

Ardersier Deeper Dredge Ecological Assessment



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EXECUTIVE SUMMARY

Envirocentre was commissioned by Ardersier Port to undertake an Ecological Appraisal of the proposed amendments to dredging being conducted under marine licence MS-00009936, to inform Environmental Impact Assessment (EIA) Screening, requested by Marine Scotland.

Since the 2018 impact assessment was undertaken and marine licence was granted for dredging, further investigative works have revealed that a change in the volume and depth of dredge are required. There is also a change in the footprint of the area to be dredged.

The aim of this study is to assess the impacts and significance of any subsequent effects the proposed dredging amendments will have on ecological receptors.

The impacts in relation to night-time dredging were assessed as part of the 2018 EIA and it is not considered that the proposed dredge amendments will affect the original assessment. The proposed dredge amendments won't alter the parameters of the modelling (eg noise generated by the vessel will not be different). Assuming that animals will flee as soon as they hear the noise from the dredging, and expected disturbance from modelling is highly localised to the dredge site, with individuals present within the wider Moray Firth unlikely to be impacted. There is only considered to be a risk to marine mammals if they are in close proximity to the dredge vessel when dredging is commencing. The modelling also shows that there is no difference to disturbance distances regardless if the activity continues for 8 hours or 24 (as long as they do not remain stationary).

As long as mitigation is employed, as it currently is, it is not anticipated that dredging activities at night-time would have any greater impact on marine mammals that day-time dredging has. By allowing night-time dredging, the total number of days dredging may occur over will be reduced as greater volumes would be removed within a 24hr period with longer operational hours.

The impacts from night-time dredging are not predicted to affect the conservation status of any of the populations of marine mammals present within the Moray Firth and are not significant.

The loss of additional sub-tidal habitat will be permanent. No Annex I or Priority Marine Feature habitats are considered to be present within the dredge footprint¹. The habitat is also not considered to be key habitat for any protected or notable species. It is considered that the birds have access to alternative roosting and nesting habitat and the loss of the island will not impact on the conservation status of the wider populations. There will be an overall reduction of habitat available for roosting within the development area and so the effects will be significant at a site level.

Additional mitigation will be required in order to compensate for the proposed loss of bird nesting and roosting habitat. The existing Habitat Management Plan which sets out compensatory and enhancement actions for the site will be updated to reflect the loss of the island.

¹ According to habitat maps available through the Marine Scotland National Marine Plan Interactive Map available at: <https://marinescotland.atkinsgeospatial.com/nmpi/> (accessed 06/07/2023).

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1 INTRODUCTION

1.1 Terms of Reference

Envirocentre was commissioned by Ardersier Port to undertake an Ecological Appraisal of the proposed amendments to dredging being conducted under marine licence MS-00009936, to inform Environmental Impact Assessment (EIA) Screening, requested by Marine Scotland².

1.2 Scope of Report

The aim of this study is to assess the impacts and significance of any subsequent effects the proposed dredging amendments will have on ecological receptors. The objectives are as follows:

- Review the existing EIA and other relevant assessments pertaining to the works.
- Describe the potential impacts of the proposed dredging amendments.
- Identify the ecological features which could be impacted by the proposed amendments.
- Assess any additional impacts to IEFs not already covered within the existing EIA.
- Recommend any additional mitigation required to avoid or minimise impacts.

1.3 Project Background

Dredging works are required to facilitate the creation of a new port facility granted planning permission in principle in 2019 (planning reference 18/04552/PIP). An Environmental Impact Assessment³ was undertaken in 2018 to inform the planning application. The EIA considered impacts arising from works, including impacts dredging would have in relation to marine mammals and the qualifying features of designated sites, amongst other ecological receptors and found that with mitigation, no significant impacts were predicted.

Since the 2018 impact assessment was undertaken and marine licence was granted for dredging, further investigative works have revealed that a change in the volume and depth of dredge are required. There is also a change in the footprint of the area to be dredged.

The requirement for night-time dredging was anticipated and the significance of impacts arising from dredging were assessed on the basis of 24 hour operation in 2018. Despite no significant effects being identified with mitigation, Marine Scotland placed a condition on the licence that works could not take place outside of daylight hours, in order to protect qualifying features of the Moray Firth Special Area of Conservation (bottlenose dolphin, *Tursiops truncatus*). Ardersier Port are seeking for the condition to be removed in order to maximise the time available to complete dredging.

