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Redacted
Site Development Manager
Babcock International Group
Rosyth Business Park
Rosyth
Dunfermline
Fife, KY11 2YD

Ecopy: Redacted

30th May 2014

Dear Redacted ,

SCOPING OPINION UNDER PART 3, REGULATION 13 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2007 (AS AMENDED)
BABCOCK INTERNATIONAL (PER JACOBS): ROSYTH INTERNATIONAL CONTAINER TERMINAL DEVELOPMENT, ROSYTH

I refer to your letter dated 17th February 2014 with accompanying Environmental Impact Assessment (EIA) Scoping Report. In the letter you request a Scoping Opinion from Marine Scotland, the Licensing Authority, in accordance with Regulation 13 of The Marine Works (EIA) Regulations 2007 (as amended) (the EIA Regs) with respect to the proposed International Container Terminal at Rosyth.

Background
Port Babcock (Rosyth) Ltd have formally requested a Scoping Opinion from Marine Scotland Licensing Operations Team (MS-LOT) under Section 13 of the Marine Works (Environmental Impact Assessment) (As Amended) Regulations 2007, with respect to the in–estuary works at the proposed Rosyth International Container Terminal (RICT). Marine Scotland understands the works to consist of the following:

The purpose of the development is the creation of an International Container Terminal that will be capable of simultaneously accommodating two container ships with a capacity in the range of 500-2000 Twenty-foot Equivalent Units (TEU). When fully operational, the Port would operate on a 24-hour per day basis. Construction of the terminal is expected to take approximately 24-months.

Article 5(1) of the HRO gives Babcock the power to construct 21 defined works. Principal amongst these is the construction of a berthing pocket capable of accommodating two vessels on the southern part of the RD57 site (utilising part of the existing void), with the necessary quay walls, sea walls and revetment, and dolphins. The remainder of the void would be in-filled and the land to the west, north and east of the quay walls used for stacking and handling containers. The development will include the installation of up to two ship-to-shore cranes not exceeding 50 metres in height on the eastern quayside, and up to two mobile harbour cranes not exceeding 40 metres high on the opposite side of the berthing pocket. The HRO authorises the stacking of containers up to five high or 15 metres in height, and the use of rubber tyre gantry cranes (RTG) not exceeding 30 metres high for handling containers. It also authorises the erection of lighting columns up to 25 metres high.

On the northern part of the site, beyond the container stacks, there would be a single-storey freight station of about 3000 square metres accommodating facilities for the loading and inspection of containers, offices, staff accommodation and entry and exit gatehouses. Other buildings proposed include a two-storey administration building of approximately 1000 square metres, canteen and other offices, workshop and maintenance buildings, including for the RTG. Parking provision for 80 cars and a truck holding area for 70 HGVs are included, as well as security fencing and a three-metre high acoustic and visual barrier along the western edge of the site adjacent to the Windylaw Bay foreshore.

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Access to the berthing pocket from the Forth would be obtained by removing the existing sea wall embankment and revetment on the south side of the present void, reduction of the underlying bed level and the creation of a dredged channel to a maximum depth of 9.5 metres below Chart Datum extending for approximately 750 metres southwards into the river. The channel would be 150 metres wide at its base with slopes finished to a profile of approximately 1:3. The capital dredging will be carried out by a large back-hoe dredger resulting in removal of approximately 700,000 cubic metres of material. Maintenance dredging may be required approximately every 4 months.

Please be aware that this scoping response is undertaken in relation to the removal of 700,000 cubic metres of material during the capital dredging operations. The final ES and accompanying marine licences must reflect this. Any increase in material expected to be removed in the capital dredging operations will require additional assessment prior to processing the ES and marine licences.

Screening and 2011 Environmental Statement

A formal screening opinion was submitted to the Transport Scotland in July 2010. This confirmed that an Environmental Impact Assessment (EIA) was required under Section 10(e) of Annex II of Directive 85/337/EEC. The Environmental Statement (ES) was submitted along with a Harbour Revision Order (HRO) in January 2011. Following the close of public consultation in early 2011 a number of objections to the HRO were received and a Public Local Enquiry PLI was undertaken.

The cases for each party were heard and the environmental information in the ES, along with supplementary environmental information submitted, was taken into account. The Reporters also evaluated the information in the Report to Inform an Appropriate Assessment relating to the impact of the proposed development on Natura sites.

As a result of the PLI the final recommendations to Scottish Ministers were that the Rosyth International Container Terminal (Harbour Revision) Order 201[X] be made, subject to suggested modifications and in October 2013 the Rosyth International Container Terminal (Harbour Revision) Order 2013 No.288 came into effect.

February 2014 Scoping Request

A condition of the HRO (No. 288) is that a Marine Licence for all in-estuary works must be obtained by Port Babcock (Rosyth) Ltd before any of the works granted by the HRO commences (Article 17(10) of HRO). Port Babcock (Rosyth) Ltd now intends to progress the scheme by submitting an application for a Marine Licence under the Marine Works (Environmental Impact Assessment) (As Amended) Regulations 2007 and the Marine (Scotland) Act 2010. This application will be accompanied by a detailed environmental impact assessment (EIA).

This Scoping Report sets out the proposed approach which will utilise and build upon pre-existing work carried out for the HRO. In setting out this report, specific reference has been given to guidance from the Marine Scotland document 'Marine Licensing in Scotland's Seas Under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009', in particular sections 3.4 and 3.5. Included within this Scoping Report are figures showing the location of the project and regulated activities, a description of the project including the possible effects on the environment and a statement of the working methods. Supporting information relevant to the project and background is also submitted, including the RICT ES (Jacobs, 2011); HRO (no. 288); the PLI report and; version 4 of the Construction Environmental Management Plan (certified by Transport Scotland in October 2013 as an attachment to the HRO).

Careful consideration has also been given to the recommendations made by the Reporters in the PLI report. This has assisted in the scoping in/out of various environmental receptors as have a number of points raised throughout the inquiry.

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Scoping

One objective of the Scoping process is to seek agreement from all the key stakeholders on the assessment methodologies. This includes the scope of issues to be addressed and the method of assessment to be used. The Scoping exercise also allows consultees to have early input into the EIA process, to specify what may be required to be addressed and to supply information that could be pertinent to the EIA process. In association with any comments herein, full regard has been paid to the information submitted in the Scoping Report submitted.

The Scoping Report includes an assessment of whether the following factors should be scoped within the EIA:

- Water quality and contamination
- Hydrodynamics and sediment regime
- Benthic ecology
- Intertidal habitats
- Fish (including migratory species)
- Marine Mammals
- Birds
- Noise and vibration
- Lighting
- Marine non-native species
- Vessel movements
- In-combination assessment

The Scoping Report has concluded that the following technical aspects are subsequently scoped out of the EIA:

- Noise and vibration
- Lighting
- Marine non-native species
- Vessel movements
- In-combination assessment

MS-LOT advises you that the in-combination assessment should be fully revisited and updated, based on the number of projects being undertaken and proposed for the east coast of Scotland, since the submission of the original ES.

Regulation

The Marine Scotland-Licensing Operations Team administers the licensing function under Part IV of the Marine (Scotland) Act 2010 (the Act) on behalf of the Scottish Ministers. Under the Act the following are examples of "licensable marine activity":

- To scuttle any vessel or floating container in the Scottish marine area;
- To deposit or use any explosive substance or article within the Scottish marine area either in the sea or on or under the seabed;
- To deposit any substance or object within the Scottish marine area, either in the sea or on or under the seabed, from a vehicle, vessel, aircraft, marine structure or a container floating in the sea;
- To construct, alter or improve any works within the Scottish marine area either in or over the sea, or on or under the seabed;
- To use a vehicle, vessel, aircraft, marine structure or floating container to remove any substance or object from the seabed within the Scottish marine area;
- To carry out any form of dredging within the Scottish marine area (whether or not involving the removal of any material from the sea or seabed).

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The following activities described in the Scoping Report are therefore considered to require a marine licence(s):

- To construct, alter or improve any works within the Scottish marine area either in or over the sea, or on or under the seabed;
- To carry out any form of dredging within the Scottish marine area (whether or not involving the removal of any material from the sea or seabed);
- All deposits below Mean High Water Springs (MHWS).

Therefore, separate marine licences will be required for:

- all construction works taking place below MHWS;
- capital dredging and disposal, and;
- any maintenance dredging and disposal required.

Consultation

MS-LOT has consulted the relevant consultation bodies in accordance with Schedule 4 Regulation 6 of the EIA Regs:

Association of District Salmon Fishery Boards (DSFB)
Chamber of Shipping (CoS)
Crown Estate (CE)
Environmental Planning – Scottish Government (EPSG)
Forth Ports (FP)
Health and Safety Executive (HSE)
Fife Council (HC)
Historic Scotland (HS)
Inshore Fisheries Group (IFG)
Fisheries Office Anstruther
Maritime and Coastguard Agency (MCA)
Marine Safety Forum (MSF)
Marine Scotland Science (MSS)
Marine Scotland Planning and Policy (MSPP)
Ministry of Defence (MOD)
Northern Lighthouse Board (NLB)
Royal Society for the Protection of Birds (RSPB)
Royal Yachting Association Scotland (RYA Scotland)
Scottish Environment Protection Agency (SEPA)
Scottish Fishermen's Organisation (SFO)
Scottish Natural Heritage (SNH)
Scottish Wildlife Trust (SWT)
Transport Scotland (TS)
Whale and Dolphin Conservation (WDC)

The parties highlighted in bold in the above list have submitted responses to the request for Scoping advice in accordance with Regulation 13 of the EIA Regs and copies are attached for your reference (Appendix 1). Any further replies will be forwarded on receipt. In addition to the parties above, MS-LOT have also received comments on the scoping report by a member of the public. This has been included as a separate attachment.

Your attention is drawn to Schedule 3 of the Marine Works (Environmental Impact Assessment) Regulations 2007 – information to be included in an environmental statement. In addition to the gaps identified, MS-LOT would advise you that the following must be considered in the Environmental Statement.

Navigation

The impact assessment should consider likely changes in movements resulting from the installation, the constraints imposed upon local navigation by the installation and, if considered a risk, the danger of passing

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vessels colliding with the installation. The assessment of significance should focus on the extent of conflict with navigation, anchorage etc. Any benefits, for example, the provision of new mooring facilities should also be identified and assessed. Mitigation is likely to comprise measures incorporated into the design of a development however operation factors such as navigational lighting will also be relevant.

