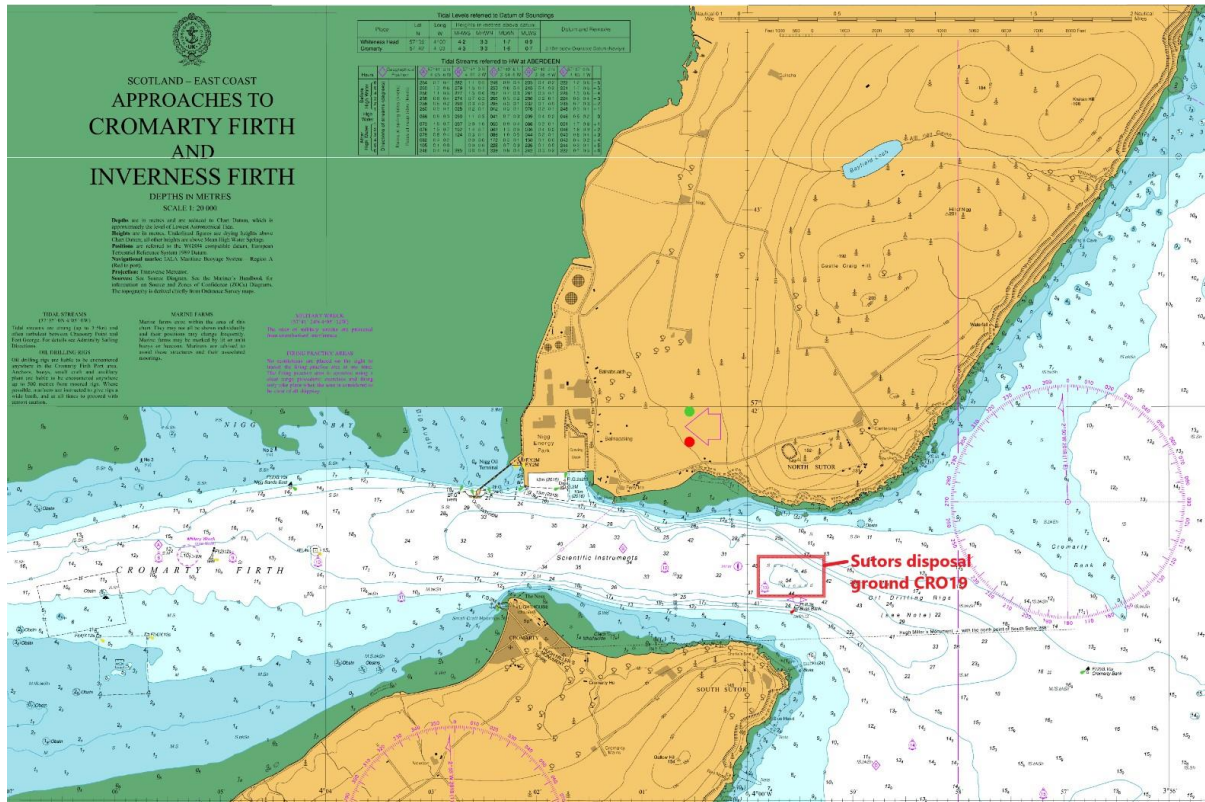


Figure 1: Showing the proposed Sutors Disposal Site CRO19 within the red boxed area (note North is at the top of the figure).

Best Practical Environmental Option (BPEO)

For the BPEO and the disposal of the dredging's the following options have been considered and are summarised within Table 1 below. **Our preferred disposal route is option number 3**, shown in Table 3 below.

Disposal Option	Comments	Advantages and Disadvantages
Landfill (option number 1).	The closest landfill to Invergordon Port is Garnish Landfill Site at Aviemore .	Advantages: removal of elevated pollutants in the dredge from the marine ecosystem to the landfill. Disadvantages: This is 106 miles round trip and would involve heavy goods vehicle (HGV) movements through Invergordon. Resultant possible traffic congestion, noise (vibration) and air pollution. There would be land based port health and safety

