



Ardersier Port (Scotland) Ltd

Ardersier Port Maintenance Dredging Support Environmental Appraisal

ASSIGNMENT A101001-S00
DOCUMENT A-101001-S00-A-REPT-002



XODUS

Aberdeen

5th Floor Capitol Building
429-431 Union Street . Aberdeen
AB11 6DA . UK

T +44 (0)1224 628300
E Anni.Makela@xodusgroup.com

www.xodusgroup.com



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[Redacted]						
A02	02/05/25	Re-Issued for Use	CEF	AM	AM	-
A01	24/04/25	Issued for Use	CEF	AM	AM	-
R01	20/03/25	Issued for Review	CEF	AM	NG	-
REV	DATE	DESCRIPTION	ISSUED	CHECKED	APPROVED	CLIENT



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ABBREVIATIONS

ABBREVIATION	DEFINITION
AP	Ardersier Port (Scotland) Ltd
BPEO	Best Practicable Environmental Option
CD	Chart Datum
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
km	Kilometres
km ³	Kilometres Cubed
m	Metres
MD-LOT	Marine Directorate – Licensing Operations Team
MImAS	Morphological Impact Assessment System
MMO	Marine Mammal Observer
nm	nautical miles
NMP	National Marine Plan
PMF	Priority Marine Feature
PTS	Permanent Threshold Shift
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TSHD	Trailing Suction Hopper Dredge
TTS	Temporary Threshold Shift
WFD	Water Framework Directive



1 INTRODUCTION

Ardersier Port (Scotland) Ltd (herein referred to as 'AP') is the owner and developer of the Ardersier Port near Inverness. Following the completion of AP's capital dredging campaign in summer 2025 as part of the port development, the newly deepened navigation channel must be maintained at the charted depth and dredging may be required in the case of sudden sedimentation events and gradual sediment build up. AP is therefore applying for a marine licence for dredging and sea deposit of dredged material, to allow for maintenance dredging to take place when/if required. The annual maintenance dredge amount is estimated to be 200,000 m³ or 360,000 wet tonnes annually over a three-year period. The number of dredging campaigns required per year and the volume of material to be dredged will be dependent on weather events and therefore an exact annual amount is unknown. Maintenance dredging may be carried out at any point during the year.

Following the undertaking of a Best Practicable Environmental Option (BPEO) assessment, it was concluded that depositing the dredged material at sea, within the Whiteness Sands B and C sea deposit sites would be the BPEO. The deposit will be split 50/50 between Whiteness B and C sea deposit sites (see Figure 1-1). This document will provide information on the dredging methodology and an assessment of the potential associated impacts on the environment and other sea users.

