



**Ardersier Port Ltd.
Marine Mammal Protection Plan**



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Marine Mammal Protection Plan

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Author: [Redacted]

Reviewer: [Redacted]

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Glasgow

Craighall Business Park
 8 Eagle Street
 Glasgow
 G4 9XA
 0141 341 5040
info@envirocentre.co.uk
www.envirocentre.co.uk

Aberdeen

Banchory Business
 Centre
 Burn O’Bennie Road
 Banchory
 AB31 5ZU
 01330 826 596

Inverness

Alder House
 Cradlehall Business Park
 Inverness
 IV2 5GH
 01463 794 212

Edinburgh

Suite 114
 Gyleview House
 3 Redheughs Rigg
 Edinburgh
 EH12 9DQ
 0131 516 9530

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1 INTRODUCTION

EnviroCentre Limited was commissioned by Ardersier Port Ltd. to undertake a review and, where necessary, an update of the existing information relating to marine mammals within the *'Port of Ardersier Environmental Statement Volume 2 (May 2013)'*; to create a Marine Mammal Protection Plan (MMPP). The MMPP will inform an Environmental Impact Assessment Report (EIAR) in relation to the redevelopment of Ardersier Port.

The MMPP is required to assess and manage the risks of causing injury or disturbance to marine mammals (cetaceans and seals) as a result of proposed piling and dredging operations in response to the following scoping opinions (2018):

- The Highland Council: *'The inclusion in an Appendix of the EIA Report of the Marine Mammal Protection Plan that considers effects and mitigation, not only on bottlenose dolphin but also common seal, as assessed within the EIA Report is also welcomed.'*
- Scottish Natural Heritage (SNH): *'Underwater noise: SNH highlights the need to consider whether the 2013 EIA assessment of underwater noise remain up to date in the light of more recent studies.'*
- Marine Scotland: *'Assumptions made previously on vessel movements to see if these are still applicable and, if not, then additional modelling may be required'.*
- Marine Scotland: *'An Underwater Noise Assessment should be updated taking account of recent scientific understanding in the propagation of underwater noise and cumulative impacts. Based on these conclusions, the MMPP should include details of mitigation and the use of Marine Mammal Observers (MMO) and Passive Acoustic Monitoring (PAM). If mitigation is not possible or appropriate and in Impact on European Protected Species (EPS) is envisaged then an EPS licence will be required'.*

The MMPP, which will include a site specific Marine Mammal Risk Assessment (MMRA), will inform a detailed method statement in order to provide appropriate mitigation during development and inform a European Protected Species (EPS) licence application. An EPS licence is required from Marine Scotland prior to the commencement of any construction works. The Marine Scotland *'Guidance for Scottish Inshore Waters: The Protection of Marine European Protected Species from injury and disturbance (2014)'* was consulted to inform this document.

The proposed development is detailed in Chapter 3: The Proposed Development in Volume 2 of the EIAR.

2 MARINE MAMMAL BASELINE

The 2013 ES summarised the baseline for marine mammals by utilising public records from the National Biodiversity Network (NBN). This provided records within 5km of the development, and within the Moray Firth Special Area of Conservation (SAC). The assemblage of marine mammals in the Moray Firth is considered to be internationally important; the data gathered suggests that minke whale, common dolphin, grey seal, Atlantic white-sided dolphin, harbour seal, harbour porpoise, and common bottlenose dolphin are resident within the zone of influence of the development, so the desk study therefore focussed on these species.

Further baseline information to provide a more recent assessment of how marine mammals utilise the zone of influence of the proposed works was collated from the following sources:

- The Joint Nature Conservation Committee (JNCC)¹ & ²;
- Seawatch Foundation³;
- Scottish Natural Heritage (SNH)⁴ & ⁵; and
- Whale and Dolphin Conservation (WDC)⁶.

2.1 Moray Firth SAC: Bottlenose Dolphins

Monitoring is undertaken to determine the condition of the bottlenose dolphin (*Tursiops truncatus*) feature of the Moray Firth SAC. This feature is currently in Favourable condition according to the last assessment in 2010.

The monitoring used timing porpoise detectors (T-PODs⁷) to assess the baseline activity of cetaceans. T-POD sampling locations were positioned to the north and north east of Whiteness Head (entrance to Cromarty Firth, Lossiemouth, and Outer Moray Firth). During these studies differing densities of bottlenose dolphin and harbour porpoise were determined, and generally speaking dolphins were detected regularly at the entrance to Cromarty Firth, only rarely in the outer Moray Firth, and at an intermediate level at Lossiemouth.

Cheney *et al.* (2012) conducted photo-identification surveys and Passive Acoustic Monitoring (PAM) studies in core sampling areas within the Moray Firth SAC during the summers (May to September) of 2008 to 2010. Mark-recapture analysis of photographs collected during photo-identification surveys indicated that an estimated 68 individual dolphins used the SAC during the summer of 2008, 102 in 2009 and 114 in 2010. This indicates that the number of dolphins using the SAC between 1990 and 2010 appears to be stable. However, a Bayesian capture-recapture assessment of the total abundance of the east coast bottlenose dolphin population suggests, with a high probability (99%), that this population is increasing and therefore the actual proportion of the population using the SAC may have declined.

¹ JNCC Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise (2010) available at: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf last accessed 21/08/2018

² Reid, J B, Evans, P G H, and Northridge, S P. JNCC Atlas of Cetacean Distribution in north-west European waters (2003) available at: <http://jncc.defra.gov.uk/page-2713#download> last accessed 21/08/2018

³ Seawatch Foundation Cetaceans of Western Scotland available at: <http://seawatchfoundation.org.uk/wp-content/uploads/2012/07/WesternScotland.pdf> last accessed 21/08/2018

⁴ SNH About Scotland's Nature: Marine Mammals available at: <http://www.snh.gov.uk/about-scotlands-nature/species/mammals/marine-mammals/> last accessed 21/08/2018

⁵ Site Condition Monitoring of bottlenose dolphins within the Moray Firth SAC: 2014-2016 available at: <https://www.nature.scot/sites/default/files/2018-04/Publication%202018%20-%20SNH%20Research%20Report%201021%20-%20Site%20Condition%20Monitoring%20of%20bottlenose%20dolphins%20within%20the%20Moray%20Firth%20Special%20Area%20of%20Conservation%202014-2016.pdf> last accessed 21/08/2018

⁶ WDC species guides available at: <http://uk.whales.org/species-guide> last accessed 21/08/2018

⁷ T-PODS are autonomous data recorders for detecting cetacean echolocation clicks and potentially provide cost-impactive opportunities for monitoring cetacean activity.

