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ABERDEEN HARBOUR (AHEP) - NEW EIAR & SUPPORTING DOCUMENTS - LICENCE EXTENSION & BLASTING

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

Marine Mammals

Marine Scotland Science have reviewed the documents regarding the Environmental Impact Assessment Report Aberdeen Harbour Expansion Project: Revised Blasting Methodology Issued: 28th October 2019. With respect to marine mammals we have focussed in particular on Appendix B AHEP: Underwater Noise impact study for increased blast charge weights, CEMP Chapter 11: Marine Mammal Mitigation Plan and the SNH advice, dated 14th January 2020.

General comments

AHEP are proposing to increase the charge weight of the blasting up to a maximum of 80 kg. AHEP propose to set precautionary noise threshold limits which will be monitored using underwater water noise measurements to assess noise levels of increase charge sizes after bubble curtain attenuation.

MSS broadly agree with the methodology proposed and the SNH advice, which would implement a noise threshold of 183 dB re 1 μ Pa (peak) at 400 m distance or just outside the bubble curtain (whichever is furthest from source), and a Sound Exposure Level (SEL) of 155 dB re 1 μ Pa²s, measured over the blast duration. However, MSS have some concerns regarding the practicality of implementing this threshold. These concerns centre around the equipment and techniques to be used to monitor underwater noise, and the reporting procedures to be used to ensure compliance with the threshold.

MSS recommend that MS-LOT requests a full technical specification of the equipment to be used for this monitoring, to ensure that it is fit for purpose. We also recommend that MS-LOT request a protocol for the use of this equipment. We recommend that the underwater noise measurements are carried out using hydrophones which are calibrated and are of a suitable sensitivity to detect the blast noise. They should also be capable of providing real time measurements, in order to allow the measurements to be used within the adaptive management framework, to stop work from proceeding if the threshold is breached.

MSS recommend that MS-LOT request a detailed process document on how the noise measurements will be used to inform the adaptive management plan, the actions to be taken in the event of a breach of the threshold, and the time scales at which compliance reporting will be made to MS-LOT. This should ensure that there is no delay in using the noise measurements to inform whether to maintain, reduce or increase charge size, which would reduce the risk of the noise threshold being breached.

MSS highlight that the issues encountered in the previous underwater noise monitoring procedure in 2018, where some measurements failed to be recorded at the northern breakwater area, have not been addressed. MSS recommend that MS-LOT request that these issues are addressed in the revised underwater noise monitoring procedure in order to establish confidence in the planned approach for obtaining these measurements.

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MSS recommend that underwater noise monitoring is carried out for the southern breakwater area at a maximum of 20 kg before the increased charge size is implemented. The effectiveness of the bubble curtain arrangement in this area needs to be established as it is much closer (100 m) to the detonations than that used previously in the northern breakwater area (650 m). Following testing we would recommend that the increments are increased in 5 kg units for Phase 1 not 10 kg.

If it can be demonstrated that the underwater noise monitoring procedure is sufficient to ensure that blast noise is monitored and mitigated to within the noise thresholds, then MSS are content with the mitigation in place in terms of risk of injury to marine mammals. However, if this cannot be demonstrated, MSS recommend MS-LOT request further mitigation options from the developer, to avoid the potential for injury to marine mammals. MSS advise that an EPS licence will still be required for disturbance of cetaceans regardless of the monitoring and adaptive management strategy.

MSS have the following technical comments on the documents. These are of less importance in the situation where it is agreed that the monitoring is suitable and sufficient, but are noted here for completeness.

Environmental Impact Assessment Report

Section 2.6.1 – It is MSS's understanding that the seal relocation licence has not been approved. Therefore, the relocation of seals should not be included as a mitigation option in calculations for the realistic scenario.

Section 2.6.2 – details the proposed phases for incremental increase in charge size. The number of charges per blast to be used is not clear and MSS advise that this should be clarified. The section also states that the noise of the blast will only be as loud as the largest detonation in the blast sequence, however, multiple detonations will all contribute to the Sound Exposure Level (SEL). As noted above, MSS agree with SNH advice that the SEL threshold of 155 dB re 1 $\mu\text{Pa}^2\text{s}$ should also be assessed in the noise modelling and measured during the underwater noise monitoring.

Section 4.3.2 - Figures 4.3 and 4.4 – shows the sound level of the blast for different numbers of detonations. The graphs are missing the values on the y axis. It is also not clear at which distance Figure 4-3 plots the blast levels from. Have they been back propagated to the same distance? The combined weight of the charge should be on the x axis and not the number of detonations. The peak SPL not rms SPL would also be a more appropriate measure for the blast level for explosives (especially given that peak SPL is to be used in the monitoring threshold).

Section 6.4.5 presents the predicted results of the noise with and without the double bubble curtain attenuation. The predicted PTS ranges shown in Figures 6-10 and presented in Table 6.9 show a plateau at 100 m for minke whale and grey seal with the bubble curtain. Is there an explanation as to why the impact distances do not increase with increasing charge size?

Appendix B: Underwater Acoustic Impact Study for Increased Blast Charge Weights

MSS have concerns regarding the noise modelling assessment. It appears that the predicted impact ranges are based on the modelling of one frequency (100 Hz). If this is the case then the SEL calculations will be underestimated. MSS recommend that the modelling is carried out using a frequency spectrum of blast noise, preferably using one derived from the noise monitoring.

MSS note that the mean duration of the blast noise has been used to calculate SEL impact ranges. To be precautionary MSS advise that the maximum duration of blasts should be used for these calculations.