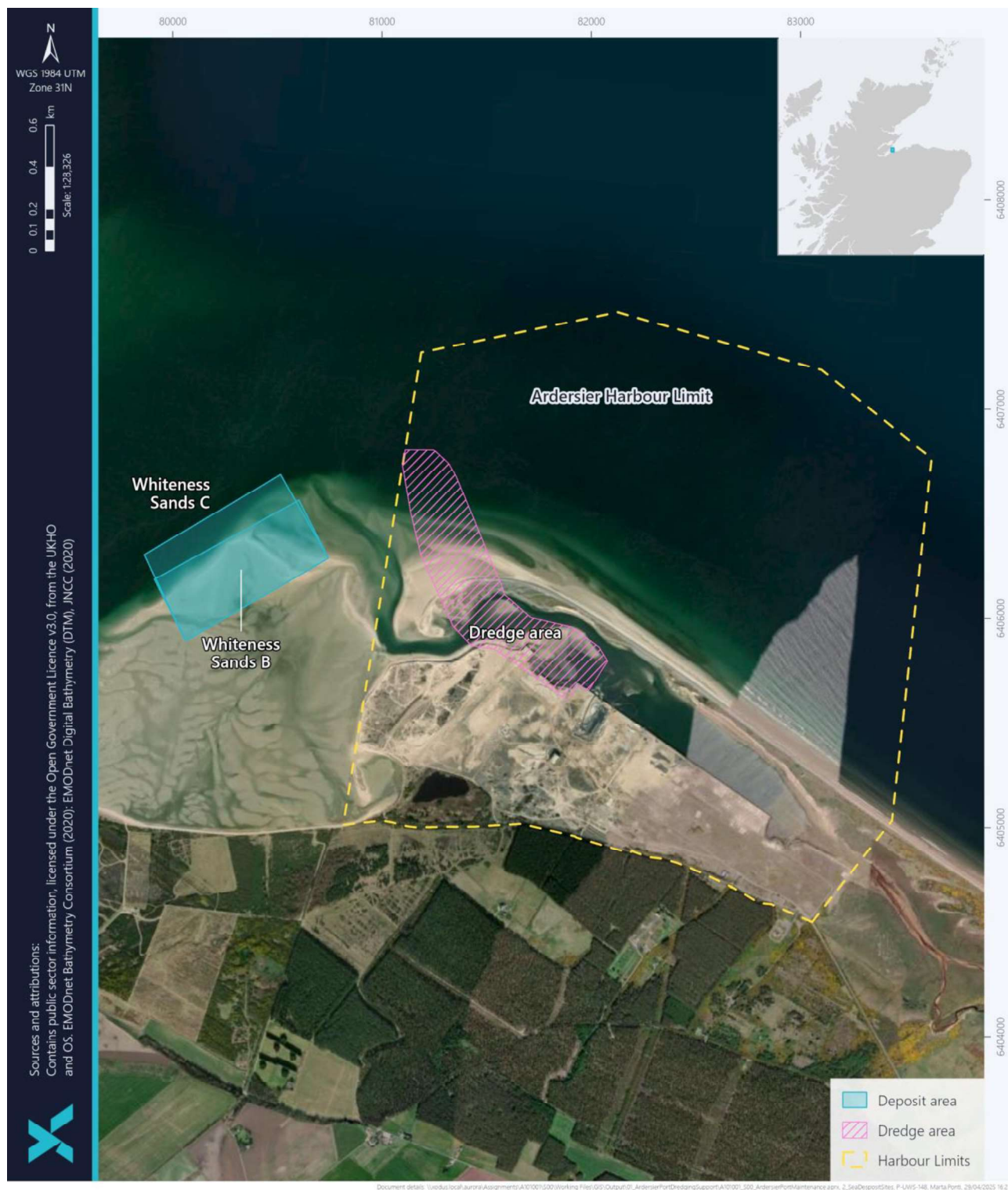


Figure 1-1 Ardersier Dredging and Sea Deposit Locations



2 DREDGING METHODOLOGY

2.1 Methodology

AP will be engaging a contractor to carry out the maintenance dredging and sea deposit at the Ardersier Port. The primary dredging option is to use a Trailing Suction Hopper Dredge (TSHD), with plough dredging undertaken to help maintain a level seabed. However, mechanical dredging and use of a split barge may be used on occasion. Notification on the vessels used will be provided to the regulator, Marine Directorate – Licensing Operations Team (MD-LOT), once known. All dredged material will be deposited in the Whiteness sands B and C designated sea deposit sites.

2.1.1 Deposit Sites

The dredged material will be deposited between the Whiteness Sands B and C deposit sites (CR021 and CR023), located approximately 0.6 km and 1.1 km from Ardersier Port and dredging location, immediately to the west of the dredge channel. The aim is to achieve a 50/50 split between in amount deposited between the two sites (B & C) over the three-year period, allowing the deeper site (>-5m Chart Datum (CD)) to be used mainly at low tide and the shallower site to be mainly used at high tide. The shallow site is between 0 m CD and -5 m CD and it is expected that depositing the material in this location will mimic the natural sedimentation process of the area whereby the sand from Ardersier Port area would naturally migrate to the Whiteness Sands area in the absence of the port entry channel. The use of the dredge material for nourishment of the Whiteness Sands has been requested by NatureScot.

2.1.2 TSHD

A TSHD (Figure 2-1) is a self-propelled vessel that uses suction pipes dragged along the seabed to suction up the seabed material (here primarily sand) into a hopper on the vessel. The TSHD will be mobile during dredging operations and does not require the use of anchors or mooring lines. It will move at a speed of 1 to 2 knots. Once the hopper of the TSHD is full, the dredging will cease and the TSHD will then sail to the sea deposit site located 0.6-1.1 km from the dredge site.

On arrival at the sea deposit site(s), once in the correct location, the bottom opening doors of the hopper will be slowly opened to allow disposal of the dredged material. Once the hopper is empty the doors will be closed and the TSHD will return to the Ardersier Port to continue dredging. Within the deposit site 50% of the total material dredged over the three-year period will be deposited in the shallow site, between 0 m CD and -5 m CD, typically at higher tide states and 50% in the deeper water site typically at lower tide states. This will allow for operational flexibility and for the dredging activities to run 24/7 if required.