Notwithstanding the above, at least 60% of the population have been seen within the SAC in 16 of the 21 years of photo-identification effort. Mark-recapture analysis of photographs collected during surveys in the summer of 2016 indicated that the estimated number of individual dolphins using the SAC was 103 (95% confidence interval: 93-115).

T-PODs were deployed to the west, north and north east of Whiteness Head (2008-2010), and survey transects and groups of bottlenose dolphin (with varying densities) were identified immediately adjacent/north of the development site. With reference to the maps, which show the locations of encounters with groups of dolphins during surveys conducted in a) 2008, b) 2009 and c) 2010, it is clear that the deep water channel immediately adjacent/north of Whiteness Head is an important area for bottlenose dolphin. There were group encounters here in 2008, 2009 and 2010, particularly during the months of May to September.

Since June 2018, Seawatch Foundation have received 200 sightings of bottlenose dolphin between Ardersier and Lossiemouth, 50km along the coast to the east. Hotspots include Lossiemouth, Hopeman, Nairn and Covesea; the closest of which being Nairn, 14km east of the site.

Chanony Point, approximately 3km north west of Ardersier, is a well-known bottlenose dolphin hotspot. PAM is ongoing in this area to monitor the status of the SAC feature. Between 2011 and 2016, during the summer months (May – September), the percentage of days that dolphins were detected was over 90%.

2.2 Harbour Porpoise

Harbour porpoise (*Phocoena phocoena*) were detected regularly during the T-POD monitoring⁸ in the outer Moray Firth, only rarely Lossiemouth, and at an intermediate level at the entrance to the Cromarty Firth.

Since June 2018 there have been 23 sightings of harbour porpoise submitted to Seawatch Foundation, the nearest being seen from Nairn, approximately 14km to the east of Ardersier.

2.3 Minke Whale

Minke whales (*Balaenoptera acutorostrata*) are the most commonly seen baleen whale in Scotland and sightings are frequent and widespread from May to October, peaking in July. The southern and Outer Moray Firth are thought to be particularly important areas for minke whales. The closest recorded sightings of minke whales, submitted to Seawatch Foundation since June 2018, to the proposed Ardersier Port are off the coast off Covesea, approximately 40km to the east.

2.4 White-sided Dolphin

White-sided dolphins (*Lagenorhynchus acutus*) are a pelagic species often found in continental shelf waters and deep water to the north of Scotland throughout the year. Although they could occasionally be present in the Moray Firth, they are unlikely to utilise the shallow waters in proximity to Ardersier. No recorded sightings of white-sided dolphins were identified during the baseline study.

2.5 Common Dolphin

Common dolphins (*Delphinus delphis*) are thought to prefer deeper, continental shelf waters and are occasionally seen in the North Sea between June and September. Although they could occasionally be present

⁸ T-PODS are autonomous data recorders for detecting cetacean echolocation clicks and potentially provide cost-impactive opportunities for monitoring cetacean activity.

in the Moray Firth, they are unlikely to utilise the shallow waters in proximity to Ardersier. No recorded sightings of common dolphins were identified during the baseline study.

2.6 Occasional Cetacean Visitors

In August 2017, a pod of 30 long-finned pilot whales travelled up the Moray Firth to North Kessock, approximately 5km west of Ardersier, meaning they would have swum within approximately 500m of Ardersier Port. The sighting was extremely rare, however important to note, as if they become stressed, entire pods of pilot whales are known to beach themselves.

A pod of six orca were identified in the Moray Firth in 2016, approximately 11km north west of Findhorn (and approximately 24km north east of Ardersier Port). Orca may occur in coastal regions to feed on breeding seals.

Humpback whales were observed in the Moray Firth in 2016 and 2017. In 2016, one individual was identified from Cromarty Sutors, approximately 13km north east of Ardersier; and in 2017 two individuals were observed from between Hopeman and Burghead, approximately 42 km east along the Moray coast.

2.7 Dornoch Firth and Morrich More SAC Seals

The Dornoch Firth and Morrich More SAC is designated for its population of common seals (*Phoca vitulina*) (also known as harbour seals) which are currently classed as 'Unfavourable – declining' (2013)⁹. The development lies approximately 48km from the SAC, which is within the range of observed common seal movements between haulout areas (the locations on land where seals come ashore to rest) and also well within the 'normal' range of foraging trips. SNH also know that common seals tagged at the Dornoch Firth use the Ardersier area.

As well as being protected through designated SACs, seals are also protected by the Marine (Scotland) Act 2010; it is an offence to kill or injure a seal except under licence or for welfare reasons, outlawing unregulated seal shooting that was permitted under previous legislation. A number of seal conservation areas around Scotland have been introduced, designed to protect vulnerable, declining common seal populations. The Act also agreed to provide additional protection for seals at designated haulouts. In Scotland the coastline has been divided into management units for common seals based on ecological boundaries. The relevant Management Unit for both common and grey seals in this area is the Moray Firth. Grey seal management units use the same boundaries although it is recognised that they are more likely to move between management units outside the breeding season.

There is a designated haulout site¹⁰ at Whiteness Sands, approximately <500m west of the proposed development site. This site holds 20% of the Moray Firth population of common seals and is seen as the most important haulout for this species not only in the Moray Firth but on the east coast of Scotland. The average moult counts (during August) are around 200 animals and this has been steady since 1992. The location is also used for pupping with a count undertaken in June 2011 having 216 adult harbour seals and 28 mean number of pups (56 pups was higher figure). The location is also used by large numbers of grey seals (*Halichoerus grypus*); 204 animals during the June count in 2011 and 297 during the August count 2010. Further studies were undertaken by EnviroCentre in 2014 which generally found lower numbers. Three haul out areas were identified and referred to as A, B and C, from east to west (Appendix A).