As well as the marine license for dredging, the project has a derogation licence for the disturbance European Protected Species (EPS) (MS EPS 06/2019/0) and works are being undertaken in accordance with a Marine Mammal Protection Plan⁴.

At present dredged material is being transported onshore via a floating pipe. It is then stockpiled with a view to repurposing. No at sea disposal is anticipated. Associated water from the dredging process is

²Request via email subject 00009936 -Ardersier Port Limited (per Envirocentre Ltd) - Capital Dredging and Deposit Variation – Notification That Further Information Is Required for Screening sent 26th May 2023.

³Ardersier Port (2018) Ardersier - Environmental Impact Assessment Report Volume 2

⁴ EnviroCentre (2018) Ardersier Port Marine Mammal Protection Plan.

directed through settlement ponds to help reduce the suspended solid content prior to discharge of the water back into the harbour.

1.4 Report Usage

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2 EIA REVIEW

Table 2-1 below sets out the impacts predicted in 2018 to occur in relation to the dredging campaign currently consented and underway. It also sets out how those impacts are likely to change in relation to the proposed amendments (increased dredge area and deeper dredge, night-time working was already assumed within the impact assessment).

Table 2-1: Dredging impacts review

Current Impacts Assessed	Receptor	Current Mitigation	Significance of Impact	Likely Changes with Proposed Amendments	Additional Mitigation Required
Increased underwater noise.	<ul style="list-style-type: none"> -Moray Firth SAC (bottlenose dolphins) -Dornoch Firth and Morrich More SAC (harbour seals, <i>Phoca vitulina</i>) -River Moriston SAC (Atlantic salmon, <i>Salmo salar</i>) -Atlantic salmon and sea trout (<i>Salmo trutta</i>) -Harbour porpoise (<i>Phocoena phocoena</i>) -Seals (grey seal (<i>Halichoerus grypus</i>) and harbour seal) -Dolphinids (Bottlenose dolphin, Common dolphin (<i>Delphinus delphis</i>)) 	<p>Marine Mammal Protection Plan in place inclusive of MMO protocol. Visual searches within 500m mitigation zone prior to dredge commencing. Dredging to commence in daylight hours and sea states conducive to conducting searches (less than sea state 4).</p>	Not significant for any of the receptors	No change	None
Increased airborne noise	<ul style="list-style-type: none"> -Inner Moray Firth SPA (non-breeding birds) -Moray Firth SPA (non-breeding and breeding birds) 	<p>Regular monitoring of roost locations.</p> <p>Buffer to be maintained between any known roost sites and proposed works as all times.</p>	Not significant for any of the receptors	No change	None

Increased visual disturbance through vessel movements.	-Inner Moray Firth SPA (non-breeding birds) -Moray Firth SPA (non-breeding and breeding birds)	Regular monitoring of roost locations. Buffer to be maintained between any known roost sites and proposed works as all times.	Not significant for any of the receptors	No change	None
Temporary localised increase in sediment suspension around dredge location.	-Moray Firth SAC (bottlenose dolphins) -Dornoch Firth and Morrich More SAC (harbour seals, <i>Phoca vitulina</i>) -River Moriston SAC (Atlantic salmon, <i>Salmo salar</i>) -Inner Moray Firth SPA (non-breeding birds) -Moray Firth SPA (non-breeding and breeding birds) -Atlantic salmon and sea trout (<i>Salmo trutta</i>) -Harbour porpoise (<i>Phocoena phocoena</i>) -Seals (grey seal (<i>Halichoerus grypus</i>) and harbour seal) -Dolphinids (Bottlenose dolphin, Common dolphin (<i>Delphinus delphis</i>))	Cutter suction dredger used to minimise sediment suspension.	Not significant for any of the receptors	No change	None

<p>Minor and localised alterations to coastal processes.</p>	<p>-Moray Firth SAC (subtidal sandbanks) -Whiteness Head SSSI (coast geomorphology, sand dunes, shingle, sand flats, saltmarsh)</p>	<p>N/A</p>	<p>Not significant for any of the receptors</p>	<p>Updates to the coastal morphology model are being undertaken to assess if there are significant changes.</p>	<p>Unknown at present</p>
				<p>A geotechnical assessment has been conducted in relation to the the spit (forming part of the Whiteness Head SSSI) and it is considered that the dredging to date and proposed phase 1 dredging will not undermine stability⁵.</p>	

⁵ Arup (2023) *Ardersier Port, Spit Stability: Geotechnical Assessment*.