CEMD Chapter 11

MSS recommend that an updated figure is provided which includes the location of boat C in Section 11.7.4.

Marine fish ecology

MSS support continued use of the double bubble curtain to reduce noise related impacts to marine fish further afield. Monitoring, as discussed in the marine mammal comments will allow insight into the noise levels outside the curtain.

Inside the double bubble curtain, herring and whiting were the two main species of fish killed during the previous blasting events. These fish species are at risk of mortality and potential mortal injury at sound

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pressure levels above 229 dB re 1 μ Pa. The mitigation for marine mammals has set the limit for noise levels at 183 dB re 1 μ Pa (peak), outside of the bubble curtain. Using 229 dB re 1 μ Pa (peak) as a precautionary noise level, the noise modelling displayed in Table 5.6 predicts that all fish present within the double bubble curtain during blasting will be killed when using a 40kg charge weight and above. However, not considering the technical comments on the noise modelling in the marine mammal section above, the noise modeling carried out by the developer predicts that the double bubble curtain present at 100m from the blast location will mitigate noise impacts and the noise level will not exceed the 183 dB re 1 μ Pa (peak). MSS consider that there will be no likely negative impact to herring and whiting populations, as a whole, caused by fish kills inside the bubble curtain due to the blasting.

Again, MSS agree with SNH advice that charge weights should be increased by 5kg rather than 10kg in phase 1 for the blasting locations in the south of the bay.

With regards to the fish scarer, MSS note that fish kills appeared to reduce when the fish scarer was detonated 1 minute before blasting. However, this is only based on 4 detonation events which does not seem sufficient evidence to make the assumption that the measure is effective or that 1 minute before blasting is more effective than 5 minutes. Other factors such as time of year, for example, could have influenced this observation as detonations for 5 minutes before blasting took place across August to October and detonations for 1 minute before blasting took place across October to November. MSS recommend further observations are required to confirm the effectiveness of this measure. If, when detonating 1 minute before blasting, the number of fish kills suddenly increases above the numbers seen for detonation 5 minutes before blasting (i.e. over 100 fish kills which was the maximum amount of fish killed when detonating 5 minutes before blasting) then MSS recommend returning to detonating 5 minutes before blasting.

MSS recommend that dead fish are collected after each blast and carefully observed, measured and photographed to allow accurate identification of species. Recovered fish should not be returned to the water. The numbers and species of fish, along with the photographs can be added to the post-blast reports for injured or dead marine fish which are submitted to MS-LOT. This will give a more accurate record of the species of fish impacted by the blasting.

Commercial fisheries

MSS have no further comments on commercial fisheries.

Diadromous fish

The lack of response of salmonids to other high energy impulsive underwater sounds (pile driving noise, Harding *et al.*[2016]) would suggest that small detonations may be ineffective at displacing salmon and sea trout. Although the salmon and sea trout tracking project was intended to give information on fish movement during periods when detonations were being carried out, which could have been informative, the delay in the start to detonations resulted in the study being carried out when there were no detonations. Although, as MSS understand, there is no intention to carry out another tracking study, any opportunities to further investigate the effectiveness of the small detonations to scare diadromous fish should be pursued.

As noted in the marine fish ecology comments, every effort should be made to develop as good a protocol as possible for searching for, and recovering for careful examination and identification, fish which are killed in detonations, so that any diadromous fish are not overlooked, in the recording and reporting of observations. Photographs should be taken of all fish which are recovered. Recovered dead fish should not be returned to the water.

Marine Ornithology

The review of the 2015 Environmental Statement provides a summary of where changes have been made for the ES supporting the October 2019 application. With respect to ornithology this states that an additional assessment has been carried out (Section 7 of EIAR), additionally the HRA has been updated (section 10 of EIAR).

The summary notes that a number of bird species are present in the vicinity of the development site including individuals likely to be originating from SPA sites. The increase in the construction period is stated to be likely to extend the period over which displacement effects will occur compared to those assessed in the 2015 ES. It

is noted though that displaced birds are expected to be able to use alternative habitat in Aberdeen Bay and elsewhere.

SNH provided advice on the application (dated 14th January 2019). With respect to ornithology, SNH raise concerns around Eider duck as a qualifying interest of Ythan Estuary, Sands of Forvie and Meikle Loch SPA, stating that the proposal is likely to have a significant effect on this feature. However, SNH add that subject to conditions (provided in Appendix A of their advice letter) a new licence for the project could be issued without serious adverse effects. Three of the four suggested conditions are relevant to eider duck: 1. SNH recommend that the Construction Environmental Management Document (CEMD) should be implemented. 2. SNH recommend that the Vessel Management Plan (VMP) be implemented. 3. To ensure that mitigation measures are effective, SNH recommend that a Monitoring Strategy be implemented with inclusion of monitoring use of the new harbour and surroundings by eider duck during construction and once in operation. These recommendations are expanded on in Appendix B of the SNH advice, e.g. for condition 1, an observer will ensure that blasting activity is delayed until any diving birds have surfaced.

MSS advise that subject to the conditions recommended by SNH, summarised above, that the development could proceed without serious adverse effects on the key species and feature (Eider duck as a qualifying interest of Ythan Estuary, Sands of Forvie and Meikle Loch SPA).

Benthic Ecology

Extension to the licence for dredging

MSS does not consider that extending the dredging licence until 2021 will substantially change the impacts of the proposed dredging that has already been given a licence until Feb 2020. The local ecosystem will have already been altered by the removal of 4,928 020 m³ of material. Similarly, the surrounding ecosystem will have already been altered by the increase in suspended sediment over a predicted 71 km².