⁹ Site details for Dornoch Firth and Morrich More SAC available at:
https://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=8242#features last accessed 31/08/2018

¹⁰ MF001 - Ardersier: Intertidal sandbanks west of Whiteness Head and north of Kirkton within the MoD Danger Area.

3 MARINE MAMMAL RISK ASSESSMENT

3.1 Activities Affecting Marine Mammals

3.1.1 Underwater Noise Producing Activities

Underwater noise modelling was commissioned as part of this assessment and was appraised to inform this document. Please refer to Chapter 10: Underwater Noise in Volume 2 of the EIAR and associated technical appendices in Volume 3 which details the methods and findings.

There are a number of proposed activities which will introduce underwater noise into the marine environment. These include: pile extraction (vibratory), vessel movement, rock armour placement, drilling and vibratory piling.

The Marine Scotland 'Guidance for Scottish Inshore Waters: The Protection of Marine European Protected Species from Injury and Disturbance' defines what disturbance means to cetaceans as: 'Changes in behaviour which may not appear detrimental in the short-term, but may have significant long-term consequences. Additionally the effects may be minor in isolation, but may become more significant in accumulation'. Disturbance may be identified via the following behaviour:

- Changes in (direction or speed of) swimming or diving behaviour;
- Bunching together or females shielding calves;
- Certain surface behaviours such as tail splashes and trumpet blows; and
- Moving out of a previously occupied area.

The following negative effects are linked to disturbance:

- Displacement from important feeding areas;
- Disruption of feeding;
- Disruption of social behaviours such as communication, calving, breeding, nursing, resting and feeding; and
- Increased risk of injury or mortality;
- Increased vulnerability of an individual or population to predators or physical stress; and
- Changes to regular migration pathways to avoid human interaction.

The two construction methods below, which will occur during construction, are considered the most significant:

1. Vibropiling

A new sheet pile quay wall will be constructed along the line of the existing quay wall and extending towards the harbour entrance. Vibropiling will be used to install the piles. The new quay wall near the harbour entrance will be largely driven through ground above the mean high water level, either as existing ground or through a temporary bund for construction, while the replacement quay wall against the existing quay will be constructed in open water within the harbour.

Construction works are expected to take six months, with piling works expected to be up to three months in duration during normal working hours. Piling works can commence at any time of year and will be undertaken with the five year duration of the Marine Licence consent.

2. Dredging

A Cutter Suction Dredger (CSD), which uses a cutter to break/loosen harder sediments and remove them via suction, will be used to remove 2,300,000m³ of predominantly sand that has accumulated at the port entrance since it was previously dredged. The bulk of the dredged material will be deposited via a pipeline to land with some used to reinstate the inner spit within the harbour.

Dredging will last for two months, with the plant working up to 24 hours a day, seven days a week between April and September (potentially into October with prior agreement from SNH).

Cetaceans rely on their hearing for foraging, navigation and mating. The impact of noise to a population level is difficult to determine, however the expected impact on an individual animal's hearing ability and potential damage that could be caused by noisy activities during construction is assessed by modelling representative scenarios, taking into account environmental variables and the animal's hearing capabilities.

3.1.2 Increased vessel movement

During construction, there will be an increase in vessel movement in and out of Ardersier Port; the increase in vessel capacity will also lead to an increase in vessel traffic post-construction. It is not currently known what the predicted increase in vessel movements will be as a result of the development.

The increase in the number of vessels travelling through to Ardersier Port, both during construction and operation, would increase the risk of collision with marine mammals, potentially resulting in death or injury to individuals.

Disturbance caused by an increased human presence can have a negative impact on seals. Seals that are on land are usually resting to conserve energy or may be nursing young. Disturbing seals into the water costs them energy, creates stress and can lead to impacts on health¹¹. Stampeding adults can also injure pups. The population utilising the Ardersier haulout site may be temporarily disturbed by an increase in vessel traffic and land-based construction noise and vibration.

3.2 Noise Modelling Results: Impacts of Underwater Noise on Cetaceans

The way in which noise affects marine mammals is dependent on several factors, including the type of noise generated, the noise level, the species of marine mammal and the distance between the animal and the source of the noise. The National Oceanic and Atmospheric Administration (NOAA) describes how different groups of marine mammals hear and are affected by sounds, which can be found in the '*Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing*'¹². The effects can be described as either a Permanent Threshold Shift (PTS), where an animal experiences irreversible damage to their hearing which can in turn affect their ability to forage and reproduce and in extreme circumstances result in death; or a Temporary Threshold Shift (TTS) which an animal can recover from, but may experience 'masking' which reduces its ability to communicate with other animals and locate prey, resulting in fatigue¹³.

The underwater noise model was run using three assumptions; vibropiling/dredging continuously for eight hours, 12 hours and a worst case scenario of 24 hours. The results are used to determine an appropriate mitigation zone in order to provide effective mitigation for marine mammals during underwater noise producing activities, i.e. the distance that is required between the noise source and the animal to prevent the

¹¹ Scottish Natural Heritage: A Guide to Best Practice for Watching Marine Wildlife available online at: <https://www.nature.scot/sites/default/files/2017-06/Publication%202017%20-%20A%20Guide%20to%20Best%20Practice%20for%20Watching%20Marine%20Wildlife%20SMWWC%20-%20Part%202%20-%20April%202017%20%28A2263517%29.pdf> last accessed 13/06/2018

¹² NOAA guidance available at: <http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm> last accessed 22/05/18

¹³ JNCC UK Marine Noise Registry: Information Document available at: http://jncc.defra.gov.uk/pdf/MNR_Draft_InfoDoc_V1_20160808.pdf last accessed 06/06/2018

risk of PTS. Although piling works are anticipated to be 09.00-17.00, the 12 hour assumption was used to determine the impacts, to account for any overrunning works and to reflect a worst-case scenario. The 24 hour scenario was used to determine the impacts from dredging.