<p>Loss of small areas of habitat within the Whiteness Head Site of Special Scientific Interest (SSSI) (<3%) and Inner Moray Firth Special Protection Area (SPA) (0.1%) and Moray Firth SAC.</p>	<p>-Moray Firth SAC -Moray Firth SPA -Inner Moray Firth SPA -Whiteness Head SSSI</p>	<p>Habitat enhancement plan to be implemented.</p>	<p>Not significant for any of the receptors.</p>	<p>Additional dredge area is outwith the designated sites so no additional habitat will be lost.</p> <p>The island to be formed during creation of the dredge channel, which would provide predator free roosting and nesting opportunities for birds will now be lost. This was to be mitigation for loss of habitat within the SPA</p>	<p>Habitat Enhancement Plan to be revised and alternatives for roosting bird provision sought through enhancement of other areas of the site.</p>
<p>Increased risk of pollution events occurring in the event of a fuel leak and spill</p>	<p>-All features.</p>	<p>-Good practice pollution prevention measures set out within Construction Environment Management Plan (CEMP) -Adherence to CEMP audited during weekly Ecological Clerk of Work (ECoW) visits.</p>	<p>Not significant</p>	<p>No change</p>	<p>None</p>

3 ASSESSMENT OF ADDITIONAL IMPACTS

3.1 Habitat Loss

The key difference in the proposed dredging amendment and the existing dredge plan is that the footprint of the dredge area will be larger (additional 10.11ha). The loss of additional sub-tidal habitat will be permanent. No Annex I or Priority Marine Feature habitats are considered to be present within the dredge footprint⁶. The habitat is also not considered to be key habitat for any protected or notable species.

As well as sub-tidal habitat loss, the new dredge area will result in the loss of the western end of the spit. This is comprised of open dune habitat and intertidal mud and sand. Whilst not within the Inner Moray SPA or Moray SPA, the seabird and wader species which are designated features of the sites may utilise the end of the spit for roosting. Under current plans the end of the spit was to be retained, providing an island, protected from land predators such as foxes, which could be utilised by nesting or roosting birds. The creation of this island was part of mitigation for loss of SPA habitat elsewhere within the site.

It is considered that the birds have access to alternative roosting and nesting habitat and the loss of the island will not impact on the conservation status of the wider populations. There will be an overall reduction of habitat available for roosting within the development area and so the effects will be significant at a site level.

3.2 Night-time dredging

The impacts in relation to night-time dredging were assessed as part of the 2018 EIA and it is not considered that the proposed dredge amendments will affect the original assessment. Due to concerns raised by Marine Scotland and the inclusion of the condition preventing night-time work in order to protect bottlenose dolphin within the Moray SAC, the impacts of this on bottlenose dolphin (and other marine mammals) are further provided here.

The main impact predicted to arise from the current and proposed dredging, in relation to marine mammals, is the generation of underwater noise. High levels of underwater noise have the potential to cause injury to marine mammals via temporary or permanent threshold shifts (TTS or PTS) in hearing. In extreme circumstances, loud noises generated in close proximity to individuals can cause death due to pressure changes. In lower levels, noise can cause disturbance and changes in behaviour through masking (where man-made noise drowns out natural noises, affecting communication between individuals, ability to hunt and/or navigate) or displacement from habitats. Underwater noise modelling undertaken to inform the 2018 EIA included modelling of noise which would be generated by dredging using a cutter suction dredger. The proposed dredge amendments won't alter the parameters of the modelling (eg noise generated by the vessel will not be different) Figure 3-1 below shows the results of the modelling with regards to distances for PTS and TTS thresholds for different hearing groups. It is assumed that marine mammals will swim away from any noises which are causing them disturbance or are harmful, the shorter exposure periods for the modelling are therefore the most likely to be experienced.

⁶ According to habitat maps available through the Marine Scotland National Marine Plan Interactive Map available at: <https://marinescotland.atkinsgeospatial.com/nmpi/> (accessed 06/07/2023).

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. 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. The expected disturbance is therefore highly localised to the dredge site, with individuals present within the wider Moray Firth unlikely to be impacted. There is only considered to be a risk to marine mammals if they are in close proximity to the dredge vessel when dredging is commencing. The modelling also shows that there is no difference to the TTS and PTS threshold distances regardless if the activity continues for 8 hours or 24 (as long as they do not remain stationary).