Cumulative Impacts

Schedule 3 of the MWR states that the ES must include a description of the likely significant effects of the project and the regulated activity on the environment, and that this description should include consideration of cumulative effects. MS-LOT is aware of the following works or proposed works that should be included in your assessment of cumulative effects in the ES:

- Moray Offshore Renewables Ltd
- Beatrice Offshore Windfarm Ltd
- Inch Cape Offshore Limited
- SeaGreen Firth of Forth Windfarm
- Aberdeen Offshore Windfarm
- Global Energy Nigg Berth Development
- Cromarty Firth Port Authority Berth Development
- Port of Ardersier Ltd N-RIP
- Forth Replacement Crossing
- Aberdeen Harbour Development
- Port of Leith N-RIP
- Port of Dundee N-RIP
- Cockenzie Power Station
- Kincardine Offshore Windfarm Ltd
- Neart na Gaoithe Windfarm

Details of marine licence applications received by MS can be viewed on our webpage by using the following link: http://www.scotland.gov.uk/Topics/marine/Licensing/marine/scoping; and navigating to “Current Projects”.

You are also advised to take into account the on-going maintenance dredging operations with the Firth of Forth, both at Rosyth and the wider Firth of Forth area. This should be included in any cumulative impact assessment and updated in-combination effects assessment.

Please note that this list is not exhaustive and that if you are aware of any additional works that may contribute to cumulative effects, these should be included. MS-LOT will contact you to advise you of any further information received that will help you in your assessment of cumulative impacts.

Habitats Regulations Appraisal

It is noted that you intend on dealing with the Habitats Regulations Appraisal (HRA) within a separate document. You are strongly advised to review the advice provided by SNH on the construction of this document in order to fully assess the various Natura interests that may be impacted by this development. You are further advised to submit this in advance of the ES so that this document can be fully reviewed.

Pre-Application Consultation

As of 6th April 2014, certain activities are now subject to a public pre-application consultation requirement. The activities affected are large projects with the potential for significant impacts on the environment, local communities and other legitimate uses of the sea. This new requirement allows those local communities, environmental groups and other interested parties to comment on a proposed development in its early stages – before an application for a marine licence is submitted.

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Given the size and type of this proposal, the pre-application consultation requirements will apply. A copy of the Guidance for this process is available on the Marine Scotland website at http://www.scotland.gov.uk/Resource/0043/00439649.pdf

Consultation Responses

The consultation responses raise various matters that you must address in the compilation of the final ES for submission. A table summarising specific points for inclusion is attached (Appendix 2). Please complete the table and append to the final ES. Please note that this table is not exhaustive and additional advice to aid the production of the final ES is contained within the consultation responses. These are attached in full for your reference (Appendix 1). You are reminded that the construction environmental management plan (CEMP) should be a single version that satisfies all the requirements for the HRO and marine licences.

The next step in progressing your marine licence application is to submit the final ES along with the appropriate marine licence application form(s), which can be found on our webpage at the following link: http://www.scotland.gov.uk/Topics/marine/Licensing/marine/Applications; The ES is required to be advertised by you for a period of 42 days, and in this regard MS-LOT will send you an advertising template and instructions upon acceptance of your application.

Thank you for consulting with us on this matter and if you require any further assistance or advice on Marine Licence matters please contact MS-LOT at ms.marinelicensing@scotland.gsi.gov.uk.

Yours sincerely,

Redacted
Marine Licensing Casework Officer
Marine Scotland – Licensing Operations Team

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Appendix 1

Northern Lighthouse Board Consultation Response

SCOPING OPINION – SECTION 13 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) AS AMENDED REGULATIONS 2007
PORT BABCOCK ROSYTH LIMITED - PROPOSED DEVELOPMENT OF THE ROSYTH INTERNATIONAL CONTAINER TERMINAL AT ROSYTH, FIRTH OF FORTH ESTUARY

Thank you for your e-mail correspondence dated 14 March 2014 regarding the Scoping Opinion submitted by Jacobs on behalf of **Port Babcock Rosyth Limited**, in support of a proposed marine license application for the in-estuary works for this port development in the Firth of Forth.

Having reviewed the content of the Scoping Report, Northern Lighthouse Board would advise that with respect to navigational issues only, we note the following:

- Construction of a tidal basin capable of accommodating vessels for discharge and loading of cargo, with 18 metres quay walls and adequate shore-side hard standing areas for discharge/loading of cargo
- Capital and maintenance dredging of both the tidal basin and proposed 750 metre access channel to a maximum depth of 9.5 metres below chart datum
- Access to tidal basin from the Firth of Forth by the removal of part of the existing sea wall, embankment and revetment on the south side of the development to flood the basin once established
- Construction of dolphin structures and associated walkways
- Repair and maintenance of the Contractors Jetty

Northern Lighthouse Board has no objections to the proposed development and would advise that on receipt of the relevant marine licence applications for the dredging, disposal and marine construction works, that we will make full comment at that time, with regard to any navigational lighting/marking requirements for the safe access and operation of the development.

Scottish Natural Heritage Consultation Response

Dear Re
Scoping Request For Rosyth International Container Terminal Marine Licence In Estuary Works

Thank you for consulting us on the above scoping request.

The extent of the new information which the applicant should supply is discussed in Annex 1 to this letter.

Port Babcock has committed to accompanying the application with a detailed Environmental Impact Assessment (EIA). Specific works which should be considered include:

- Creation and maintenance of a dredged channel to a maximum depth of 9.5 metres below Chart Datum extending approximately 750 metres southwards into the Forth,
- Disposal of dredged material,
- Construction of quay walls on southern edge of the site,
- Piling for quay walls and dolphins,
- Removal of rock armour and underlying bund, and
- Contractors' jetty works.

The key natural heritage impacts associated with this development are those on the qualifying interests of Natura sites, the Firth of Forth Site of Special Scientific Interest (SSSI) and on marine mammals.

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The project is likely to have significant effects on various European sites as set out in the Scoping Report and previously confirmed by Reporters during the Inquiry. Accordingly, our advice is that an appropriate assessment is required under Regulation 48 of the Conservation (Natural Habitats, &c) Regulations 1994 (The Habitats Regulations). Although the applicant notes they will deal with the issue of Habitats Regulations Assessment (HRA) separately, we can comment here in some detail on the work that may be required. The HRA must cover all the issues relating to the potential impacts of the consenting regime. For that reason, the HRA for the marine licence will need to assess some issues which were also previously considered by the Public Inquiry into the Harbour Revision Order (HRO).

We do not agree, therefore, that in-combination assessment should be scoped out of this EIA. There is confusion on this subject in the scoping report in that in-combination is scoped out but in the same section at p20 the report notes that the issue "will be updated". Our view is that in-combination assessment is required, although we acknowledge that for many of the aspects which require consideration this may simply require the updating of existing information.

We recommend that Marine Scotland consider the detail of the Construction Environmental Management Plan (CEMP), alongside the findings of the Reporters report into the Public Inquiry at chapters 17 and 18, in order to delineate the issues which should be dealt with in the current EIA. Our understanding from these documents is that Babcock are relying on the licence from Marine Scotland (and any associated conditions) to cover the necessary mitigation measures for all construction work below Mean High Water Spring (MHWS), including dredging and the relocation of dredged material. Any EIA must therefore adequately address all the issues arising from this, even if they have been considered to some extent in a previous process. For this reason, we also believe the issue of noise impacts on marine mammals should not be scoped out of consideration here. It should be revisited and updated to confirm that the piling methods previously assessed remain valid and that blasting is not required.

We welcome the coverage of issues proposed in the Scoping Report and look forward to more detail emerging on how this work will be carried forward.

Please do not hesitate to contact me if you have further questions
Regards

Redacted
Senior Casework Manager

Redacted

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ANNEX 1
Detailed comments on impacts and aspects to be addressed in the Environmental Statement (ES) and Habitats Regulations Appraisal (HRA)

All parties are fully aware of the designated sites and natural heritage interests which could be affected by the RICT proposal as a whole. HRA should consider broad connectivity in its initial phases. Our early advice on the original Harbour Revision Order noted that three Natura sites have clear connectivity to the development and therefore the project should be considered as having a likely significant effect (lse) under consideration of the Habitats Regulations tests for these sites. These sites are the River Teith Special Area of Conservation (SAC), Forth Island Special Protection Area (SPA) and Firth of Forth SPA. Any updated RIAA and ES will need to revisit the findings of the originals. It should update where any changes have occurred or where issues previously not considered need to be assessed. Information on the special features and conservation objectives for these sites can be found on our website at the following: http://www.snh.gov.uk/publications-data-and-research/snhi-information-service/.

In particular for the Firth of Forth SPA an adequate assessment of the impacts of dredging and dredge disposal on coastal process issues (and therefore the qualifying interest features of the site) needs to be undertaken.

Firth of Forth SPA
Coastal Process
The further information that will be required for any appropriate assessment includes:

- Full detail and description of the dredged channel to be created
- The method of capital dredging to be used;
- The frequency of maintenance dredging;
- The use or disposal of the dredged material;
- The type of sediment in the proposed channel and level of suspended sediment in surrounding waters. This will require additional borehole information to be collected for those parts of the dredged channel where this has not been done and for surrounding areas (including the area between the channel and the SPA); and
- Hydrodynamic modelling to help to determine the impact of wave and tidal energy and sediment deposition on the SPA. Such modelling would also need to consider any changes to the geometry of the channel during the operational phase. The additional borehole information will help establish how likely these operational adjustments (slumping etc.) may be.

There has been a lot of discussion during previous consenting processes on this issue. Our view on what is required remains unchanged from that documented during the HRO Public Inquiry. We stress the need for ground investigation works to inform the modelling and other assessments. There is no indication in the Scoping Report that this will be the case. We will welcome information on the extent of the planned ground investigation works, and resultant summary reports on the cores themselves. Without an understanding of the nature of substratum adjacent to the proposed channel and towards designated intertidal area it is not possible to estimate accurately the 'eventual – post dredge channel shape' which would be modelled.

We note that the proposed disposal sites at Blae Rock or Narrow Deep differ from those previously suggested in correspondence, and assessment of these will therefore require updating. The original application proposed using Oxcars or Bo'ness as disposal sites.

Ornithology
In tandem with the proposed assessment of coastal process issues, it will be necessary to update the baseline bird data. This is because of the amount of time which has elapsed since the initial bird surveys were done.