Although bottlenose dolphin are a feature of the SAC, are present within the area year-round and are the species most likely to be encountered during works; they are not at high risk of PTS or TTS, with the maximum TTS range (when fleeing) of 2m from the source of the noise.

Harbour porpoise are the most sensitive marine mammal species to underwater noise, and display the largest PTS/TTS risk zones within the underwater noise modelling. The species of concern will therefore be harbour porpoise, to represent a worst-case scenario. It is considered that the mitigation suggested to protect them will be effective at protecting any other species present within the working area.

3.2.1 Vibropiling

The risk of PTS onset would only be present if a harbour porpoise were to stay within 500m of the vibropiling works for a 24 hour period, which is highly unlikely. By implementing the MMO protocol (to determine no marine mammals are present within the mitigation zone prior to vibropiling commencing) and assuming a maximum (worst-case scenario) 12 hour working day, there will be no risk of PTS to marine mammals, including seals, once they have vacated the mitigation zone.

Assuming that animals will flee as soon as they hear the noise from the vibropiling, the PTS range for any species is a maximum of 2m from the source of the noise. Whilst following the MMO protocol, an animal will not be this close to the vibropiling activities when they commence.

The TTS limits are all within 200m when assuming animals will flee from the noise source. Harbour porpoise could experience TTS out to ranges of 3.6km, 4.4km and 6.5km, however this is assuming that an animal is stationary for the duration of the noise (eight hours, 12 hours and 24 hours respectively), which is unlikely. The above ground noise of vibropiling has the potential to cause disturbance to any seals hauled out at the Ardersier haul-out site.

3.2.2 Dredging

The risk of PTS onset would only be present if a harbour porpoise were to stay within 570m of the dredging works for a 24 hour period, which is highly unlikely. By implementing the MMO protocol, there will be no risk of PTS to marine mammals, including seals, once they have vacated the mitigation zone.

Assuming that animals will flee as soon as they hear the noise from the dredging, the PTS range for any species is a maximum of 3m from the source of the noise. Whilst following the MMO protocol, an animal will not be this close to the dredging activities when they commence.

The TTS limits are all within 230m (within 2m for all species when excluding harbour porpoise) when assuming animals will flee from the noise source. Harbour porpoise could experience TTS out to ranges of 2.8km, 3.3km and 4.3km however this is assuming that an animal is stationary for the duration of the noise (eight hours, 12 hours and 24 hours respectively) which is unlikely.

The proposed dredge storage site is adjacent to the Ardersier haul-out site. Dredging activities and the disposal of dredged material could cause disturbance to any seals that are hauled-out.

3.3 Assessment of Risk

It has been assessed that the primary risk from the works is to harbour porpoise, with consideration given to bottlenose dolphin, minke whale, killer whale, common dolphin, humpback whale and grey and common seal. This will be **temporary disturbance** from underwater noise associated with vibropiling and dredging. The noise is not predicted to cause long term negative effects on the local populations of the aforementioned species due to its short duration and to adherence to the detailed Marine Mammal Observation Protocol (MMOP) in section 4.

Given the mitigation which will be employed and the short term nature of the works producing underwater noise, the number of individuals affected will be negligible and any disturbance which may occur will not fall under the JNCC (2008) definition of significant disturbance. Therefore, it is considered that the MMOP will be sufficient to prevent short term negative effects.

Upon interpolation of the updated underwater modelling data, it is considered that the standard, minimum 500m mitigation zone would be sufficient to mitigate against PTS/TTS during vibropiling and dredging noise on all marine mammal species. This is because, when fleeing (the likely reaction of any marine mammal to disturbance), the maximum TTS limit for any species is 230m.

A map showing the Marine Mammal Mitigation Zone can be found in Appendix A.

Common and grey seals are the species considered most at risk from an increase in vessel movement; they are also at risk of disturbance during dredge disposal adjacent to the Ardersier haul-out site.

To reduce the risk of collision with marine mammals, a vessel management plan has been detailed in sections 7 and 8. Contractors should also be made aware of additional standard wildlife codes of conduct prior to construction commencing, which are also outlined in section 8.

4 MARINE MAMMAL OBSERVATION PROTOCOL

This section defines the Marine Mammal Observation Protocol (MMOP) that will be implemented so that the proposed construction works, particularly piling, dredging and disposal, do not cause unnecessary disturbance to marine mammals (cetaceans and seals).

Suitably qualified Marine Mammal Observers (MMOs), competent in the identification of marine mammals, will be present during construction. The MMOs will undertake observation for marine mammals during piling, dredging and disposal activities. The MMOs, through the ECoW, will advise the contractors and crews on the implementation of the procedures set out in the agreed protocol, to ensure compliance with those procedures.

The following guidance has been used:

- Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise, JNCC (August 2010)¹⁴.

4.1 The MMO

The JNCC guidance provides the following definitions:

Marine Mammal Observer (MMO): Individual responsible for conducting visual watches for marine mammals. It may be requested that observers are trained, dedicated and/or experienced.

Trained MMO: Has been on a JNCC recognised course.

Dedicated MMO: Trained observer whose role on board is to conduct visual watches for marine mammals.

Experienced MMO: Trained observer with three years of field experience observing for marine mammals, and practical experience of implementing the JNCC guidelines.

4.2 MMO Equipment

MMOs will be equipped with binoculars and/or spotting scopes, a copy of the agreed protocol and the Marine Mammal Recording Form, which is a Microsoft Excel spreadsheet containing embedded worksheets named Cover Page, Operations, Effort and Sightings. A Microsoft Word document named Deck forms is also available, and MMOs may prefer to use this when observing before transferring the details to the Excel spreadsheets. Although these forms were developed for seismic surveys, they can be used for piling operations, although many columns will not be applicable. The ability to determine the range of marine mammals is a key skill for MMOs, therefore a hand-held or boat-mounted GPS device or rangefinder will be used to verify the range.