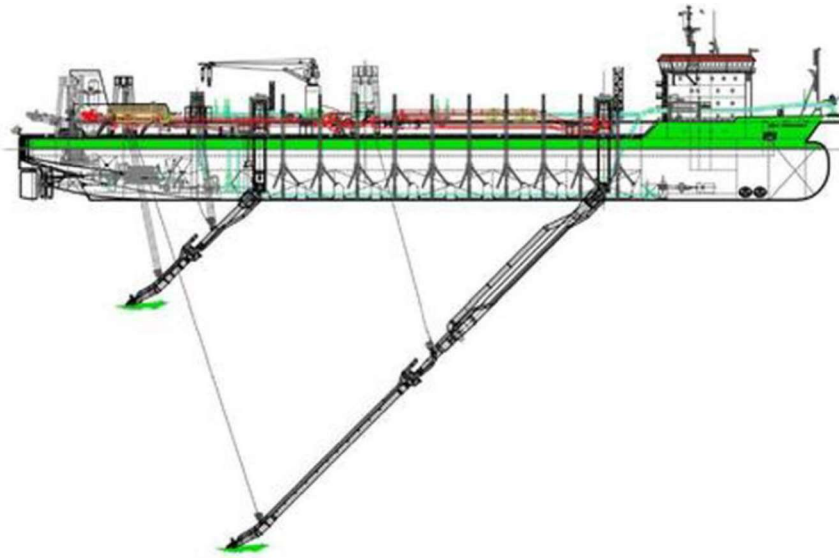


Figure 2-1 Trailing Suction Hopper Dredger

2.1.3 Mechanical Dredger/Split Barge

While a TSHD is the primary dredger that will be utilised for maintenance dredging, a mechanical dredger/split barge (Figure 2-2) may be used on occasion depending on vessel availability.

A mechanical dredger uses an excavator style arm attached to a barge/pontoon to remove the dredge material and deposit it into a split barge moored alongside the mechanical dredger. Once the split barge is full, it will move to the deposit site where the material is unloaded by splitting the barge longitudinally. While some barges can be self-propelled, most require a tugboat to transport the split barge from the dredge site to the deposit site. Depending on the size and depth of the waterways, multiple barges may be strapped together to reduce the number of trips required to the deposit site.

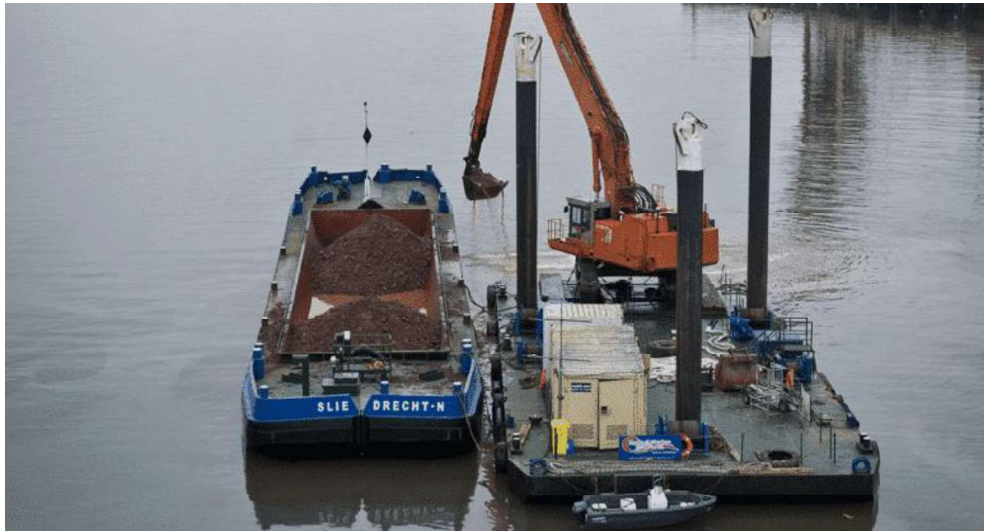


Figure 2-2 Mechanical Dredger and Split Barge

2.1.4 Plough Dredger

Plough dredgers are used to help even out irregularities in the seabed at dredge sites. They are often trailed behind a tug or work boat and can vary in size and weight. They can be utilised on a variety of seabed types.

During the proposed maintained dredging works, the plough may be used in association with the dredger to help level the seabed either before or after dredging works. It may also be used to move sediment from areas unreachable by the dredgers due to their size.

2.2 Consideration of Alternatives

Alternatives to dredging and the use of the dredged material have been considered and assessed within the associated BPEO document (Xodus document A-101001-S00-A-REPT-001) submitted with the marine licence application.

The assessment concluded that the deposit of the dredged material at the Whiteness Sands B and C deposit sites was the BPEO, and this option also allows for the material to be retained in the local sediment system.

2.3 Consideration of Policies

Assessment of the maintenance dredging on Scotland's National Marine Plan (NMP) objectives are detailed in Table 2-1.



Table 2-1 National Marine Plan policies relevant to the proposed operations (Scottish Government, 2015)

