

**Edinburgh Marina Ltd. (EML)**



**Edinburgh Marina  
Dredging Environmental Management Plan**



**September 2019**

# Edinburgh Marina

## Dredging Environmental Management Plan

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# 1 CHANGE CONTROL

Any changes to working methods not identified within the method statement (i.e. dredging technique, quantity of material to be dredged or other significant change to methodology or circumstances) will involve cessation of the works until a full risk assessment has been conducted on these changes and the method statement has been altered accordingly to reflect these changes. Any changes will be issued to all parties concerned.

Recording of change(s) will identify areas where change(s) have occurred throughout the CEMP document.

**Table 1-1: Document Change Record**

Date	Version	Author	Change Details

## 2 INTRODUCTION

### 2.1 Terms of Reference

This Dredging Environmental Management Plan (EMP) has been produced by EnviroCentre Ltd, on behalf of Edinburgh Marina Limited, to facilitate environmental management during dredging and construction activities associated with capital dredging as conditioned by Marine Licences. Completion of the Environmental Management Plan (EMP) is in accordance with Condition 3.1.9 of the Marine Dredging Licence which states:

#### ***Construction Environmental Management Plan (CEMP)***

*The licensee must submit a CEMP to the Licensing Authority for their written Approval at least two months prior to the commencement of works, or less if agreed by the licensing authority. The CEMP must be consistent with the application and supporting information and must address but not be limited to:*

*a) Mitigation measures to prevent significant adverse impacts to environmental interests including protected areas and features, as identified in the application and supporting information.*

*b) Adherence to good practice measures including Guidance for Pollution Protection.*

*c) Navigational Risk Assessment.*

*d) Construction Method Statement.*

Edinburgh Marina Ltd will prepare two separate Environmental Management Plans, one will deal specifically with dredging and disposal works, while the second will focus on the construction works associated with the marina i.e. Quay Wall Works, North Mole Extension and the New Marina.

**It must be noted that this document is not a Health and Safety Protocol.**

#### **Dredging and Disposal Phase**

This Environmental Management Plan deals specifically with dredging and disposal works associated with the development of the marina. The dredge EMP will adhere to the Schedule of Mitigation (Section 8 of the EIAR and appended to this document within Appendix A) as far as practically possible. It should be noted that some mitigation within the Schedule are applicable specifically to construction activities associated with the marina and not dredging activities.

In the absence of detailed marine development, or City of Edinburgh Council CEMP guidance, reference has been made to the Highland Council Guidance Note on the *Construction Environmental Management Process for Large Scale Projects* (August 2010<sup>1</sup>). The Guidance Note sets out a robust Project Environmental Management Process (PEMP) for large scale projects. It describes the CEMP as one of the key management tools to implement the agreed Schedule of Mitigation as set out in the Environmental Impact Assessment Report (EIAR dated September 2018). The Schedule of Mitigation is provided within Appendix A of this EMP.

#### **Construction Phase**

The construction phase CEMP will adhere to good practice measures within SEPA Guidance for Pollution Protection (GPPs)/ Pollution Prevention Guidelines (PPGs). The CEMP will also include a Construction Method

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<sup>1</sup>[www.highland.gov.uk/download/downloads/id/2644/construction\\_environmental\\_management\\_process\\_for\\_large\\_scale\\_projects.pdf](http://www.highland.gov.uk/download/downloads/id/2644/construction_environmental_management_process_for_large_scale_projects.pdf)

Statement and allow for programme updates for the works at a later date when design details have been finalised.

The construction phase CEMP will outline how the construction project will avoid, minimise or mitigate effects on the environment and surrounding area, and detail the implementation of measures in accordance with environmental commitments outlined in the Schedule of Mitigation within Section 8 of the Environmental Impact Assessment Report (EIAR).

The CEMP ensures that environmental impacts identified during previously performed environmental studies i.e. the Environment Impact Assessment (EIA), are properly managed and that controls will be put in place to reduce the impacts of the development on the natural and human environment during construction.

The purpose of the CEMP is to;

- Provide effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the construction phase of the project
- Ensure that construction activities so far as is practical do not adversely impact amenity, traffic or the environment in the surrounding area

## **2.2 Scope of Report**

The EMP contains the following specific mitigation plans within Section 5:

- Potential Environmental Impacts
- EMP management strategies
- Dredging and Dredge Disposal
- Navigation
- Water Quality Management
- Hydrocarbons
- Spill Response
- Noise/Vibration
- Dust Control
- Control of Odour
- Non Native Species
- Waste Management

Section 6 deals with Pollution Prevention and Emergency Response, and is split into the following sections

- General Arrangements
- General Incidents
- Incident/Emergency Response Plans
- Emergency Contacts

## **2.3 Document Control**

Document control procedures will be implemented to ensure all correspondence, drawings and technical data received are recorded, distributed, filed and archived in an efficient and controlled manner. Document control activities shall include:

- Review of documents and drawings prior to release to ensure that requirements are clearly stated and that they are authorised for issue;

- Identification of documents to be controlled;
- Review and approval of changes to documents and drawings; and
- Control of documents, including approved changes to preclude inadvertent use of obsolete or superseded documents.

Standard methods shall be defined for adding and identifying revisions.

## **2.4 Report Usage**

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

Whilst the Client has a right to use the information as appropriate, EnviroCentre Ltd retain ownership of the copyright and intellectual content of this report. Any distribution of this report should be controlled to avoid compromising the validity of the information or legal responsibilities held by both the Client and EnviroCentre Ltd (including those of third party copyright). EnviroCentre do not accept liability to any third party for the contents of this report unless written agreement is secured in advance, stating the intended use of the information.

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## **3 PROJECT OVERVIEW**

### **3.1 Site Description**

At present, the harbour site comprises predominantly reclaimed land from the sea, consisting of vacant brownfield land which is scheduled for development under the approved 2003 masterplan and a number of subsequent Matters Specified in Conditions (MSC) permissions. The overall topography of the surrounding area is generally flat, with the proposed marine works development situated at the edge, and within the extents of the harbour.

Edinburgh Marina sits within the Granton Harbour regeneration development area, approximately 4km north of Edinburgh City Centre and fronting the Firth of Forth. It is approximately 9.5Ha, bounded to the north by the Western Breakwater, to the east by the Eastern Harbour and to the south by wider regeneration proposals and developments. The nearest residential development is situated on Merlin Avenue, approximately 90m south of the proposed development.

Within the wider area there is a combination of brownfield land, commercial/industrial and residential premises, which will be developed as part of the Granton Waterfront Development. Granton Waterfront is split into four development quarters of (1) Central Development Area, (2) North Shore, (3) Forth Quarter, and (4) Granton Harbour.

### **3.2 Overview**

To ensure efficient operation of the existing harbour, the harbour bed needs to be dredged to the required depth. With reference to the Granton Harbour Dredging 2018; Best Practicable Environmental Option Report (EnviroCentre Document Number 8192 (June 2018)), dredging will be undertaken within the western harbour to facilitate the development of the proposed marina and infrastructure.

Backhoe dredging will be utilised to effectively remove sediments (predominately silt), as well as boulders and weathered/weaker rock outcrop and looser material will be dredged directly from the seafloor by the BHD. Figure 3-1 shows the typical backhoe dredger arrangement with a long reach excavator positioned on a barge; it also shows the self-propelled disposal barge that is used to take the dredged material to the disposal ground. The dredging barge is stabilised on spud legs, so it does not require anchors and can be easily and rapidly moved.

Northern Dredging Ltd have been contracted by Edinburgh Marina to dredge an area as per survey and design at the Western Harbour, Granton Harbour. The marine plant shall consist of MV Shearwater which is a self contained self propelled bottom dumping hopper vessel with a Caterpillar excavator mounted on its bow. Master is Miroslaw Pawlazyk / Dimitar Rykov



**Figure 3-1: MV Shearwater**

### **3.2.1 Vessel Coordination**

During the dredging campaign, only the dredger will be operational. The dredging programme will be in two phases. The first phase will remove material up to 1.2m depth, the second phase will Dredge material from 1.2m to final dredge level at each location. These should be in sequence however, the second phase may overlap with the civils works for the other site construction.

The dredged spoil will be disposed of at sea as set out in the approved Marine Licence where this is possible. As outlined in the BPEO and the Works Licence application documents, the remainder will be brought to land and either utilised within the development i.e. use as backfill if deemed appropriate or disposed of off-site. Where possible the strategy will focus on the beneficial reuse of material as far as possible.

### **3.2.2 Management & Regulation**

The licensee must ensure that a copy of the Dredge Licence and any subsequent variations made to it in accordance with section 30 of the 2010 Act have been read and understood by the masters of any vessels being used to carry on any licensed activity under this licence, and that a copy of this licence is held on board any such vessel.

Throughout dredging and disposal, these (above) vessel movements will be managed and coordinated to ensure maritime safety.

The vessel movements proximal including access the harbour berthing, unloading and egressing the harbour will be in accordance with existing operational management plans and procedures developed by Granton Harbour.

The Principal dredging contractor will inform Edinburgh Marina Limited and Forth Ports in accordance with their Licence requirements, of the programme and notice of planned vessels movements, together with the intention of additional unplanned vessel movements in advance of the activity.

### 3.3 Works Overview

The works relevant to this EMP are marine works involving a capital dredge as detailed in the Marine Licence Application documentation and associated drawings. An overview of the licenced works extents and main dredging areas are shown in Figure 3.2 while Table 3-1 indicates dredging volumes per zone.

