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MARINE (SCOTLAND) ACT 2010, PART 4 MARINE LICENSING

THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) 2017 REGULATIONS (AS AMENDED)

DECISION NOTICE – MARINE LICENCES TO CONSTRUCT, ALTER OR IMPROVE WORKS, DEPOSIT AND USE EXPLOSIVE SUBSTANCES OR ARTICLES AND TO CARRY OUT DREDGING AND DEPOSIT DREDGED SUBSTANCES OR OBJECTS ASSOCIATED WITH ABERDEEN HARBOUR EXPANSION PROJECT, NIGG BAY, ABERDEEN

1. Application and description of works

- 1.1. On 31 October 2019 and 01 November 2019 Aberdeen Harbour Board (“the Applicant”) having its registered office at 16 Regent Quay, Aberdeen, AB11 5SS, submitted to the Scottish Ministers applications under Part 4 of the Marine (Scotland) Act 2010 (“the 2010 Act”) for the construction alteration and improvement of works, the deposit and use of explosives, and dredging and deposit of dredged substances or objects (“the Works”) associated with Aberdeen Harbour Expansion Project (“AHEP”) at Nigg Bay, Aberdeen. The applications were accompanied by an Environmental Impact Assessment report (“EIA Report”) as required under The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (“the 2017 MW Regulations”). The said applications and supporting EIA Report are collectively hereinafter referred to as “the Application”.
- 1.2. The Scottish Ministers previously granted a construction and use of explosives marine licence (“the 2016 Construction Licence”) and a dredging and deposit marine licence (“the 2016 Dredging Licence”) (hereinafter collectively referred to as “the 2016 Marine Licences”), and Environmental Impact Assessment

("EIA") consent (under the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)), for AHEP on 4 November 2016 ("the 2016 Consent"). The 2016 Consent was informed by an Environmental Statement dated November 2015 ("the 2015 ES") and an Additional Environmental Information Report dated 22 April 2016 (hereinafter collectively referred to as "the 2016 EIA"). A Harbour Revision Order and Planning Permission in Principle were also granted for AHEP in 2016. AHEP construction and dredging activities commenced in 2017 with an anticipated duration of three years.

- 1.3. In 2018, difficulties encountered in relation to AHEP's blasting programme, including a delayed start, winter storm damage to the double bubble curtain used to mitigate underwater noise levels ("the double bubble curtain") and the frequent presence of seals within the mitigation zone, limited the amount of rock removed by blasting to date. Blasting was last carried out in November 2018 before the programme was suspended. Consequently, the 7 month blasting programme timeframe permitted by the 2016 Construction Licence became unachievable resulting in significant delays to the overall project schedule. The 2016 Dredging Licence expired in February 2020, with dredging activities therefore being placed on hold since then, and the 2016 Construction Licence expires on 30 June 2020.
- 1.4. To enable the construction of AHEP to be completed, the Application proposes changes to the blasting methodology, including an increase in the duration over which blasting is permitted to take place and an increase in the size of the charges to be used (from 20 kilograms ("kg") up to 80 kg). It is also proposed to extend the overall duration of the construction and dredging programme to 31 December 2021. The location, spatial extent, overall construction methods, boundaries and design of AHEP remain largely unchanged from the 2016 Marine Licences.
- 1.5. AHEP involves dredging Nigg Bay to design depths varying from -9 to -15.24 metres ("m") chart datum ("CD"). The dredge material is comprised of sand, gravel, glacial till/fine silts and rock. The rock, gravel and sand is used as quay backfill, in land reclamation and as breakwater core material. The glacial till and fine silts are deposited at the designated Aberdeen sea deposit site. As of 19 November 2019, approximately 81% of the total volume had been dredged. The Works therefore include dredging of approximately 1,191,980 wet tonnes of material. The remaining material is largely rock that will be dredged following blasting and other means of rock removal. Dredge material suitable for re-use might require temporary stockpiling above and below mean high water springs line before being used in construction.
- 1.6. AHEP also includes the construction of two rubble mound breakwaters, one 634 m in length situated to the north side of Nigg Bay ("the North Breakwater") and one 640 m in length situated to the south side of Nigg Bay ("the South Breakwater") to protect the new harbour. The breakwaters comprise of blasted and dredged rock and other core material, secondary protection of large rocks and an accropode outer layer. The North Breakwater has already reached its full length and 80 m of the South Breakwater has been constructed. The Works

therefore include remedial works at limited areas of the North Breakwater and the remaining construction of the South Breakwater.

- 1.7. AHEP also involves the construction of approximately 886 m of closed and 538 m of open quays to provide over 1400 m of quayside capable of berthing vessels. The East Quay ties into the North Breakwater and is comprised of concrete caissons that have been prefabricated in Spain and towed to Cromarty Firth for storage prior to placement at AHEP. The open North and West Quays are of concrete pile and deck slab construction. The Works include the construction of rock revetment around the quays, with land reclamation being undertaken to provide a paved area to the rear of the quayside structures. The land reclamation utilises dredged material and imported infill. As of October 2019 all piling had been completed involving the installation of 120 piles in total. No further marine piling is required. Once completed, the East Quay will consist of 22 caissons in total, with 11 of these already in situ and a further 11 currently located in Cromarty Firth waiting to be towed to AHEP for installation. Caisson infill and backfill as well as closed quay general fill have been completed in the areas where caissons have been placed. The Works include installation and infill of the remaining caissons at the closed quay and completion of both open and closed quays, including construction of rock revetment.
- 1.8. AHEP's blasting programme was originally anticipated to be undertaken up to 6 days per week over a 7 month period however, due to the difficulties described in paragraph 1.3 above, between August 2018 and March 2019 only 12 days of blasting in total were completed. Since March 2019 some rock removal has been achieved using mechanical means however, as of October 2019, 114,553 cubic metres ("m³") of rock remained to be removed. Appendix 1 presents a map of the total areas of rock already removed and the remaining rock yet to be removed during the Works.
- 1.9. The Application proposes the use of explosives, with incrementally increased charge weights from 20 kg up to 80 kg, to blast the remaining rock in localised areas around the north and south sides of Nigg Bay. One to two blasts per day are proposed with all blasting being carried out during daylight hours, unless exceptional circumstances necessitate the blasting of previously loaded charges. The blasted rock will be dredged and used in breakwater core construction. Although a worst case scenario of blasting all remaining rock has been assumed in the EIA Report, it is intended for mechanical rock removal methods, such as ripping, drilling and a rock breaker, to be used in conjunction with the blasting. Consequently, it is likely that not all of the remaining rock will necessarily be removed by blasting. Approximately 153,500 m³ of rock has already been removed by drilling and blasting. The Works thus involve the removal of the remaining 114,553 m³ of rock.
- 1.10. This decision notice contains the Scottish Ministers' decision to grant regulatory approval for the Works as described above, in accordance with the 2017 MW Regulations.