All MMO forms, including a guide to completing the forms, are available on the JNCC website:

http://jncc.defra.gov.uk/marine/seismic_survey

4.3 Communication

The contractor will be responsible for the communication channels between those providing the mitigation service and the crews working on the piling or on the dredger. The MMO Operatives will have a workable

¹⁴ It should be noted that this protocol does not document measures to mitigate disturbance effects, but has been developed to reduce to negligible levels the potential risk of injury or death to marine mammals in close proximity to piling operations.

communication procedure established at the outset, so that any visual and acoustic detections can be corroborated by both. A formal chain of communication from the MMO Operative to the contractor, who will start/stop piling, dredging or disposal activities, will be established. In order to confirm the chain of communication and command MMO Operatives will attend any relevant pre-mobilisation meetings. The ECoW will be informed of all communication.

4.4 Mitigation Zone

The JNCC guidance defines the mitigation zone as the area where a MMO keeps watch for marine mammals (and delays the start of activity should any marine mammals be detected). The extent of this zone represents the area in which a marine mammal could be exposed to sound that could cause injury and will be determined by factors such as the pile diameter, the water depth, the nature of the activities and the effect of the substrate on noise transmission.

Upon interpolation of the updated underwater modelling data, it is considered that a 500m mitigation zone would be sufficient to mitigate against vibropiling and dredging noise for all species. A map showing the Marine Mammal Mitigation Zone can be found in Appendix A.

The MMO will be located on the most appropriate viewing platform (e.g. vessel or elevated location within the surrounding landscape) to provide effective coverage of the mitigation zone and a good all-round view of the sea.

4.5 MMO Protocol

The standard JNCC protocol is outlined below¹⁵ which will be used to provide effective mitigation for all species:

1. Vibropiling or dredging will not commence during periods of darkness or poor visibility (such as fog) or during periods when the sea state is not conducive to visual mitigation (above sea state 4 is considered not conducive) as there is a greater risk of failing to detect the presence of marine mammals¹⁶. Harbour porpoise have small dorsal fins, therefore the MMO shall take additional precautions if the sea state exceeds 2¹⁷. During the winter months it is likely that sea state 2 will be exceeded on a regular basis. An elevated platform for the MMO to monitor from, such as a cherry picker for example, would be beneficial when the sea state is between 2 and 4.
2. The mitigation zone will be monitored visually by the MMO for an agreed period prior to the commencement of piling. This will be a minimum of 30 minutes.
3. The MMO will scan the waters using binoculars or a spotting scope and by making visual observations. Sightings of marine mammals will be appropriately recorded in terms of date, time, position, weather conditions, sea state, species, number, adult/juvenile, behaviour, range etc. on the JNCC standard forms. Communication between the MMO and the contractor and the start/end times of the activities will also be recorded on the forms.
4. Piling will not commence if marine mammals are detected within the mitigation zone or until 20 minutes after the last visual detection. The MMO will track any marine mammals detected and ensure they are satisfied the animals have left the mitigation zone before they advise the crew to commence piling activities.

¹⁵ There is a 'variation of standard piling protocol' allowed in the guidance if required.

¹⁶ There is a 'variation of standard piling protocol' allowed in the guidance if required.

¹⁷ Detection of marine mammals, particularly porpoises, decreases as sea state increases. According to the JNCC guidance ideally sea states of 2 or less are required for optimal visual detection.

5. A soft-start will be employed, with the gradual ramping up of piling power incrementally over a set time period until full operational power is achieved. The soft-start duration will be a period of not less than 20 minutes. This will allow for any marine mammals to move away from the noise source. The MMO should monitor any seals that are hauled-out at the adjacent haul-out site during the soft-start, to identify any signs of disturbance (increased alertness, agitation and stampeding into the water). If this behavior is observed, the MMO should inform contractors to cease drilling until the seals have returned to the water.
6. If a marine mammal enters the mitigation zone during the soft-start then, whenever possible, the piling operation will cease, or at least the power will not be further increased until the marine mammal exits the mitigation zone and there is no further detection for 20 minutes.
7. When piling at full power this will continue if a marine mammal is detected in the mitigation zone (as it is deemed to have entered voluntarily¹⁸).
8. If there is a pause in the piling operations for a period of greater than 10 minutes, then the pre-piling search and soft-start procedure will be repeated before piling recommences. If a watch has been kept during the piling operation, and MMO is able to confirm the presence or absence of marine mammals, it may be possible to commence the soft-start immediately. If there has been no watch, the complete pre-piling search and soft-start procedure will be undertaken.

4.6 Dredge Disposal Protocol

An additional MMO should be positioned at Whiteness Sands to monitor seal activity at the Ardersier haul-out site prior to dredge vessels approaching to dispose of dredge material. The incoming vessel will radio/call the MMO to check seal activity and if/where it is safe to approach. A buffer of approximately 50m between vessels and hauled-out seals should be adopted where possible, however the MMO should also monitor the behavior of the seals when vessels approach. If they display signs of disturbance (increased alertness, agitation and stampeding into the water) vessels should turn off their engines and not approach any closer.

4.7 Reporting

As per the JNCC guidance, reports detailing the piling/dredging activity and marine mammal mitigation (the MMO reports) will be sent to MS/SNH/TS via the EMG at the conclusion of piling/dredging activity. Reports will include:

- Completed Marine Mammal Reporting Forms (MMRFs);
- Date and location of the piling/dredging activities;
- A record of all occasions when piling occurred, including details of the duration of the pre-piling search and soft-start procedures, and any occasions when piling activity was delayed or stopped due to presence of marine mammals;
- A record of all occasions when dredging occurred, including details of the duration of the pre-dredging search, and any occasions when dredging activity was delayed or stopped due to presence of marine mammals;
- Details of watches made for marine mammals, including details of any sightings, details of the PAM equipment and detections, and details of the piling/dredging activity during the watches;
- Details of any problems encountered during the piling/dredging activities including instances of non-compliance with the agreed piling/dredging protocols; and
- Any recommendations for amendment of the protocols.

¹⁸ The guidance states that there is no scientific evidence for this voluntary hypothesis; instead it is based on a common sense approach. Factors such as food availability may result in marine mammals approaching piling operations; in particular, the availability of prey species stunned by loud underwater noise may attract seals into the vicinity.