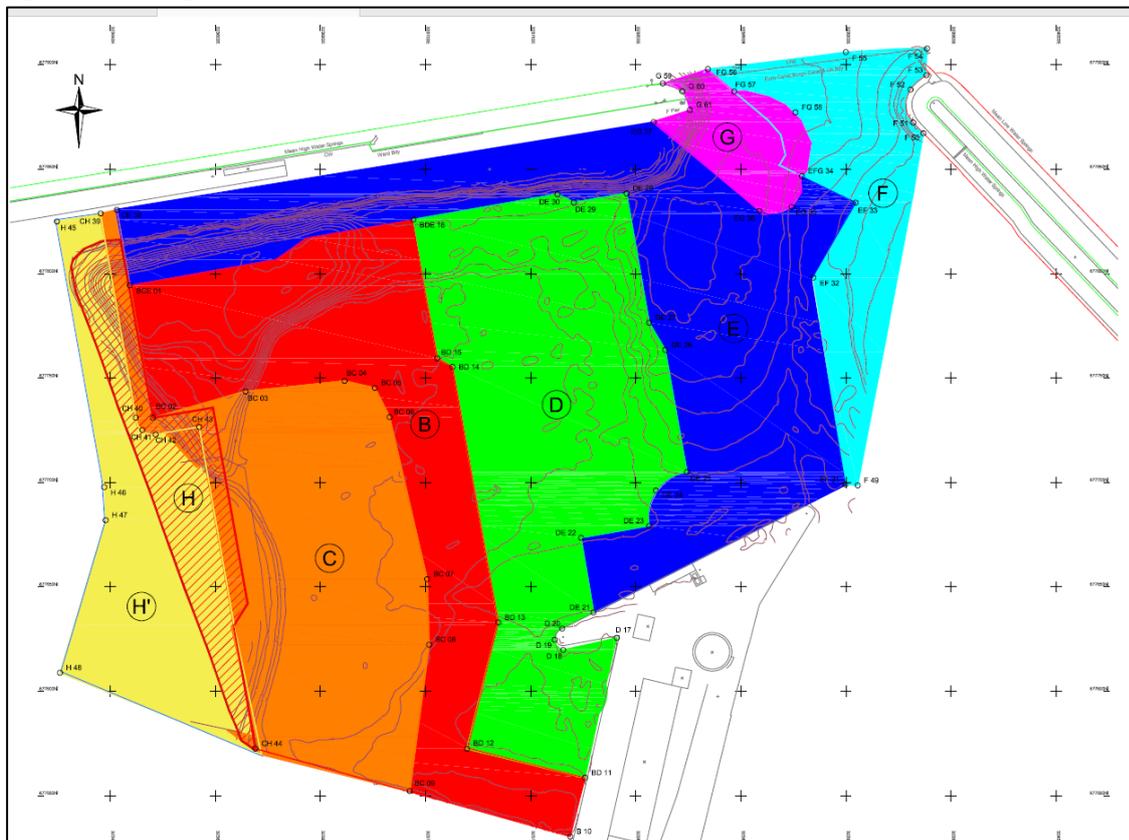
It must be noted that construction is not relevant for dredging however we provide a brief method statement of the works below

The figure below shows the proposed design dredge levels for the revised marina layout. These dredge levels have been set to accord with the requisite under keel clearances of the respective vessels in the given areas of the marina.

**Table 3-1: Dredging Volumes**

Zone	Volume for Disposal at Sea (m <sup>3</sup> ) (Top 1.2m where applicable)	Volume for Disposal on Land (m <sup>3</sup> )	NETT VOLUME (m <sup>3</sup> )	Factored by 1.8 wet tonnes/m <sup>3</sup>
A			N/A	
B	20,344	7,936	28,280	50,904
C		47,094	47,094	84,769
D	25,698	20,620	46,318	83,372
E	27,349	40,928	68,277	122,898
F	10,073	21,400	31,472	56,650
G	3,516	16,408	19,924	35,863
<b>Total Nett Volume</b>	<b>86,980</b>	<b>154,385</b>	<b>241,365</b>	<b>434,457</b>
H			19,322	34,780
<b>Total Infill Volume</b>			<b>19,322</b>	<b>34,780</b>

**Figure 3-2: Dredge Levels - Western Harbour**



### **3.4 Method Statement for Dredging**

Due to a Construction Method Statement being a requirement of the licence 06807/19/0 condition 3.1.9, it is required that some form of Construction Method Statement is included in the CEMP. However, this condition is more targeted at the construction aspect of this project. Therefore, construction is not relevant for dredging, nevertheless a brief method statement of the works is included. Further information will be submitted to Marine Scotland pending contractor appointment.

#### **3.4.1 Operational Log**

A log of operations will be maintained on the vessel employed to undertake the dredge spoil disposal operations. The log(s) must be kept onboard the vessel(s) throughout the disposal operations, and be available for inspection by any authorised Enforcement Officer. The log(s) must be retained for a period of six calendar months following expiry of the licence, and copies of the log(s) may be requested during that period for inspection by the licensing authority.

The log(s) must record in English the following information:

- a) the name of the vessel;
- b) the nature and quantity of each substance or object loaded for disposal;
- c) the date and time of departure from port, and the date and time of arrival at the disposal area(s), on each occasion that the vessel proceeds to the disposal area(s);
- d) the date, time and position of commencement, and the date, time and position of completion, of each disposal operation;
- e) the course(s) and speed(s) throughout each disposal operation. (Multiple changes may be recorded as "various");
- f) the weather, including wind strength and direction, sea-state and tidal set throughout each disposal operation;
- g) the rate of discharge during each disposal operation, if appropriate, and the duration of each disposal operation. (If the rate of discharge is not constant, the maximum and mean rates of discharge must be indicated);
- h) comments on the disposal operations, including any explanations for delays in the disposal operations;
- i) the signature of the Master at the foot of each page of the record.

No deviation from the schedule specified in the licence is to be made without the further written consent of the licensing authority.

The licensee must ensure that, where practicable, works are carried out at times of day which avoid times of low tide feeding activity in order to minimise disturbance to birds

#### **3.4.2 Dredging Operation**

It is intended that the dredging operation will be by backhoe dredger and either to land or by disposal barge to the sea disposal site. Backhoe dredging will involve dredging by mechanical means from a stationary platform and loading to attendant barges.

Positioning of the barge will be by Global Positioning System (GPS). The licence is valid for the duration of the works, i.e. from 1 August 2019 and shall not exceed 31 July 2022.

The dredge Area and volumes are shown on the Dredge Levels plan, including the quantities to be disposed of at sea.

All dredge material comprises silt and the dredging works are capital dredging located within the existing Granton Harbour bed.

Dredging will be conducted in concert with tides and will need to be conducted during winter months (i.e. November - April).

The disposal vessel transporting material to the licensed disposal grounds will exhibit the required marks and lights to avoid collisions at sea. Such vessels will be in regular communications with the Harbour Master.

### **3.5 Local Dredging**

The area of the Western Harbour will be dredged to a finished dredge level sufficient for the planned operation of the marina. The depth varies across the marina with shallower waters for smaller craft closed to the shore.

Dredging in advance of the north mole is likely to be by backhoe dredger. Sediment testing has been undertaken across the marina site with some material identified as suitable for disposal at sea site at an approved site and the remainder brought ashore for disposal or treatment and reuse.

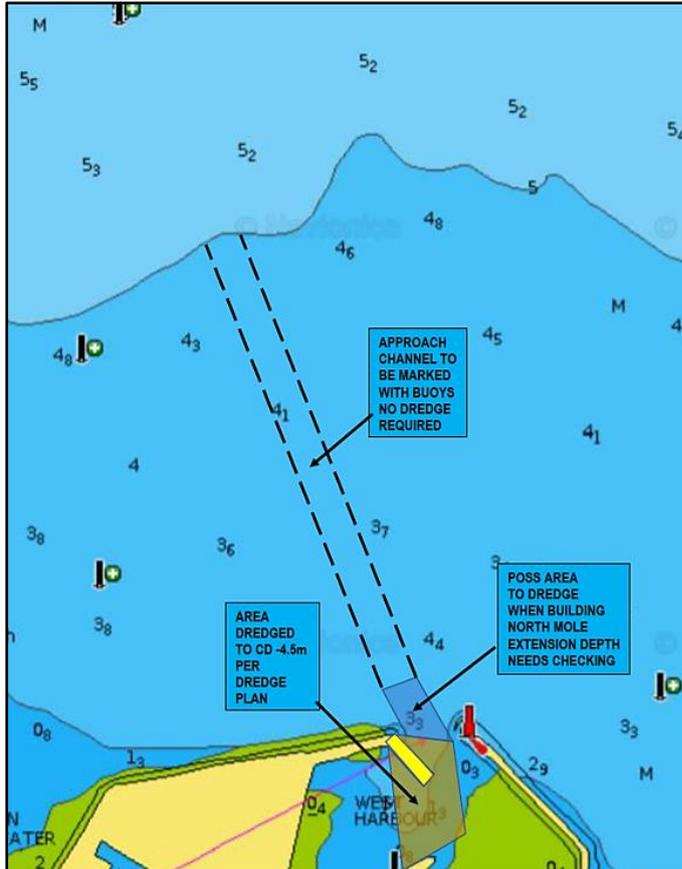
Condition 3.3.10 of the dredge licence states that the licensee must avoid, where practicable, works being carried out at times of the day which avoid low tide bird feeding activity to minimise disturbance to birds, however, removing the contaminated spoil at low tide is the most practicable solution to address the removal of contaminated sediment. There may be some short term disturbance or displacement in the immediate vicinity of the works however, there is sufficient alternative foraging habitat available such that it would not impact long term bird population viability.

### **3.6 Dredge spoil placement areas**

There are multiple disposal grounds in proximity to the site. Sea disposal of dredge spoil should be to Oxcar Mains (FO044) or Narrow Deep B (FO038).

The marina will require a marked entrance channel running virtually north/south for around 0.7 nautical miles over the coastal banks into the deeper Leith Roads. Very few, if any vessels will have access restrictions. Only vessels with a draft greater than 4 metres will be affected for about 1.5 hours either side of low water springs. On low water neaps there will be no access restrictions (Figure 3-3).

**Figure 3-3: Granton Harbour Entrance**



### 3.7 Works Programme

The proposed works programme is as shown in Table 3-2 below. This will be updated following contract award for each stage of the works to reflect the contractor’s programme.

**Table 3-2: Works Programme**

Proposed Development Component	Timing	Assumptions
Dredging and Reclamation	To be confirmed once Dredge contractor has been appointed	TBC

## 4 BACKGROUND CONDITIONS

### 4.1 Dredging Background

It is anticipated that dredging works will be undertaken during the early stages of construction. However, conditions and circumstances may dictate that some will occur in later in the construction programme and so options for phasing of these works will be clarified once a contractor has been appointed.

The typical geology of Granton Harbour consists of soft alluvial silts overlying stiff glacial till which overlies bedrock comprising inter-bedded strata of sandstone and mudstone (Arup, 2015).

Sediment sampling was undertaken in November 2017 and discussions have been ongoing with Marine Scotland since this time regarding the various options available due to the presence of some contaminants of concern in exceedance of Revised Action Level 2. Sediments sampled within the proposed dredge area are reported as primarily silt.

With reference to the Granton Harbour Dredging 2018; *Best Practicable Environmental Option Report* (EnviroCentre Document Number 8192 (June 2018)), dredging will be undertaken within the western harbour to facilitate the development of the proposed marina.

### 4.2 Summary of work method

It is expected that dredging would be undertaken up to XX hours per day (XX-hour operations with XX hours down time per day). Stoppages in dredging may occur for dredge maintenance or to assist in the control of the quality of the water at the harbour and/ or designated disposal site(s). This will be agreed once the dredge contractor has been appointed.

### 4.3 Sediment characteristics

Prior to the dredging campaign, the geochemical characteristics of representative samples of the material to be dredged was identified. Multiple contaminants of concern were recorded above Revised Action Level<sup>1</sup> including

- Metals
- PAHs
- PCBs
- Petroleum Hydrocarbons

Mercury was recorded in exceedance of Revised Action Level 2 in multiple locations.