2. Summary of environmental information

2.1. The environmental information provided by the Applicant was:

- An EIA Report that provided an assessment of the impact of the Works on fish and shellfish ecology, marine ornithology, marine mammals and designated sites.
- A review of the 2015 ES identifying receptors that would not be affected by the changes in blasting programme and project duration extension
- An updated Construction Environmental Management Document (“CEMD”)

2.2. To inform the content of the EIA Report, the Applicant undertook a review of the 2015 ES and identified whether additional assessment was required relating to the potential impacts of the proposed changes on relevant receptors. The Applicant concluded additional assessment to be required in regards to the following receptors: fish and shellfish ecology, marine ornithology, marine mammals and the Nigg Bay Site of Special Scientific Interest (“SSSI”). The Applicant concluded that the proposed changes would not alter or have any further impacts on all other receptors, therefore no additional assessment was deemed to be required in respect of these receptors. Consequently, the EIA Report considers only the aforementioned receptors identified as requiring additional assessment. In addition, within the EIA Report, the Applicant has undertaken an updated Habitats Regulations Appraisal.

2.3. The EIA Report describes the proposed changes to the blasting methodology, updates environmental baselines using the available post-consent environmental monitoring data, identifies and assesses the likely significant environmental effects of the proposed changes that are beyond the effects already assessed in the 2016 EIA and identifies new mitigation measures. A summary of the environmental information provided in the EIA Report is given below.

Blasting methodology

2.4. In the EIA Report it is proposed for the blasting to be undertaken in two phases. Phase one starts with an explosive charge weight of 20 kg and the charge weight is increased to 40 kg in 10 kg increments. Six blasts are undertaken for each charge weight before increasing to the next weight. In phase two, starting at a charge weight of 45 kg, the charge weight increments are reduced to 5 kg and the maximum charge weight will be 80 kg. During blasting, passive acoustic monitoring (“PAM”) will be carried out to ensure no cetaceans are within the exclusion zone. Hydrophones placed both within and outwith the area enclosed by the double bubble curtain will record the peak noise levels. Results of the peak noise will be reported to Marine Scotland Licensing Operations Team (“MS-LOT”) on the same day. The noise level is measured during each detonation and the noise threshold is set at 170 dB re 1 μ Pa rms or 183 dB re 1 μ Pa peak. This level must not be breached at either 400 m from the blast site or outside the double bubble curtain, whichever is at greater distance. Additionally, a Precautionary Control Limit (“PCL”) has been defined to minimise the chance of reaching the noise threshold. The PCL is set at 167 dB

re 1 μ Pa rms or 178 dB re 1 μ Pa peak and if these are reached, the charge weights will not be increased. A double bubble curtain will be positioned 100 m from the blast site in the south side of the harbour to mitigate underwater noise.

Fish and shellfish ecology

- 2.5. The EIA report states that the changes in the blasting programme have the potential to disturb, injure or kill fish and shellfish due to increased impact zone. Additionally, migrating salmonid smolts could be impacted through increased noise and suspended sediment levels due to dredging and deposit of dredged substances or objects at the sea deposit site. The River Dee Special Area of Conservation ("SAC") is located 0.8 km from AHEP. The qualifying features of the SAC are Atlantic salmon (*Salmo salar*) and freshwater pearl mussel (*Margaritifera margaritifera*), which use diadromous fish as hosts during the larval stage. Within the EIA Report, the Applicant updated its Habitats Regulations Appraisal ("HRA") with regards to the River Dee SAC. Atlantic salmon and sea trout migrate to and from the River Dee and when the smolts leave the river they may swim towards the direction of Nigg Bay or the designated Aberdeen sea deposit site. Freshwater pearl mussel could be impacted through adverse effects on their larval stage hosts. Most of the other fish and shellfish species that occupied Nigg Bay prior to AHEP are assumed to have already been displaced due to the project, but the bay still acts as a nursery ground for juvenile herring and whiting. The EIA Report also considered sand eels but concluded that they are found outside the impact range of the blasting and thus will not be affected by the changes in the blasting programme. Consequently the availability of sand eels as a prey to marine mammals and birds in the wider area will not change.
- 2.6. A diadromous fish survey was carried out in August-September 2017 in Nigg Bay during which five salmon and two sea trout were caught, suggesting low use of Nigg Bay by these species. Additional diadromous fish tagging studies in the River Dee suggest that the migrating diadromous fish quickly move out of the Nigg Bay area after entering the sea. Furthermore, no diadromous fish have been observed to have died during previous blasting events. The use of Nigg Bay by diadromous fish is therefore considered low, although the EIA Report recognises that some uncertainty about the true levels of usage remains.
- 2.7. The EIA Report identified that without the double bubble curtain, mortality to fish and shellfish occurs 20-440 m from the blast site depending on the explosive charge weight used. Fish scarers will be used to startle fish away from the blast areas prior to blasting, however any fish remaining within the area enclosed by the double bubble curtain are likely to suffer mortal injury. With the double bubble curtain in place, the environmental impacts of blasting on fish and shellfish outwith the area enclosed by the double bubble curtain will not be different to what was assessed in the 2015 ES, although fish within the area enclosed by the double bubble curtain are at increased risk of being killed or injured. If a double bubble curtain is placed 100 m from the blast site, sufficient noise is removed so that mortality and potential mortal injury do not occur at all outwith the area enclosed by the double bubble curtain. As the use

of Nigg Bay by diadromous fish and shellfish is limited, the Works are unlikely to impact fish and shellfish. Minor effects on herring and whiting within the area enclosed by the double bubble curtain are likely, although the use of fish scarers before blasting mitigates against these effects. Overall the impacts of the blasting programme on salmonids and by proxy freshwater pearl mussel, are considered unlikely. Any cumulative impacts with other projects are also considered unlikely as the impacts are limited to the area enclosed by the double bubble curtain.