The proposed duration of survey, (November to March inclusive & in one year only) does not give adequate coverage. Survey work should span all times of year when the target species are present. The SPA protection

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applies to the qualifying interests of the site whenever they are present. Given the number of qualifying interests, that could be all year round. We consider that a survey period of August to April inclusive will be required as a minimum. Qualifying interests may also be present on site during May, June & July, however it is likely that they would be in low numbers.
Just one winter of survey will not take account of inter-year variation in weather and other factors that influence bird abundance, distribution and behaviour. We recommend survey for a minimum of two years to allow for variation in bird use between years. Two years of survey should be required unless it can be demonstrated by the developer that a shorter period of survey is sufficient (e.g. if other adequate site specific information up to five years old is available to be used).
Through The Tide Count (TTTC) methodology is appropriate as is the proposed frequency of six survey days per month. There could be scope for reducing the number of survey days planned per month but it may be wise to allow for the possibility of lost survey days through poor weather, staff illness etc.

The proposed survey area is described as "*the same survey area as utilised for the RICT Report to Inform Appropriate Assessment (RIAA*)". It would have been helpful to include within the Scoping Report a figure with the survey boundary clearly marked. The key issue is that the survey area must be drawn so that it encompasses, as a minimum, all of the SPA area that may be predicted to be affected, directly or indirectly, by the proposed works. Once that area has been defined the applicant may wish to extend the survey area slightly beyond it to match up with pre-existing survey/count section boundaries. This would make data comparisons easier.

The new TTTC data should be supplemented by the provision and analysis of WeBs data (N.B. the phrasing in the last three paragraphs on page 18 seems to confuse TTTC & WeBS (high tide) surveys).

The report proposes that the number & the locations of the vantage points (VPs) will be the same as undertaken to date. Our advice is that this will not be adequate since we now know that sections of Windylaw Bay, for example, are not visible from the previously used vantage point.
When selecting VPs the aim should be to cover all of the survey area. They should be chosen to achieve maximum visibility with the minimum number of points. VPs should be located as close to the survey area as possible whilst also minimising the observer's effect on bird behaviour. For this reason VPs are best located outside the survey area where possible. In order to minimise disturbance, VPs should not be located near to sensitive sites for target species, e.g. roost sites. Observers should try to position themselves inconspicuously so as to minimise their effects on bird movements. Care also needs to be taken not to locate VPs in locations that may lie directly between the site and a roost of a key target species, as this can seriously influence the behaviour of birds to be surveyed.

Where VPs are located within the survey area, they should not be used simultaneously with other VP locations which overlook them as the presence of an observer either sitting at or moving to/from the VP will probably affect bird behaviour. We recommend scanning an arc of up to 180 degrees from each VP. Larger arcs cannot be scanned efficiently.

Thus, in order to ensure complete coverage of the SPA area that may be predicted to be affected by the proposed works, new vantage points will be needed. We note the aspiration to use the survey data collected in 2009/10 and the valid point about data consistency & ease of comparison at page 18 of the report. There may therefore be merit in re-using the existing vantage point but supplementing with additional ones such that full coverage of the SPA area predicted to be affected by the proposed works is achieved. It should then be possible to compare the new results from just the old VPs with that from old plus new VPs (i.e. full coverage). The results of that comparison would inform how robust an assessment based on data from just the old VPs would be and thus whether the 2009/10 data would be usable. Please note however that the five year age cut-off may apply and the applicant needs to be fully aware of this when planning works.

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Intertidal and subtidal habitats
We are content with proposed assessment work. It will be useful to compare these results with the previous surveys, as this might give some idea of the temporal variation naturally found in the system.

Underwater noise modelling
Noise can travel many tens of kilometres underwater so the applicant may need to consider impacts well beyond the immediate vicinity of the proposal. The previous assessments dealt with vibro piling activity and dredging noise, concluding no significant impacts on marine mammals was likely provided mitigation was put in place. Noise modelling may be required to determine potential risk of both injury and disturbance to seals, cetaceans and fish species if the original assumptions for the HRO differ from those required for the marine licences, (such as where blasting becomes necessary for the channel dredge or previously unassessed piling activities are being introduced). The ES needs to clearly consider this.

When considering mitigation for underwater noise impacts from piling, we strongly recommend following the JNCC guidance, and we welcome the applicants existing commitment to adhere to these: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf

Non Natura Issues
Firth of Forth Site of Special Scientific Interest (SSSI)
Assessment work discussed above should sufficiently cover all issues required to consider the interest features of the SSSI.

Marine Features
Subtidal and Intertidal Benthic Ecology
Priority Marine Features (PMFs) should also be considered: www.snh.gov.uk/protecting-scotlands-nature/safeguarding-biodiversity/priority-marine-features/

PMFs should be considered during subtidal and intertidal survey work and in consideration of dredge disposal.

Health and Safety Executive Consultation Response

Dear Redacted ,

ENVIRONMENTAL ASSESSMENT FOR PROPOSED DEVELOPMENT OF AN INTERMODAL CONTAINER AT THE FORMER RD57 SITE, ROSYTH.

Thank you for your email of 14 March 2014 asking what information should be provided in the environmental statement for the proposed development at Rosthy.

Environmental Impact Assessments are concerned with projects, which are likely to have significant effects on the environment. HSE's principal concerns are the health and safety of people affected by work activities. HSE cannot usefully comment on what information should be included in the environmental statement of the proposed development. However, the environmental statements should not include measures, which would conflict with the requirements of the Health and Safety at Work etc Act 1974 and its relevant statutory provisions.

Yours sincerely
Redacted

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Royal Yachting Association Consultation Response

Dear Re

Please see below RYA Scotland 's response from Redacted our Planning and Environment Officer to Scoping Request for Rosyth International Container Terminal –

"I note that the hydrodynamics and sediment regime will be modelled in relation to the Natura 2000 sites. However, changes in sediment deposition can have effects on moorings, harbours and marinas used by recreational sailors. The modelled results should be used to investigate any changes in sedimentation regime, either increased or decreased rates, at locations within the sediment cell used for mooring by recreational sailors such as Limekilns, Brucehaven and North Queensferry. I would also wish to be reassured that the dredging will have no significant impact on the important recreational facility of Port Edgar Marina on the South Shore.

Scottish Environment Protection Agency Consultation Response

Dear Sir

Planning application:
Scoping Request
Rosyth International Container Terminal – Marine Licence Application for In-Estuary Works

Thank you for your consultation letter of 14 March 2014.

We consider that issues detailed below should be addressed in the Environmental Impact Assessment in support of the Marine Licence application.

Advice for the determining authority

1. Marine Environment

1.1 Marine Ecology

1.1.1 We are content that marine non-native species are being addressed under the Construction and Environmental Management Plan (CEMP) and that Environmental Statement (ES) proposes additional work on Eelgrass (Zostera noltii). We would, however, request that the Eelgrass survey follows the Water Framework Directive (WFD) tool protocol. SEPA can supply details of this to the applicant if required.

1.2 Marine Morphology

1.2.1 With regard to section 5.5.11 and 5.5.33 in the original ES, preliminary WFD hydromorphology screening suggests that the dredging of the new approach channel will not result in deterioration in hydromorphological status of the Lower Forth Estuary water body. However it should be realised that the capital dredge, and subsequent maintenance dredging, will result in a new permanent footprint in addition to the seabed and shoreline development pressures that already exist within this water body. The dredging of the new channel will push the classification of the subtidal zone towards the high/good class boundary in this water body.

1.2.2 We note in the scoping report that a more detailed hydrodynamic and wave modelling study will now be carried out as part of the EIA following the Public Local Inquiry. The ES should assess the significance

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of any changes to coastal processes and shoreline morphology in line with River Basin Management Plan objectives.

1.3 We recommend that a dredge plan be drawn up to complement the CEMP with regard to measures to reduce sediment plumes, in-combination effects etc. during the dredging programme.

2. Radioactive Substances

2.1 With regard to Section 3.1 on water quality and contamination, we support the planned programme of sediment sampling in the area of dredging activity to monitor/test for the presence of radionuclides.

2.2 However, we would also suggest that an archival/reconnaissance survey is undertaken before any site investigation works start to review the results of previous radiological surveys undertaken by Rosyth Royal Dockyard Limited (RRDL) and others. For example, RRDL are required by SEPA to undertake site environmental monitoring and conduct habits surveys as part of conditions in their authorisation under the Radioactive Substances Act 1993 (RSA 93). This survey can inform the scope of the planned programme testing for radiological contamination.

3. Contaminated Land

3.1 We can confirm that water quality and contamination issues are satisfactorily scoped; addressing previous recommendations from SEPA. We therefore have no further comments on this aspect of the Scoping Report.

Regulatory advice for the applicant

4. Regulatory requirements

4.1 Details of regulatory requirements and good practice advice for the applicant can be found on our website at www.sepa.org.uk/planning.aspx. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the operations team in your local SEPA office at:

Pentland Court, The Saltire Centre, Glenrothes, Fife, KY6 2DA, tel 01592 776910

If you have any queries relating to this letter, please contact me by telephone on Redacted or e-mail at planning.se@sepa.org.uk

Yours faithfully

Redacted
Senior Planning Officer
Planning Service

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Forth Ports Consultation Response

FORTH PORTS LIMITED

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Telephone 0131 555 8700 Facsimile 0131 553 7462

10 April 2014

Redacted

Licensing Casework Officer
Marine Scotland - Marine Planning & Policy
Scottish Government, Marine Laboratory,
PO Box 101,
375 Victoria Road,
Aberdeen, AB11 9DB

Dear Red

Rosyth International Container Terminal - Scoping Request

We welcome the commitment from the applicant to produce a detailed environmental impact assessment in relation to the marine works. This will be helpful, and subject to the level of analysis and scope therein, should provide evidence in relation to the impacts of the proposed activity that will allow consenting authorities to ensure appropriate decision making. Whilst we welcome the attempt at brevity, we were surprised by the lack of information and limited level of detail in this Scoping Request for a 'detailed environmental impact assessment'. We have a number of comments upon the scoping report, CEMP and original EIA.