Further review of the information and discussion with a view to segregating the material with exceedances above REV AL2 was undertaken and communicated with Marine Scotland. The key points being that if all material with mercury concentrations >RAL2 are excluded for sea disposal i.e. the material is dredged to a fixed depth of 1.2m the average concentration is 1.06 mg/kg which is also <RAL 2.

On this basis, it was proposed that the upper 1.2m of material would be dredged, excluding a large buffer around VC 8 and VC9 where shallow mercury contamination was also encountered with a view to disposing this material at sea on the basis that sufficient supporting evidence could be provided to justify this in the presence of REV AL1 exceedances. All remaining material would be taken to land for a land based disposal solution.

## 4.4 Chemical Quality Screening of Dredge Material

All data are summarised in the sampling report. The samples with levels of mercury > REV AL2 have been removed from the data set to mimic the proposed segregation during dredging works. All data included within the assessment is summarised in the BPEO, with exceedances summarised below.

### *Revised Action Level 1*

- Up to 18 of 18 samples exceed REV AL1 for metals, PAHs and PCBs

### *BAC*

- Up to 18 of 18 samples exceed for metals, PAHs and PCBs

### *ERL*

- Up to 18 of 18 samples exceed ERL levels where available for metals and PAHs.

### *PEL*

- Up to 18 of 18 samples exceed PEL levels where available for metals and PAHs. 18 samples exceed the PEL for mercury

### *Revised Action Level 2*

- No exceedances of REV AL 2 are recorded where they are available.

## 4.5 Chemical Data at Disposal Site

The sampling data for three of the local disposal sites was provided by Marine Scotland as a means of baseline assessment. Oxcars, Narrow Deep and Bo'ness, the largest disposal site in the area were all included for the assessment. All Data has been assessed as metals do not degrade and historic concentrations are of interest. Total concentrations may have altered over the time, but the data is considered useful for comparative purposes.

Data for all contaminants was not provided for each sample, so the summaries are of the data provided only and the number of data points vary accordingly.

Total PCB concentrations have been compiled by adding the ICES 7 congener concentrations as per the dredge material to enable a like for like comparison. Congeners included are PCB 28, 52, 101, 118, 138 153 and 180.

The Dredge Licence states:

3.3.3 The licensee must ensure that no material from dredge depth below 1.2 metres relative to the pre-dredge seabed level is deposited at sea. In addition, no material from any depth in the area around VC8 & VC9 is permitted to be disposed of at sea.

The licensee must deposit all dredge spoil substances, other than material from the areas listed in condition 3.3.3 in the following areas

1. Oxcars Main (FO044); or
2. Narrow Deep B (FO038)

**Table 4-1: Summary of Exceedances at Disposal Sites**

Site ID	Total No. of Samples	No. of BAC Exceedances	No. of ERL Exceedances	No. of PEL Exceedances	Comments
FO038 – Narrow Deep and Narrow Deep B	68	52	52	29	Exceedances include mercury (29 samples exceed PELs) and various PAH species and 1 sample exceeds PEL for PCBs
FO044 – Oxcars Main	43	42	42	31	All 31 samples which exceed the PEL are for Mercury

In summary, the Narrow Deep B and Oxcars Mains disposal sites have a history of contaminants of concern exceeding the adopted PELs for metals, PAHs species and PCBs.

On average, between 42% and 72% of samples exceed the PEL for mercury. Other contaminants present include PAH species and minor PEL exceedances for PCBs.

## 4.6 Averages

Review of the averaged data for all the data has been undertaken i.e. considering the material as a single volume for disposal. The concentrations of the various contaminants of concern are quite variable, the review of average data against the available adopted assessment criteria are summarised below.

### 4.6.1 Granton Harbour

- The average concentration of mercury in the sediments exceed the PEL for mercury for Granton Harbour.
- Various PAH species average concentrations exceed the PEL for Granton Harbour

### 4.6.2 Disposal Sites

- Narrow Deep B recorded average concentrations of fluorene above the PEL
- Oxcars – recorded average concentrations of fluorene above the PEL

## 4.7 Other Data

Marine Scotland provided sediment quality data also for the Grangemouth (G21-27) site which is dredged on a frequent basis and is understood to constitute a large proportion of all disposed sediments in the Firth of Forth. It is noted that the samples collected share similarities to the Granton sediments (although TBT > Rev AL2 was recorded in one sample). The key point of note is that mercury is recorded above REV AL1 in all samples (and also the PEL in all samples with average mercury concentrations (0.93mg/kg) similar to those recorded in the sediments (0-1.2m) at Granton). These multiple sets of data highlighting widespread elevated mercury would suggest that mercury is a consideration in the entire estuary rather than just Granton Harbour and it either reflects natural baseline levels or anthropogenic inputs from large scale industry into the estuary.

## **4.8 Contaminant Sources**

The contamination within the harbour is considered to be historic, with the worst noted at depth in most instances. PAHs and hydrocarbons are readily attributed to heavy industry, waste oils, with PAHs readily attributed to combustion of organic materials.

The current harbour is considered to have limited local contamination sources barring standard run-off of urban roadways. The harbour will remain open for movement of sediment from within the Firth of Forth and as such it is considered that there is not a suitable means for managing future sediment quality, barring routine maintenance dredging.

## **4.9 Chemical Assessment Conclusions**

While exceedances of REV AL1, BAC, ERL and PEL (where available) values have been recorded for various contaminants of concern in the harbour sediments excluding all samples/depths with levels > Rev AL2.

Additionally, review of the background contaminant levels at three of the potential disposal sites has identified that there are contaminants of concern in exceedance ERL and PELs, and average concentrations of mercury in the historic data sets are recorded above the PEL value for all the sites.

On this basis, it is considered that while many contaminants are recorded above their respective REV AL1 levels within the Granton Harbour sediment identified for sea disposal, the levels at the disposal sites (FO038 & FO044), especially mercury, are very similar in nature, and would suggest an estuary wide mercury issue.

Further consideration of the potential risks associated with the proposed disposal is considered in the following sections.

## **5 EMP ROLES & RESPONSIBILITIES**

The EMP will be updated as appropriate as works progress, or as required,

During dredging, Edinburgh Marina Limited has responsibility for delivering the commitments in the EMP. The dredge contractor is required to provide regular feedback and information to Edinburgh Marina Limited on the progress and success (or otherwise) in delivering all conditions, mitigation and commitments on site.

Edinburgh Marina Limited will regularly monitor works on-site and ensure that all conditions, committed mitigation and identified best practice are delivered in accordance with the EMP.

Edinburgh Marina Limited has the authority to halt any activity where environmental commitments are not being successfully delivered, where legal requirements are being breached or where there is a significant risk to the environment.

Any significant deviations from agreed methods of work will be formally agreed with the relevant parties.

### **5.1 Roles and Specific Environmental Responsibilities**

By defining responsibilities across all levels of the project management team a common goal can be sought, with individuals named to deliver all aspects of the EMP.

Compliance with the EMP is mandatory and shall be adhered to by all personnel employed on the project to achieve a common approach to environmental control.

Example responsibilities for roles are outlined below, and will be refined during the appointment of a contractor.

#### **5.1.1 Contract/Project Manager**

The Contract/Project Manager's specific environmental responsibilities include:

- Demonstrate positive environmental leadership and commitment through actively supporting the initial set-up and sustaining effective environmental management and monitoring measures;
- Ensure adequate provision of competent resources to meet the requirements of the Environmental Management Plan; and
- Ensure all consents and licenses are in place prior to work commencing.

#### **5.1.2 Site Manager / Supervisor**

The Site Manager / Supervisor's specific environmental responsibilities include:

- Ensure EMP are updated as required and implemented.

#### **5.1.3 All Site Personnel**

All personnel working on the project are responsible for the environmental control of their own work and shall perform their duties in accordance with the requirements of this EMP and procedures referenced therein. No deviations are permitted without the written authority of the Project Manager.

All site personnel shall:

- Implement control measures described within the EMP and associated plans; and
- 'Stop the job / activity' if a potential breach of a mitigation or legislation occurs.

#### **5.1.4 Key Contacts**

Edinburgh Marina Limited  
The Old Gunpowder Store,  
Lochinvar Drive,  
Edinburgh,  
EH5 1RY

## 6 ENVIRONMENTAL MANAGEMENT PLAN

### 6.1 Introduction

This Environmental Management Plan (EMP) provides a framework for the environmental management of the dredging and spoil disposal activities undertaken as part of a proposed Edinburgh Marina development. The EMP provides management measures (where relevant) that may apply to on-site activities.

To allow development of the existing harbour, the harbour bed needs to be dredged to the required depth. If a significant change in the duration or nature of the dredging works occurs, the EMP will be reviewed and amended accordingly. The review will include a reassessment of the environmental risks posed by the works. If an increase in risk to the environment is identified, corresponding mitigation and management strategies will be implemented.

### 6.2 Potential Environmental Impacts

#### 6.2.1 Beneficial Use of Spoil

Whenever possible, dredge spoil shall be treated as a resource. At an early stage beneficial uses that may be appropriate for the spoil have been identified. To date, beneficial uses that have been found for spoil in Granton include land reclamation for marina development and raising the level of land. In general, coarse grained sediments are suitable for a wide range of beneficial uses, but fine-grained dredge material may be suitable for lightweight structures that require only weak foundations.

The primary risks associated with dredging of Granton Harbour, disposal of spoil at sea and the potential placement options are as follows:

1. Seabed disturbance including;
  - Physical removal of the substrate and its associated flora and fauna from the dredge site;
  - Smothering of the seabed at the offshore dredge spoil placement site; and
  - Smothering of the seabed within the approved reclamation area.

(Note: These impacts are unavoidable in order to carry out the approved works so are accepted impacts)

2. The suspension of fine sediment in the water column which can form plumes 'down current' of Granton Harbour and the spoil placement areas, and the resulting blanketing and water quality impacts from the settling of sediment in the plume areas;
3. The re-suspension of fine sediment from the offshore disposal site and the potential for blanketing and water quality impacts on sensitive areas;
4. Marine incidents involving vessels, oil/fuel or dredge sediment spills, collisions with large marine fauna, or spillage of material in transit to the disposal site;
5. The possibility of contaminants in some of the sediment to be released at or from the disposal site;
6. Underwater noise associated with dredging and disposal of soil;
7. Dust arising from spoil deposited to land for use within the boundary of the harbour;
8. Odour associated with spoil deposited to land for use within the boundary of the harbour and disposal off-site;
9. Waste arising as a result of the dredging and disposal works;
10. Translocation of marine pests on dredging plant / machinery.