- 2.8. Dredging and deposit of dredged material at the sea deposit site could affect salmon through reduction in foraging ability due to increased suspended sediment load and subsequent reduced visibility or increased foraging due to reduced predation risk as salmon can prefer slightly turbid conditions when feeding. Salmon smolts could, however, be sensitive to increased sediment loads and noise at the sea deposit site, although salmonids are generally considered tolerant to turbid conditions. Underwater noise modelling shows that the noise generated by the deposit of dredged material at the sea deposit site falls within background levels within tens of metres of the site of deposit. Any adverse noise events will be intermittent, limited to the frequency of dredging occasions, and the small area of effect will be expected to be avoided by highly mobile and wide ranging salmonids. Impact significance is thus considered to be minor even if smolts could be present at the time of a deposit operation. The impacts of sedimentation at the sea deposit site are not anticipated to differ from what was assessed in the 2015 ES. Any effects are short lived and limited to 0.5-1.5 km from the site of deposit, depending on material type. As salmon are considered capable of avoiding the site during deposit of dredged material, the EIA Report considers that the impacts are minor. Furthermore, the suspended sediment monitoring and mitigation detailed in the CEMD should ensure no exceedances of the agreed suspended sediment levels occur as a result of temporary stockpiling of dredge material prior to use in construction. The updated HRA concludes that the River Dee SAC salmon and freshwater pearl mussel are not at increased risk due to the changes in the blasting methodology compared to what was assessed in the 2016 EIA. No cumulative or in combination effects with other projects are predicted. The HRA concludes no adverse impact on the site integrity of the River Dee SAC.

Marine ornithology

- 2.9. The EIA Report states that while seabirds have been largely displaced from Nigg Bay due to the AHEP works undertaken so far, the wider area supports a range of bird species through provision of habitat for the birds and their prey species (sand eel). As discussed in paragraph 2.3 above, sand eels are not considered to reside inside the zone of impact of blasting and therefore no impacts on the species and consequent prey availability are anticipated. Eider duck (*Somateria mollissima*), common tern (*Sterna hirundo*), sandwich tern (*Thalasseus sandvicensis*) and little tern (*Sternula albifrons*) are all qualifying interests of the Ythan Estuary, Sands of Forvie and Meikle Loch Special Protection Area ("SPA"). An updated HRA with regards to the SPA was undertaken by the Applicant. Eider ducks have been largely displaced by the AHEP works carried out so far and now reside in the adjacent Greyhope Bay

and Girdle Ness. Sandwich tern and common tern are regionally common but according to modelling, make low use of the area around Nigg Bay. Pre-construction site surveys showed that these species use the rocky shore at Greyhope Bay for roosting and the outer areas of Nigg Bay for feeding. Any noise disturbance from blasting in the south of Nigg Bay is therefore unlikely to reach the bird aggregations. Little terns are present during breeding periods within the Ythan Estuary, Sands of Forvie and Meikle Loch SPA proposed marine extension but appears to make little or no use of the local area based on modelled foraging ranges. The overall extension of the project duration is likely to extend the temporal displacement of the bird species from Nigg Bay, although suitable alternative habitat has been adopted by the birds. Further impacts on birds are therefore considered minor and unlikely.

- 2.10. The EIA Report also identified that besides displacement, the changes in the blasting programme could impact marine birds through injury and disturbance. The impacts of blasting are highly localised to AHEP, intermittent and temporary. Distances over which injury to surface swimming birds is likely to occur is only a few tens of metres and consequently no significant adverse effects to marine birds due to the proposed changes in the blasting programme are anticipated. Diving and submerged birds are more vulnerable to blasting, but pre-blast checks for rafting and diving birds will mitigate for these impacts. These checks are included as a marine licence condition. The HRA concludes that significant in-combination effects on terns and eider duck are not expected as a result of the Works. No adverse impacts on the site integrity of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA are predicted as a result of the Works.

Marine mammals

- 2.11. The EIA Report identified the potential impacts of the changes in the blasting programme and associated underwater noise on marine mammals to include death, injury and behavioural alterations. The region supports a number of marine mammal species including bottlenose dolphin (*Tursiops truncatus*), harbour porpoise (*Phocoena phocoena*), Risso's dolphin (*Grampus griseus*) and white-beaked dolphin (*Lagenorhynchus albirostris*). Grey seal (*Halichoerus grypus*) is the most commonly occurring species of seal in the waters off Aberdeen and Aberdeenshire. Harbour seal (*Phoca vitulina*) is occasionally recorded. Ongoing Marine Mammal Observer ("MMO"), PAM and C-POD monitoring during the AHEP works completed so far has shown that bottlenose dolphin, harbour porpoise and grey seals are frequently found in the vicinity of Nigg Bay despite the ongoing construction activities. Underwater noise modelling was carried out to assess the blasting noise attenuation and determine the threshold levels for permanent hearing damage, or Permanent Threshold Shift ("PTS"), and temporary hearing damage, or Temporary Threshold Shift ("TTS"), following exposure to impulsive and continuous noise. The assessment was carried out for marine mammal species found in the vicinity of AHEP: bottlenose dolphin, minke whale, harbour porpoise and grey seal. Grey seal and bottlenose dolphin are qualifying features of the Isle of May SAC, located 108 km to the south and Moray Firth SAC, at approximately 150 km north-west of AHEP, respectively. The Applicant carried out an updated

HRA on the Isle of May SAC and Moray Firth SAC. New numerical modelling using the interim Population Consequences of Disturbance (“iPCoD”) model v5.0 was also carried out to identify the long term population effects of the blasting on the marine mammals. Proposed mitigation for marine mammals is detailed in chapter 11 of the CEMD and includes use of a double bubble curtain, PAM and MMO watches prior to and during blasting, establishment of a cetacean mitigation zone of 1000 m and use of acoustic deterrent devices (“ADD”). Blasting will also only take place during good visibility.