POLICY	TITLE	DETAILS
GEN-1	General planning and principle	Development and use of the marine area should be consistent with the NMP, ensuring activities are undertaken in a sustainable manner that protects and enhances Scotland's natural and historic marine environment. As discussed within this assessment, appropriate measure will be taken to ensure any potential impacts from the proposed operations are mitigated or minimised to ensure the marine environment is protected, and where possible, enhanced.
GEN-4	Co-existence	Where conflict over space or resource exists or arises, marine planning should encourage initiatives between sectors to resolve conflict and take account of agreements where this is applicable. As discussed in Section 4, no impact on other users of the sea is expected.
GEN-5	Climate change	Marine planners and decision makers should seek to facilitate a transition to a low carbon economy. They should consider ways to reduce emissions of carbon and other greenhouse gasses. As discussed in the BPEO the chosen dredging and deposit option has the lowest associated emissions of the options considered.
GEN-8	Coastal Process and Flooding	Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding. As discussed in Table 3-1 the impacts on coastal processes and flooding from the proposed operations are expected to be minimal and will not result in adverse impacts.
GEN-9	Natural heritage	<p>Development and use of the marine environment must:</p> <ul style="list-style-type: none"> • Comply with legal requirements for protected areas and protected species; • Not result in significant impact on the national status of PMF; and • Protect and, where appropriate, enhance the health of the marine area. <p>As discussed in Section 3 the potential impacts on protected sites and species within the area have been considered and any potential adverse impacts mitigated or minimised. Furthermore, the deposit of dredged material near Whiteness Sands retains the sediment in the same sediment cell, enhancing the coastal environment.</p>
GEN-10	Invasive non-native species (INNS)	Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made. As discussed in Section 3.3 no INNS have been identified in the dredge area, but an Operational Biosecurity Plan will be in place during the maintenance dredging campaign.



POLICY	TITLE	DETAILS
GEN-12	Water quality and resource	Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive (WFD), Marine Strategy Framework Directive or other related Directives apply. As discussed in Section 3.3 no potential impacts on the waterbody status has been identified from the proposed operations.
GEN-13	Noise	Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects. As discussed in Section 3.1.1, noise levels will be marginally increased during operation but no significant adverse effects on sensitive species are predicted due to the short-lived nature of the operations.
POLICIES RELATING TO DREDGING		
Transport 4		Maintenance, repair and sustainable development of port and harbour facilities in support of other sectors should be supported in marine planning and decision making. This application covers maintenance dredging to maintain navigational depth within the port under the Statutory Harbour Authority (SHA).



3 ENVIRONMENTAL ASSESSMENT

3.1 Potential Impacts

The maintenance dredging and sea deposit activities at Ardersier Port have the potential to cause temporary environmental impacts due to the presence of the vessel(s) including noise and lighting, the removal and deposit of seabed material, and the potential impacts of dredging on the coastal processes within the area. The impacts of maintenance dredging were assessed as part of the 2018 EIA Report (EnviroCentre, 2018), which found no significant effects from the activity, however, the potential impacts have been further assessed within Table 3-1:



Table 3-1 Potential Impacts Resulting from Maintenance Dredging Activities

		POTENTIAL IMPACT	CONSIDERED FURTHER?
Vessel presence	Noise	The routine operation of the vessels will result in a low-level increase in noise below sea level which has the potential to impact marine mammals and fish within the local area.	Yes Section 3.1.1
	Lights (winter only)	The use of lights on the vessel during winter dredging has the potential to cause visual disturbance to birds and other protected species in the vicinity of the operations.	Yes Section 3.1.1
	Physical presence	The physical presence of the vessel has the potential to cause disturbance to the breeding and nesting birds and seals located within the vicinity of the proposed operations.	Yes Section 3.1.1
Seabed disturbance	Water Quality/Suspended Sediment	Dredging activities will result in the suspension of sediments and sediment dispersal within the dredged area and sea deposit site which has the potential to result in the dispersal and deposit of contaminants contained within the seabed. However, the dredge material is primarily clean sand with a very small level of fines and therefore turbidity impacts will be small and localised, the sand will fall out of suspension quickly, particularly at the deposit site due to the shallow water depth. Furthermore, the dredged material in the dredged area has been tested in the past three years and no sediment contaminants exceeding Action Level 2 were detected, any Action Level 1 exceedances were marginal (for further details refer to the BPEO). There should therefore be no risk of release of contaminants during the dredging. In addition, no sensitive or high value benthic species are likely to be present in the dredge or deposit areas due to frequent dredging and deposit operations at the locations.	No
	Removal of seabed material	The removal of seabed material has the potential to cause disturbance to benthic species within the dredging area. However, as this area has been capital dredged the potential impacts to benthic species is expected to be limited. In addition, no sensitive or high value species have been identified in the dredge area.	No



POTENTIAL IMPACT		CONSIDERED FURTHER?
Deposit of dredged material	The deposit of the dredged seabed material at the sea deposit site will result in smothering of any benthic species present. However, as the deposit site is a designated sea deposit site intended for this activity, the regularity of the seabed deposits in the same location at the site means it is unlikely that any sensitive or high value benthic species will be present at the site. While the falling dredge material has the potential to disturb fish, seals and cetaceans present in the area of deposit, a Marine Mammal Observer (MMO) will be present on the vessel to ensure the area is clear of marine mammals prior to the material being deposited.	No
Coastal processes	Sediment transport modelling undertaken during the capital dredging activity (EnviroCentre, 2024a) has shown that dredging has the potential to impact the sediment transport and costal morphology within the footprint and immediate vicinity of the dredge channel and north-eastern fringe of Whiteness Sands. However, it will not impact the wider system and the potential impacts on designated sites from sediment transport are expected to be small, impacting <3% of Whiteness Head Site of Special Scientific Interest (SSSI), 0.1% of the Inner Moray Firth SPA, and <0.1% of the Moray Firth Special Area of Conservation (SAC) (EnviroCentre, 2024a). In addition, depositing of the dredged material at the Whiteness Sands B and C deposit sites will keep the dredged sediment within the same sediment cell and will help replenish the Whiteness Sands SSSI that may otherwise be impacted from the capital dredging works at the mouth to the port.	No
Habitat Loss	Maintenance dredging has the potential to result in a loss of habitat over the dredged area. However, the maintenance dredging area has already been subject to capital dredging and as a result no further loss of habitat is expected.	No