## **6.3 EMP management strategies**

This component of the EMP outlines mitigation strategies for the protection of specific environmental values that may be affected by dredging and disposal of dredged sediment. The extent to which the environmental risks identified in the previous section lead to tangible or observable environmental impacts will depend on the duration of impacting process, the extent of the area effected, the intensity of impacting process, and the resilience of the natural environment to the impacting process

## **6.4 Dredging and Dredge Disposal**

### **6.4.1 Dredging and Dredge Disposal Operations**

The management and coordination of dredging and spoil disposal operations will be in line with regulations and operational procedures developed by Edinburgh Marina Limited to ensure vessel navigation and maritime safety.

### **6.4.2 Marine Mammals**

Works will be carried out in accordance with the Marine Mammal Protection Plan (MMPP). It should be noted that the MMPP is largely construction focused when activities such as piling will be undertaken. Underwater noise associated with dredging should not be a significant issue (based on CEDA Position Paper - 7 November 2011 Underwater Sound in Relation to Dredging).

The following management measures will be implemented to manage risk of impacts to marine mammals from the dredging operations:

### **6.4.3 General Management Measures**

- Prior to commencement of dredging and disposal, designated crew will observe for marine mammals, record sightings and actions to be taken in event of sightings, injury or mortality.
- Site inductions for all vessel crew and awareness programmes covering procedures to be undertaken to minimise disturbance to marine fauna.
- The dredge/disposal vessel(s) will be required to maintain a watch for marine mammals, and if they are spotted, vessels will avoid impacting the fauna (within safe operational constraints of the vessel).
- Any injuries or mortalities of marine mammals will be documented and reported to Marine Scotland.

### **6.4.4 Vessel Strikes (Marine Mammals)**

Normal vessel transit rules ensure vessels follow long established navigation routes into and within The Firth of Forth, together with maintaining low speeds, typically less than 10knots, which is considered to be sufficiently low to enable marine mammals to safely vacate vessel transit routes. Nonetheless, all vessels associated with the dredging and disposal works will follow standard maritime procedures and maintain vigilant lookout for marine mammals within the Firth of Forth and on approach to and travelling within the Firth of Forth.

Should marine mammals approach dredging/ disposal vessels during general transit, the direction of travel and speed should be maintained, with sudden changes in course and speed avoided. These procedures are standard for commercial maritime vessels.

Management measures to minimise the interaction of marine fauna with vessels during dredging and disposal include:

- Vessel crew will undertake site induction training by appropriately trained project personnel.
- Vessel speeds will be under the control of the Vessel Master who will ensure that all vessels operate in a safe manner with due respect to ongoing operations, navigational constraints and environmental considerations.
- The Vessel Master will be advised of environmental matters from on-site environmental staff.
- If a marine mammal is sighted within 300m, a maximum vessel speed of 6 knots will be applied.
- Any incidents or injuries to marine mammals will be documented and reported to Marine Scotland.

## 6.5 Navigation

A Vessel Management and Navigation Plan will be developed once the dredge contractor has been appointed.

The marina footprint will be dredged prior to commencing construction works i.e. quay wall works, extending the north Mole breakwater and marina construction and will be subject to a separate CEMP. It is understood that a backhoe dredger will be used and dredged material will be disposed of at either Oxcars Main (FO044) OR Narrow Deep B (FO038) (as per the dredge licence), or if unsuitable for disposal at sea, either used within the wider marina masterplan area where possible, or transported off site by road to an appropriately licenced disposal facility.

Forth and Tay Navigation must be informed of the intended arrival time and subsequent movements of the vessel of vessels used for the works in accordance with the Forth Ports General Directions published on the website.

Forth Ports reserved the right to assign a pilot to the vessel or vessels should the need arise.

The dredge/disposal vessel must maintain radio contact on VHF Ch71 during the works to ensure safe navigation is preserved.

The following recommendations will be developed further once the dredge contractor has been appointed.

### ***Moving the dredger and barge/rig***

To be handled by a competent vessel and crew at all times, advised to harbour and other traffic and co-ordinated prior to commencement through a single contact.

### ***Obstruction of channel***

- Ensure barge/jackup is on the 'non' channel side of the sheet pile installation if possible.

### ***Foundering of barge in the channel***

- As above and additionally contractor emergency procedures to be in place, dovetailing with harbour emergency procedures;
- Contractor insurance; and
- Best operating practice for the dredge.

### ***Collision with other vessels while engaged in dredging/disposal***

- Navigational and minimum ambient lighting on barge;
- Local Notice to Mariners;
- Publicity in local press for recreational users, who are most likely to be affected.

- Communication issues
- VHF ch12 continuous monitoring; and
- Mobile numbers of single contact point with emergency action responsibility on barge and vice versa with Harbour contacts.

#### ***Support vessels***

- Control of movement by harbour;
- VHF ch12 continuous monitoring; and
- Contractor methods and risk assessed boarding and transfer methods to barge/shore for all weather conditions.

#### ***Wave/wash of passing vessels affecting passenger transfers or barge***

- Pre-planned and co-ordinated movements to lessen risk by contractor.

#### ***Damage to vessels by dredger***

- Lighting or other highlighting of danger areas to be used particularly during darkness;
- Local Notice to Mariners; and
- Publicity in local press for recreational users.

#### ***Contact with vessels passing by the operation of dredging/ disposal***

- Methods and risk assessments to be provided, agreed and adhered to (e.g. barge mounted crane jib extending into navigational channel and the like).
- The dredge operation to be arranged in such a way that encroachment can be made into the navigational channel with minimal disturbance and risk to the dredger and vessels entering and egressing the Harbour.

## **6.6 Water Quality Management**

The objective for water quality is to maintain the quality of water so that existing and potential environmental values are protected.

The generation of a turbid plume is one of the most likely adverse environmental effects associated with dredging operations. The generation of dredge induced turbid plumes generally results from the resuspension of existing fine sedimentary material from the seabed during dredging and mobilisation during disposal.

Turbidity is usually caused by suspended silt particles, dispersed organics and micro-organisms. A lower water temperature increases the amount of sediment that can be transported in suspension due to the viscosity change.

### **6.6.1 Minimise Effects on Water Quality**

The two main effects of dredging on water quality are toxic effects due to release of contaminants and effects on turbidity that may impact light-requiring species. Control of turbidity is usually also the most practical means of limiting the release of contaminants, as most contaminants are adsorbed on particles rather than dissolved.

Potential impacts to water quality include:

- Increased turbidity (NTU) levels-caused by suspended sediments released into the water column during dredging; and
- Mobilisation of potential contaminants through the disturbance of sediments during dredging.

The plumes generated by the Project are expected to be very limited in temporal and spatial extent. This is due to the type of dredging equipment proposed, the short duration, the small volume of material to be dredged, and the composition of the sediments.

The water quality objectives for the Project are to:

- Maintain marine water quality so that existing and potential environmental values are protected;
- Cause no increase in turbidity that creates persistent plumes outside the immediate zone of dredging; and
- Cause no deterioration in water quality from any potential return water discharge.

### **6.6.2 Management Measures**

The Project would not coincide either temporally or spatially with other dredging activities, and the use of silt curtains would prevent many of the potentially adverse impacts. Silt curtains will be used where fine sediments will potentially elevate natural levels of turbidity for an extended period and currents and wave action do not preclude their deployment.

The following management measures will also be in place:

- Trained operators will be used to ensure minimal loss of turbid water from the backhoe dredge;
- Dredging is to be undertaken from well maintained and inspected vessels which are free from structural defects and potential sources of leakages;
- A silt curtain will be used to screen each dredging area, prior to dredging, to prevent suspended sediments from being transported away from the site and contain the majority of the re-suspended sediment. This should minimise the amount of sediment which could escape into the Firth of Forth. This is a flexible screen that is placed vertically around the area to be dredged, from the seabed to above the surface. It would remain in place for a further period of time after the dredging of the cell had been completed and suspended solids adjudged to be below harmful levels;
- Well-maintained barges will be used for transport of dredged material;
- The backhoe dredge should be fitted with a suitably accurate positioning system, that ensures reasonable accuracy of dredging both horizontally and vertically;
- Material placed on shore should be suitably banded and managed to prevent the direct discharge of turbid return water and/or run-off back into the harbour or the Firth of Forth.

### **6.6.3 Monitoring**

Because of the nature and duration of the dredging proposed direct monitoring of water quality has not been recommended for the dredging program. There are no sensitive receptors adjacent to the dredge footprint; however the dredge plume should be monitored visually on a daily basis to confirm that the plume is not spreading outside Granton Harbour.

These observations will be undertaken from an elevated location and will include information on the plume extent (e.g. estimated distance in metres from dredging site), plume direction and prevailing conditions (e.g. wind, tide, swell) and any other notable visual characteristics of the plume or dredging activity.

If turbidity is more extensive or persistent than anticipated, additional monitoring will be undertaken to determine the plume extent. If exceedance of turbidity levels is attributable to the dredging, Edinburgh Marina Limited would liaise directly with the dredging contractor to determine:

- (1) Which part of the process is likely responsible for the exceedance, and;
- (2) What can be done in the context of the operating environment on the day to change this factor.

The hierarchy of controls would be:

- a) Modify dredging operations;
- b) Modify loading operations;
- c) Modify dredging cycle;

#### **6.6.4 Reporting**

A daily log of observations of the plume will be maintained and provided to Edinburgh Marina Limited on demand and at the conclusion of the dredging works.

### **6.7 Hydrocarbons**

#### **6.7.1 Potential impacts**

The potential exists for hydrocarbon spills and leaks from equipment during implementation of the Project.

The objectives for the Project in relation to hydrocarbons are to:

- Cause no significant hydrocarbon spills;
- Ensure all spills are responded to them in a timely manner; and
- Ensure no deterioration in local marine water quality occurs as a result of the use of hydrocarbons associated with the dredging activities.

#### **6.7.2 Management measures**

The following management measures will be put in place:

- All hydrocarbon spills to the marine environment (regardless of volume) will be reported to Edinburgh Marina Limited. This will set in motion Edinburgh Marina Limited 's process for marine oil pollution response and official communication protocol;
- The dredge contractor will maintain an oil spill response capability commensurate with its risk of oil spill;
- Relevant staff will be trained to use oil spill response equipment;
- A Risk Assessment will be performed before refuelling activities (if required); and
- Oily wastes will be segregated from general wastes and removed from the site in an approved manner.

#### **6.7.3 Monitoring**

Refuelling activities will be continuously monitored to ensure no leak or spillage of hydrocarbons.

#### **6.7.4 Reporting**

All hydrocarbon spills to the marine environment (regardless of volume) will be reported to Edinburgh Marina Limited.

### **6.8 Spill Response**

The Principal contractor will be required to confirm Emergency Response Procedures, via training prior to the commencement of works and for this reason environmental risk associated with spill response and emergency procedures is low.

The Contractors vessels shall be equipped with suitable spill kits and will be operated in accordance with the Maritime Safety.