In comments on the original Environmental Statement, MSS highlighted that the proposed permanent loss of 71,133.15m² of intertidal habitat (32% of total) and 140,984.76m² (25% of total) of subtidal habitat have been assessed as having a negligible impact at a regional and national level. Impacts on the local ecosystems were not discussed and there is no further discussion of such impacts in this document and no mitigation measures have been proposed. Nor is there discussion of the impact of the increase in suspended solids and increase in sediment deposition.

Physical environment / coastal processes

MSS have reviewed the relevant documents and licences and, based on the information provided, especially with regard to chapters 6 and 7 in the original EIAR (covering the marine physical environment and marine water and sediment quality), MSS have no further comments.

The documents state that no additional assessment is required for the above mentioned topics. MSS agrees with this conclusion since there is no change to the location or design parameters of the already consented work as a result of the changes proposed in the 2019 applications (i.e. no increase in the dredge area or volume). The document states that the required changes are highly unlikely to result in significant alterations to the seabed bathymetry, wave and tidal regimes, sediment transport, erosion or accretion processes, sediment disturbance, suspended sediment levels, contaminant levels or water and sediment circulation patterns, and MSS agrees that no additional assessment is required for these processes.

Aquaculture

There is no change to advice previously given on this development as there have been no change to aquaculture sites in this vicinity.

Hopefully these comments are helpful to you. If you wish to discuss any matters further contact the REEA Advice in-box at MSS_Advice@gov.scot.

Yours sincerely

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27 January 2020

References

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Wright H (Hamish)

From: Lina-Elvira Back <LiBack@aberdeencity.gov.uk>
Sent: 24 January 2020 15:53
To: MS Marine Licensing
Subject: RE: 07035/07161 – Aberdeen Harbour Board (per Dragados) – Aberdeen Harbour Expansion Project – Nigg Bay, Aberdeen - Consultation - Response required by 14 January 2020

Importance: High

Hi Anni
Aberdeen City Council have no comments on this consultation.

Kind regards



Lina-Elvira Bäck | Environmental Planner

Protecting the irreplaceable. Promoting the sustainable

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Northern Lighthouse Board

Your Ref: MSL 07035 / 07161
Our Ref: AL/OPS/ML/A10_03_081

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13 December 2019

MARINE (SCOTLAND) ACT 2010, PART 4 MARINE LICENSING THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)

07035/07161 – ABERDEEN HARBOUR BOARD (PER DRAGADOS) – ABERDEEN HARBOUR EXPANSION PROJECT – NIGG BAY, ABERDEEN

Thank you for your e-mail correspondence dated 10th December 2019 regarding the Marine License extension request submitted by **Dragados on behalf of Aberdeen Harbour Board**, relating to the blasting and dredging campaigns within the Nigg Bay construction area.

Northern Lighthouse Board have no objection to the granting of an extension to the Marine Licenses referenced above.

Yours sincerely
[Redacted]

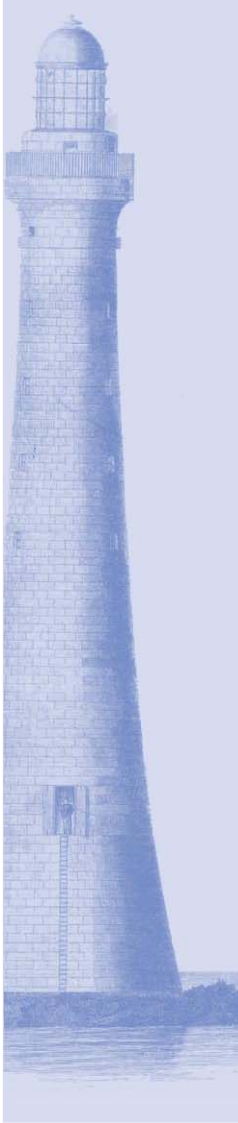
Peter Douglas
Navigation Manager

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Wright H (Hamish)

From: Thomas Bulpit <Thomas.Bulpit@mcga.gov.uk>
Sent: 19 December 2019 13:46
To: MS Marine Licensing
Cc: navigation safety
Subject: RE: 07035/07161 - Aberdeen Harbour Board (per Dragados) - Aberdeen Harbour Expansion Project - Nigg Bay, Aberdeen - Consultation - Response required by 14 January 2019

Dear Marine Scotland,

Thank you for the opportunity to comment on two further Marine Licence applications submitted as part of the Aberdeen Harbour Expansion Project. MCA Navigation Safety Branch have reviewed the supporting information for both and our responses are as follows:

07035 – Marine Licence – Capital Dredging and Sea Deposit – Nigg Bay, Aberdeen

On the understanding that this is for a time extension only for the disposal operations at the existing consented disposal site then MCA have no objections to make provided our original advice remains in effect, including the requirements that local Notices to Mariners and HM Coastguard be updated.

07161 – Marine Licence – Construction of New Harbour and Use of Explosive Substances – Nigg Bay, Aberdeen

On the understanding that this is for a change to the methodology and a time extension of blasting activities up to 31st December 2021, MCA have no objections to make. The works are set to take place within a Statutory Harbour Authority area, who may wish to issue local warnings to alert those navigating in the vicinity. HM Coastguard should also be updated in line with our original advice.

Should you have any questions please feel free to contact us.