Scoping Report

Table 1 – whilst we note the comments in relation to noise and vibration, we would make the observation that this assumed (not based on any evidence presented to the PLI) that there would not be any blasting required (whether for sea bed removal or removal of the current 'bund' to RD57). There were extensive discussions at the PLI in cross examination of the postulated likelihood or unlikelihood of the presence of rock and the relative merits of a suitably detailed geotechnical investigation. Subject to the findings of such a detailed investigation, the applicant would be wise to consider whether they need to pay particular attention to this issue. We also note that the applicant believes that the conclusion of the in-combination assessment was 'considered reasonable by Marine Scotland'. Marine Scotland were not determining the application at the stage of the PLI or the HRO application, further time has elapsed since the noted report was drafted and it may well be that there have been changes in relation to other projects that would need to be considered in any in-combination assessment. Certainly further detail is liable to be available on a number of projects and this may be of assistance to the applicant.

3.1 – We note that the applicant re-iterates that the 'PLI Reporters concluded that contamination issues associated with the construction and operation of the RICT could be adequately addressed through the CEMP and other regulatory Regimes (section 18.14)', we also note that the applicant has recognised that further sediment sampling may refine this position. We welcome this approach and recommend that the issue of contamination in marine sediments and potential contamination of the marine environment is considered in the EIA.

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Table 2 – Hydrodynamics and sediment regime – it is not clear exactly what this table suggests. It could be interpreted as previous wave and flow modelling will be re-presented and that if the results are negligible, then there will be no need for further modelling; if this relates to the original ES work or that presented in the PLI, this would not be appropriate. As the applicant will be aware, there was considerable evidence on the issue of the impacts of dredging (capital and maintenance) and uncertainty regarding the provisional and relatively low resolution modelling that was undertaken. We are firmly of the view that this needs to be robustly considered, not just from a near-field effect, but the far field elements also need consideration. It is critical that as the Competent Harbour Authority for the Forth, we are aware of any potential impacts upon the stability of any currently maintained areas, and areas not currently maintained that could result in the need for maintenance due to a change in the regime in the estuary or firth. We are therefore concerned by the comments in this table. This also appears to contradict the section titled 'Hydrodynamics and sediment regime'.

Hydrodynamics and sediment regime – We note that a stand alone report will be produced focusing on the impact of the dredged channel with a particular focus on the adjacent SPA to the west of the site. Whilst this is welcome and no doubt reassuring for SNH and the local community of Limekilns, it is imperative that the wider implications of the capital dredge, on-going maintenance dredging regime and the associated disposal are considered in the context of potential changes to the navigable sections of the estuary and firth, particularly those areas that are currently subject to maintenance dredging, either by Forth Ports, other terminal operators or the leisure harbours. We would wish to be reassured that an appropriate resolution has been chosen for all relevant areas, not just in the immediate vicinity of the proposed channel.

Regarding the wave modelling, we welcome the proposal to conduct runs at high, mid and low tide. Contrary to the statement in the applicant's scoping report, the wave conditions at the eastern boundary of the SWAN model *may* influence wave conditions at the location of the proposed channel/adjacent coastlines. This will be determined based upon the prevailing conditions and the location of the eastern boundary of the model (which does not appear to be stated). We wish to be reassured on this point. Whilst we welcome the consideration of 3 south easterly wind directions, we request that the analysis is broader than this as the issues needing examined in our view include:

- The stability of the new channel and rate of sedimentation and the resultant frequency of maintenance dredging
- The impact of the new channel upon the adjacent SPA
- The impact of the new channel upon the wider area

All of which can have an impact on sedimentation elsewhere in the estuary and could create siltation in areas other than the adjacent SPA, potentially in areas that are currently maintained for navigation or indeed areas used for navigation that are currently stable. Only assessing the impact of wave directions from the south east will not allow Forth Ports to consider the potential impact upon the areas of navigation it has a duty to maintain. We are also concerned that a 1 year return frequency is not sufficient on its own, running the model with both 1 and 10 year return frequency would seem more appropriate (noting that for flooding 200 year return frequency is normal), this would seem an appropriate line between conservative and pragmatic.

3.2 Topics Scoped out

On noise and vibration, it may be challenging for this to remain scoped out if it is found that rock will need to be removed through the dredging process, or if blasting is needed to remove any of the wall of the RD 57 facility. We think it will be challenging to justify not updating the in-combination assessment, we strongly recommend that a new in combination assessment is undertaken, aside from the age of the assessment and the changes to other projects, the RICT proposals also evolved

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between the original ES, additional supporting information and further changes through the PLI process. This will not have been captured in the existing assessment.

CEMP

The CEMP as currently drafted fails to reassure Forth Ports, it is still in a remarkably draft state given the number of previous iterations and is to discharge and oversee many of the points agreed in the PLI and conditions set in the HRO. We would also point out that the PLI Reporters went to great lengths to make clear that the HRO only authorised the land based elements, they found that the marine elements of the application were not to the required standard, hence the need for the applicant's request for this EIA scoping process. Given this, the marine elements of the CEMP could not be said to have been agreed, indeed, it would be prudent to review the CEMP in light of the findings of this EIA once concluded and in combination with the terrestrial elements of the HRO and CEMP, as well as other projects in the Forth (or further afield as directed by Marine Scotland).

Original EIA/RIAA

As the applicant will be aware, we have (and retain) concerns over the comprehensiveness, accuracy and validity of the original application documents. During the PLI we outlined our concerns on this matter, particularly in relation to our Statutory Responsibilities (ship handling and safe navigation). We would also wish to draw the applicant's attention to the dredging quantities and whilst there were issues with this section at the time, it has been compounded by the fact that the report is now 4 years old:

- There is currently dredging in Port Edgar and shortly in Granton
- Rosyth: Dredge frequency should be 10 days generally in spring, not monthly.
- Methil Approach Channel: Dredge volume should be 5000m^3 / 7000tonnes
- Methil Quayside 1, Energy Park: Dredge volumes and Tonnes quantities do not match.
- Kirkcaldy; No Capital dredging should be maintenance dredge volume of 5000m^3, annually.

As this report is now four years old, it is recommended that the applicant checks all of their figures.

Conclusions

We remain concerned that the channel as proposed is designed from an engineering perspective rather than from a ship handling and safe navigation perspective; particularly as this is a relatively narrow channel that is perpendicular to the tidal stream and prevailing winds. We would strongly advise Jacobs to consider this further, appropriate hydrodynamic modelling may assist in this regard as well as providing us the required information to understand the future erosion/deposition regime in the wider estuary and firth. Throughout the PLI there was a considerable amount of additional information provided (particularly in relation to dredging, and marine elements), often refining or even changing considerably from that presented in the original EIA attached to this scoping report. Given the multitude of sources of information and the alteration of data, approach and parameters throughout this process, we would suggest it better to fully present all information in this EIA rather than rely upon an out of date and incomplete EIA as a starting point. This will then be clearer to all concerned and will aid the consenting authorities in reaching timely, consistent and appropriate decisions. Regarding in combination assessment (and aside from the dredging data errors noted above), over the last 4 years the projects that may be considered to be in combination have changed, those that remain have considerably more information in the public domain, this will be of great benefit to the robustness of the applicant's assessment; we therefore strongly advise that the in combination assessment is reviewed and that one of these in combination projects is the terrestrial element of RICT.

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Forth Ports are keen to work with the applicant to ensure that the dredging information is correct and that the hydrodynamic modelling (and interpretation) is focused on the appropriate areas and suitably robust.

Yours sincerely

Redacted

Group General Counsel and Company Secretary

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RSPB Consultation Response

Rosyth International Container Terminal - Scoping Request

Thank you for consulting RSPB Scotland regarding the scoping request relating to marine licences required for Port Babcock Rosyth's ("PBR") proposals for a Rosyth International Container Terminal ("the RICT").

As you are no doubt aware, RSPB Scotland previously objected to PBR's application to Transport Scotland for a Harbour Revision Order ("HRO") to enable the RICT, on the grounds that suitable information to assess the impacts of the proposed new dredged access channel had not been provided. As the channel is an integral and essential part of the RICT project, it has consistently been our view that assessment of its effects should have been carried out at the earliest possible stage – in this case, that of the HRO consulted on in January 2011.

Regrettably (in our view), this did not happen, and the HRO has been confirmed by Scottish Ministers, including a clause empowering PBR to dredge, but without the effects of the dredged channel having been assessed. In our view, the dredged channel is the single element of the project most likely to have the greatest effect on the adjacent Firth of Forth Special Protection Area ("the SPA"), classified for its internationally important numbers of wintering and migrating birds. Consequently, we very much welcome the opportunity to assist in assessment of this aspect of the project, even at such a late stage in the process.

The proposed RICT is a large intervention in the environment, immediately adjacent to a European wildlife site that could be affected not only during the construction phase, but for as long as the proposed new channel is maintained. Accordingly, both EIA and appropriate assessment under the Conservation (Natural Habitats & c.) Regulations 1994 (as amended) ("the Habitats Regulations") are required; we welcome acknowledgement of this in Jacobs' scoping report.

Our comments on the scoping report address the following main points:

We would welcome clarity as to the number of consents required, and the activities proposed to be consented by each; the scoping document does not include maintenance dredging, which will clearly be needed; the new ES will need to assess all of the effects of the project as a whole;

In our view, the most significant effects of the whole project seem likely to arise from the creation of the new dredged access channel; this will need very detailed assessment, to include:

- Sediment transport modelling;
- Justification for choosing model design and protocols;
- An appropriately precautionary range of scenarios
- The different chapters of the ES will need to join up to allow proper assessment of the full range of possible effects on the SPA;
- Account will need to be taken of the findings of the public local inquiry ("PLI") into the HRO when referring to the original ES;
- The proposed new surveys are welcome; advice should be sought from SNH in order to minimise any doubt about the suitability of methods.

These points are covered in more detail in the Annex attached to this letter. In our view, assessment of the effects of the new access channel on the SPA is key to determining consent for the project, whether under regulation 48 or 49 of the 1994 regulations. If the ES is deficient, an appropriate assessment will not be possible. Should it not be possible to rule out adverse effects on integrity of the SPA, but Scottish Ministers are nevertheless minded to consent the project by granting the necessary licences under the Marine (Scotland) Act 2010, in our view it may be feasible to identify compensatory measures in terms of regulation 49.

Should you wish further information from us on this or any other aspect of this proposal, please do not hesitate to get in touch.