Dredging NMFS (2018) - SEL _{cum} (8 hours)	PTS criteria		TTS criteria	
	Fleeing	Stationary	Fleeing	Stationary
Low Frequency (LF) Cetaceans	< 1 m	34 m	2 m	370 m
Mid Frequency (MF) Cetaceans	< 1 m	20 m	2 m	220 m
High Frequency (HF) Cetaceans	3 m	330 m	230 m	2.8 km
Phocid Pinnipeds (PW)	< 1 m	22 m	2 m	240 m

Table 5 Summary of the impact ranges for auditory injury using criteria from NMFS (2018) for dredging (non-impulsive) noise over 8 hours

Dredging NMFS (2018) - SEL _{cum} (12 hours)	PTS criteria		TTS criteria	
	Fleeing	Stationary	Fleeing	Stationary
Low Frequency (LF) Cetaceans	< 1 m	42 m	2 m	460 m
Mid Frequency (MF) Cetaceans	< 1 m	25 m	2 m	280 m
High Frequency (HF) Cetaceans	3 m	400 m	230 m	3.3 km
Phocid Pinnipeds (PW)	< 1 m	27 m	2 m	300 m

Table 6 Summary of the impact ranges for auditory injury using criteria from NMFS (2018) for dredging (non-impulsive) noise over 12 hours

Dredging NMFS (2018) - SEL _{cum} (24 hours)	PTS criteria		TTS criteria	
	Fleeing	Stationary	Fleeing	Stationary
Low Frequency (LF) Cetaceans	< 1 m	61 m	2 m	640 m
Mid Frequency (MF) Cetaceans	< 1 m	36 m	2 m	390 m
High Frequency (HF) Cetaceans	3 m	570 m	230 m	4.3 km
Phocid Pinnipeds (PW)	< 1 m	39 m	2 m	420 m

Table 7 Summary of the impact ranges for auditory injury using criteria from NMFS (2018) for dredging (non-impulsive) noise over 24 hours

Figure 3-1: Underwater noise modelling results in relation to dredging.

In order to avoid and minimise the risk of injury and disturbance to marine mammals, a Marine Mammal Protection Plan is in place. The main mitigation in relation to underwater noise is to employ a Marine Mammal Observation (MMO) Protocol. Prior to dredging commencing, a dedicated MMO will undertake a visual search of waters within 500m of the dredge vessel for 30min prior to dredging commencing. No works will begin until 20 min after any marine mammals are observed leaving the mitigation zone. The visual searches will be conducted in daylight hours only, in suitable conditions (sea state less than 4). Whilst the searches prior to the activity commencing are required to be done in periods with good visibility, it is considered that dredging may continue into the night, or periods of reduced visibility (due to weather conditions etc) as long as there is no break in activity. This is in line with Joint Nature Conservation Committee guidance on reducing noise impacts to marine mammals in relation to impact piling⁷; “A distinction should be made here between piling which commences during times of good visibility (and subject to the above provisions) and continues into a period of poor visibility/ night-time, and piling that commences during times of poor visibility (including night-time conditions). Assuming that the operations are continuous the first scenario would not need additional mitigation.”

As long as mitigation is employed, as it currently is, it is not anticipated that dredging activities at night-time would have any greater impact on marine mammals than day-time dredging. By allowing night-

⁷ Available at: <https://data.incc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/JNCC-CNCB-Piling-protocol-August2010-Web.pdf> (Accessed 06/07/2023)

time dredging, the total number of days dredging may occur over will be reduced as greater volumes would be removed within a 24hr period with longer operational hours.

The impacts from night-time dredging are not predicted to affect the conservation status of any of the populations of marine mammals present within the Moray Firth and are not significant.

3.3 Cumulative Impacts

No significant cumulative impacts were identified within the original EIA and given the highly localised nature of the additional impacts identified for the proposed dredge amendments, it is considered that this is still likely to be the case.