Best Regards,

Tom

Thomas Bulpit, Marine Licencing Lead
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Safer Lives, Safer Ships, Cleaner Seas





Dee District Salmon Fishery Board

Hamish Wright
Marine Licensing Support Officer
Marine Scotland – Marine Planning & Policy
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14th Jan 2020

Dear Mr. Wright,

**MARINE (SCOTLAND) ACT 2010, PART 4 MARINE LICENSING THE MARINE WORKS
(ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)**

**07035/07161 - Aberdeen Harbour Board (per Dragados) – Aberdeen Harbour Expansion
Project – Nigg Bay, Aberdeen.**

The Dee District Salmon Fishery Board (Dee DSFB) welcomes the opportunity to comment upon the above marine licence applications request for an extension of the project duration until the end of 2021 and a change to the blasting regime.

Background

The (AHEP) is located adjacent to the main stem of the River Dee and is on a direct migration pathway for Atlantic salmon. The Dee has been designated as a Special Area of Conservation under the EC Habitats Directive 92/43 EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna, for Atlantic salmon, Freshwater Pearl Mussels and Otters.

Sea trout, the migratory form of *Salmo trutta* are present within the proposed development area and utilize the habitat as both a migratory pathway and feeding area. Sea trout are currently designated as a priority species under the UK Biodiversity Action Plan.

Atlantic salmon enter the Dee each month of the year and are therefore likely to be present on the adjacent coast throughout the year in varying numbers. Adult salmon and sea trout are known to travel back and forth along the coastal zone in preparation for entering their natal rivers when conditions are suitable. Shore based netting stations for salmon and sea trout operated in Nigg Bay until the 1980's. These nets intercepted adult salmon and sea trout in Nigg Bay highlighting that fish follow the shoreline and use the bay. The olfactory

organs of salmonids are especially sensitive to pollutants and may detect them at extreme dilutions. Salmon and sea trout require their olfactory organs to recognise their natal river. Any disruption to these senses may delay or reduce the fish's ability to "home". In addition turbid water results in a stress response in salmonids, which may result in reduced ability to evade predators, compromised immune system, impaired out-migration behaviour and reduced osmoregulatory competence; all of which can decrease survival rates.

The Dee DSFB commented that the monitoring of adult salmon migration along the coast past Nigg Bay and into the River Dee would be essential to determine any real impacts on salmon migration. The importance of this was recognised by Condition 3.2.7 of the Dredging Marine Licence which required a monitoring programme to be developed to track salmon.

As in our previous responses to high impact marine works at Nigg Bay the Dee DSFB strongly believe that due to insufficient monitoring taking place there is insufficient data to inform us as to how salmon and sea trout may use Nigg Bay and consequently how they may be impacted by construction activities. Therefore it is impossible for us to properly evaluate the likely impacts of the extension to the project duration and the changes in blast regime. Dredging along with other high impact construction activities has been ongoing over the last 3 years, the Dee DSFB are concerned that a considerable amount of material has still to be dredged. The last three years of construction have coincided with some of the lowest salmon catches on record for the Dee. The historically low numbers of fish now returning to the Dee and their conservation and economic value warrant a precautionary approach when evaluating any activity that may negatively impact on their survival.

Changes to Blast Regime.

Construction Marine Licence application to permit blasting up to the 31st Dec 2021 and for the use of a maximum permissible charge weight of 80kg.

Atlantic salmon and sea trout use the Nigg Bay area during their migrations. Increasing the charge size has the potential to negatively impact these fish. The EIAR concludes that increased charge sizes are unlikely to affect salmon and sea trout, however there is a lack of data available to accurately predict when and how these species may use the Nigg Bay area. There is also uncertainty on the potential effects of increased particle motion on salmonids due to blasting.

In the reporting and management of dead fish the Dee DSFB would reiterate that we are informed by the ECoW in the event that 5 or more fish carcasses are reported during a 24hr period. This requirement is missing from 8.5.8 "Reporting commitments" table on the last page of the Fish Species Protection Plan, chapter 8 of the CEMD.

The effective monitoring of underwater noise and vibration is essential for limiting impacts on fish. Noise monitoring should cover all required parameters and be consistent. The Dee DSFB supports the requirement that noise levels should not exceed the current noise benchmark condition of 170dB re 1 μ Pa rms at 400m from the blast location or outside the bubble curtain, whichever is the greatest.

The extension of the project increases the time span of general disturbance for migrating salmonids in an area very close to or within their migration corridor as they migrate to and from the sea.

The Dee DSFB would request that any licence granted is in accordance with all up to date assessments and methodologies provided by the developer as part of the licence application. Regular Environmental Liaison Group meetings should also be held to discuss any issues and to update and inform stakeholders.

Dredging and Sea Disposal

Around 273,000m³ of soft sediment material remains to be dredged and disposed of at the licensed offshore disposal site, with a further 262,000m³ of rock material to be dredged and used for construction. The proposed completion date is the 31st of December 2021.

There is no proposed increase in dredging or dredged material disposal as a result of the proposed extended construction time. However the extension could mean that a further 2 smolt and adult migration seasons may be impacted by dredging. Findings from recent smolt tracking work indicates that smolts leave the Dee in April/May and head in a south easterly direction. This means that smolts could be in the vicinity of the disposal site from April until June. The EIAR states that juvenile and adult fish can generally tolerate high concentrations of suspended sediment, however due to undergoing significant physiological changes smolts may be particularly vulnerable to various impacts such as sediment levels, noise/vibration and general disturbance. Due to the smolts vulnerability at this stage suspended sediment levels should not be permitted to exceed those predicted by the EIAR. If levels are exceeded the Dee DSFB would request that dredging is stopped until the licensee puts measures in place to reduce sediment levels.