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Yours sincerely
[BY E-MAIL]
Redacted

ANNEX: Rosyth International Container Terminal – marine licence scoping request – detailed comments from RSPB Scotland
In more detail, and in order of appearance in the scoping report:

Application (Section 1.2)
We note the assumption by Jacobs that a single licence will be applied for under the Marine (Scotland) Act 2010. Based on experience elsewhere, we would have expected separate applications for the different licensable activities (capital dredging; maintenance dredging; disposal of dredgings; other marine works). While we have no strong view on which approach is better, it is clear to us that what is now required is a single Environmental Statement (ES) to cover all of the remaining activities, and their effects on the environment in combination with those of activities already consented by the HRO, or as permitted development enabled by the HRO, so that a view can finally be taken of the acceptability of the effects of the RICT project as a whole.

While the emphasis should be on those aspects of the project not yet assessed, it will be important that the ES enables an overall view to be taken, as was not possible for Scottish Ministers to do this when confirming the HRO, principally because of the lack of information provided about the effects of the dredged channel.

Certain information is stated as having been provided in support of the current applications, including the original 2011 RICT ES, the HRO, the public local inquiry ("PLI") report, and the latest version of the construction and environment management plan ("CEMP"). While some of these documents contain essential up-to-date context, we note that some aspects of the original ES are effectively rendered obsolete by various findings of the PLI report, in particular in relation to some of the effects of dredging (e.g. volume of dredging, frequency of maintenance dredging, likely stable angle of side-slopes and potential for slumping of the dredged channel), with the tendency being for the original ES to have underestimated the scale of effects compared with that considered likely by the PLI reporters. Therefore, an element of caution may be needed when referring to the original ES; and where this is contradicted by the PLI report, then it may be advisable to prefer the conclusions of the PLI report to those of the earlier 2011 ES.

The proposed development (Section 2.1)
The dredged channel will need separate consideration from the berthing pocket. In our view (reinforced by our experience of the assessment process for this project to date), the new channel represents the biggest single EIA and Habitats Regulations challenge for the RICT scheme. We note that the figure given in this section of the scoping report for the frequency of maintenance dredging reflects the PLI reporters' findings at 14.217, but not at 14.205 in relation to the volume of the capital dredge, which could be greater than stated by an unknown amount, depending on the degree of slumping of channel side-slopes.

Some of the current uncertainty about this aspect of the project could be reduced if sediment bore/core samples were available at a finer spatial resolution over more of the area potentially affected by the channel (13.292 of the PLI report). Therefore, we recommend that attention is paid to this area in preparing the ES, and that assessments are supported by data (13.310, 14.220 of the PLI report).

CEMP (Section 2.2)
We note the reference to the PLI reporters' conclusions that various aspects of the project would have no significant impact, subject to mitigation being successfully implemented. In relation to the SPA, these include noise, vessel movements and chemical spills.

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In-estuary works and possible environmental effects (Section 2.3)
See our comments above, relating to the number and scope of marine licences required, and for what activities. We note that maintenance dredging is not included in the list here, and draw your attention to paragraph 13.333 of the PLI report, and the reporters' inability to conclude that maintenance dredging would not have an adverse impact on integrity of the SPA.

Hydrodynamics and sediment regime (in Section 3.1)
In our view the key area of concern is that of hydrodynamics and sediment regime, and how changes in these may in turn affect SPA birds and bird habitats, including, but not restricted to *Zostera* (13.301 of the PLI report). It is clear from the findings of the PLI, that these assessments may not be straightforward in terms of the relative importance of erosion and accretion (e.g. 13.313; 14.206; 14.215). We should emphasise, as in our original response to the HRO application, that accretion of sediment on the SPA may be just as significant as erosion in terms of impact on habitat function for qualifying birds: alterations to the profile of the intertidal area from low- to high-water will affect the amount of time for which feeding areas are exposed at different stages of the tide; and accretion could alter conditions for shore-bird food (not only *Zostera*). We note that accretion of sediment seems to have been the principal effect on the Severn Estuary SPA of development at the Port of Bristol, consented by the Department for Transport in 2008.

Consequently, at this stage we feel it is essential that clear evidence is produced to show the likely changes to sedimentation patterns; and it is difficult to see how this can be done without modelling not only of changes to wave and tidal regimes, but also specific modelling of changes to sediment transport. This will be key to assessing impacts not only on the SPA, but also to intertidal and potentially subtidal habitats, as currently distinguished from "terrestrial ecology" (including birds, and the SPA) in the various project application documents. Given the history of the RICT project proposal, we strongly recommend that sediment modelling is carried out and the results clearly presented alongside those for wave and tidal processes, so as to unambiguously minimise any possible doubt over this key area of current uncertainty over the project's potential impact on the SPA.

In terms of the various scenarios proposed to be modelled, we note the uncertainty recorded by the PLI reporters in relation to regime slope and the possible degree of slumping (13.291-292). We recommend that the models are run for more than one "eventual post-dredging" scenario, to include "realistic worst-case" effects of slumping, as well as a "most likely" slumping scenario (on the assumption that "most likely" has less impact than "realistic worst case"). It may be possible to get these two scenarios to converge if sufficient sediment borehole/core samples are available for the whole area over which effects are possible. This would require significantly more work than was available for reference at the PLI.

We would welcome some clarification as to the choice of flow, wave and sediment modelling software. As non-experts in this field it appears in the face of it curious to use SWAN for wave modelling in preference to TOMAWAC, from the same stable as and compatible with the TELEMAC program, currently specified for flow modelling.

We note too the availability of SISYPHE from the same developers, and thus presumably fully compatible with TELEMAC and TOWAMAC. In our view, the ES must include clear explanations of modelling methodologies and protocols, including the reasons for choosing particular software, model designs and scenarios.

Benthic ecology (in section 3.1)
It will also be important that the different areas of work to be reported in the ES join up to allow safe assessment s to be made of the possible effects, especially on the SPA. For example, changes to "hydrodynamic and sedimentation" regimes may have effects on "benthic ecology" that in turn impact on the SPA ("terrestrial ecology"), if benthic species predicted to be affected are also (for the sake of argument) bird food.

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Birds (in section 3.1)
We welcome the commitment to carry out a further season of bird surveys (as well as additional surveys for intertidal and subtidal benthic species, including *Zostera*), as the original survey data on their own are now rather dated. An additional year (winter) of work is probably the minimum necessary to bring this information up-to-date.

We note SNH's wish at the PLI to question the completeness of vantage point coverage of the intertidal immediately adjacent to the proposed RICT, and that the reporters' decision not to allow this was based on a lack of notice under inquiry rules, rather than the fundamental ornithological merits. We strongly recommend that vantage point coverage of Windylaw Bay is reassessed, in consultation with SNH, before the proposed new surveys are carried out, so as to ensure that no areas of dead ground are left uncounted at low or mid-tide.

Topics not included in EIA (scoped out) (Section 3.2)
In general we agree with the list of topics "scoped out", while noting that this is appropriate for noise and lighting only once the mitigating effects expected to be delivered by proper implementation of the CEMP are taken into account. We welcome the commitment to update cumulative impact assessments.

RSPB Scotland
April 2014

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Maritime and Coastguard Agency Consultation Response

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Our ref: **MNA53/10/518**

6th May 2014

Dear Redacted

Rosyth International Container terminal
Scoping Request

Thank you for your request dated 14 March 2014 inviting MCA to comment on the documents for the proposed Rosyth International Container Terminal. Apologies for the delay in getting a response back to you.

At this stage MCA can only generalise and point you in the direction of the Port Marine Safety Code (PMSC). You will need to liaise and consult with other local Harbour Authorities (Forth Ports etc) to ensure that any relevant development activities are consistent with and incorporated under a Marine Safety Management System (SMS), which, amongst other things, must consider any safety of navigation issues which the development may impose, both pre and post construction.

Following on from the scoping study an application for a Harbour Revision Order (HRO) may be required. If this is necessary, the MCA will need to be consulted again on any revisions we may require to enhance the initial conditions.

Yours sincerely

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Marine Scotland Science Response

JACOBS (BABCOCK) - ROSYTH INTERNATIONAL CONTAINER TERMINAL SCOPING REQUEST – MARINE SCOTLAND SCIENCE COMMENTS

Marine Scotland Science has reviewed the submitted scoping response and has provided the following comments.

Marine Scotland Science comments on marine mammals.
MSS welcome the main berthing pocket being constructed prior to the removal of the bund, as well as the use of alternatives to percussion piling. We recommend that MMOs are used, in accordance with JNCC piling guidance for all pile driving that occurs in water, to ensure that no marine mammals are within ranges where they may be exposed to noise levels sufficient to cause injury. We agree with the mitigation suggested by the applicant, except that we do not recommend the use of ADDs for this project.

The application has not addressed the possibility of spiral lacerations to seals as a result of interaction with ducted propellers. This development is close to an area where there have been many such cases discovered (see Thompson et al 2013). Vessels used for the piling and dredging may have ducted propellers. The developer should consider whether it is possible to use vessels without such propulsion systems and also seek to reduce the amount of time such systems may in use, by, for example, requesting vessels to anchor when they are not carrying out operations.

We broadly agree with the conclusion that the development is outside the range at which we would consider HRA for harbour seals from the Tay and Eden Estuary SAC. The decision as to whether there is a requirement for and Appropriate Assessment in relation to marine mammal interests will be informed by SNH. However, the development is within the range at which we would consider that an AA for grey seals from the Isle of May SAC may need to be undertaken (developments within 100km are considered to have the possibility of connectivity with an SAC). Our understanding of the nature of the proposed development leads us to believe that it is unlikely that there will be a significant adverse effect on the integrity of this SAC.

This development may need to be viewed in a cumulative context with wind farm developments in the Firths of Tay and Forth for harbour seals and grey seals, since they are within the same seal management area. We do not currently consider that this application will have a cumulative effect on the east coast of Scotland bottlenose dolphin population, because it is at sufficient distance from areas that the dolphins are known to use, and also because the amount of percussion piling will be limited.

Marine Scotland Science comments on fish ecology and commercial fisheries.
Marine Scotland Science has no comments on fish ecology and commercial fisheries.

Marine Scotland Science comments on ornithology.
There will also presumably have been a large amount of relevant discussion at the PLI mentioned in the document but I am not aware of what those discussions concluded. The site is immediately adjacent to the Firth of Forth SPA and it seems likely that there will be some effect on the SPA from the planned dredging and/or construction activity. SNH will be able to advise on the need for an Appropriate Assessment and how the ES may be best able to inform any AA.

Marine Scotland Science comments on socio economics.
Marine Scotland Science has no comments on socio economics.

Marine Scotland Science comments on benthic ecology.
We are slightly concerned at the impact the dredging programme may have on the Zostera beds close to the area of work. Sedimentation/settling from the dredging may cause significant smothering effects on these beds

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(up to 2.5cm deposition have been predicted) we would like to see some information on the extent of the Zostera beds and if the developer proposes any mitigation measures to protect them.