All refuelling is to be done by licensed fuel suppliers in accordance with their Standard Operating Procedures.

Refuelling will take place at wharves suited to tanker access. In the event that it is necessary for the contractor to refuel vessels or plant in the works area operations will be in accordance with industry standards.

Maintain an Emergency Contact List with an up to date copy retained.

Minimise the stored volumes of fuel, lubricants and oil in discrete containers on board vessels. When required they will be stored in a secure area and any spills will be cleaned immediately. Any visible or reasonably suspected fuel, lubricant or hydraulic fluid loss will be treated as an 'incident' and handled in accordance with Section 6.

Vessel crew are to regularly check equipment for evidence of leaks and fitness of hydraulic hoses and seals, and conduct maintenance or repairs as necessary to prevent drips, leaks or likely equipment failures. Inspections of the dredge, pipelines, pump(s) are to be undertaken daily to meet this requirement.

For minor spills, provide spill kit including; bilge socks, heavy duty absorbent polypropylene pads, floating booms and blowback refuelling collars on vessels for use in the event a substance is spilled either on deck or to waters to handle a spill of up to 160 litres.

For major spills, undertake actions as specified in the approved vessels Oil Pollution Emergency Plan

A register of Materials Safety Data Sheets (MSDS) relating to all hazardous substances on board, will be maintained

Daily Visual Monitoring of the reclamation walls are to be undertaken and any concerns to be reported to TMR and Council to instigate management actions.

In the unlikely event a structural failure of the reclamation area occurs placement works are to immediately cease, immediate actions are to be taken to minimise impacts outside the approved the works and the incident is to be reported to Edinburgh Marina Limited, so that remediate actions can be instigated.

In the event of a spill, the spill source will be immediately isolated, stopped and contained

#### **6.8.1 Monitoring and reporting**

The contractor will undertake audits which include:

- ensuring that emergency response plans and equipment and materials are available, working an unobstructed ensuring firefighting equipment has been serviced when required

- updating the emergency response contacts list when required
- hazardous materials are appropriately stored
- MSDS are appropriate to the material stored.

Daily visual inspections of the reclamation are undertaken. If emergency response procedures are initiated, or any spills of hazardous materials occur, the action will be regarded as an incident and reported as described in [Section 7: Pollution Prevention and Emergency Response](#). Equipment that uses fuel, lubricants, and/or hydraulic fluid, will be inspected during scheduled maintenance for the condition of hoses, valves, seals and reservoirs. Storage areas, containers, transfer hoses and valves for fuel/lubricants/hydraulic fluids will be inspected during maintenance.

## 6.9 Noise/Vibration

### 6.9.1 Marine Mammals

Underwater noise associated with dredging should not be a significant issue (based on *CEDA Position Paper - 7 November 2011 Underwater Sound in Relation to Dredging*). The noise levels are of a level that could result in a disturbance/behavioural response by marine mammals. However, given the fact that the harbour area is used very infrequently by marine mammals and in low numbers and the fact that the dredging activity is infrequent and short in duration, the risk to marine mammals during the dredging operations is considered insignificant.

The majority of energy generated through vessel movements is below 1kHz and full dredging can generate higher levels of broadband noise up to 200kHz (Robinson et al. 2011). The source level for both activities is predominantly between 160 and 180kHz (re: 1µPa). Functional frequencies of marine mammals is outlined below:

- Most toothed whales and dolphins (Bottlenose Dolphin): Mid frequency - 150-160kHz
- Certain toothed whales and porpoises (Harbour Porpoise): High frequency - 200Hz to 180kHz
- Pinnipeds (Grey and Harbour seals) in water: 75Hz to 75kHz
- Pinnipeds (Grey and Harbour seals) in air: 75Hz to 30kHz

The following mitigation measures have been developed to Manage the Risk to Marine Mammals from Man-made Sound Sources in the Firth of Forth:

### 6.9.2 Dredging Operations

- Selecting inherently quiet plant;
- Vessel crew will undergo site inductions and clear briefings covering procedures to be undertaken to minimise disturbance to marine fauna provided by appropriately qualified personnel;
- Existing acoustic controls on noise-generating equipment will be implemented to reduce noise at source;
- Where practical the practice of leaving engines, thrusters and auxiliary plant on standby or running mode will be avoided;
- Daily review of records and compliance will be undertaken (i.e. marine fauna observations undertaken, dredge logs etc.);
- A log of all visual observations of marine mammals will be maintained by the dredging contractor and available to MS on request.
- All operational shut down events shall be immediately communicated to Edinburgh Marina Limited; and
- Incidents (including breaches of this management strategy or marine fauna procedure) to be reported immediately to the Project Manager and Environment Manager.

## 6.10 Dust Control

Control procedures will be implemented to avoid as far as is reasonably practicable the emission of dust and other particulates that would adversely affect air quality to ensure there is no significant deterioration of current air quality as a result of the works

Dust has the potential to migrate from the site and cause a nuisance to surrounding areas. During dry and windy weather conditions, the potential for dust to migrate from the site increases.

Dust control procedures will be implemented to avoid as far as is reasonably practicable the emission of dust and other particulates that would adversely affect air quality to ensure there is no significant deterioration of current air quality as a result of the works.

Dust has the potential to migrate from the site and cause a nuisance to surrounding areas. During dry and windy weather conditions, the potential for dust to migrate from the site increases.

Site operations with the potential to generate dust are as follows:

- General Site Works (including site/compound layout and management);
- Haul routes, plant and vehicle movement;
- Transportation, storage and handling of materials; and  
Excavation, infilling and earthworks activities.

### 6.10.1 Control Measures

Dust levels on the site will be monitored on a regular basis by the principal contractor taking into account the guidance provided below:

- The Contractor will appoint a person responsible for monitoring dust levels throughout the duration of the works;
- The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary in advance of any works commencing;
- The appointed person (or appointed deputy during holiday periods etc.) will be contactable 24 hours per day, 7 days per week throughout the duration of the works;
- Staff will be trained in the control of dust and will ensure the site is monitored for levels of surface dust. Should dust build up this will be damped down with hosepipes;
- During normal site working hours, dust monitoring will consist of regular visual checks by the appointed person(s). Details of such checks will be documented in a monitoring schedule with details such as date, time, location, weather conditions and observations recorded;
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in the log book;
- The appointed person(s) will be supported by employees throughout the site who will report any problems with dust levels in their area to the appointed person(s);
- The weather forecast will be checked by the appointed person(s) prior to the end of each working day;
- If it is deemed that dust is likely to arise from any particular works when combined with actual/forecast weather conditions, the affected area will be controlled with a suitable measure to prevent dust becoming airborne;
- If dry and windy weather is expected over the duration which the site is closed, then measures, dependent on the type of activity in progress will be implemented as far as reasonably possible so that these weather conditions do not lead to high levels of dust/debris becoming airborne until the next working day;

- Where hard surfaced roads are constructed the roads will be regularly swept to prevent a build-up of dust and debris; and
- Traffic speed on site will be monitored to prevent the generation of dust, not exceeding the site speed limit.

### **Dust Complaints**

Any dust complaints that are received or issues relating to dust resulting from operations will be directed to the above noted individual.

Monitoring will undertake when justified nuisance complaints have been identified at residential properties and when method statements indicates adverse (dust) effects due to dredging works and stockpiling being undertaken within close proximity at occupied residential properties

The site manager will investigate the source of the complaint / abnormal activity and implement mitigation measures (if required) as soon as practicably possible.

The source and nature of the complaint including the mitigation measures implemented (if undertaken) will be documented in an incident register.

**NAME**..... will investigate the source of the complaint / abnormal activity and implement mitigation measures (if required) as soon as practicably possible.

## **6.11 Control of Odour**

Odour from anaerobic sediments containing hydrogen sulphide from dredging is rarely more than a temporary problem. Typically, when dredging channels discharged sediment is initially anaerobic. When first discharged it may smell, but the smell is lost within a few days of its exposure to air. Before discharging sediment, Edinburgh Marina Limited shall ensure that residents in the immediate vicinity are aware of the proposed dredging and assured that any smell will be lost with a few days exposure to air. This should be done by notices placed near the discharge point and at the most public vantage point.

### **Monitoring**

- Vessels and equipment will be maintained in good working order to minimise air emissions.
- Regular maintenance of dredging equipment will be scheduled and carried out by the Contractor.
- Vehicles, vessels and equipment, including generators, will be turned off when not in use.
- The Contractor will carry out regular visual monitoring to identify equipment producing excessive visible emissions.

Where adverse odours are identified, the Contractor, in collaboration with Edinburgh Marina Limited, will:

- Identify prevailing wind direction and strength and the potential for odours to reach sensitive receptors;
- In exceptional circumstances, limit the rate of dredging to reduce the odour emissions.
- Where odour complaints received, the contractor in collaboration with Edinburgh Marina Limited, will investigate the cause of odours and implement appropriate management actions to reduce odours associated with dredging where practicable.

**NAME**..... will investigate odour complaints and implement mitigation measures (if required) as soon as practicably possible.

## Reporting

- The Contractor will notify Edinburgh Marina Limited of any adverse odours identified during dredging.\*
- Log books will be maintained to record instances where adverse odours are apparent, and what corrective action as taken.\*
- The dates and outcomes of visual emissions monitoring will be reported by the Contractor to Edinburgh Marina Limited fortnightly.

## 6.12 Non Native Species

Edinburgh Marina Limited will act in accordance with The Code of Practice on Non-Native Species (approved by the Scottish Government in 2012 and made under 14C of the Wildlife and Countryside Act 1981). This will include undertaking risk assessments relevant to all scheduled activities to minimise the risk of introducing marine non-native species into the adjacent waterbodies.

Should marine non-native species be identified on site, these sightings should be reported to the relevant authority. Should marine non-native species be identified on site, these sightings should be reported to the relevant authority. Useful contacts are listed below:

- Marine Scotland: [marinescotland@scotland.gsi.gov.uk](mailto:marinescotland@scotland.gsi.gov.uk)
- Scottish Natural Heritage (SNH): [info@sears.scotland.gov.uk](mailto:info@sears.scotland.gov.uk)

Vessels used during the construction phase of the project e.g. dredge and hopper barges, may be mobilised from waters having the potential to introduce marine species from other locations.

Marine pests are often introduced either by release of ballast water in water adjacent to the port, or from biofouling species that become attached to the hulls of vessels or released from niche spaces such as sea chests and intakes.

Potential environmental impacts that may occur as a result of the introduction of marine organisms include the following:

- Establishment of non-indigenous marine pest species;
- Competition for food and space with native species;
- Removal of native species;
- Predation of native species; and
- Introduction of associated pests and disease.

The environmental objective for introduced marine organisms is to minimise the risk of marine pest species introduction, establishment and spread into and within Scottish waters as a result of dredging activities.