Ongoing and effective monitoring of suspended sediment concentrations, underwater noise and vibration for both the construction site and the disposal site is essential for limiting impacts on fish. Monitoring should cover all required parameters and be consistent.

The Dee DSFB would request that any licence granted is in accordance with all up to date assessments and methodologies provided by the developer as part of the licence application. Regular Environmental Liaison Group meetings should also be held to discuss any issues and to update and inform stakeholders.

Yours sincerely
[Redacted]

Edwin Third
River Operations Manager
For and on behalf of the Dee District Salmon Fishery Board.

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Our case ID: 300019623

Your ref: 07035

10 January 2020

Dear Sir/Madam

Marine (Scotland) Act 2010

**Marine Licence Application for Dredging and Sea Disposal
Aberdeen Harbour Expansion Project - Nigg Bay, Aberdeen**

Thank you for your consultation on this Marine Licence Application for the Aberdeen Harbour Expansion Project.

Our understanding from the supplied documents is that this is an application for the extension of the duration of the previously licenced dredging and sea disposal. Furthermore, we understand that there is no change to the existing dredging and disposal plans other than the time extension. We are therefore content with the application and have no further comments to offer.

Please contact us if you have any questions about this response. The officer managing this case is Andrew Stevenson who can be contacted by phone on 0131 668 8960 or by email on andrew.stevenson2@hes.scot.

Yours faithfully

Historic Environment Scotland



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T: 0131 668 8960

Our case ID: 300019623

Your ref: 07161

10 January 2020

Dear Sir/Madam

Marine (Scotland) Act 2010
Marine Licence Application for Construction Projects
Aberdeen Harbour Expansion Project - Nigg Bay, Aberdeen

Thank you for your consultation on this Marine Licence Application for the Aberdeen Harbour Expansion Project.

Our understanding from the supplied documents is that this application relates to the blasting of rock and extension of the overall construction programme, including an increase in charge weights for blasting. In terms of the monitoring of vibration and any potential impact on St Fittick's Church as a result of blasting we note that the updated CEMD retains the existing limits previously set out (CEMD Sections 13.6.1.1 and 13.6.2). We are therefore content with the application and have no further comments to offer.

Please contact us if you have any questions about this response. The officer managing this case is Andrew Stevenson who can be contacted by phone on 0131 668 8960 or by email on andrew.stevenson2@hes.scot.

Yours faithfully

Historic Environment Scotland

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14th January 2020

Construction Environmental Management Document (CEMD)

Dear Hamish Wright,

Thank you for the opportunity to provide comments on the Construction Environmental Management Document (CEMD) for the Aberdeen Harbour Expansion Project (AHEP). Given our area of interest, we have only focused on the marine mammal sections.

Overall we are pleased with the continued mitigation and monitoring that is planned for the AHEP but we still have some outstanding comments on the revised CEMD.

Due to the project being behind schedule, changes to the blasting methodology have been proposed. These include an increase in the charge weight of the blast and the duration of blasting permitted.

The revised CEMD proposes to increase the charge weight to a maximum of 80kg in two phases. Phase 1 of the blasting regime proposes to increase the charge weight at 10kg intervals up to 40kg. Six blasts will be undertaken for each charge level, starting with a charge weight of 20kg. After 40kg, six blasts will be undertaken for each charge level however the charge weight increments will be reduced to 5kg to a maximum charge weight of 80kg (phase 2).

To date, a maximum charge of 20kg has been used for the blasting and these blasts have occurred in the north area of the bay. No blasting has occurred in the south area of the bay and the double bubble curtain configuration will be different in the south area (*e.g.*, only 100m from blast site). Therefore, we do not consider the 10kg increments in phase 1 to be sufficiently precautionary. Charge weights for phase 1 and phase 2 should be at 5kg increments. Furthermore, blasting increments should not increase more than once a day to allow MS-LOT to ensure that the peak noise level is not exceeding the agreed noise threshold (183 dB Peak/170 dB RMS).

Whilst we understand that increasing blast weight will increase the efficacy of the project and reduce the overall duration of blasting, this is a novel project and requires real data to ensure



that a precautionary approach is being undertaken.

We support the more detailed comments on the noise modelling and concerns of the charge weights submitted by SNH.

WDC requests to be included in any reports, consultations and discussions on the marine mammal aspects of the project, including the upcoming document regarding the use of ADDs and potential removal of seals.

We hope you find these comments useful and would be happy to discuss these further.

Yours sincerely,

[Redacted]

Fiona Read
Policy Officer

Hamish Wright
Marine Scotland
Marine Planning and Policy
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By email only to: MS.MarineLicensing@gov.scot

14 January 2020
Our ref: CLC157708
Your ref: 07035/07161

Dear Mr Wright

**Marine (Scotland) Act 2010, Part 4 Marine Licensing
The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as Amended)
Aberdeen Harbour Board – Aberdeen Harbour Expansion Project – Nigg Bay
New Marine Licence Request**

Thank you for this consultation which requests new marine licences for construction of the Aberdeen Harbour Expansion Project, and for continued dredging and disposal. Importantly, a new blasting regime is proposed to remove rock from the north and south sections of the harbour. We have reviewed the supporting information and have the following advice to provide.

The proposal raises natural heritage interests of international interest, therefore SNH objects to it, unless it is made subject to appropriate conditions.

The issues to be covered by conditions are attached as Appendix A.