Marine Scotland Science comments on physical environment.
Please find below a few excerpts from the report (in red) with our comments attached. In the report it is proposed to extend the preliminary modelling and they are asking for appropriate data sources:

"Boundary wind, wave and tide conditions are available for input to the model but due consideration will be given to the views of the consultees on appropriate data sources and numerical inputs."

One of our colleagues, Redacted is working on a model of the Firth of Forth and had a few suggestions or would be happy to be contacted to discuss the modelling Redacted

Here are a few resources with regard to data and boundary conditions for the model:

Use the tide gauge data from Leith (from BODC)

Use the Oregon State University tidal prediction software which is a tidal model based on the Oregon State University tidal inversion of TOPEX/POSEIDON altimeter data (might not be ideal for a model of the inner Firth of Forth

Wind forcing data can be obtained from ECMWF and NOAA NCEP. But: the quality of these data for the inner Firth of Forth is unlikely to be ideal.

We'd be interested to see how the model will be set-up and would be interested to see more details on that.

"Interpretive reports for both the wave and flow modelling will present the results along with overall conclusions. Following this, an assessment of the results will be undertaken to inform the likelihood of significant changes to the adjacent intertidal area."

We'd also be interested to see the outcome of both the wave and flow modelling if possible.

Marine Scotland Science comments on diadromous fish.
There is a previous ES (2011) and a PLI (Public Local Inquiry) Report and various things appear to have been agreed with SNH and MS regarding the CEMP and mitigation. The ES for the application for a marine licence will build on what has been done previously, but allows further consideration as necessary.

The recent scoping report advises that a desk study will be carried out on the fish communities and that assessments will be made on the non-migratory and migratory fish species which will build upon the results of the previous ES.

In view of the consideration and agreements to date, various topics have been scoped out in the scoping report of further consideration: noise and vibration, lighting, marine non-native species, vessel movements and in-combination assessment. Regardless of this statement, all topics should be revisited in the new ES, as appropriate. Indeed in the case of in-combination assessment the scoping report itself notes that "Given the time which has elapsed since this was last examined the potential for cumulative impacts associated with other developments in the vicinity of the RICT and River Forth area will be updated".

The new ES should include better information on the use of the proposed development area by diadromous fish and what times of year the different species and life stages are likely to be in the vicinity of the proposed work. Atlantic salmon, anadromous brown trout (sea trout), eel, sea lamprey and river lamprey will migrate from the rivers into and or through the firth. Marine Scotland Science carried out a review of migratory routes and behaviour for Atlantic salmon, sea trout and eels relevant to Scotland which may contain useful information. It is

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online at: http://www.scotland.gov.uk/Resource/Doc/295194/0111162.pdf. Local sources of information will include the Forth District Salmon Fishery Board and Forth Fisheries Trust

Information on the potential impacts on diadromous fish and any associated fisheries either in the rivers or the firth during construction and from the completed structure will need included and should be updated as necessary. The previous ES considered the main species involved and correctly listed the likely impact mechanisms which could operate during construction or operation of the facility. New information on the effects of sound on fish is now available and should be brought in as appropriate. The noise sections of Gill, A.B. & Bartlett, M. (2010). Literature review on the potential effects of electromagnetic fields and subsea noise from marine renewable energy developments on Atlantic salmon, sea trout and European eel. Scottish Natural Heritage Commissioned Report No.401 (available at www.snh.org.uk/pdfs/publications/commissioned_reports/401.pdf) and Gill A. B., Bartlett M. and Thomsen F. (2012) Potential interactions between diadromous fishes of U.K. conservation importance and the electromagnetic fields and subsea noise from marine renewable energy. Journal of Fish Biology 81, 664–695, with Corrigendum in Journal of Fish Biology (2012) 81, 1791, may be helpful. (Journal of Fish Biology papers are available online through www.wileyonlinelibrary.com). There was the assumption in the previous ES that fish will generally be able to move away from sound sources. While operational practice to encourage this is clearly highly desirable, the extent to which this will or can happen is uncertain, particularly in the case of small fish.

It is noted in the scoping report in respect of the River Teith SAC for lampreys and salmon that "A Habitats Regulations Assessment (HRA) will be carried out on the potential impacts arising from the in-estuary activities and their significance with regard to the conservation objectives. The HRA will be covered in a separate report, and include an updated cumulative / in combination assessment." The separate report will allow detailed consideration with respect to salmon and lampreys.

Eel populations are in decline cross their range and a conservation priority and should be considered in the new ES. There is also a population of sparling which is of also conservation interest and should be considered too.

The potential for in-combination / cumulative impacts with other work developments and activities will need reviewed and updated.

The developer will need to review and update as necessary how impacts can be mitigated, including choice of timing of construction operations

The developer should consider the need for monitoring during and post construction. I would note that estuaries can provide useful opportunities for monitoring effects of construction activities on migration and other behaviour of fish, which may be of wider value

Marine Scotland Science comments on aquaculture.
There are currently no aquaculture sites registered with Marine Scotland Science located in the vicinity of the Rosyth International Container Terminal development proposed by Babcock Marine Rosyth Limited. (see attached map).

The nearest aquaculture site is situated approximately 15km north of the proposed development. It is a freshwater rainbow trout tank site. It is currently active and operated by Dawnfresh Farming Ltd.

The nearest marine aquaculture site is situated approximately 45km east of the proposed development. It is a pump ashore partial recirculation lobster hatchery. It is currently active and operated by Firth of Forth Lobster Hatchery.

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Hopefully these comments are helpful to you. If you wish to discuss any matters further contact the MSS Renewables in-box MS_Renewables@scotland.gsi.gov.uk.

Yours sincerely

Redacted

Marine Scotland Science

30 April 2014

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Appendix 2

Consultee	No.	Point for inclusion	Section/ Pg ES	Sign
MSS Oceanography	1	The assessment of the wave and flow modelling should be detailed within the ES in full.		
MSS Ornithology	2	Given the proximity of the Firth of Forth SPA, a full assessment of the potential impacts from the dredging and construction activities must be undertaken.		
MSS Benthic Ecology	3	The dredging programme may impact on the Zostera beds close to the area of work. Sedimentation/settling from the dredging may cause significant smothering effects on these beds (up to 2.5cm deposition have been predicted) and information on the extent of the Zostera beds, and what mitigation measures are proposed to protect them, should be provided.		
MSS Marine Mammals	4	MMOs should be used, in accordance with JNCC piling guidance for all pile driving that occurs in water, to ensure that no marine mammals are within ranges where they may be exposed to noise levels sufficient to cause injury. We agree with the mitigation suggested by the applicant, except that we do not recommend the use of ADDs for this project.		
	5	The developer should consider whether it is possible to use vessels without ducted propellers and also seek to reduce the amount of time such systems may in use, by, for example, requesting vessels to anchor when they are not carrying out operations in order to address the possibility of spiral lacerations to seals.		
	6	This development will need to be viewed in a cumulative context with wind farm developments in the Firths of Tay and Forth for harbour seals and grey seals, since they are within the same seal management area.		
MSS Diadromous Fish	7	In view of the consideration and agreements to date, various topics have been scoped out in the scoping report of further consideration: noise and vibration, lighting, marine non-native species, vessel movements and in-combination assessment. All topics should be revisited and updated, as appropriate, in the new ES		

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Consultee	No.	Point for inclusion	Section/ Pg ES	Sign
MSS Diadromous Fish	8	Information on the potential impacts on diadromous fish and any associated fisheries either in the rivers or the firth during construction and from the completed structure will need to be included and should be updated as necessary.		
	9	Eel populations are in decline across their range and are a conservation priority which should be considered in the new ES. There is also a population of sparling which is of also conservation interest and should be considered too.		
	10	The potential for in-combination / cumulative impacts with other work developments and activities will need reviewed and updated.		
	11	The developer will need to review and update as necessary how impacts can be mitigated, including choice of timing of construction operations		
	12	The developer should consider the need for monitoring during and post construction. Estuaries can provide useful opportunities for monitoring effects of construction activities on migration and other behaviour of fish, which may be of wider value		
RSPB	13	Clarity as to the number of consents required, and the activities proposed to be consented by each; the scoping document does not include assessment of maintenance dredging, which will be needed; the new ES will need to assess all of the effects of the project as a whole (including maintenance dredging)		
	14	Detailed assessment of sediment transport modelling, justification for choosing model design and protocols and an appropriately precautionary range of scenarios.		
	15	The different chapters of the ES will need to join up to allow proper assessment of the full range of possible effects on the SPA.		
	16	Account will need to be taken of the findings of the public local inquiry (“PLI”) into the HRO when referring to the original ES.		
	17	The proposed new surveys are welcome; advice should be sought from SNH in order to minimise any doubt about the suitability of methods.		
	18	The Windylaw Bay vantage point should be reassessed, in consultation with SNH, before the proposed new surveys are carried out.		

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Consultee	No.	Point for inclusion	Section/ Pg ES	Sign
Forth Ports	19	Due consideration should be given to any potential use of blasting techniques.		
	20	Contamination in marine sediments and potential contamination of the marine environment should be considered.		
	21	The implications of the capital dredge, on-going maintenance dredging regime and associated disposal should be considered in relation to the potential changes to the navigable sections of the estuary and firth.		
	22	Wave modelling should include analysis of the stability of the new channel, rate of sedimentation and frequency of maintenance dredging, the impact of the new channel upon the adjacent SPA and, the impact of the new channel upon the wider area.		
	23	It is recommended that a new in-combination assessment is undertaken to account for the time elapsed since the last assessment and the changes between the original and current ES, including recommendations in the PLI.		
SEPA	24	The inclusion of marine non-native species within the CEMP is useful. It is recommended that the Eelgrass survey should follow the Water Framework Directive (WFD) tool protocol.		
	25	The significance of any changes to the coastal process and shoreline morphology should be assessed, in line with the River Basin Management Plan objectives.		
	26	A dredge plan should be drawn up to complement the CEMP in relation to measures including, but not limited to, reducing sediment plumes and in-combination effects during the dredging programme.		
	27	An archival/reconnaissance survey should be undertaken before any site investigation works start to review the results of previous radiological surveys undertaken by Rosyth Royal Dockyard Limited (RRDL) and others.		