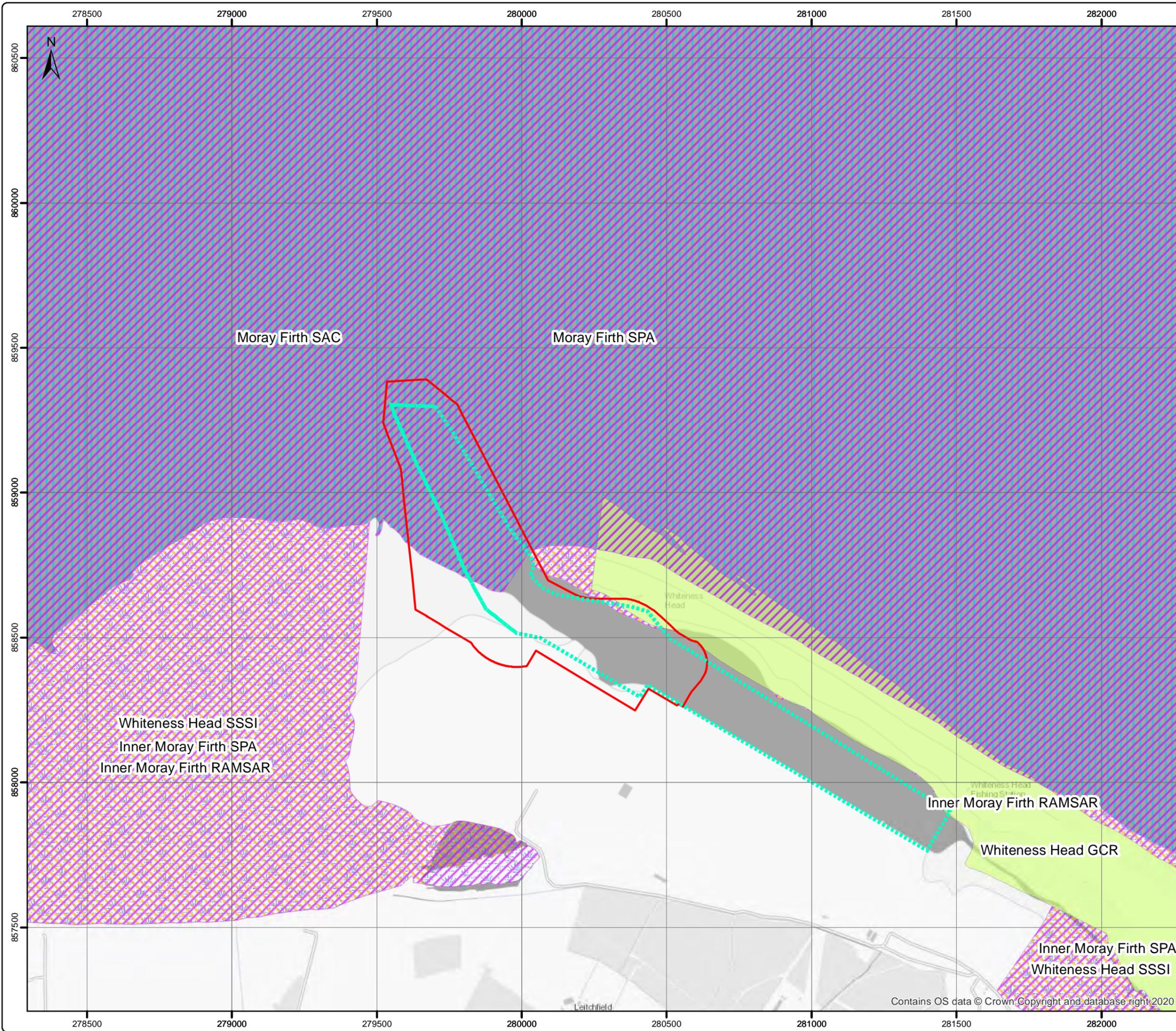
4 MITIGATION

Additional mitigation will be required in order to compensate for the proposed loss of bird nesting and roosting habitat. The existing Habitat Management Plan which sets out compensatory and enhancement actions for the site will be updated to reflect the loss of the island. Stakeholders within the Habitat Management Group, have discussed the possibility of re-storing the natural hydrology of the lagoon situated to the west of the development area. This would involve re-connecting it to the sea and allowing it to flood. It may be possible to create a similar island within this area, however further hydrological investigation is required to assess the feasibility.

It is considered that the existing protocols set out within the MMPP will be sufficient to avoid and minimise the risk associated with underwater noise generation from dredging.

APPENDICES

A DREDGE AREA AND DESIGNATED SITES



Legend

- Dredge Boundary 2018
- Dredge Outline 2023

Designation

- GCR
- RAMSAR
- SAC
- SPA
- SSSI

Do not scale this map
Client
 Ardersier Port (Scotland) Ltd

Project
 Ardersier Port

Title
 Dredge Extent and Designated Sites

Status
FINAL

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