5 MARINE MAMMAL LICENSING

European Protected Species (EPS) are animals and plants (species listed in Annex IV of the Habitats Directive) that are afforded protection under The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017. All cetacean species (whales, dolphins and porpoise) are European Protected Species. If any activity is likely to cause disturbance or injury to a European Protected Species a licence is required to undertake the activity legally.

The licensing of Marine European Protected Species in Scotland is shared between several regulators depending on the purpose and location of the activity in question. For activities taking place within 12 nautical miles of the coast (the Scottish Territorial Sea), EPS are protected under the 1994 Regulations. For commercial activities, including geophysical or seismic surveys (including those related to oil and gas), port and harbour developments and the installation of renewable energy devices Marine Scotland (on behalf of the Scottish Ministers) is the licensing authority under the 1994 Regulations: Regulation 39 (1) (a). For activities relating to scientific research or conservation, Scottish Natural Heritage is the licensing authority.

A licence may be granted to undertake such activities if certain strict criteria are met:

- There is a licensable purpose.
- There are no satisfactory alternatives.
- The actions authorised will not be detrimental to the maintenance of the population of the species concerned at favourable conservation status¹⁹ in their natural range.

The flowchart in Figure 5-1 below shows the decision-making process for licensing, taken from the Marine Scotland guidance²⁰.

¹⁹ The ultimate objective of the Habitats Directive is to ensure that the species covered reach what is called a 'Favourable Conservation Status' and that their long-term survival is deemed secure across their entire natural range within Europe. Article 1(i) of the Habitats Directive defines Favourable Conservation Status (FCS) of a species as follows:

"Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within its natural range.

The conservation status will be taken as 'favourable' when:

- population dynamics data on the species concerned indicates that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and

- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and

- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."

²⁰ Guidance for Scottish Inshore Waters: The Protection of Marine European Protected Species from injury and disturbance. Marine Scotland 2014.

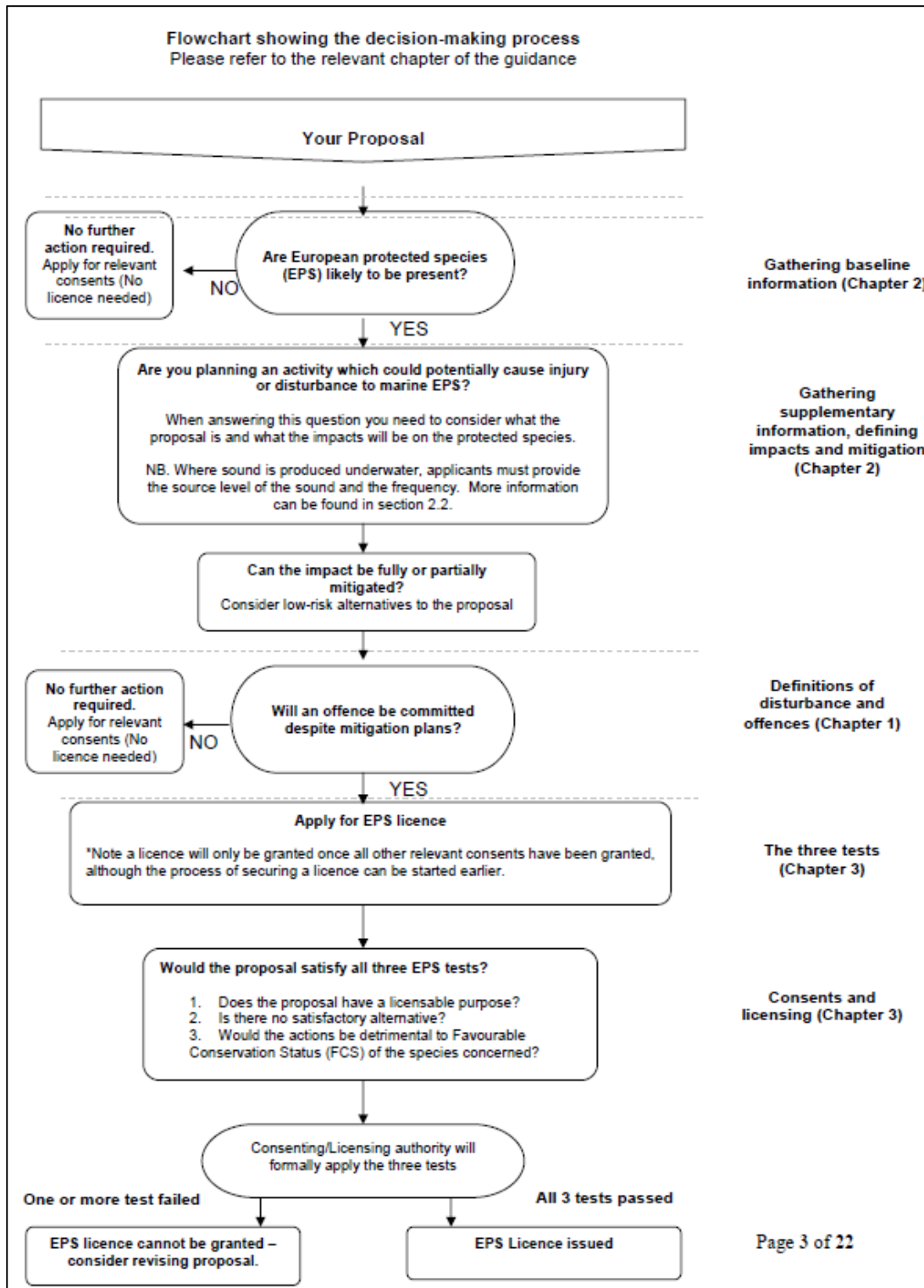


Figure 5-1: EPS Licencing Procedure

Vibropiling and dredging have the potential to produce underwater noise at levels which could cause injury and disturbance to cetaceans. If the mitigation in section 5 is employed effectively, it is predicted that there will be no risk of injury, however, the mitigation measures cannot fully protect against disturbance from underwater noise. As highlighted in section 3 the risk of disturbance is greater than that of injury, with TTS (disturbance) occurring over a much wider area than PTS (injury). **Therefore an EPS licence will be required for potential disturbance from vibropiling and dredging.**

6 SEAL INJURY AVOIDANCE SCHEME

This Seal Injury Avoidance Scheme (SIAS) sets out measures to minimise the risk of potential injury or disturbance to seals as a result of the works.