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Consultee	No.	Point for inclusion	Section/ Pg ES	Sign
SNH	28	The further information that will be required for any appropriate assessment includes: • Full detail and description of the dredged channel to be created • The method of capital dredging to be used; • The frequency of maintenance dredging; • The use or disposal of the dredged material; • The type of sediment in the proposed channel and level of suspended sediment in surrounding waters. This will require additional borehole information to be collected for those parts of the dredged channel where this has not been done and for surrounding areas (including the area between the channel and the SPA); and • Hydrodynamic modelling to help to determine the impact of wave and tidal energy and sediment deposition on the SPA. Such modelling would also need to consider any changes to the geometry of the channel during the operational phase. The additional borehole information will help establish how likely these operational adjustments (slumping etc.) may be.		
	29	Assessment of the disposal sites at Blae Rock and Narrow Deep will need to be undertaken.		
	30	Priority Marine Features (PMFs) should also be considered during subtidal and intertidal survey work and in consideration of dredge disposal.		
	31	The baseline bird data will need to be updated given the amount of time that has elapsed since the original survey. The survey should span all times of the year when target species are present. As a minimum a survey period of August to April should be undertaken.		
	32	A minimum of two years winter survey data is recommended to allow for variation in bird use, unless it can be demonstrated that a shorter period of survey is sufficient.		
	33	The survey area must include all of the SPA area that may be affected by the proposed works, as a minimum.		
	34	New vantage points will be required to ensure complete coverage of the SPA		
	35	Consideration of noise modelling for determination of potential risk to seals, cetaceans and fish species will need to be included if the assumptions for the original HRO differ from the marine licences (e.g. if blasting is necessary).		

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Consultee	No.	Point for inclusion	Section/ Pg ES	Sign
RYA	36	The hydrodynamics and sediment regime modelled results should be used to investigate any changes in sedimentation regime, either increased or decreased rates, at locations within the sediment cell used for mooring by recreational sailors such as Limekilns, Brucehaven and North Queensferry.		
	37	Assurance should be provided that the dredging operations will have no significant impact on the Port Edgar Marina.		

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Appendix 3

In accordance with the MWR Schedule 3 Regulation 12(2), unless scoped out by the Scoping Opinion, Marine Scotland requests that any ES submitted in support of a marine licence application includes the below:

1. A description of the project and of the regulated activity, including details of the following matters—
(a) the location, size and nature of the project and the regulated activity;
(b) the quantity and nature and source of the materials to be used in the course of the project and the regulated activity;
(c) the quantity, nature and source of any items or materials to be deposited in the sea in the course of the project and the regulated activity; and
(d) the working methods to be used in the course of the project and the regulated activity.

2. A description of the aspects of the environment likely to be significantly affected by the project and the regulated activity, including—
(a) human beings, fauna and flora;
(b) soil, water, air, climate and the landscape;
(c) material assets and the cultural heritage; and
(d) the interaction between any two or more of the things mentioned in the preceding subparagraphs.

3.—(1) A description, complying with sub-paragraph (2), of the likely significant effects of the project and the regulated activity on the environment resulting from—
(a) the nature of the activities to be carried out and the manner in which they are to be carried out;
(b) the use of natural resources;
(c) the emission of pollutants;
(d) the creation of nuisances; and
(e) the elimination of waste.
(2) The description should cover each of the following categories of effect—
(a) direct and indirect effects;
(b) secondary effects;
(c) cumulative effects;
(d) short-term, medium-term and long-term effects;
(e) permanent and temporary effects; and
(f) positive and negative effects.

4. The forecasting methods used by the applicant to assess the main effects that the project and the regulated activity are likely to have on the environment.

5. A description of the measures envisaged to prevent, reduce and offset any significant adverse effects of the project and the regulated activity on the environment.

6. An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects of those alternatives and the project as proposed.

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7. A non-technical summary of the information provided under paragraphs 1 to 6.

8. Any difficulties, such as technical deficiencies or lack of knowledge, encountered in compiling any information of a kind specified in paragraphs 1 to 6.

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Appendix 4 – Pre-dredge Sampling Guidance

MARINE (SCOTLAND) ACT 2010

File Reference No.: FKB/

Sampling/analysis advice form for: **[Applicant Name]**

Name/location of dredging site: **(Location]**

Sampling Method

Grab Sampling 10.1		Core Sampling 10.2	

Summary of Samples analysis required

Number of sampling stations	
Number of grabs/cores* required per station ** delete as appropriate*	
Number of core fractions (see 10.2)	
Total number of samples	

Each sample will be sub-sampled and analysed for:

Metals	PAH	PCBs	TBT	PSA	TOC	Bioassay

Other Material (please specify)	

Total number of analyses to be undertaken (i.e. Total no. of samples x Total no. of analyses)	

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GUIDANCE FOR THE SAMPLING AND ANALYSIS OF SEDIMENT AND DREDGED MATERIAL TO BE SUBMITTED IN SUPPORT OF APPLICATIONS FOR SEA DISPOSAL OF DREDGED MATERIAL

Introduction

The purpose of introducing a code of practice for sampling and analysis of sediment/dredged material being undertaken by external parties is to ensure that the data being provided for the licensing authority are fit for purpose. It is not the intention of this document to provide an exhaustive list of guidance since each sea disposal operation is dealt with on a case-by-case basis; however it should be sufficient to initiate a pre-dredge survey strategy.

Applications for the sea disposal of dredged spoil are submitted under the Marine (Scotland) Act 2010. Part of the licensing process for sea disposal operations requires sampling and analysis of sediment/dredged material to be undertaken if existing analytical data for the same dredging area are more than 3 years old. The contaminant concentrations are used to assess the suitability of the dredged material for sea disposal.

1 Sample Station and Location

Table 1 is a general guide to the number of samples required to be collected and analysed for a particular volume of dredged sediment. Capital dredging or areas suspected to have high contaminant concentrations might require more samples to be collected in order to define the spatial extent of the contamination. Cores will be required if the dredge depth is greater than 1m and the sediment is fine grained. The number of core stations will be assessed in a similar way to the above, however the number of samples required will increase in order to identify the temporal extent of the contamination.

The scale of the dredging operation and site history will influence the extent of involvement of Marine Scotland Licensing Operations Team (MS-LOT) in defining the precise location of each of the sample stations. A location might be defined in terms of an annotated chart extract of the dredge area or as a series of latitude and longitude coordinates. If the sea bed is unsuitable for the recovery of a sediment sample, then a sample must be recovered as close to the original position as is practicable. The past and present activities undertaken in the harbour or port will in part control the location of sample stations. Appendix I includes the sampling protocol to be followed when using a grab or coring device.

2 Field Documentation

Each sample station must have a unique sample ID used to label and cross reference sub-samples taken from the same station.

A sample data sheet should include:

- Sample ID e.g. grab sample 1/ABZ/04, core samples 1/ABZ0-15/04, 1/ABZ50-65/04.
- Sample location e.g. Upper Quay, Victoria Dock.
- Sample coordinates in latitude and longitude in degrees minutes and decimals of minutes.
- Sample type i.e. sediment chemistry or sediment biology.
- Field Officer Name and Company Address.
- Date of collection.
- Time of collection.
- Depth of collection.
- Details of any deviation from sampling protocol.

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3 Sediment Description

A sediment description sheet should include:

- Colour e.g. brown, grey, black.
- Texture e.g. clay, silt, sand, pebbles (Note the classification scheme).
- Odour e.g. petrochemical, hydrogen sulphide.
- Stratification in the grab or core e.g. depth of oxic/anoxic interface.
- Biota: presence or absence.
- Anthropogenic inputs e.g. note the presence of an oily sheen, scum, paint flecks, coal, slag material etc.
- Estimate quantity of recovered sediment i.e. depth sediment in the grab or length of core.

4 Quantity of Sample Required

In order to undertake the basic chemical analysis 500g of wet sediment should be sufficient to determine metals, polyaromatic hydrocarbons, polychlorinated biphenyls and tributyl tin. However, this amount will increase if whole sediment bioassay or radionuclides are required.

5 Sediment Sample Containers for Chemical Analysis and Whole Sediment Bioassay

Ensure that the sample containers are not filled to capacity as they should be stored frozen – leave approximately 10% of the container volume empty to allow for expansion when frozen. Also keep the threads of all containers free from sediment to maintain a tight seal during storage.

5.1 Metals and Particle Size Analysis

- Wide-mouth opaque polyethylene containers e.g. Medfor Products Ltd Cat. No. 619 (Tel. No. 01252 371181).

5.2 Organic Analysis

- Wide mouth glass jars with aluminium foil (pre-washed with hexane) separating the sample from the lid, or aluminium containers pre-washed with hexane, e.g. de la Pak Cat. No. 5123071 (Tel. No. 01386 554441).

5.3 Sediment Bioassay

- Polythene bags.

6 Sample Storage and Transportation

Ideal standard conditions for the storage and transportation of sediment samples are as follows:

All field-collected sediment samples for chemical analysis should be kept in the dark at a temperature of 4ºC or less after collection, and **frozen as soon as possible** to avoid samples being compromised.

All field-collected sediment samples for biological analysis should be kept in the dark at a temperature of 4ºC.

All field-collected samples that require further processing before storage should be transported to the laboratory as soon as possible, preferably within 24 hr of collection.

Deviation from the above will need to be recorded by the contractor.

7 Sample Analysis

When choosing a contractor consideration should preferentially be given to laboratories that are accredited for the requirements of the work to be undertaken and that have experience in analysing marine sediments. The quality of the analytical procedures provides confidence in the licensing process and procedures used to

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gather and interpret the analytical results. It is essential that the external party can demonstrate that the sampling and analytical methods used are appropriate, rigorous, repeatable and auditable.
The contractor will need to satisfy the licensing authority that the laboratory used can report on the following standards for chemical analysis:

- Precision of ≤±25% of a matrix matched standard with a determinand concentration of 33% of the Action Level 1 threshold value (Tables 2-4).
- Limit of detection shown in Tables 2-4 calculated as the standard deviation of matrix matched blanks or low standards (n≥7) multiplied by 4.65.
- Percentage recovery reported for all the determinands requested using matrix matched certified materials or when not available spiked samples.

Supplementary information on the following would also be very useful.

- Evidence of on-going quality control (e.g. Shewhart charts).
- Successful participation in laboratory proficiency schemes.

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8 Retention of Samples

Samples must be retained until all the required consents for the operation have been confirmed.