3.1.1 Vessel Presence

The presence of the vessels and the dredging activity will lead to an increase in noise levels both above and below sea level and an increase in light pollution above sea level during the winter, which could cause potential disturbance to both marine mammals and birds.

Vessel Noise

During dredging activities, the underwater noise emitted from the dredger is considered to be non-impulsive. As part of the original EIA Report for the development of the Ardersier Port, noise modelling was undertaken in order to establish the potential risks to fish and marine mammals from the dredging. The noise modelling looked at the temporary reduction in hearing sensitivity after exposure to sound, defined as the Temporary Threshold Shift (TTS) and the permanent loss of hearing sensitivity after exposure to sound, known as the permanent threshold shift (PTS). The results of the noise modelling showed that fish with swim bladders would need to stay within 7 m of the operating dredger for 48 hours to suffer from a recoverable injury and within 30 m for 12 hours to result in a TTS. For marine mammals, assuming animals will flee when they hear the noise from the dredging, the PTS for all marine mammals is 3 m from the source of the noise and for TTS is 230 m for all mammals when including harbour porpoise (*Phocoena phocoena*, the most sensitive species assessed), and only 2 m when harbour porpoise are excluded (Graham and Sibbald, 2018). The small disturbance radius and short duration of the maintenance dredging operations means the likely impact from noise on the marine mammals in the area is expected to be minimal. However, as bottlenose dolphins (*Tursiops truncatus*), grey seals (*Halichoerus grypus*) and harbour seals (*Phoca vitulina*) are known to reside in the Moray Firth, a suitably qualified MMO, competent in the identification of marine mammals at sea, will be present during the sea deposit activities. If marine mammals are observed within a 200 m mitigation zone, then the deposit activity will not commence until the area has been clear for at least 20 minutes.

Due to the short-term nature of the dredging activities and the minimal impacts caused by the dredging campaign, the number of cetaceans potentially effected will be negligible and any disturbance that may occur will not fall under the Joint Nature Conservation Committee (JNCC) (2020) definition of significant disturbance. As a result, no European Protected Species licence will be required for the maintenance dredging and sea deposit activities.

Vessel Lighting

Bright vessel lighting can lead impacts on birds by disrupting of foraging activity, disorientation, forcing the birds to fly away from the disturbance and in prolonged cases lead to changes in breeding, foraging and roosting locations as well as migration routes (MacArthur Green, 2022). There are a number of breeding and non-breeding rare and vulnerable bird species found within the surrounding area of the Ardersier Port that could be impacted by the dredging vessel lighting during maintenance dredging activities, in particular during winter when there will be an increase in lighting requirements for safe navigation (see Table 3-2 for Special Protection Areas (SPA) in vicinity of Ardersier Port). A number of bird roosting sites have been identified around the Ardersier Port, as shown in Figure 3-1, and as a result a 100 m buffer zone will be implemented around each location at all times of the year for maintenance dredging activities. The 100 m buffer has been agreed with NatureScot for the capital dredging campaign. In addition, the maintenance dredging activities will occur within an area in which other vessels and lighting will be present. As a result, the impacts from vessel lighting as a result of the maintenance dredging activity are not expected to result in a significant effect. As the lightening on the vessels will be above sea level, no impact on marine mammals are expected.



Physical Vessel Presence

The physical presence of the dredging and deposit vessel(s) could lead to impacts of birds, seal and cetaceans that may be present in the surrounding area. However, the port and port entrance, in which the maintenance dredging will be occurring, is subject to high level of baseline vessel activity. Due to the existing vessel traffic, the presence of the maintenance dredging vessel is not like to result in a significant increase in vessel presence within the area. In addition, as detailed above, a year round 100 m buffer will be implemented around the known bird roosting sites located in the vicinity of the port, and a MMO will be used during sea deposit activities to detect marine mammals. As a result, the physical presence of the vessel is not expected to result in significant impacts.