- 2.12. The EIA Report noted that the impact ranges for direct mortality as a result of the pressure pulse or shock wave caused by blasting are not well understood, but the MMOs and PAM operators will ensure no marine mammals are close enough to the blast site before blasting takes place to experience mortality as a result. No blasting takes place if marine mammals are within the exclusion zone. The underwater noise modelling showed that high frequency cetaceans, namely harbour porpoise, are most sensitive to underwater noise from blasting. Without the double bubble curtain in place, TTS and PTS could occur over hundreds to thousands of metres, depending on charge weight and species. With the double bubble curtain and marine mammal exclusion zones in place, bottlenose dolphin, grey seal and minke whale will not be at any risk of experiencing adverse underwater noise effects when charge weights of up to 80 kg are used and therefore the risks of TTS and PTS are negligible. For harbour porpoise, noise levels indicative of PTS to individuals were not predicted beyond the 1000 m mitigation zone for charge weights up to 80 kg while the noise threshold for TTS to individuals was reached beyond the mitigation zone for charge weights of 40 kg or more, if the minimum noise attenuation of the double bubble curtain was assumed. In this case the impacts on harbour porpoise could be significant. If the average double bubble curtain noise attenuation is assumed, no PTS or TTS for harbour porpoise is predicted beyond the mitigation zone. Underwater noise monitoring during blasting will take place to ensure the double bubble curtain noise attenuation is at the expected level. If the underwater noise approaches the PCL at either 400 m from the blast site or outside the area enclosed by the double bubble curtain, charge weights will not be increased to ensure impacts on harbour porpoise are mitigated.
- 2.13. The EIA Report states that marine mammal behavioural changes, such as avoidance of Nigg Bay and surrounding areas, are likely. The impact range for behavioural changes spans over several kilometres even with the double bubble curtain in place, but the impacts are considered temporary. Ongoing marine mammal monitoring has shown that harbour porpoise and grey seal appeared not to be significantly affected by previous blasting operations as they were detected within the vicinity of AHEP within a few hours following blasting events. Any impacts on marine mammals, including the Moray Firth SAC bottlenose dolphin interests, through changes in prey availability are not predicted as the mitigation proposed limits any impacts of blasting on potential prey items.
- 2.14. The Applicant acknowledges that the duration of AHEP will be extended, leading to an increase in the time over which environmental impacts occur. The

Applicant however concludes that the extension will not result in any significant increases in effects over those already assessed in the 2016 EIA. This is because the locations and quantities of seabed material to be dredged and deposited remain as originally planned and so no additional impact is anticipated in this regard. Furthermore, the frequency at which the activities will take place will be less than that originally assessed as the same amount of dredging and sea deposit will take place but over a longer period of time. Impacts of vessel traffic, dredging and sea deposit operations and piling and drilling on marine mammals are not considered different from what was previously assessed, especially as no marine piling is required during the Works. All existing mitigation addressing these concerns has been included in the CEMD.

- 2.15. The results from the iPCoD modelling showed that the Works alone would not significantly affect the long-term population size of any marine mammal species investigated and that AHEP would not contribute significantly to cumulative effects with other projects so long as the double bubble curtain is in place. The population effects of the Works on marine mammals are therefore considered insignificant. The HRA concluded that only a small proportion of the Isle of May grey seal population is thought to use Nigg Bay and therefore the Works will not have an adverse impact on the site integrity of the SAC either alone or in combination with other projects. The local bottlenose dolphin population makes long range movements up and down the east coast of Scotland and photo identification has confirmed that at least some individuals of the population using the waters around AHEP are from the Moray Firth SAC. While the dolphins likely use the local area, and particularly the mouth of the River Dee for feeding, they are also able to forage more widely along the east coast of Scotland. The HRA concluded that the impacts on the bottlenose dolphins are not greater than those assessed in the 2016 EIA and no adverse impacts on the site integrity of the Moray First SAC are predicted either alone or in combination with other projects as a result of the Works.

Nigg Bay SSSI

- 2.16. The Nigg Bay SSSI is located along the southern shore of Nigg Bay within the boundaries of AHEP. It is designated for its geological importance as a reference site for interpreting the glacial history and ice movement patterns in north-east Scotland. The SSSI slope face is undergoing a progressive failure as a result of natural weathering processes and will continue to do so until it achieves a natural angle of stability. In light of potentially increased vibrations due to the proposed changes to the blasting methodology and associated increase in risk of cliff face slippage, the SSSI is presently being monitored through regular photographic surveys, lateral movement monitoring, drone surveys and use of vibration monitoring equipment against established tolerance thresholds. Blasting will be suspended in the event that these thresholds are breached. Monitoring records to date show that blasting has not caused thresholds to be exceeded and that vibration levels remain well within management limits. Monitoring methods and reporting protocols which also consider the construction of a temporary haul road have been approved and are incorporated in the CEMD chapter 16. With monitoring in place, the

Applicant considers there to be sufficient early warning of a potential for a slippage to occur and for construction works to be paused with MS-LOT and Scottish Natural Heritage (“SNH”) being duly notified. Consequently, significant adverse effects to the SSSI are not expected and no additional mitigation or monitoring is deemed necessary by the Applicant.