All ships utilising the harbour will comply with these SIAS measures and this will be clearly signposted within the Vessel Management Plan (VMP).

During the preparation of the 2013 ES, it had been widely considered that Seal Corkscrew injuries occurred as a result of ducted propeller vessels. However, recently it has been observed that these injuries and mortalities are the result of attacks from adult grey seals.

SNH has stated in recent correspondence with Ardersier Port Limited (2017) that *“Whilst it has not been conclusively proven that ducted propellers do not/could not cause such injuries there is no conclusive evidence that they have caused such injuries, whereas there is direct evidence of the grey seal attacks”*.

Therefore, based on the above correspondence, the use of ducted propeller vessels is no longer considered a threat to seal populations, and shall be allowed within the port. It is noted from the VMP that the dredger will not be using ducted propellers during operation.

Dredging will last for two months, with the plant working up to 24 hours a day, seven days a week between April and September (potentially into October with prior agreement from SNH).

6.1 Mitigation Plan

Whilst the use of ducted propeller vessels is no longer a constraint, measures can be put in place to minimise any potential risk of disturbance to seals, namely:

- Vessels using the port will comply with the measures set out in this SIAS;
- A Marine Mammal Observer will be present during all dredging and piling activities to ensure that no pinnipeds enter the mitigation zone during the activities, in particular during the sensitive seal breeding season (July – August) – dredging is currently scheduled for two months between April and September;
- Employ a soft start approach to dredging and piling activities to allow any marine mammals present are able to vacate the area;
- Principal vessels movements associated with construction activities will be within and close to the development footprint (the dredger is only likely to operate within the dredge area footprint, with wider movements limited to support/survey vessels, while vessel movements associated with the quay construction will be limited to dredged channel and quay);
- Vessels will stay at least 50m away from seal haulout locations wherever possible (closest haulout area is adjacent to the dredge storage site);
- A seal count will be undertaken during July and August to inform the present position of the favoured haulout. This will cover the extent of the designated haulout area and will be made on a weekly basis, typically covering a four hour period around low tide. The count will be made using a telescope, primarily from the top of the dunes at Whiteness (national grid reference NH799586) and also from the opposite side of the Firth on the Black Isle (NH748610); and
- Develop and implement a Vessel Management Plan (VMP) to ensure vessel compliance with this SIAS.

7 VESSEL MANAGEMENT PLAN

The development of the Port of Ardersier will see an increase in vessel activity during the course of the construction. This Vessel Management Plan (VMP) sets out the details for managing vessels during the construction phase to minimise disturbance to seals in accordance with the SIAS.

This VMP incorporates recommendations and commitments made in the preparation of the 2013 ES to support these works and it an integral component of the CEMD and relevant Construction Method Statements (CMS) supporting the CEMD.

Vessel Details and Main Activities

Individual vessel details will be provided once the contract is awarded and before dredging/quay wall works commence. The vessel requirements have been identified from the preferred tenderer and are detailed in Table 7.1.

Table 7.1: Vessel details and main activities (pre-contract award)

	Capital Dredging Works	Quay Construction
Vessel details & (Number of vessels)	Principal: Cutter Suction Dredger (1) Support: Multicat workboat (1) Crew vessel (1) Survey vessel (1)	Material delivery by ship (1) Survey vessel (1) Dredge vessel (1) [for final dredge to depth adjacent to quay wall]
Main Activities	Initial deployment would be for the workboat and survey vessel. The workboat will lay out required pipelines for pumping the dredged material to their designated locations and this would commence two to four weeks before arrival of the cutter suction dredger. The dredger, when it arrives on site, will connect to the pipelines and commence dredging operations. The dredger will commence from existing deep water in the South Channel and proceed inwards to the port, creating the dredged channel as it proceeds. Movement of the dredger is slow as it progresses in towards the main port area and will be serviced by the attendant support vessels.	It is envisaged that steel piles would be delivered to site by ship and would anticipate that this would be a low number of deliveries, perhaps two or three. The method of constructing the quay may involve initial construction of bunds but it is envisaged that all this construction would be land based with no requirement for vessels. However, at the end of quay construction there will be a requirement to reduce the existing dredge level on the seaward side of the quay to the required dredge depth to allow use of the quay. This would probably be carried out by a barge mounted backhoe dredger with associated split hopper barges to allow the material to be taken to the agreed disposal point – this would be in line with a future dredging licence application.

Use of ducted propellers

As outlined in the SIAS, the use of ducted propellers on vessels using the port will be allowed in accordance with the most recent guidance provided by SNH.

All the vessels identified have ducted propellers fitted and which may be needed to manoeuvre in restricted waters, for navigational safety. However, it is to be highlighted that the principal vessel involved in the capital dredging operation, the dredger itself, will not use ducted propellers during the dredging operations. Movement of the cutter suction dredger is slow in progressing from the seaward end of the channel into the port and is controlled through a system of spuds and control wires.

Vessel Management Co-ordination

Vessel management will be under the control of the appointed contractor during dredging in consultation with Ardersier Port. Notice to Mariners will be published in advance of dredging works advising of dredging activity in the area.

Location of Working Port

Vessels involved in undertaking the works at the port will be based at the port. Once on station, the cutter suction dredger should proceed with the dredging operation in a single transit of the channel, from the seaward end of the channel into the port area. The dredger will be attended by the support vessels.

Measures to Minimise Risks to Marine Mammals

The following guidelines will be adhered to in order to minimise any potential risk to marine mammals.