The following natural heritage interests could be affected by this proposal:

- Bottlenose dolphin as a qualifying interest of the Moray Firth Special Area of Conservation (SAC).
- Grey seal as a qualifying interest of the Isle of May SAC.
- Atlantic salmon as a qualifying interest of the River Dee SAC.
- Eider duck as a qualifying interest of the Ythan Estuary, Sands of Forvie and Meikle Loch Special Protection Area (SPA).
- The geological interest of Nigg Bay Site of Special Scientific Interest (SSSI).

In our view the proposal is likely to have a significant effect on the qualifying interests of these SACs and SPA. As a consequence Marine Scotland is required to undertake an appropriate assessment in view of the conservation objectives for these sites. We advise that we have undertaken appraisals of the proposal and have concluded that the new licences for this harbour expansion project could be implemented without serious adverse effects on these sites and the wider natural heritage, provided the consent is subject to a number of conditions to mitigate the effects. We provide advice on the subjects required to be covered by conditions in **Appendix A** and provide our appraisal of the impacts in **Appendix B**.

The proposal also potentially affects the notified interest of Nigg Bay SSSI as noted above. The monitoring condition in **Appendix A** will also safeguard this interest and we advise that there should be no modification of the cliff face or of the exposure of sediments in the cliff face.

We hope that our comments are helpful. Please do not hesitate to get in touch with Catriona Gall, Policy and Advice Officer (catriona.gall@nature.scot, 01738 458665) should you have any queries in relation to this advice.

Yours sincerely

Darren Hemsley
Operations Manager
Tayside and Grampian
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Appendix A

List of Proposed Conditions

The table below does not suggest the particular phrasing of any condition, but indicates what each should be designed to achieve. We would welcome the opportunity to advise further on the detail of these conditions.

Condition	Reason
<p><i>Details on Construction Methodology</i></p> <p>We welcome provision of the Construction Environmental Management Document (CEMD) which we recommend should be implemented. This provides the detailed construction method statements and construction environmental management plans for undertaking work on-site and provides sufficient information to support conclusions of no adverse effect on the integrity of SACs and SPAs.</p>	<p>To minimise disturbance and injury to marine mammals, Atlantic salmon and eider duck.</p> <p>To protect the special interest of Nigg Bay SSSI.</p>
<p><i>A Marine Mammal Mitigation Plan</i></p> <p>We welcome provision of the marine mammal mitigation plan which we recommend should be implemented. This provides the detailed mitigation methods to avoid impacts on marine mammal interests and to support conclusions of no adverse effect on the integrity of the Moray Firth and Isle of May SACs.</p>	<p>To prevent injury and minimise disturbance to marine mammals.</p>
<p><i>Vessel Management Plan</i></p> <p>We welcome provision of the vessel management plan which we recommend should be implemented. This provides details on vessel numbers, their speeds, frequency of trips and routes.</p>	<p>To minimise disturbance to marine mammals and eider duck.</p>
<p><i>Monitoring Strategy</i></p> <p>There should be a monitoring strategy to record:</p> <ul style="list-style-type: none">- underwater noise produced from piling and blasting and effectiveness of mitigation;- use of Nigg Bay by marine mammals during construction;- use of the new harbour and its surroundings by eider duck during construction and once it is operational; and- impacts to Nigg Bay SSSI during construction.	<p>To ensure the proposed mitigation is effective for marine mammals, eider duck and Nigg Bay SSSI.</p>

Appendix B

Appraisal of Natural Heritage Impacts

The majority of the project is unchanged from that consented under the existing marine licence. However, due to delays in the start of the blasting programme, the presence of seals in the mitigation zone and adverse weather conditions, the project is running significantly behind schedule. To address this, there are significant changes to the proposed blasting methodology including an increase in the duration over which blasting is permitted to take place and an increase in the size of charges to be used. It is proposed to extend the overall duration of the construction programme to 31st December 2021. These changes are described in more detail in the Environmental Impact Assessment Report (October 2019) that supports this application.

Marine mammals

We have considered the changes to the proposed blasting schedule in relation to marine mammal interests in particular, including bottlenose dolphin from the Moray Firth SAC and grey seal from the Isle of May SAC. The blasting regime proposed in this consultation is as follows;

- Initial increase increments – phase 1 – 20 kg, 30 kg and 40kg (increases of 10 kg).
- Followed by – phase 2 – 45 kg, 50 kg, 55 kg, 60 kg, 65 kg, 70 kg, 75 kg and 80 kg (increases of 5 kg).
- There will be **6 blasts** at each charge weight. Underwater noise monitoring inside and outside the bubble curtain will be taken for each blast.
- Maximum allowed noise level – **183 dB re 1 µPa (pk)** based on 170 dB re 1µPa (rms). This level must not be breached at either 400m from blast zone, or just outside the double bubble curtain (whichever is the greater distance).
- In addition, a precautionary control limit (PCL) of **178 dB re 1 µPa (pk)** is proposed.
- The MMO/PAM pre-blast mitigation methods have not changed and are as have been previously agreed.
- CPOD data collection methods have not changed.
- Underwater noise monitoring proposed, initial indications within 24 hrs, and calibrated levels within 72hrs, together with monthly reports to MSLOT.

If all blasting were to be completed using 20kg charges, then there be 216 days blasting days. This is likely be within a total duration of 393 days (to include weather related issues and non-blasting days). If all blasting were to be completed using the 80 kg charges, then the number of blast days would be reduced to 124, within 225 days period.

The issue with increasing the charge weights is that the noise levels will be greater than the 20kg previously assessed and agreed. Therefore for this new licence, the noise modelling has been revisited, including noise abatement achieved by the bubble curtain to predict potential impact.