3. Consultation

- 3.1. In accordance with the 2017 MW Regulations advertisement of the Application and EIA Report was made in the local and national press and the Application website. Notices were placed in the public domain and the opportunity given for those wishing to make representations to do so.
- 3.2. The dates for the consultation exercises are given below. The regulatory requirements regarding consultation and public engagement have been met and the responses received taken into consideration. Where matters have not been fully resolved, conditions have been included to ensure appropriate action is taken after regulatory approval is granted.

Document	Date received	Consultation Period	Publication
EIA Report & Appendices	31 October 2019 & 01 November 2019	10 December 2019 – 14 January 2020	Marine Scotland Information website (10 December 2019) http://marine.gov.scot/ml/aberdeen-harbour-expansion
Marine licence application & supporting documentation			Aberdeen Harbour Board website (10 December 2019) http://www.aberdeen-harbour.co.uk/news/news-and-events/2019-consent-applications/ Edinburgh Gazette (10 December 2019) Evening Express Aberdeen (10 December 2019)

- 3.3. A summary of the responses is set out at sections 4, 5 and 6. The responses are available in full [here](#).

4. Summary of statutory consultee responses

- 4.1. Aberdeen City Council had no comments to make on the Application in its response dated 24 January 2020.

- 4.2. SNH responded on 14 January 2020 and provided further advice on European Protected Species (“EPS”) licensing requirements on 30 March 2020. SNH raised concerns about the blasting programme and advised that it objected to the Application unless conditions securing the implementation of the following are included in the marine licences:
- CEMD
 - Marine Mammal Mitigation Plan
 - Vessel Management Plan
 - Monitoring strategy to record underwater noise from piling and blasting and effectiveness of the mitigation, use of Nigg Bay by marine mammals during construction, use of the harbour and its surroundings by eider ducks during construction and operational phases and impacts to Nigg Bay SSSI during construction.
- 4.3. SNH advised that the Works are likely to affect the following natural heritage interests:
- Bottlenose dolphin qualifying interest of the Moray Firth SAC
 - Grey seal qualifying interest of the Isle of May SAC
 - Atlantic salmon qualifying interest of the River Dee SAC
 - Eider duck qualifying interest of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA
 - Geological interests of the Nigg Bay Site of Special Scientific Interest (SSSI)
- 4.4. SNH advised that the Works are likely to have a significant effect on the qualifying interests of these SACs and SPA and consequently MS-LOT is required to undertake an appropriate assessment in view of the conservation objectives of these sites.
- 4.5. SNH advised that increasing the explosive charge weight above 20 kg raises several concerns and many uncertainties remain even after the EIA carried out by the Applicant. These include the lack of validation and benchmarking of the noise modelling, especially as most of the blasting so far has taken place in the north side of Nigg Bay using a different double bubble curtain configuration. Furthermore, there are relatively few noise measurements from the area outwith that enclosed by the double bubble curtain to date. SNH thus considers there to be insufficient evidence on the effectiveness of the double bubble curtain. Additionally, the TTS and PTS ranges are reported using a peak noise metric, while using single pulse however, when cumulative Sound Exposure Level (“SEL”) metrics are used, the impact range is larger and the set noise threshold is reached within the 1000 m mitigation zone for charge weights of 40 kg and above. Furthermore, increasing the number 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. SNH advised that for these reasons, charge weight increases should be limited to 5 kg in both phases 1 and 2 of the blasting programme until a sufficient number of blasts have been undertaken to show the effectiveness of the double bubble curtain.

SNH recommends that an adaptive management plan robust enough to halt increasing charge weights is implemented. Finally, SNH advised that it is content with the peak underwater noise thresholds presented in the EIA Report, but a 155 dB re 1 $\mu\text{Pa}^2\text{s}$ threshold for SEL should be implemented over the duration of the blast noise and that the MMO and PAM watches prior to blasting check for the presence of seals inside the double bubble curtain before it is switched on. This has been secured as a marine licence condition.

- 4.6. SNH advised that the noise monitoring and marine mammal mitigation measures will also protect the Atlantic salmon interest of River Dee SAC. SNH welcomes the provisions of the vessel management plan that an observer looks out for flocks of eider ducks to ensure that vessels slow down and do not unnecessarily disturb the birds. SNH noted that an observer should assess whether seabirds are diving prior to any blasting events and that blasting is delayed until the birds have surfaced. This has been secured as a marine licence condition. SNH recommends that the annual eider duck report includes examination of the different bird behaviours observed during the surveys to identify if there is a relationship between particular Works and any flushing or disturbance behaviours seen. SNH does 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 proposed monitoring and mitigation are secured. SNH further advised that there should be no modification of the SSSI cliff face or of the exposure of sediments in the cliff face. SNH however noted that it understands that the area will need post construction restoration. This is secured as marine licence conditions.
- 4.7. SNH advised that if the proposed mitigation is secured, the Works will not have serious adverse effects on any of the designated sites and the wider natural heritage. Furthermore, SNH advised that provided the proposed mitigation is secured, there is unlikely to be a detrimental effect on the favourable conservation status of any bottlenose dolphin in their natural range, although an EPS licence will be required to allow for disturbance of the species.
- 4.8. To address SNH's concerns over blasting monitoring and mitigation, the Applicant will produce an Adaptive Blasting Management Plan ("ABMP") for the approval of Scottish Ministers prior to any blasting commencing. The plan will replace the Applicant's blasting plan detailed in section 2.4 and include a limitation of the incremental charge weight increase to 5 kg at all times as well as a revised programme of incremental charge weight increase, including details of the number of blasts per charge weight and the process for when underwater noise levels approach or exceed the agreed noise thresholds. The ABMP will also include details of a reporting strategy, including timelines to inform the Licensing Authority of any blasting events and subsequent underwater noise monitoring results, including both raw and calibrated peak and SEL metrics and the number of detonations used. The calibrated peak and SEL metrics will be used to monitor the underwater noise and ensure the PCL and noise threshold are not exceeded. The metrics should be calculated using the latest available guidance. The maximum duration of each blast will be used for these calculations. Furthermore, details of the underwater noise monitoring techniques, protocols and equipment to be used and their proposed locations

in Nigg Bay, details of the proposed use of MMOs and fish scarers and details of all monitoring, recording and reporting of the use of Nigg Bay by marine mammals will be included. The provision of and adherence to the ABMP is secured as a condition in the marine licences.