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		risks of HGV movements and dewatering plant operations. Landfill space is becoming a premium and this option would take up valuable future capacity at this landfill.
Agriculture land benefit by spreading dredge on agricultural land (option number 2).	Utilise the dewatered dredging as a soil improver.	<p>Advantage: recovery of nutrients and possibly improvement is soil condition after application.</p> <p>Disadvantage: there could be odour issues relating to spreading operations. Higher than expected poly aromatic hydrocarbon levels may not be suitable for land benefit. HGV movements as stated above in option 1. (uncertainty about distances to farms as this would have to be investigated further). Saline sediment may not be suitable as a soil improver. If possible, an advantage, once the sludge is dewatered, is that it may be closer than Aviemore Garnish landfill and require less transport.</p>
Disposal of dredging's at Sutors disposal site (option number 3).	Movement of dredging's by boat to disposal site (a line of sight distance of 11 Km).	<p>Advantage: solely sea transport, hence less health and safety risks and nuisance to the public. Around a 11 Km movement of product from West harbour to the Sutor disposal site (22 Km round trip). This could be a more efficient process as this type of operation has taken place in the past at the PoCF.</p> <p>Disadvantage: embargo periods when disposal will be prohibited, such as the bathing waters season. Requires monitoring and recording for marine mammals. Increased marine traffic for the port during transfers to Sutors site.</p>

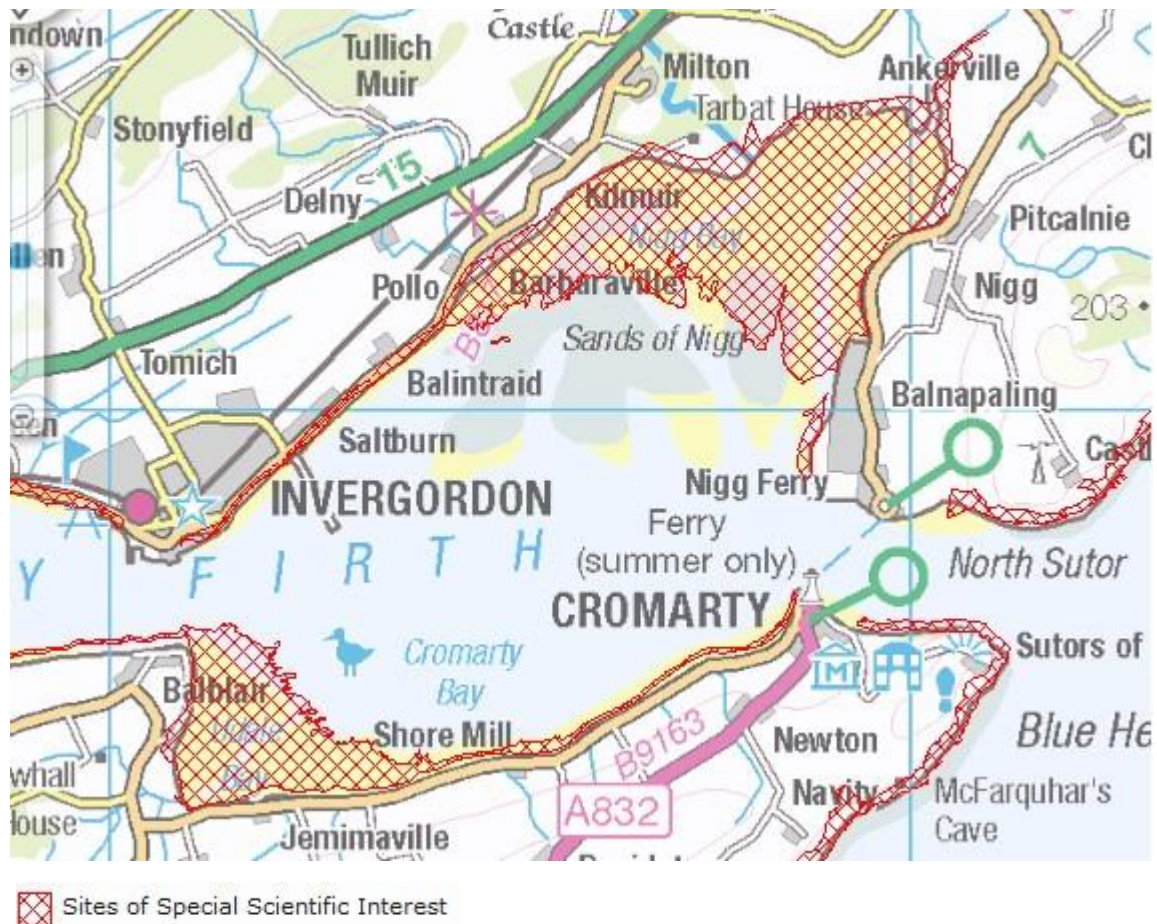
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<p>Disposal of dredging's as part of an estuary land erosion re-mediation project (option number 4).</p>	<p>Movement of dredging's by boat to disposal at an area ([Easting] Y 271093 and [Northing] X 868438) shown on map here (approx. 0.3 Km total distance). Please see Location Map 6 below.</p>	<p>Advantage: the dredging's are used to prevent further erosion of the coastline by re-cycling the silt and sediment. There is shorter 0.3 Km transfer than option 3. Disadvantage: This area is utilized by the RNLI annual raft race and there may be safety implications from the placement of soft silt in this area. After discussing the possible movement of the dredge by boat with the ports marine team. The draught of the dredge boat will be very limited in this area of the estuary (when fully laden), so this is therefore not seen as a viable option. I have also looked at other areas of landward erosion in the estuary and the sites are in the proximity of conversation areas which are sensitive to silt, so this option is not available.</p>
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Table 1 Showing the different dredge disposal options and advantages and disadvantages.