Although the confined blast model has been refined using the measurements from the blasts already conducted. There remain uncertainties and concerns;

- Noise models for this scenario are not well established, or benchmarked. Although the model has been adjusted using measured in-field levels, there are relatively few of these, 33 inside the bubble curtain and 21 outside. Also, these are from blast locations in the north of the bay, with the double bubble curtain situated approximately 600m from the blast zone.
- There is a lack of experience to date related to the levels of noise we are likely to see when the blast zone is in the south of the bay, and uncertainty as to the efficacy of the double bubble curtain when situated only 100m from the blast zone. The ranges predicted at which the noise levels fall below the threshold levels, are in some instances counterintuitive as they plateau (e.g. table C1 for low frequency cetaceans; the range given here is 100m for all charge weights using the peak metric). When the SEL metric is considered, the noise levels fall to threshold within the mitigation zone of 1km for charge weights of 40 kg or less.
- Our view is that increasing the numbers of charges in one field, is unlikely to increase the peak level significantly, but an increasing number of charges in the field will increase the noise dose duration.

We see the benefit of using larger charge weights in relation to the total time taken for the blasting campaign. Clearly there should be less overall impact if the activity is conducted in a shorter time frame. However, MSLOT need to be satisfied that the adaptive management suggested will be robust enough to stop increases in charge weights if required. **We do not agree with the charge weight increments of 10kg in phase 1 for the blasting locations in the south of the bay. We suggest, that until the measurements start to come through, that the increases are limited to 5kg.** We will have more information once the first 6 blasts in the south are measured, and the noise levels outside the double bubble curtain are reported. We can re-evaluate at that time.

As noted previously we have concerns with using SPL (rms) as a threshold, which is why we now have a SPL (pk). For impulsive sounds rms is not an appropriate metric, more commonly used in the assessment of continuous noise sources (NPL 2014). The auditory injury metrics that are generally used (Southall et al 2007; Southall et al 2019; NMFS 2018) are SPL (pk) and SEL weighted for auditory hearing range.

We are content that the peak threshold of **183 dB re 1 μ Pa (pk)** is sufficiently precautionary and should ensure that there is no auditory damage caused to any marine mammal. We are concerned that an increase number of charges detonated in one field will increase the SEL noise dose, and suggest the SEL threshold level be **155 dB re 1 μ Pa²s(SEL)¹**, over the duration of the blast noise. This should be weighted as per the latest guidance (Southall et al 2019 and NMFS 2018). We may have to rely on the pk/rms levels as the early warning, however, the SEL could be able to be estimated from the same noise file by the contractor. We are happy to discuss this additional suggestion further.

We recommend that the procedure for MMO and PAM watches prior to blasting (CEMD Chapter 11 section 11.7.5) incorporates the check that there are no seals inside the double bubble curtain before it is switched on.

With this mitigation in place and the proposed monitoring in **Appendix A** we confirm that there should be no adverse impact on site integrity for bottlenose dolphin of the Moray Firth SAC and/or grey seal of the Isle of May SAC.

¹ SEL weighted PTS threshold from NMFS 2018 for harbour porpoise as is the most precautionary of all the species hearing groups.

Atlantic salmon

Atlantic salmon are a qualifying interest of the River Dee SAC and could be present in Nigg Bay. The mitigation and noise monitoring requested for marine mammals should also protect salmon. While we advise a likely significant effect on salmon, we confirm that there should be no adverse impact on site integrity provided the conditions requested in **Appendix A** are applied.

Eider duck

Eider duck are a qualifying interest of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA and could be present in Nigg Bay. While we advise a likely significant effect on eider duck, we confirm that there should be no adverse impact on site integrity provided the conditions requested in **Appendix A** are applied.

We agree with the provisions of the vessel management plan that an observer looks out for flocks of eider to ensure that vessels slow down and do not cause unnecessary disturbance. We also note that an observer will assess whether birds are diving prior to any blasting activities and that these are delayed until birds have surfaced. We recommend that the annual report should include examination of the different behaviour observed during the surveys to identify if there is a relationship between particular activities and any flushing or disturbance behaviours seen.

Nigg Bay SSSI

We do not consider that the changes to the blasting program or the extension to the construction programme will result in any additional significant impacts on the SSSI, given the agreed monitoring and mitigation. Our only concern relates to landscaping in the SSSI (section 16.3.9) as it is not clear what this entails. There should be no modification of the cliff face or of the exposure of sediments in the cliff face. However, we understand that the area will need post construction restoration.

References

(NPL 2014) Good Practice Guide for Underwater Noise Measurement, National Measurement Office, Marine Scotland, The Crown Estate, Robinson, S.P., Lepper, P. A. and Hazelwood, R.A., NPL Good Practice Guide No. 133, ISSN: 1368-6550, 2014.

(Southall et al 2007) Brandon L. Southall, Ann E. Bowles, William T. Ellison, James J. Finneran, Roger L. Gentry, Charles R. Greene Jr., David Kastak, Darlene R. Ketten, James H. Miller, Paul E. Nachtigall, W. John Richardson, Jeanette A. Thomas, and Peter L. Tyack **Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations** *Aquatic Mammals* 2007, 33(4), 411-414, DOI 10.1578/AM.33.4.2007.411

(Southall et al 2019) Brandon L. Southall, James J. Finneran, Colleen Reichmuth, Paul E. Nachtigall, Darlene R. Ketten, Ann E. Bowles, William T. Ellison, Douglas P. Nowacek, and Peter L. Tyack. **Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects** *Aquatic Mammals* 2019, 45(2), 125-232, DOI 10.1578/AM.45.2.2019.125

(NMFS 2018) National Marine Fisheries Service. 2018. 2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-59.