The objective for the Project in relation to introduced marine organisms is to:

- Prevent the introduction of introduced marine organisms from dredging operations; and
- Remove any visible plant, fish, animal matter and mud from the vessel, in particular the hulls should be cleaned regularly.
- Safely dispose of any plant and animal material removed from the vessel.
- Provide toolbox talks and posters to aid identification of non-native species. These will aid on the management and control of marine non-native species.
- Ideally, all equipment and vessels required will be from within biogeographic regions where possible, and have undergone the necessary inspections prior to arriving on site.

- Implement appropriate management measures where known or suspected introduced marine organisms are detected during vessel inspections or during dredging operations.

### **6.12.1 Management Measures**

Prior to the dredge mobilising to site, An appropriate risk assessment (supported by relevant documentation) of the dredge, associated equipment and vessels should be undertaken to demonstrate, to the satisfaction of Marine Scotland, that the vessels and associated equipment present a low risk in terms of the introduction of non-indigenous marine organisms e.g. in sediment, as biofouling (or in ballast water).

### **6.12.2 Reporting**

Documentation demonstrating compliance with the above will be provided to Edinburgh Marina Limited before the arrival of vessels to site.

## **6.13 Waste Management**

The Site Waste Management Plan (SWMP) will be completed and maintained on site by the EMP Manager. It should be made available to all personnel on site as appropriate. The SWMP data sheet template to be used can be found in Appendix B

Waste may arise from either materials imported to site or from those generated on site. Waste generated by site activity will be segregated by type into separate skips in a secure dedicated area. Waste will be removed from site by a licensed contractor to a licensed waste transfer station where they will be further segregated and a report on waste types and recycling achieved sent to the contractor.

### **6.13.1 On vessels, allocate areas for solid and liquid waste storage.**

Waste will not be stored outside these areas. Any waste fuels, oils or other chemicals shall be collected in separate drums and transported to an approved facility for disposal.

Waste will be removed from vessels and disposed of at an approved facility.

Housekeeping procedures, including spillage control, will be implemented to minimise the generation of waste.

All waste awaiting disposal will be stored appropriately

### **6.13.2 Training and Awareness Raising**

The Principal Contractor will provide on-site instruction of appropriate separation, handling, recycling, reuse and return methods to be used by all parties' at all appropriate stages of the Project. Toolbox talks will be carried out every month on waste issues and all sub-contractors will be expected to attend. The SWMP will also be mentioned in the site induction process. This will ensure that everyone feels they are included and that their participation is meaningful.

### **6.13.3 Duty of Care**

Section 34 of the Environmental Protection Act 1990 (as amended) places a legal duty of care on all those who produce, keep or manage controlled waste, including waste carrier and brokers. The act introduces a system of

monitoring, control and recording of the management of waste en-route and at its destination. This duty has no limit and extends until the waste has either been finally disposed of or fully recovered.

A log will be maintained of all materials that come on to site, and details will be obtained from the waste disposal company of the exact amount of waste materials removed from site. Details will also be provided outlining the recovery/disposal actions for the specific waste streams. Waste receptacles will be monitored by the Principal Contractor to ensure that contamination has not occurred, results will be recorded. The Principal Contractor will continually review the type of surplus materials being produced and change the site set up to maximise reuse or recycling and the use of landfill will be the last option. The Principal Contractor will also visit any waste transfer facility to ensure effective discharge of 'Duty of Care'.

To comply with the Duty of Care, the following shall be undertaken:

- Apply the waste hierarchy to the management of waste and promote 'high quality' recycling.
- Present glass, metal, plastic, paper and card (including cardboard) for separate collection.
- Take steps to maintain the quality of dry recyclables presented for separate collection.
- Take care of the waste to prevent escape.
- Ensure waste is transferred to someone who is authorised to receive it, for example, a registered waste carrier or waste manager with the relevant authorisation.
- Complete a waste transfer note for any transfer of waste, including a full description of the waste, and retain a copy of this note for two years.
- Describe the waste accurately and provide information for the safe handling, transport, treatment, recovery or disposal by subsequent holders.
- Take reasonable measures to ensure that the waste does not cause pollution or harm to human health.

#### **6.13.4 Waste Transfer**

Waste shall only be transferred to licensed waste disposal contractors.

A Waste Transfer Note (WTN) must be completed and signed by both the person handing over the waste and the person receiving it. The WTN must contain enough information about the waste for it to be handled safely and either recovered or disposed of legally. The WTN must include:

- a description of the waste
- any processes the waste has been through
- how the waste is contained or packaged
- the quantity of the waste
- the place, date and time of transfer
- the name and address of both parties
- details of the permit, licence or exemption of the person receiving the waste
- the appropriate European Waste Catalogue (EWC) code (SEPA: Consolidated version of the EWC)
- the Standard Industry Code (SIC) of the business (Companies House: Guide to SIC 2007)

All movements of special waste must be accompanied by a Special Waste Consignment Note (SWCN). Copies of SWCN must be retained for three years.

#### **6.13.5 Inert & Non-Hazardous Materials – Storage & Segregation**

Inert materials and waste will be stored within the construction compound with the provision for small temporary storage of materials across the wider development site dependent on working needs.

The materials storage area within the main compound will be split into two main designated areas; for the delivery and storage of new materials; and for the storage and collection of waste materials. Further segregation of materials within both designated areas will be carried out to prevent cross-contamination.

#### **6.13.6 Hazardous Materials & Special Waste – Oil Storage**

All oil, fuel and chemical storage, chemical mixing, fuel deliveries, re-fuelling operations and machinery maintenance tasks will be confined to the main compound.

Any diesel, petrol and lubricating oils required during this phase shall be stored in double bunded tanks (bunded to 110% capacity) within the compound. Waste oils and oily rags will be stored in appropriate sealed containers in a secure bunded area and will be collected by an authorised contractor for recovery and/or disposal.

#### **6.13.7 Hazardous Materials & Special Waste – Liquid Waste**

Any run-off from the bunded storage area within the compound, and wastewater from machinery wash down will drain to foul sewer or to an appropriate water treatment and recycling system, either a combination of an oil/water separate and a dedicated reed bed or a mechanised cleansing unit.

Sewage waste from the compound will be either discharged to foul sewer where practical, or stored in sealed tanks and collected for appropriate disposal by a registered contractor.

#### **6.13.8 Potential Waste Streams & Management**

The types of waste likely to be generated could include unused and contaminated dredge material materials, waste packaging materials, oils, vegetation etc. Each waste type will be classified as inert waste, non-hazardous waste or hazardous waste according to listings from the European Waste Catalogue and Special Waste Amendment (Scotland) Regulations (2005).

Each waste stream will be managed safely and legally, through a combination of re-use (on site or off-site), recycling or disposal. Note that more than one management option may apply waste stream, depending on the quantities and quality of the waste produced.

The waste management options available to contractors are:

Solid Waste –

- 1 Return unused waste materials (including packaging where possible) to the supplier for re-use;
- 2 Re-use on site during construction;
- 3 Stockpile for future use;
- 4 Recycling off-site;
- 5 Incineration (with or without energy recovery); and
- 6 Disposal to landfill (as the final option)

Liquid Waste –

- Recycling and re-use on site (using an appropriate wastewater treatment system);
- Discharge to foul sewer; and
- Collection by a licensed contractor for disposal off-site.

### **6.13.9 Responsibilities**

Edinburgh Marina Limited expects all Contractors/ Subcontractors to participate fully in waste minimisation and waste management initiatives implemented by the site including any segregation and recycling activities.

Waste containers (bins and skips) are impermeable and will prevent liquid wastes leaching. Sufficient space on site has been allocated for waste storage and segregation. Waste containers are clearly labelled for different waste types to aid in segregation, and are checked regularly. Separate facilities are provided for hazardous or special waste.

### **6.13.10 Monitoring and reporting**

A record/manifest will be maintained for general and regulated waste disposal. The manifest shall record the type of waste, and the point and date of disposal.

### **6.13.11 Waste Performance Monitoring & Reporting**

Monthly waste reports will be produced.

## **7 POLLUTION PREVENTION AND EMERGENCY RESPONSE**

### **7.1 General Arrangements**

The main priority is to avoid spillages and emergency situations. This will be achieved through minimising the risk of spillage at source through avoiding the use of polluting materials where possible. Where the use of polluting materials is unavoidable, then suitable containment in a sensible location is essential.

#### **7.1.1 Responsibilities**

All persons working for or on behalf of Edinburgh Marina Limited have responsibilities to ensure they are aware or have been made aware of the processes and equipment in place to deal with emergency incident.

### **7.2 General Incidents**

#### **7.2.1 Emergency Procedures**

Emergency procedures in the event of fire, accident, contact with live services, dangerous occurrence or a significant environmental incident will be displayed throughout the site facilities.

Where an environmental incident occurs competent personnel should firstly assess and where appropriate, deal with the incident. Where the nature or scale of the environmental incident is outside the capability of the competent person/s they shall notify without delay, Edinburgh Marina Limited who will contact an appropriate environmental incident containment organisation to deal with the incident and mitigate any impact to the environment.

All persons working for or on behalf of Edinburgh Marina Limited have a responsibility to report the occurrence of any environmental incident regardless of magnitude to their superior.

Edinburgh Marina Limited have the responsibility to ensure environmental incidents are reported through the appropriate incident review process and where applicable oversee the implementation of improvement actions, both immediate and preventative.

Edinburgh Marina Limited have the responsibility to, where appropriate, notify the relevant agency or organisation of the occurrence of an environmental incident should this be required.

The Management representative(s) or nominated person(s) are responsible for reviewing environmental incidents and ensuring the appropriate correction and corrective actions have been conducted and relevant preventative actions have been implemented.

A site-specific Emergency Response Plan will be developed by the contractor, and will detail the response to any environmental incidents on site. The Emergency Response Plan shall, as a minimum, include:

- A Site Plan showing:
  - layout and access details;
  - access routes and meeting points for emergency services;
  - areas used to store raw materials, products and wastes; and
  - location of hydrants, 'fireboxes' and pollution prevention equipment and materials.

### **7.2.2 Planning & Prevention**

Risk assessments are routinely conducted for all Edinburgh Marina Limited activities and contain an assessment of the potential of an activity, process or substance to cause an incident.

Where the risk is considered small or insignificant actions are identified within the assessment.

Where the potential for a medium, large or significant risk is identified the appropriate operational controls may be implemented to ensure risks are minimised or eliminated and if and when an incident occurs, response actions are known and effective.

### **7.2.3 Routine Testing**

Where practicable the contract/site shall conduct periodic testing of applicable emergency preparedness and response procedures. Where testing is conducted the results of the test and any improvement actions will be recorded.

### **7.2.4 Response Equipment**

The most likely source of environmental incident is spillage of liquids and substances either accidentally or during handling or transfer.