- 4.9. Adherence to the CEMD, containing the Marine Mammal Mitigation Plan (chapter 11), Vessel Management Plan (chapter 17), eider duck monitoring strategy (chapter 9) and SSSI monitoring (chapter 16), will also be secured through a condition in the marine licences.
- 4.10. Scottish Environmental Protection Agency (“SEPA”) responded on 08 January 2020 and advised that all agreed procedures relating to its remit had been included in the CEMD and it did not object to the Application.
- 4.11. Historic Environment Scotland (“HES”) responded on 10 January 2020 and advised that it had no comments to make on the dredging and sea deposit activities and it was content with the monitoring detailed in chapter 13 of the CEMD regarding the potential vibration impacts on St. Fittick’s Church due to blasting.

5. Summary of non-statutory consultee responses

- 5.1. Royal Yachting Association Scotland had no objections or comments to make in their response dated 11 December 2019.
- 5.2. Northern Lighthouse Board responded on 16 December 2019 and advised that it did not object to the Application and had no further comments to make.
- 5.3. Maritime Coastguard Agency (“MCA”) responded on 19 December 2020 and advised that it did not object to the Application and that their original advice to the previously approved marine licence applications still stood, including the requirement to update HM Coastguard on the Works and issue local navigational warnings if deemed appropriate by Aberdeen Harbour Board, the statutory harbour authority.
- 5.4. River Dee District Salmon Fisheries Board (“DDSFB”) responded on 14 January 2020. DDSFB raised concerns relating to the impacts of the project on the Atlantic salmon, freshwater pearl mussel and sea trout that utilise the River Dee and the areas in the vicinity of AHEP as feeding areas and migratory pathways. DDSFB advised that the olfactory organs of salmonids are sensitive to pollutants and any disruption to these senses compromise their ability to recognise their natal river. Increased water turbidity could result in increased stress response in salmonids. DDSFB advised that in its view, there is insufficient monitoring data to show if Nigg Bay is used by salmonids and how the Works may impact them. Consequently, evaluating the impacts of changes in the blasting programme and dredging on salmonids is difficult. DDSFB noted that the previous requirement for the Ecological Clerk of Works (“ECoW”) to notify the DDSFB if five or more dead fish are recovered in a 24 h period is not included in the CEMD. DDSFB is content with the proposed underwater noise

monitoring and the noise thresholds presented in the EIA Report. DDSFB advised that any licence granted should be in accordance with up to date assessments and methodologies and regular Environmental Advisory Group meetings should take place to discuss any issues arising with the stakeholders. With regards to dredging, DDSFB advised that the suspended sediment monitoring should continue to ensure the levels presented in the EIA Report are not exceeded. If exceedances occur, dredging should stop until further mitigation is agreed.

- 5.5. The Scottish Ministers are content that the requirement to notify the DDSFB in case five or more dead fish are recovered within a 24 h period is included in chapter 11 of the CEMD. The CEMD includes a commitment to ongoing suspended sediment monitoring. If the suspended sediment levels exceed the agreed threshold set out in chapter 7 of the CEMD, MS-LOT will be notified following the adaptive management schedule.
- 5.6. Whale and Dolphin Conservation ("WDC") responded on 14 January 2020 welcoming the continued commitment of the Applicant to marine mammal mitigation and monitoring. WDC advised that up to date, the maximum charge weight for blasting has been 20 kg and all these blasts have taken place in the north area of Nigg Bay. No blasting has taken place in the south area where the proposed double bubble curtain configuration is different. WDC therefore does not consider the 10 kg increments to blasting in phase 1 to be sufficiently precautionary, and the increments should be 5 kg in both phases 1 and 2. Furthermore, blasting increments should not increase more than once a day to allow MS-LOT to ensure peak noise level threshold is not exceeded. WDC supports the detailed comments provided by SNH.
- 5.7. The Scottish Ministers consider the concerns of WDC to be covered through the provision of the ABMP.

6. Representations from other organisations or members of the public

- 6.1. No public representations were received.

7. Advice from 3rd parties

- 7.1. The Scottish Ministers sought advice from Marine Scotland Science ("MSS") and received a response on 27 January 2020. MSS advised that it supports the continued use of the double bubble curtain to reduce noise impacts on fish. MSS noted that while herring and whiting are likely to be killed within the area enclosed by the double bubble curtain when charge weights of 40 kg and above are used, no negative impacts on the populations are likely. MSS advised that further observations are required to confirm that detonating the fish scarers 1 minute before blasting is more effective than detonating them 5 minutes before. If, when detonating 1 minute before blasting, the number of fish kills increases above the numbers seen for detonation 5 minutes before blasting (i.e. over 100 fish kills), MSS recommends returning to detonating 5 minutes before blasting. MSS recommends that dead fish are collected after

each blast and carefully observed, measured and photographed to allow accurate identification of species.

- 7.2. With regards to impacts of the blasting on marine mammals, MSS broadly agrees 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 area enclosed by the double bubble curtain (whichever is furthest from the source), and a SEL of 155 dB re 1 μ Pa²s, measured over the blast duration. However, MSS raised concerns regarding the practicality of implementing the thresholds and advised that full technical specifications of the equipment to be used for underwater noise monitoring are supplied to ensure that they are fit for purpose. MSS also recommended that a protocol for the use of this equipment is provided and 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 recommended 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 recommended 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 as the effectiveness of the double bubble curtain arrangement in this area needs to be established. 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, MSS are content that the mitigation proposed is sufficient to avoid the risk of injury to marine mammals. MSS advised that an EPS licence will still be required for disturbance of cetaceans regardless of the monitoring and adaptive management strategy.
- 7.3. MSS agreed with the assessment of SNH on the impacts of the changes in the blasting programme and increased project duration on marine ornithology and especially on eider ducks. Furthermore, MSS advised that the local ecosystem will have already been altered by the removal of seabed from Nigg Bay therefore extending the duration of the dredging activities until 2021 is unlikely to substantially change the impacts on benthos. Finally, MSS advised that it agrees with the Applicant in that the proposed changes are 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.
- 7.4. MSS advised that incremental charge weight increases should be limited to 5 kg at all times.