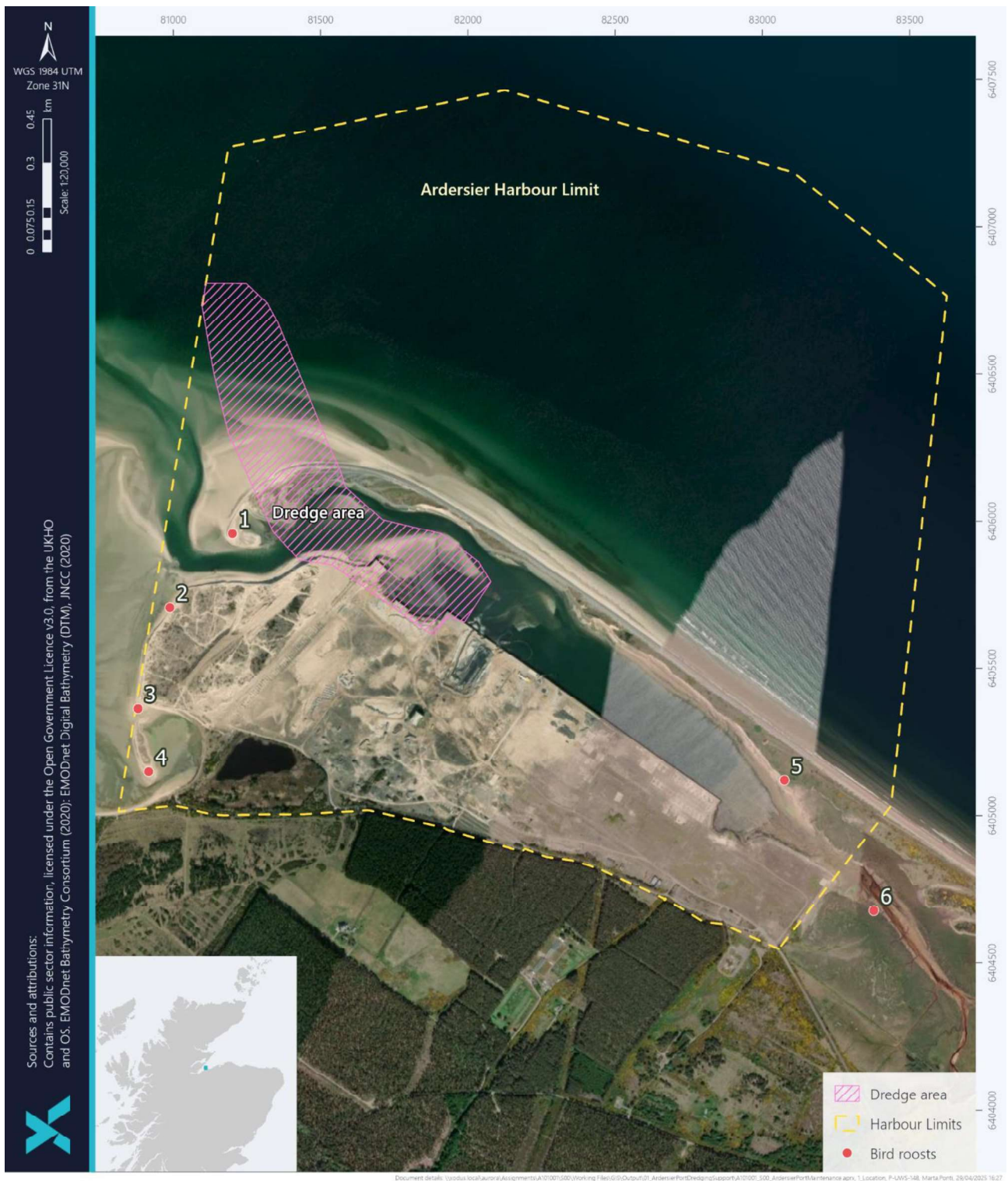


Figure 3-1 Ardersier Port Bird Roosting Locations in Relation to the Dredging Area

3.2 Designated Sites

There are a number of designated sites within the vicinity of the Ardersier Port, that have the potential to be impacted by the maintenance dredging operations (Figure 3-2). The likely impacts have been assessed within Table 3-2.