Prior to attempting to tackle any environmental incident personal safety is paramount. The use of correct Personal Protective Equipment (PPE) may prevent an incident becoming even more serious with response personnel sustaining injury. When considering whether to tackle an environmental incident even with the use of PPE if exposure is likely to cause injury the job is best left to the experts. PPE used for this purpose should be located near to spill and containment equipment, and should be confirmed as being suitable for the hazard.

Suggested PPE includes:

1. Coverall overalls or aprons
2. Wellington boots or safety shoes
3. Rubber or nitrile gauntlets or gloves
4. Respiratory protective equipment (note that this must be face fit tested)
5. Head protection (may be required if working in a restricted space)

For small liquid spillages of substance releases containment can be effective by the placement of spill or release containment equipment local to the potential sources of an incident which can effectively be cleaned up preventing any environmental risk.

For larger spills or releases, containment equipment should be sufficient to prevent spills or releases contaminating the environment and provide an additional time break to conduct an effective clean-up operation, with or without the help of specialists.

The provision of spill or release containment equipment should be appropriate to the potential hazard.

### **7.2.5 Dealing with Spills**

The precise contents and capacity of the spill kits will depend on the detailed inventory of products that will be stored and handled on site, however they are likely to contain:

- Absorbent mats;

- Drain covers;
- Gloves;
- Floating “booms” or “sausages”;
- Knives;
- Oil-absorbent granules;
- Polythene sheeting and bags;
- Shovels; and
- String.

The spill kits will be clearly marked, sign-posted and held close to the area where materials are stored and handled.

Spill or release containment equipment provided for emergency response purposes should:

- Not be used for routine operations. Daily equipment or materials should be provided for these purposes.
- Have its location identified on site plans.
- Be readily accessible.
- Be appropriate to the potential hazard i.e. chemical or oil specific.
- Have its inventory logged, periodically checked and any used equipment replaced.
- Be replaced if used for an emergency situation.
- Be disposed of in accordance with relevant legislation if contaminated (hazardous/special waste).

Spill kits should ideally contain:

**Oil** specific spill kits should be suitable to absorb hydrocarbons but repel water and contain: absorbent pads, socks and cushions, plugging compound and disposal bags and ties.

**Chemical** specific spill kits should absorb acids and caustics and should be used when unsure of the spilt liquid and contain: absorbent pads or roll, socks, cushions, plugging compound and disposal bags and ties.

The provision of drain covers should be considered especially where spills could enter the water system.

A number of specialist spill contractors will be identified that can be called upon should there be a requirement to control a major spill.

### 7.2.6 Spill Management

In the event a spill occurs the following actions will be taken:

- When a spill occurs Edinburgh Marina Limited will be informed immediately;
- In dealing with the spillage the personal safety of the site-workers and the general public will not be compromised;
- Where required to stop or contain the spillage, work will be halted;
- The cause of the spillage will be stopped;
- The spill will be contained. Particularly pathways to any drains and water courses will be blocked as soon as possible; and
- The spilled materials will be removed and disposed of in accordance with the relevant waste regulations.

In the event of major or complicated spills, the following additional actions will be taken:

- Edinburgh Marina Limited will assess the incident and if appropriate request a specialist spill contractor to attend the site.

After an incident all waste generated by clean-up activities will be disposed of in accordance with current legislative requirements and the site waste management plan and copies of all transfer notes retained.

### **7.2.7 Fire**

Health and Safety procedures and processes shall be established to minimise the risk of, and the appropriate management of a fire emergency. Consideration shall be given to the appropriate management of any subsequent fire water (the run-off generated from firefighting activities), such as temporary storage on-site.

This water should be considered contaminated and it has the potential to cause pollution. In developing strategies for dealing with a fire emergency, consideration shall be given to minimising the risk to the environment associated with fire water. The guidance on the control of fire water detailed in SEPA's PPG18: Managing Fire Water and Major Spillages shall be followed as appropriate.

### **7.2.8 Incident Reporting**

If during the course of site staff duties an Environmental / Health and Safety incident is noted, then the incident will be reported, immediately to Edinburgh Marina Limited.

Edinburgh Marina Limited shall co-ordinate any actions that are required to make the area safe or limit environmental impacts resulting from the incident.

In the event of a potential harmful or polluting incident, spillage or discharge, the actions listed below will be followed to notify SEPA of the occurrence:

- Should an incident occur, Edinburgh Marina Limited shall inform the regulator of the occurrence of an Environmental incident at the site as soon as practicably possible following notification of the incident.
- Edinburgh Marina Limited will notify the Regulators in writing the next working day after the incident, detailing the time nature of the incident; and
- Edinburgh Marina Limited will investigate the incident and notify the Regulators of the outcome within 14 days of the incident.

### **7.2.9 Emergency Response Training**

Relevant site personnel shall be trained in the use of pollution control equipment.

## **7.3 Incident/Emergency Response Plans**

An incident response plan will be prepared in line with the provisions of Guidance for Pollution Prevention (GPP) 21: Pollution Incident Response. This will be completed, reviewed and updated by Edinburgh Marina Limited and contractor. The Plans will be affixed to the EMP as an appendix once they have been prepared.

## **7.4 Emergency Contacts**

In the event of an emergency occurring in or adjacent to the site, contact the emergency services including Police Scotland, Scottish Ambulance Service, HM Coastguard and Scottish Fire & Rescue Service on: 999 or HM Coastguard on VHF Channel 16 (International Distress, Safety and Calling Channel).

In addition to the foregoing, the marina operator is committed to complying with the Port Marine Safety Code and 2018 Guide to Good Practice on Port Marine Operations.

**Table 7-1: Emergency Contact Information**

Name	Contact Details
<b>HM Coastguard</b>	999 or VHF Channel 16
<b>Police Scotland</b>	999
<b>Scottish Fire &amp; Rescue Services</b>	999
<b>Scottish Ambulance Service</b>	999
<b>Health &amp; Safety Executive</b>	0345 300 9923
<p><b>Marine Scotland</b></p> <p>The Marine Scotland Duty Officer is not a replacement for contacting the usual Emergency Services (Fire, Police, Ambulance and Coastguard) where these are required</p>	<p>0300 244 4000 and ask for the Marine Scotland Duty Officer.</p> <p><a href="mailto:MS.SpillResponse@gov.scot">MS.SpillResponse@gov.scot</a> or <a href="mailto:spillresponse@marlab.ac.uk">spillresponse@marlab.ac.uk</a>.</p> <p>A marine emergency includes oil and or chemical pollution incidents from shipping and offshore installations (and the application of chemical dispersants and deployment of containment equipment) and marine mammal strandings.</p>
<p><b>Forth Ports</b></p> <p>Group Health, Safety &amp; Environment Manager</p>	01324 668400

## 8 ENVIRONMENTAL COMMUNICATION

An Environmental Communication and Training plan will be developed by the contractor to ensure all staff employed in the execution of the works fully understand all environmental requirements and are properly equipped to implement these requirements.

The contractor should provide reports as required to Edinburgh Marina Limited confirming the status of the project, implementation of environmental requirements, environmental audits, monitoring and any environmental incidents. The structure of these reports should be included in the environmental communication and training plan.

Edinburgh Marina Limited will act as the primary contact with all statutory bodies.

All site staff (of all levels) must adhere to the EMP, and receive an induction and toolbox talk prior to the commencement of works on site. The toolbox talk may be given by the EMP Manager or their deputy.

Environmental sensitivities and policy may also be effectively communicated, where appropriate, through posters on site, information literature (leaflets, cards), video, and digital or online applications. Any environmental communications on environmental compliance or pollution prevention measures must be delivered face to face by the EMP Manager or their deputy,

### **EMP Manager.**

The EMP Manager or deputy will be responsible for issuing monthly reports to Edinburgh Marina Limited, which should include, but not be limited to:

- Details of any non-compliance identified on site;
- Monitoring information relating to the significant environmental aspects on site;
- Preventative action reports; and
- External environmental communication reports.

The Environmental Communication and Training Plan will provide the details of key individuals working on site, their job roles and contact details. This document will also clarify the communication channels that should be followed by all site staff, including who has responsibility for informing other parties on site, and how to respond in the event of an environmental incident.

For Third Party persons or groups affected by the environmental performance of Edinburgh Marina Limited; the site; or site staff, all communication will be recorded by the Environmental Manager or Site Manager, including the date of correspondence, the actions required, any non-compliance report, or non-compliance event, and whether there was any deviation from the Environmental Policy. Any serious or sustained breach of Environmental Policy may result in a fine, claim or sanction, and be communicated to Edinburgh Marina Limited with immediate effect.

## 9 AUDITING AND MONITORING

Environmental monitoring and auditing is an essential tool to ensure all project environmental requirements are fully implemented and environmental performance is continually improved.

The contractor must provide a contract specific audit and monitoring plan covering the following:

- The contractor's own Environmental Management System;
- The EMP, schedule of mitigation register, relevant legislation and industry good practice;
- All project activity;
- Roles and responsibilities for those undertaking audits and monitoring;
- Frequency of inspection activities (i.e. daily, weekly, monthly);
- Process to deal with corrective actions/non-compliance; and
- Reporting procedures (including non-compliance).

Edinburgh Marina Limited shall undertake a planned programme of compliance monitoring to verify the effectiveness of the project's environmental management.

Any Monitoring Plan will follow guidance within the EMP, adhering to all conditions stated in the relevant licences and consents for the site. Data collected during monitoring activities will be analysed by the EMP Manager or their deputy, to obtain information relevant to the environmental performance of the site. This information may then be used to implement corrective and preventative action if required. Any measuring equipment required will be calibrated and verified in line with the manufacturers' standards, or European measurement standards. All monitoring will be overseen by the Environmental Manager or Site Manager, but each specific task will be undertaken by the staff member or contractor named in the EMP, before reporting results of the monitoring activity to the Environmental Manager or Site Manager.

The Environmental Manager or Site Manager must ensure that any schedules or records of actions taken to ensure environmental compliance are kept within a suitable Environmental Management System, and all decisions were made in line with relevant licence and consent conditions and the Environmental Policy.

Non-compliance will be recorded when procedures and protocol stated in the Environmental Policy are not followed, which may include, but not be limited to:

- A failure to carry out the required checks on oil or chemical storage facilities;
- A severe pollution incident due to the failure of a containment facility; or
- A reckless act of disturbance or causing harm to a protected species or nesting bird.

Actions taken to correct a non-compliance will be dependent on the nature of the specific incident. The Environmental Manager or Site Manager has responsibility for making decisions regarding actions to take in the case of a non-compliance, but in the case of a serious incidents, this must be decided in consultation with Edinburgh Marina Limited.

Where a non-compliance relates to a pollution incident, the Incident Response Plan must be followed in the first instance, before additional actions are taken. Preventative actions relate to the measures set out within the EMP for the protection of the environment, environmental receptors, and the prevention of pollution.