7.5. The Scottish Ministers consider that the concerns and requests of MSS will be adequately addressed through the provision of the ABMP.

8. The Scottish Ministers' considerations and main determinative issues

8.1. The Scottish Ministers, having taken account of all relevant information, consider that the main determining issues are:

- the extent to which the Works accord with and are supported by Scottish Government policy and the terms of Scotland's National Marine Plan ("NMP") and relevant local development plans
- the significant effects of the Works on the environment, which are in summary:
 - impacts on marine mammals
 - impacts on fish and shellfish
 - ornithological impacts
 - impacts on Nigg Bay SSSI
 - impacts on European Protected Sites

Policy Context

8.2. As the Works are proposed to take place within the Scottish marine area they are subject to the 2010 Act. The NMP covering inshore waters is a requirement of the 2010 Act. The NMP lays out the Scottish Minister's policies for the sustainable development of Scotland's seas and provides General Planning Principles ("GEN"), most of which apply to the Works. In addition, the NMP lays out sector specific objectives and policies for shipping, ports, harbours and ferries. The relevant policies were considered as part of the EIA process with the Works being deemed to meet the requirements of the GEN and to be contributing towards achieving relevant sector specific policies and objectives.

8.3. The Scottish Ministers are satisfied that the Works accord with and are supported by Scottish Government policy and the terms of the NMP.

Environmental Matters

8.4. The Scottish Ministers are content with the Applicant's review of the 2015 ES which concluded additional assessment to be required only in regards to fish and shellfish ecology, marine ornithology, marine mammals and the Nigg Bay SSSI. The Scottish Ministers are satisfied no additional assessment was required in respect of all other receptors and that the continued implementation of the mitigation measures previously identified (as included within the CEMD) will be sufficient to address the impacts of the Works on these receptors.

8.5. The Scottish Ministers are satisfied that an environmental impact assessment has been carried out. Environmental information including the EIA Report has been produced and the applicable procedures regarding publicity and consultation laid down in regulations have been followed. The environmental

impacts of the Works have been assessed and the Scottish Ministers have taken the environmental information into account when reaching their decision.

- 8.6. The Scottish Ministers have considered fully and carefully the Application, supporting documentation and all relevant responses from consultees.

European Protected Sites and Ornithology, Fish and Shellfish, Marine Mammals and Nigg Bay SSSI

- 8.7. The Conservation of Habitats and Species Regulations 2017 and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (“the 1994 Habitats Regulations”) require the Scottish Ministers to consider whether the Works would be likely to have a significant effect on a European site or European offshore marine site (either alone or in combination with other plans or projects), as defined in the 1994 Habitats Regulations.

- 8.8. Owing to the view of SNH that the Works are likely to have a significant effect on the qualifying interests of Moray Firth SAC, Isle of May SAC, River Dee SAC and Ythan Estuary, Sands of Forvie and Meikle Loch SPA, MS-LOT, on behalf of the Scottish Ministers, as the “competent authority”, were required to carry out an Appropriate Assessment (“AA”). Having had regard to the representations made by SNH, WDC, DDSFB and MSS, it can be ascertained that the Works will not adversely affect the integrity of the SACs or the SPA provided the mitigation set out in the CEMD and the ABMP is adhered to and additional checks are made to ensure no eider ducks are diving within the double bubble curtain prior to blasting and that no seals are present within the double bubble curtain before it is turned on. Having determined that the project will not adversely affect the integrity of the sites, and having regard to the reasons for which they were designated and the associated conservation objectives, MS-LOT concludes that the project will not, on its own or in combination with other projects, adversely affect the integrity of Moray Firth SAC, Isle of May SAC, River Dee SAC and Ythan Estuary, Sands of Forvie and Meikle Loch SPA. The Scottish Ministers are also content that all other ornithological, fish and shellfish and marine mammal impacts will be appropriately mitigated through the adherence to the mitigation above. An EPS licence is required to permit disturbance of cetaceans during the Works.

- 8.9. A full explanation of the issues and justification for decisions regarding site integrity is provided in the AA ([available here](#)).

9. The Scottish Ministers’ Determination and Reasoned Conclusion

- 9.1. The Scottish Ministers are satisfied that an environmental impact assessment has been carried out, and that the applicable procedures regarding publicity and consultation in respect of the Application have been followed.

- 9.2. The Scottish Ministers have weighed the impacts of the Works, and the degree to which these can be mitigated, against the economic benefits which would be realised. The Ministers have undertaken this exercise in the context of European, national and local policies.