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Adjacent conservation area boundaries around the PoCF and the Sutor disposal site



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Figure 3: Showing the Sites of Special Scientific Interest (SSSI) around the Port of Cromarty Firth (PoCF) at Invergordon (note North is at the top of the figure). Source: Scottish Natural Heritage website at - <http://gateway.snh.gov.uk/sitelink/searchmap.jsp>

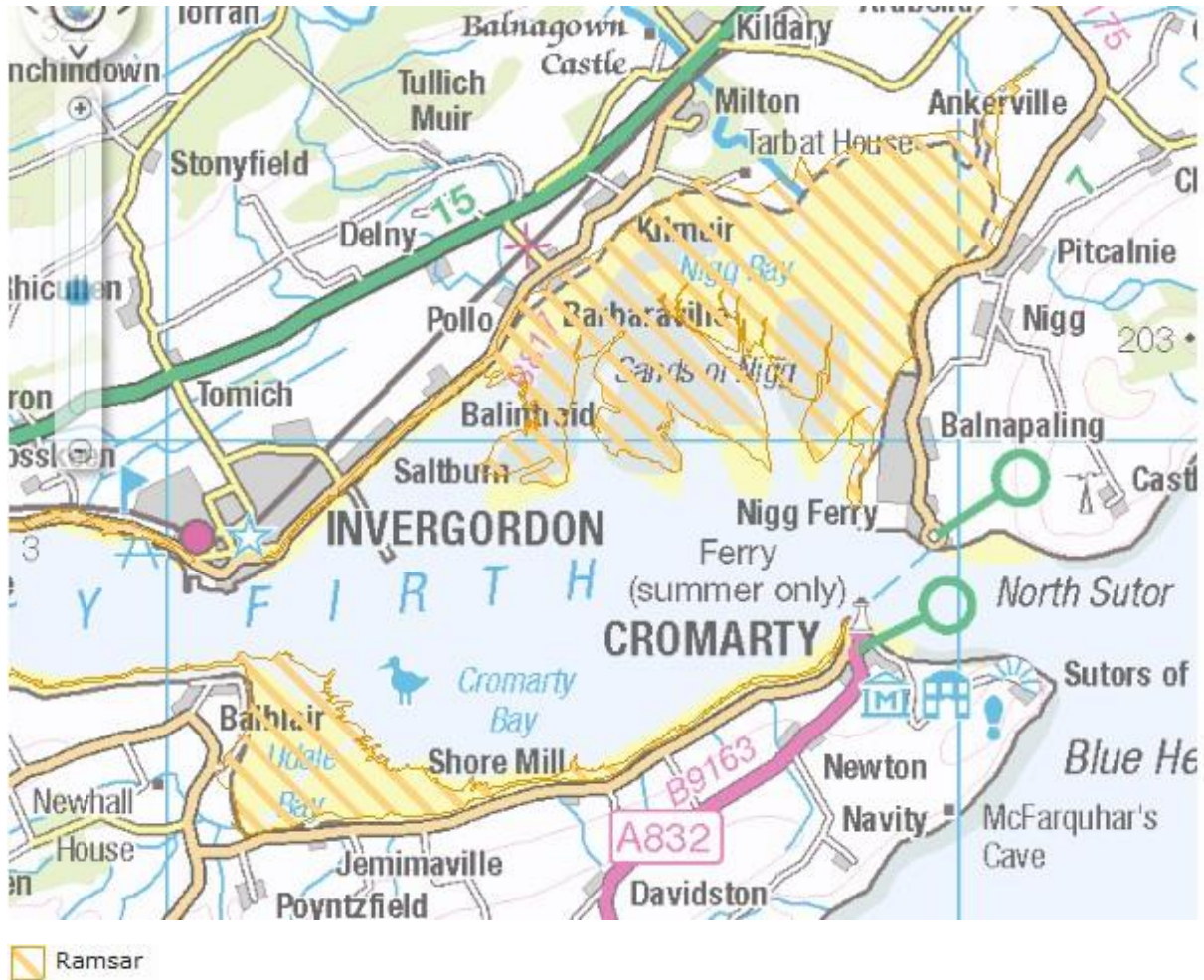
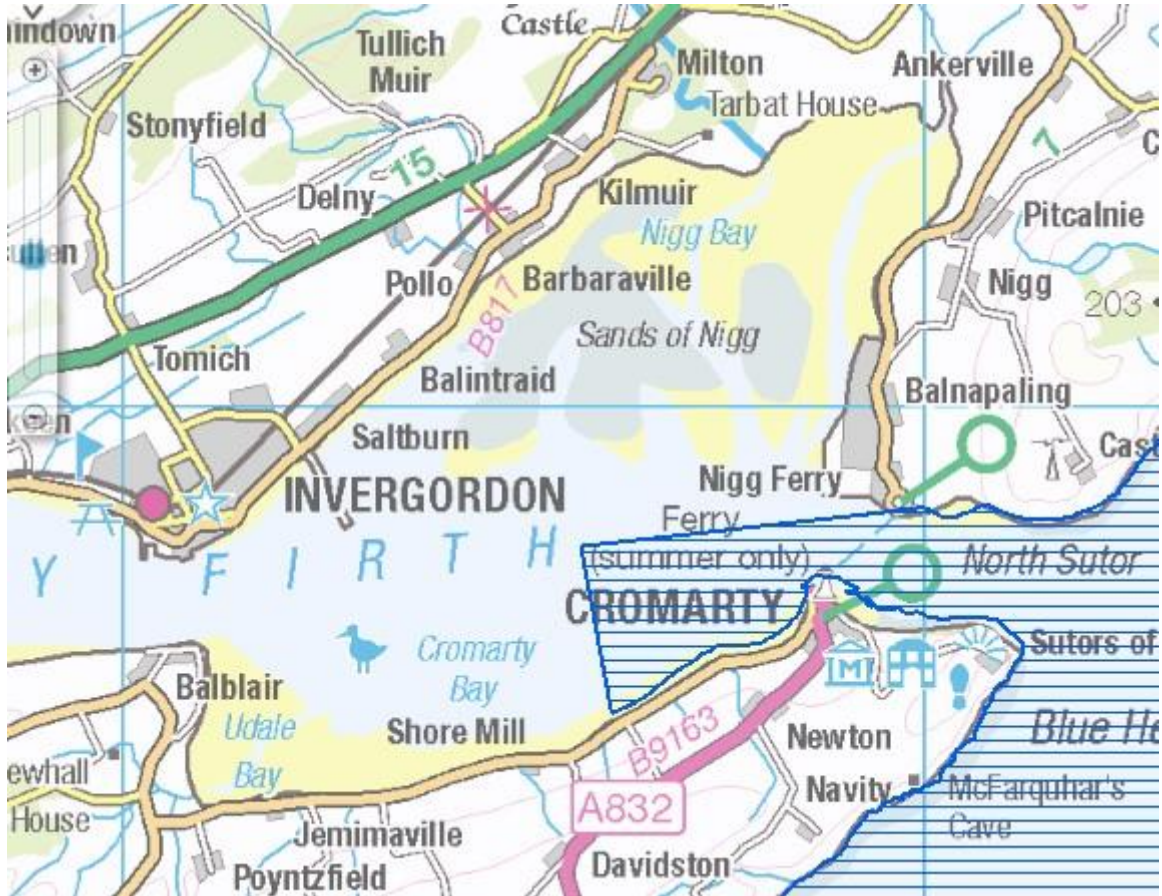


Figure 4: Showing RAMSAR Convention of Wetlands sites around the PoCF at Invergordon (note North is at the top of the figure). Source: Scottish Natural Heritage website at - <http://gateway.snh.gov.uk/sitelink/searchmap.jsp>

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SAC (Designated)

Figure 5: Showing Special Areas of Conservation (SAC) around the PoCF at Invergordon (note North is at the top of the figure). Source: Scottish Natural Heritage website at - <http://gateway.snh.gov.uk/sitelink/searchmap.jsp>

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