Table 1 - Guide to the number of samples required for pre-dredge analysis

Volume Dredged (m^3)	No. of Samples Required
25,000	3
	4
50,000	5
75,000	6
100,000	7
	8
200,000	9
	10
300,000	11
	12
400,000	13
	14
500,000	15
600,000	16
	17
800,000	18
	19
1,000,000	20
	21
1,200,000	22
	23
1,400,000	24
	25
1,600,000	26
	27
1,800,000	28
	29
2,000,000	30

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Table 2 – Sediment QC criteria for trace metal (mg/kg) and TBT (µg/kg) concentrations

Quality Criteria	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn	TBT
33% AL1	6.6	0.1	16.5	9.9	0.1	9.9	16.5	42.9	33.3
Precision (%)	25	25	25	25	25	25	25	25	25
LOD	1.0	0.05	0.2	0.1	0.05	0.2	0.2	2.0	10.0

Table 3 – Sediment QC criteria for chlorinated biphenyl (µg/kg) concentrations

Quality Criteria	CB28	CB52	CB101	CB118	CB153	CB138	CB180	ICES7 CB	TOTAL CB
33% AL1	0.47	0.47	0.47	0.47	0.47	0.47	0.47	3.30	6.80
Precision (%)	25	25	25	25	25	25	25	25	25
LOD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	1.4

Table 4 - Sediment QC criteria for polycyclic aromatic hydrocarbon (µg/kg) concentrations

Quality Criteria	Naphthalene	Phenanthrene	Anthracene
33% AL1	33.3	33.3	33.3
Precision (%)	25	25	25
LOD	2.0	2.0	2.0
Quality Criteria	**Fluoranthene**	**Pyrene**	**Benz[a]anthracene**
33% AL1	33.3	33.3	33.3
Precision (%)	25	25	25
LOD	2.0	2.0	2.0
Quality Criteria	**Benzofluoranthenes**	**Benzo[a]pyrene**	**Indenopyrene**
33% AL1	33.3	33.3	33.3
Precision (%)	25	25	25
LOD	2.0	2.0	2.0
Quality Criteria	**Benzoperylene**	**Acenaphthylene**	**Acenaphthene**
33% AL1	33.3	33.3	33.3
Precision (%)	25	25	25
LOD	2.0	2.0	2.0
Quality Criteria	**Fluorene**	**Dibenz[a,h]anthracene**	**Chrysene**
33% AL1	33.3	3.3	33.3
Precision (%)	25	25	25
LOD	2.0	0.5	2.0

Please note that these detection limits are to be used as a guide. Where these detection limits cannot be met, please contact the Marine Scotland Licensing Operations Team (MS-LOT) for approval before undertaking testing: ms.marinelicensing@scotland.gsi.gov.uk. Detection limits **must** be above Revised Action Level 1 (Appendix 2) in order to gain approval.

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9 APPENDIX 2

9.1 GRAB SAMPLES: GUIDANCE PROCEDURES FOR THE SAMPLING AND COLLECTION OF PHYSICO-CHEMICAL SEDIMENT SAMPLES

9.1.1 General

9.1.1.1 ***Where possible all samples from one station should be collected from the same grab sample.***

9.1.1.2 ***Where insufficient sediment is available from one grab sample, further sediment may be taken from an additional sample providing the sample volumes are homogenised prior to sub-sampling.***

9.1.2 Sample collection

9.1.2.1 ***Preferably use a Day or Van Veen grab with stainless steel buckets.***

9.1.2.2 ***Wash the sampling grab between stations to prevent cross-contamination.***

9.1.2.3 ***At all times protect the samples from contamination e.g. vessel exhaust, winch grease, smoking etc.***

9.1.3 Sample collection: Metals and particle size

9.1.3.1 ***Use a polyethylene scoop/spatula to collect the sample.***

9.1.3.2 ***Avoid sampling from the edges of the grab. Take the sample from the surface to a depth of 5cm. Record the depth of an anoxic layer if present within the surface 10cm.***

9.1.3.3 ***Homogenise the sediment using a polyethylene spatula in a large polyethylene container.***

9.1.3.4 ***Transfer sub-samples to separate smaller polyethylene containers for metal and particle size analysis.***

9.1.3.5 ***All field-collected samples for chemical analysis should be kept at a temperature of 4ºC or less after collection (e.g. insulated box) and*** *frozen as soon as possible* ***to avoid samples being compromised.***

9.1.3.6 ***Ensure all sample implements are washed with seawater in between samples.***

9.1.4 Sample collection: Organic carbon and organic chemicals including TBT

9.1.4.1 ***Use a stainless steel scoop/spatula to collect the sample.***

9.1.4.2 ***Avoid sampling from the edges of the grab. Take the sample from the surface to a depth of 5cm. Record the depth of an anoxic layer if present within the surface 10cm.***

9.1.4.3 ***Homogenise the sediment using a stainless steel spatula in a large stainless steel container.***

9.1.4.4 ***Transfer sub-samples to a suitable glass or metal container and freeze it as soon as possible.***

9.1.4.5 ***All field-collected samples for chemical analysis should be kept at a temperature of 4ºC or less after collection (e.g. insulated box) and*** *frozen as soon as possible* ***to avoid samples being compromised.***

9.1.4.6 ***Ensure all sample implements are washed with clean seawater in between samples.***

9.1.5 Sample collection: Whole sediment bioassay

9.1.5.1 ***Use a polyethylene scoop/spatula to collect the sample.***

9.1.5.2 ***Avoid sampling from the edges of the grab. Take the sample from the surface to a depth of 5cm. Record the depth of an anoxic layer if present within the surface 10cm.***

9.1.5.3 ***Sediment should be stored in polythene bags (excluding as much air as possible) and stored in the dark at refrigerated at approximately 4ºC until delivered to the laboratory.***

9.2 CORE SAMPLES: GUIDANCE PROCEDURES FOR THE SAMPLING AND COLLECTION OF PHYSICO-CHEMICAL SEDIMENT SAMPLES

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9.2.1 General

9.2.1.1 ***Cores are usually required when the contaminant history of a dredge area is unknown and the depth of dredging exceeds 1m of fine sediment.***

9.2.1.2 ***Sample core intervals are a minimum of 15cm commencing at the sediment surface and then every 50cm thereafter e.g. 0-15cm, 50-65cm 100-115cm etc.***

9.2.1.3 ***A subset of the samples representing the top, middle and bottom of the core is initially chosen for analysis. The remaining samples may be used at a later date to confirm the spatial and temporal extent of elevated contaminant concentrations.***

9.2.1.4 ***Where insufficient sediment is available in the 15cm core extend the depth intervals until sufficient (i.e. 500g) sample is recovered.***

9.2.2 Sample collection

9.2.2.1 ***Preferably use a vibrocore with aluminium or plastic core liners.***

9.2.2.2 ***At all times protect the samples from contamination e.g. vessel exhaust, winch grease, smoking etc.***

9.2.2.3 ***The core intervals must be cut and capped at both ends.***

9.2.2.4 ***Ensure that the core ID, depth interval and orientation are recorded on the core sample.***

9.2.3 Sample recovery

9.2.3.1 ***Divide the core into two equal halves along the length of the core after it is extracted from the liner. Each half can be sub-sampled and homogenised using polyethylene and metal implements as described in 10.1.3.3 and 10.1.4.3 respectively.***

9.2.3.2 ***It is essential to avoid recovering sediment that has been in contact with the core liner and caps. Special attention is required when plastic liners are used and sectioned using a saw in order to avoid the inclusion of frayed plastic liner into the sample.***

9.2.4 Sample collection: Metals and particle size

9.2.4.1 ***Use a polyethylene scoop/spatula to collect the sample.***

9.2.4.2 ***Record the depth of an anoxic layer if present within the depth interval sampled.***

9.2.4.3 ***Transfer sub-samples of the homogenised sample from the larger container using a spatula to separate smaller polyethylene containers for metal and particle size analysis.***

9.2.4.4 ***All field-collected samples for chemical analysis should be kept at a temperature of 4ºC or less after collection (e.g. insulated box) and*** *frozen as soon as possible* ***to avoid samples being compromised.***

9.2.4.5 ***Ensure all sample implements are washed with seawater in between samples.***

9.2.5 Sample collection: Organic carbon and organic chemicals including TBT

9.2.5.1 ***Use a stainless steel scoop/spatula to collect the sample.***

9.2.5.2 ***Record the depth of an anoxic layer if present within the depth interval sampled.***

9.2.5.3 ***Transfer sub-samples of the homogenised sample from the larger container using a spatula to separate smaller aluminium or glass containers for organic carbon and organic chemical (including TBT) analysis.***

9.2.5.4 ***All field-collected samples for chemical analysis should be kept at a temperature of 4ºC or less after collection (e.g. insulated box) and*** *frozen as soon as possible* ***to avoid samples being compromised. Ensure all sample implements are washed with seawater in between samples.***

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11 Appendix II

Contaminant	Existing AL1 mg/kg dry weight (ppm)	Existing AL2 mg/kg dry weight (ppm)	Revised AL1 mg/kg dry weight (ppm)	Revised AL2 mg/kg dry weight (ppm)
Arsenic (As)	20	50-100	20	70
Cadmium (Cd)	0.4	2	0.4	4
Chromium (Cr)	40	400	50	370
Copper (Cu)	40	400	30	300
Mercury (Hg)	0.3	3	0.25	1.5
Nickel (Ni)	20	200	30	150
Lead (Pb)	50	500	50	400
Zinc (Zn)	130	800	130	600
Tributyltin	0.1	1.0	0.1	0.5
Polychlorinated Biphenyls	0.02	0.2	0.02	0.18
Polyaromatic Hydrocarbons				
Acenaphthene			0.1	
Acenaphthylene			0.1	
Anthracene			0.1	
Fluorene			0.1	
Naphthalene			0.1	
Phenanthrene			0.1	
Benzo[a]anthracene			0.1	
Benzo[b]fluoranthene			0.1	
Benzo[k]fluoranthene			0.1	
Benzo[g]perylene			0.1	
Benzo[a]pyrene			0.1	
Benzo[g,h,i]perylene			0.1	
Dibenzo[a,h]anthracene			0.01	
Chrysene			0.1	
Fluoranthene			0.1	
Pyrene			0.1	
Indeno(1,2,3cd)pyrene			0.1	
Total hydrocarbons	100		100	
Booster Biocide and Brominated Flame Retardants *				

*Provisional Action Levels for these compounds are subject to further investigation.