- 9.3. The Scottish Ministers have considered the extent to which the Works accord with and are supported by Scottish Government policy, the terms of the NMP and local development plans and the environmental impacts of the Works, in particular the impacts upon ornithology, marine mammals, fish and shellfish species and the Nigg Bay SSSI as well as Moray Firth SAC, Isle of May SAC, River Dee SAC and Ythan Estuary, Sands of Forvie and Meikle Loch SPA.
- 9.4. The Scottish Ministers are satisfied that the environmental issues associated with the Works have been appropriately addressed by way of the design of the Works and mitigation. In particular, the Scottish Ministers are satisfied that the Works will not adversely affect the integrity of the Moray Firth SAC, Isle of May SAC, River Dee SAC and Ythan Estuary, Sands of Forvie and Meikle Loch SPA. The Scottish Ministers are satisfied that the licensing tests in respect of an EPS disturbance application have been met and an EPS licence will be granted.
- 9.5. The Scottish Ministers have had regard to the requirements of Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds, and Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
- 9.6. In their consideration of the environmental impacts of the Works, the Scottish Ministers have identified conditions to be attached to the licences to reduce environmental impacts. These include adherence to the CEMD. The Applicant will produce an ABMP for the approval of the Scottish Ministers which takes into consideration all the advice given by SNH, MSS, WDC and DDSFB and limits the incremental increases in explosive charge weights to 5 kg at all times.
- 9.7. The Scottish Ministers are satisfied, having regard to current knowledge and methods of assessment, that this reasoned conclusion is still up to date.
- 9.8. The Scottish Ministers **grant marine licences subject to conditions** under Part 4 of the Marine (Scotland) Act 2010 for the construction alteration and improvement of works, the deposit and use of explosive substances, dredging and deposit of dredged substances or objects activities associated with AHEP, Nigg Bay, Aberdeen. The marine licences are attached at Appendix 2.
- 9.9. In accordance with the 2017 MW Regulations, the Applicant must notify the public of the Scottish Ministers' EIA application determination decision, and of where a copy of this decision notice may be inspected, by publishing a notice on the application website, in the Edinburgh Gazette and in one or more newspapers circulating in the locality in which the Works are situated.
- 9.10. Copies of this decision notice have been sent to the bodies consulted on the Application including the relevant planning authority, SNH, SEPA and HES. This decision notice has also been published on the [Marine Scotland Information website](#).

9.11. The Scottish Ministers' decision is final, subject to the right of any aggrieved person to apply to the Court of Session for judicial review. Judicial review is the mechanism by which the Court of Session supervises the exercise of administrative functions, including how the Scottish Ministers exercise their statutory function to determine applications for consent. The rules relating to the judicial review process can be found on the website of the Scottish Courts – <http://www.scotcourts.gov.uk/rules-and-practice/rules-of-court/court-of-session-rules>. Your local Citizens' Advice Bureau or your solicitor will be able to advise you about the applicable procedures.

Yours sincerely,

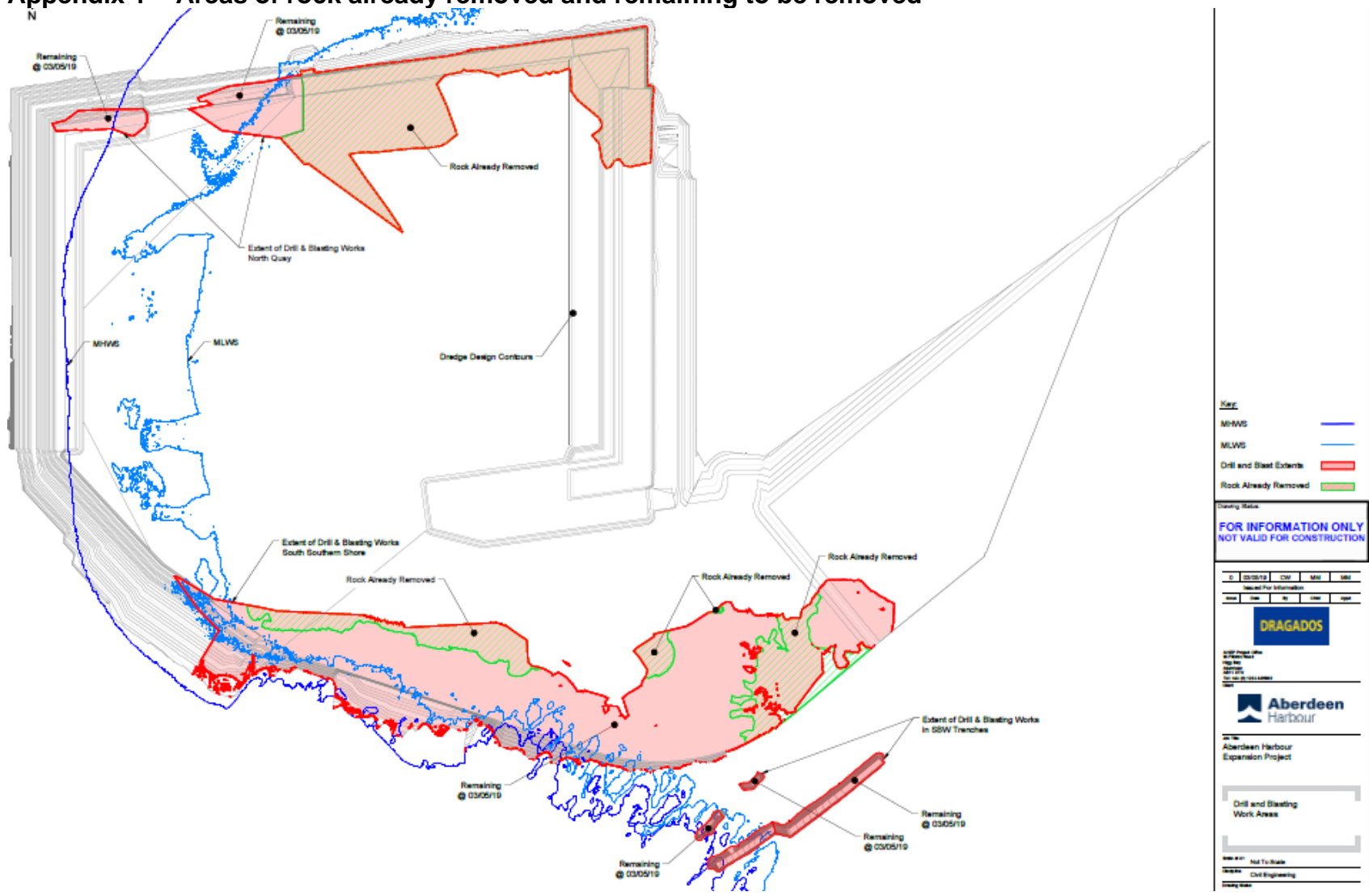
Malcolm Rose

Marine Licensing Group Leader, Marine Scotland Licensing Operations Team

A member of the staff of the Scottish Ministers

01 July 2020

Appendix 1 – Areas of rock already removed and remaining to be removed



Appendix 2. Marine licences