Wright H (Hamish)

From: Planning Aberdeen <planningaberdeen@sepa.org.uk>
Sent: 08 January 2020 11:47
To: MS Marine Licensing
Subject: PCS/169120 07035/07161 – Aberdeen Harbour Board (per Dragados) – Aberdeen Harbour Expansion Project – Nigg Bay, Aberdeen - Consultation - Response required by 14 January 2019

Dear Mr Wright

Thank you for your consultation email which we received on 10 December 2019.

We note from the construction licence application that “The construction methods are largely unchanged from those consented under the existing marine licence. The changes requested under this application relate to the blasting of rock and extension of the overall construction programme, as detailed in Section 2 of the Environmental Impact Assessment Report” and for the dredging licence application that “This application is to extend the end date to 31st December 2021. All other aspects of the dredging and disposal remain unchanged from the existing licence.”

We thank the applicant for highlighting the changes in the updated documentation, which was very useful to assist our assessment. On review of the documents and chapters relevant to our remit it appears that all previously agreed procedures/amendments to method statements are retained and on this basis we have no additional concerns and **no objection** to the dredging and construction licence applications.

If you have any queries relating to this please contact me by telephone on 01224 266656 or email at planningaberdeen@sepa.org.uk.

Yours sincerely

Alison Wilson

Senior Planning Officer
Planning Service, SEPA, Inverdee House, Baxter Street, Torry, Aberdeen, AB11 9QA
Direct line: 01224 266656 email: alison.wilson@sepa.org.uk
Please note that my regular work pattern is Monday - Thursday

For our planning guidance, please visit www.sepa.org.uk/environment/land/planning

From: MS.MarineLicensing@gov.scot <MS.MarineLicensing@gov.scot>
Sent: 10 December 2019 12:30
To: catriona.gall@nature.scot; tayside_grampian@nature.scot; Planning Aberdeen <planningaberdeen@sepa.org.uk>; navigation@nlb.org.uk; navigationsafety@mcga.gov.uk; Pauline.McGrow@ryascotland.org.uk; FO.Aberdeen@gov.scot; Karl.Zaczek@transport.gov.scot; planning.scotland@rspb.org.uk; Inshore@gov.scot; pi@aberdeencity.gov.uk; sarah.dolman@whales.org; fiona.read@whales.org; info@riverdee.org; general@fms.scot; boardchairman@riverdon.org.uk; M.Morrison@sff.co.uk; info@scottishfishermen.co.uk; richard.nevinson@british-shipping.org; fboyle@ukchamberofshipping.com; marine@crownestatescotland.com; Iain.Robertson584@mod.gov.uk; DIOODC-LMSSNI1c@defence.gsi.gov.uk; Pauline.McGrow@ryascotland.org.uk; trevor.johnson@hse.gsi.gov.uk; secretary@marinesafetyforum.org; secretary@marinesafetyforum.org; hmconsultations@hes.scot; help@scottishwater.co.uk; laura.blackburn@visitscotland.com; communitycouncils@aberdeencity.gov.uk; david.mchardie@cmassets.co.uk; Paul.Haddon@gov.scot
Subject: 07035/07161 – Aberdeen Harbour Board (per Dragados) – Aberdeen Harbour Expansion Project – Nigg Bay, Aberdeen - Consultation - Response required by 14 January 2019

Dear Sir/Madam,

Wright H (Hamish)

From: Pauline McGrow <Pauline.McGrow@ryascotland.org.uk>
Sent: 11 December 2019 10:48
To: MS Marine Licensing
Subject: RE: 07035/07161 – Aberdeen Harbour Board (per Dragados) – Aberdeen Harbour Expansion Project – Nigg Bay, Aberdeen - Consultation - Response required by 14 January 2019

Dear Hamish,

I write to inform you that RYA Scotland has no comment that they wish to make on this application.

Kind Regards

Pauline

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From: MS.MarineLicensing@gov.scot [mailto:MS.MarineLicensing@gov.scot]
Sent: 10 December 2019 12:30
To: catriona.gall@nature.scot; tayside_grampian@nature.scot; planning.aberdeen@sepa.org.uk; navigation@nlb.org.uk; navigationsafety@mcga.gov.uk; Pauline McGrow <Pauline.McGrow@ryascotland.org.uk>; FO.Aberdeen@gov.scot; Karl.Zaczek@transport.gov.scot; planning.scotland@rspb.org.uk; Inshore@gov.scot; pi@aberdeencity.gov.uk; sarah.dolman@whales.org; fiona.read@whales.org; info@riverdee.org; general@fms.scot; boardchairman@riverdon.org.uk; M.Morrison@sff.co.uk; info@scottishfishermen.co.uk; richard.nevinson@british-shipping.org; fboyle@ukchamberofshipping.com; marine@crownstatescotland.com; Iain.Robertson584@mod.gov.uk; DIOODC-LMSSNI1c@defence.gsi.gov.uk; Pauline McGrow <Pauline.McGrow@ryascotland.org.uk>; trevor.johnson@hse.gsi.gov.uk; secretary@marinesafetyforum.org; secretary@marinesafetyforum.org; hmconsultations@hes.scot; help@scottishwater.co.uk; laura.blackburn@visitscotland.com; communitycouncils@aberdeencity.gov.uk; david.mchardie@cmassets.co.uk;