Environmental records that may be retained by the Environmental Manager or Site Manager to evidence compliance with the requirements of the Environmental Policy may include, but are not limited to:

- Training records;

- Process monitoring records;
- Inspection, maintenance and calibration records;
- Pertinent contractor and supplier records;
- Incident reports;
- Records of tests for emergency response;
- Audit results;
- Management review results;
- Decisions relating to external communications;
- Records of applicable legal requirements;
- Records of significant environmental aspects;
- Records of environmental meetings;
- Environmental performance information;
- Legal compliance records; and
- Communication with Third Parties.

Internal audits will be conducted by Edinburgh Marina Limited, and will be conducted by personnel who are competent and in a position to conduct the audits impartially and objectively. Regular internal audits of the site will be conducted during the dredging phase.

Any confidential information will be saved or stored in an appropriate manner, away from the public domain. Management reviews will be conducted by Edinburgh Marina Limited, and will assess the suitability and efficiency of the environmental performance of the site staff and the site, including the management of environmental issues and impacts, operational controls, non-compliances and any corrective actions undertaken.

Environmental objectives laid out in the Environmental Policy will be reviewed with the Environmental Manager or Site Manager, in order to ensure these are effectively improving the environmental progress of site, and delivering continual improvement.

## 10 ENVIRONMENTAL AWARENESS TRAINING

The EMPs will only be successful in managing environmental impacts where all those responsible for its implementation and review are thoroughly conversant with its content, interpretation and performance measurement. Edinburgh Marina Limited is committed to providing training and ensuring that the contractual arrangements with the contractor specify the need for adequate training to be provided to all contracted members of the workforce.

Environmental Awareness training will be undertaken to ensure all site personnel have the appropriate knowledge to successfully implement the Dredging Method Statement (DMS), EMP and the environmental requirements of the project.

The training section of the environmental communication and training plan should be developed by the contractor and shall include but not be limited to:

- General induction/awareness training for all site personnel should be provided. This should include waste management, working in or near watercourses, surface water pollution and control, ecology, dust management and noise management;
- COSHH Risk assessment
- Accident and Incident investigation
- Emergency preparedness and response;
- Fire fighting
- Spill control and response
- Weekly sessions to cover specific relevant issues appropriate to the work being undertaken at the time;
- Any specific training requirements for key, identified roles. Specific training for key, identified roles should include any training that will be required to comply with specific commitments/mitigations and general good practice contained within this document; and
- Records of all training required and provided to all employees should be maintained and made available to Edinburgh Marina Limited for inspection.

## 11 REFERENCE DOCUMENTS

Mitigation to avoid and reduce potential environmental impacts due to dredging works have been developed from UK best practice and the following guidance documents:

- Central Dredging Association (CEDA) , CEDA Position Paper 7 November 2011: Underwater Sound in Relation to Dredging;  
Construction Industry Research and Information Association (CIRIA) Coastal and Marine Environmental Site Guide (C584) 2003.
- Scottish Government (2012) Duty of Care - A Code of Practice
- Scottish Government (2013) Guidance on Applying the Waste Hierarchy
- SEPA (2006) Is it waste? Understanding the definition of waste guidance note.
- SEPA (2013) Pollution Prevention Guidelines, PPG1. Understanding Your Environmental Responsibilities - Good Environmental Practices
- SEPA (2017) Guidance for Pollution Prevention, GPP5. Works and maintenance in or near water.
- SEPA (2012) Pollution Prevention Guidelines, PPG6. Working at Construction and Demolition Sites.
- SEPA (2011) Pollution Prevention Guidelines, PPG7. The safe operation of refuelling facilities.
- Joint Nature Conservation Committee (JNCC) (2010) Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise.
- The Highland Council (2010) Construction Environmental Management Process for Large Scale Projects

# APPENDICES

# A SCHEDULE OF MITIGATION

Mitigation Ref.	Mitigation Measure	Location in EMP	Lead
1	Prepare and maintain a Construction Environmental Management Document (CEMD), subject to approval from Marine Scotland.	EMP	Edinburgh Marina Limited
2	Maintain updated schedule of mitigation to include all mitigation proposed in support of the marine licenses.	Schedule of Mitigation (Appendix A)	Edinburgh Marina Limited
3	Appoint an Environmental Clerk of Works (ECoW).	Appoint at the construction stage	Edinburgh Marina Limited
4	Mitigation measures against the introduction of non-native species include: <ul style="list-style-type: none"> <li>Remove any visible plant, fish, animal matter and mud from the vessel, in particular the hulls should be cleaned regularly;</li> <li>Safely dispose of any plant and animal material removed from the vessel;</li> <li>Toolbox talks will be given and posters to aid identification of non-native species will be disseminated to all members of staff involved in the project. These will aid on the management and control of marine non-native species;</li> <li>Ideally, all equipment and vessels required will be from within biogeographic regions where possible, and all have undergone the necessary inspections (and certification) prior to arriving on site; and</li> <li>Should marine non-native species be identified on site, this should be reported to the relevant authority.</li> </ul>	EMP Section 6-12	Edinburgh Marina Limited
5	General Ecological Mitigation Measures: <ol style="list-style-type: none"> <li>An Environmental Clerk of Works (ECoW) will be appointed to ensure delivery of the CEMD;</li> <li>Monitoring of marine mammal activity will be undertaken during dredging; and</li> <li>Any changes to mitigation and habitat enhancement as a result of monitoring activity can be co-ordinated through the ECoW.</li> </ol>	EMP  Appointed EcOW at the construction stage	Edinburgh Marina Limited
6	Prepare a Marine Mammal Protection Plan (MMPP). To be included within the Construction Environmental Management Plan associated with the harbour construction works.	EMP Section 6.4.2	Edinburgh Marina Limited
7	Prepare and implement a Seal Injury Avoidance Scheme ("SIAS")  Mitigation measures identified within the SIAS includes: <ul style="list-style-type: none"> <li>Have a Marine Mammal Observer Present during all dredging and overwater piling activities to ensure that no seals enter the area during the operations; and</li> <li>Develop and implement a Vessel Management Plan.</li> </ul>	EMP Section 6.4.4 Section 6.5	Edinburgh Marina Limited

Mitigation Ref.	Mitigation Measure	Location in EMP	Lead
8	<p>Prepare and implement a Noise and Vibration Plan.</p> <p>Mitigation measures identified within the Noise and Vibration Plan includes:</p> <ul style="list-style-type: none"> <li>• Impose appropriate conditions on the appointed contractor to minimise noise and vibration;</li> <li>• Introduce measures to control noise and vibration during the construction phase;</li> <li>• Use best practice to reduce emissions throughout the dredging period incorporating measures to control noise and vibration;</li> <li>• Adhere to relevant British Standards including, but not limited to, British Standard BS 5228;</li> <li>• Take cognisance of CEDA Position Paper <i>“Underwater Sound In Relation To Dredging”</i></li> </ul>	EMP Section 6.9	Contractor
9	No dredging operations take place during the November to March period.	EMP Table 3-2	Edinburgh Marina Limited
10	<p>Pollution Prevent Plan mitigation measures include:</p> <ol style="list-style-type: none"> <li>a) CEMPs will consider all possible pollution pathways and be in accordance with relevant SEPA PPG and GPP; and</li> <li>b) Regulate use of fires and lights within the harbour and within any vessel within the harbour</li> </ol>	EMP Section 7	Contractor
11	<p>Dust Management:</p> <ul style="list-style-type: none"> <li>• Visually monitor dust generation from work areas to ensure that excessive dust is not being produced;</li> <li>• Maintain all trafficable areas and vehicle manoeuvring areas in or on the premises, in a condition that will minimise the generation, or emission from the premises, of wind blown or traffic generated dust;</li> <li>• If excessive fugitive dust observed, investigate source and implement/increase suppression measures; and</li> <li>• Restrict traffic to defined roads and implement a speed limit.</li> </ul>	EMP Section 6.10	Contractor

Mitigation Ref.	Mitigation Measure	Location in EMP	Lead
12	<p>Waste management:</p> <ul style="list-style-type: none"> <li>• The Contractor will adopt an integrated approach to waste management and minimisation by applying the waste hierarchy;</li> <li>• A list of clearly defined waste responsibilities will be prepared and implemented;</li> <li>• Present glass, metal, plastic, paper and card (including cardboard) for separate collection;</li> <li>• Take steps to maintain the quality of dry recyclables presented for separate collection;</li> <li>• Take care of the waste to prevent escape;</li> <li>• Ensure waste is transferred to someone who is authorised to receive it, for example, a registered waste carrier or waste manager with the relevant authorisation;</li> <li>• Complete a waste transfer note for any transfer of waste, including a full description of the waste, and retain a copy of this note for two years;</li> <li>• Describe the waste accurately and provide information for the safe handling, transport, treatment, recovery or disposal by subsequent holders;</li> <li>• Take reasonable measures to ensure that the waste does not cause pollution or harm to human health;</li> <li>• All movements of special waste must be accompanied by a Special Waste Consignment Note (SWCN). Copies of SCCN must be retained for three years; and</li> <li>• Monthly waste reports must be provided to Edinburgh Marina Limited.</li> </ul>	EMP Section 6.13	Contractor

**B WASTE MANAGEMENT**

**Waste Management Legislative Checks**

Waste Management Legislation Checks							
Section 1: Site Details Waste Licences and Exemptions							
Contact Number:				Project Value:			
Date Completed:				Completed By:			
Section 2: Waste Licences & Exemptions							
Waste Activity Requiring a licence or exemption		Details of Licence / Exemption				Expiry Date	
Section 3: Duty of Care							
Waste Details		Waste Carrier			Disposal Site		
					This may include more than one facility (e.g. transfer station, treatment or deposition facility. Landfill site) for each type of waste. Details of each facility should be provided		
Waste Stream	EWC Code	Contractors Name	Licence No.	Licence Expiry Date	Name of Site	Licence Details	Conditions of Licence Checked
						WML/PPC/Exempt No	Covers the type & quantity of waste involved

**Site Waste Data Sheet**

Site Waste Data Sheet												
Project Name / Address	Edinburgh Marina											
Contract Number					Project Value							
Month Completed					Waste Data Report No.							
Completed By					Position							
Material	EWC Code	Waste Category	Estimate m <sup>3</sup>	Actual (m <sup>3</sup> ) Cumulative	Actual (m <sup>3</sup> ) Monthly	Reused on Site	Reused off Site	Recycled of use on site	Recycled for use off site	Sent to transfer station	Sent to WML exempt site	Disposed to landfill
<b>Totals</b>			<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

**C INCIDENT/EMERGENCY RESPONSE PLANS (TO BE ADDED ONCE  
PRINCIPAL CONTRACTOR HAS BEEN APPOINTED)**