- All vessels will adhere to instructions and guidance from the Harbour Master;
- All vessels will comply with the International Maritime Organisation(IMO)/Maritime Coastguard Agency (MCA) codes for the prevention of oil pollution;
- All vessels must have on-board Ship Oil Pollution Emergency Plans (SOPEPs);
- Vessels must comply with the protocols outlined in the Invasive Non-Native Species (INNS) Management Plan;
- Should vessels need to dispose of dredge material adjacent to the Ardersier seal haul-out site, the crew should radio/call the MMO ahead to check the status of the seals, in order to ascertain if/where it is safe to approach; and
- All movements of vessels, which also include site deliveries, will be coordinated with the Harbour Master.

Additionally, providing the following advice to port users, both during and post-construction, would offer additional measures to mitigate for disturbance to and/or prevent collision with marine mammals:

- Keep a safe distance. Never get closer than 100m (200m if another boat is present). If within 100m, switch the engine to neutral;
- Never drive head on to, or move between, scatter or separate marine mammals. If unsure of their movements, simply stop and put the engine into neutral;
- Spend no longer than 15 minutes near the animals;
- Maintain a steady direction and a slow 'no wake' speed; and
- Avoid sudden changes in speed.

8 REFERENCES

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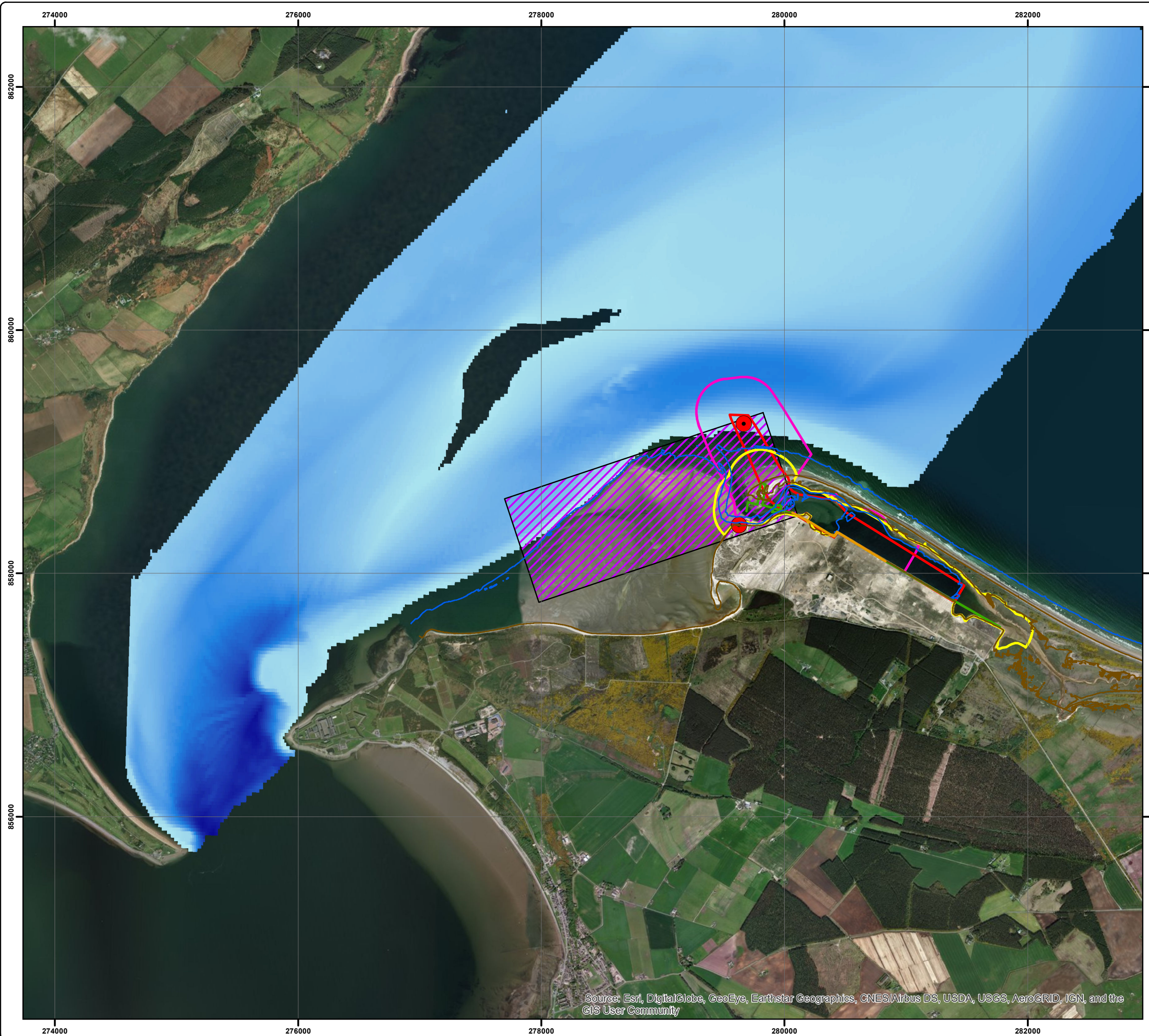
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A MARINE MAMMAL MITIGATION ZONE



Legend

- Marine Mammal Observer (MMO) Location (see note below)
- Harbour Revision Order Works
- Quay Wall Construction Works Extents 2018 License Application
- Marine Mammal Mitigation Zone - Quay Wall Construction Works
- Capital Dredge Extent 2018 License Application
- Marine Mammal Mitigation Zone - Capital Dredge
- Designated Seal Haulout Site
- Mean Low Water Spring (MLWS)
- Mean High Water Spring (MHWS)

Bathymetric Data (UKHO Dataset)

High : 0.707

Low : -43.44

Note:
 Tidal contours from May 2018 Aspect Topographic and Bathymetric survey

During the capital dredge the MMO will be located on a boat and will therefore be unfixed.

Do not scale this map

Client
Ardersier Port Ltd

Project
Ardersier Port Redevelopment

Title
Marine Mammal Protection Plan

Status
FINAL

Drawing No. 670191-017	Revision
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Scale 1:30,000	A3	Date 24 Sep 2018
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Drawn JEP	Checked KC	Approved KD
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Craighall Business Park, Eagle Street, Glasgow, G4 9XA
 Tel: 0141 341 5040
 Fax: 0141 341 5045

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