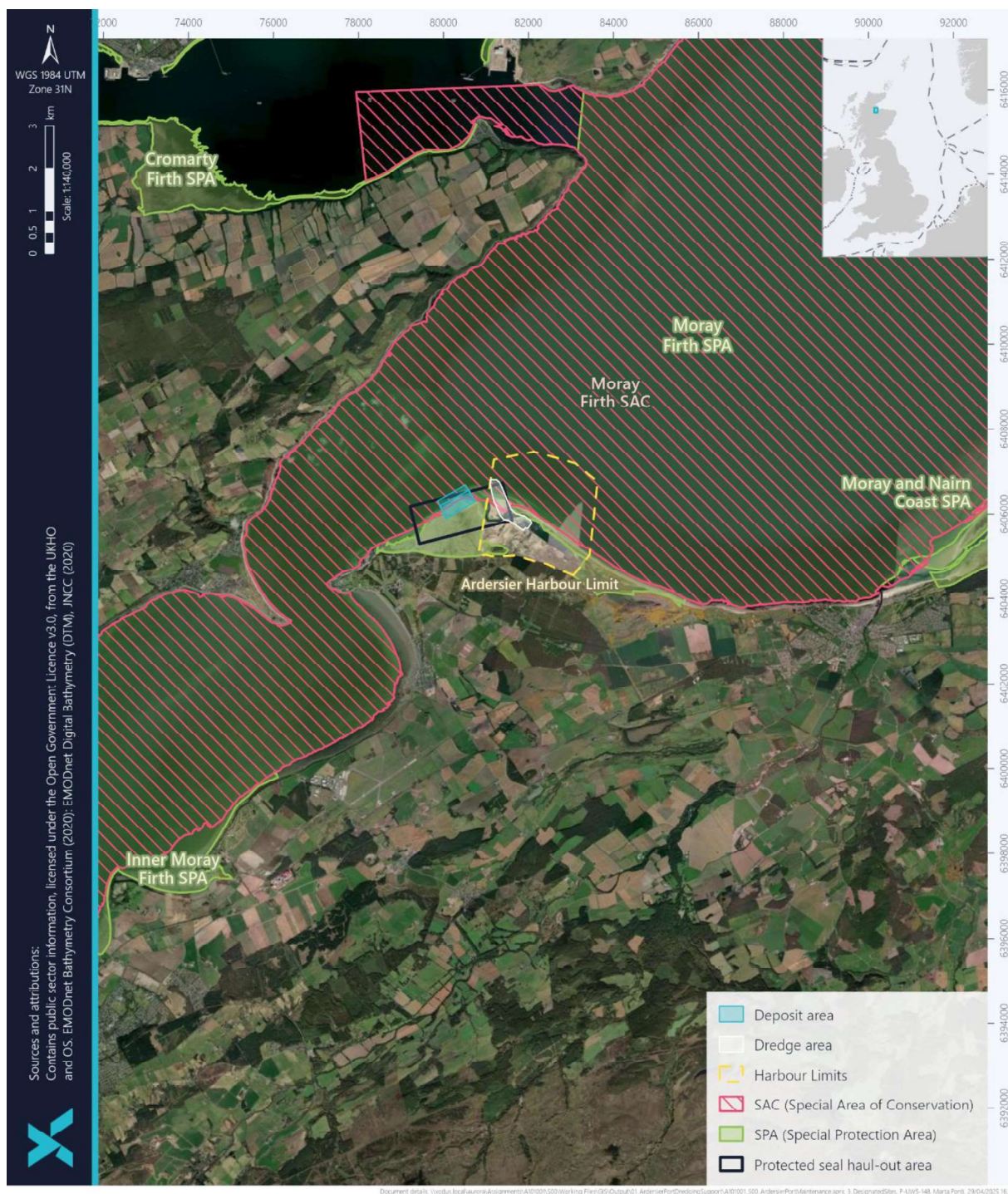


Figure 3-2 Designated Sites in the vicinity of Ardersier Port



Table 3-2 Designated Sites within the Vicinity of the Ardersier Port

SITE	DISTANCE FROM DREDGE AND DEPOSIT SITES (KM)		DESIGNATION FEATURES	POTENTIAL IMPACTS
	AT SEA	STRAIGHT LINE		
Moray Firth SPA (Marine Directorate, 2020)	0	0	<p>Rare and vulnerable bird species (non-breeding); Great northern diver (<i>Gavia immer</i>), red throated diver (<i>Gavia stellata</i>), Slavonia grebe (<i>Podiceps auratus</i>).</p> <p>Regularly occurring migratory bird species (non-breeding); Greater Scaup (<i>Aythya marila</i>), Common eider (<i>Somateria mollissima</i>), Long-tailed duck (<i>Clangula hyemalis</i>), Common scoter (<i>Melanitta nigra</i>), Velvet scoter (<i>Melanitta fusca</i>), Common goldeneye (<i>Bucephala clangula</i>), Red breasted merganser (<i>Mergus serrator</i>) and European shag (both breeding and non-breeding) (<i>Phalacrocorax aristotelis</i>).</p>	<p>Vessel lighting and vessel presence has the potential to impact on birds, however the impacts relating to the maintenance activities are not expected to be significant due to no change in baseline vessel lighting and traffic. A 100 m exclusion zone will be observed around the nearby roosting sites year round. In addition, the operations will be short lived and within the existing navigation channel so no impacts on foraging areas are expected.</p>
Moray Firth SAC (JNCC, 2025a)	0	0	Bottlenose dolphin	<p>Vessel noise, however the vessel will only be travelling between the dredge area and the sea deposit sites (distance of <1 km). Any disturbance from sedimentation during sea deposit will be negligible and an MMO will be on board to ensure no marine mammals are within 200 m of the deposit vessel during sea deposit operations.</p>



SITE	DISTANCE FROM DREDGE AND DEPOSIT SITES (KM)		DESIGNATION FEATURES	POTENTIAL IMPACTS
	AT SEA	STRAIGHT LINE		
			Sandbanks which are covered by sea water all the time	Only maintenance dredging activities within a previously dredges area. No impact on coastal processes is expected.
Inner Moray Firth SPA	0	0	Bar-tailed godwit (<i>Limosa lapponica</i>); Common tern (<i>Sterna hirundo</i>); Cormorant (<i>Phalacrocorax carbo</i>)*; Curlew (<i>Numenius arquata</i>)*; Goldeneye*; Goosander (<i>Mergus merganser</i>)*; Greylag goose (<i>Anser anser</i>); Osprey (<i>Pandion haliaetus</i>); Oystercatcher (<i>Haematopus ostralegus</i>)*; Red-breasted merganser; Redshank (<i>Tringa totanus</i>); Scaup (<i>Aythya marila</i>)*; Teal (<i>Anas crecca</i>)*; Wigeon (<i>Anas penelope</i>)* and Waterfowl assemblage. * Indicates assemblage qualifier only	Vessel lighting and vessel presence has the potential to impact on birds, however the impacts relating to the maintenance activities are not expected to be significant due to no change in baseline vessel lighting and traffic. A 100 m exclusion zone will be observed around the nearby roosting sites year round. In addition, the operations will be short lived and within the existing navigation channel so no impacts on foraging areas are expected.
Inner Moray Firth Ramsar (Ramsar, 2006)	0	0	Wintering wildfowl including bar-tailed godwit, red-breasted merganser, redshank and greylag goose.	Vessel lighting and vessel presence has the potential to impact on birds, however the impacts relating to the maintenance activities aren't expected to be significant and a 100 m exclusion zone will be observed around the nearby roosting sites, year round. In addition, the operations will be short lived and no impacts on coastal processes are expected that will impact on foraging areas.



SITE	DISTANCE FROM DREDGE AND DEPOSIT SITES (KM)		DESIGNATION FEATURES	POTENTIAL IMPACTS
	AT SEA	STRAIGHT LINE		
			Sand dunes, shingle and saltmarsh.	Features primary located on land. Therefore, no impact.
			Intertidal mudflats and sandflats.	Dredged material will be kept in the same sandy sediment cell and only deposited at designated sea deposit sites. No impacts on the features are predicted.
Whiteness Head SSSI (SNH, 2013)	0	0	Study of coastal processes; sand shingle and saltmarsh habitats.	Deposit of dredge material at the Whiteness Sands B and C Deposit site will keep the dredged sediment within the same sediment cell and will help replenish the Whiteness Sands SSSI that may otherwise be impacted from the capital dredging works at the mouth to the port.
			Feeding and roosting area for bar-tailed godwit and wintering knot (<i>Calidris canutus</i>)	Vessel lighting and vessel presence has the potential to impact on birds, however the impacts relating to the maintenance activities aren't expected to be significant and a 100 m exclusion zone will be observed around the nearby roosting sites, year round.



SITE	DISTANCE FROM DREDGE AND DEPOSIT SITES (KM)		DESIGNATION FEATURES	POTENTIAL IMPACTS
	AT SEA	STRAIGHT LINE		
Dornoch Firth and Morrich More SAC (JNCC, 2025b)	39.9	22.8	Otter (<i>Lutra lutra</i>) and harbour seal	<p>Vessel noise and physical presence has the potential to impact harbour seals however an MMO will be present, and the operations are short lived, therefore no significant effect is expected.</p> <p>There are no impacts on otters due to the distance to the SAC.</p>
			Sandbanks which are slightly covered by sea water all the time and Reefs	Only maintenance dredging activities with no anticipated connectivity to the benthic features. No impact on coastal processes expected.
Ardersier designated seal haul-out site	0	0	Harbour seal, grey seal	<p>Vessel noise and physical presence has the potential to impact harbour seals as well as the deposit of dredged material within the Whiteness Sands sea deposit sites. However, an MMO will be present, a 200 m marine mammal mitigation zone will be implemented and the operations are short lived, therefore no significant effect is expected. Further information has been provided in Section 3.2.1.</p>



3.2.1 Seals

Dornoch Firth and Morrich More SAC designated for harbour seal is located 39.9 km from the dredge and deposit sites and therefore within the potential connectivity range for harbour seal, and the Ardersier designated seal haul-out site is located at Whiteness Sands B and C at the west side of the Ardersier Port approach. The haul-out site holds 20% of the Moray Firth population of harbour seal and is seen as one of the most important haul-out sites both in the Moray Firth and on the east coast of Scotland. Large numbers of grey seals are also found to use the site.

Any potential impacts on the Dornoch Firth and Morrich More SAC harbour seals are likely to result from noise and vessel presence during the deposit operations, or during disturbance of any seals hauled out. Any noise impacts are likely to be short-lived and temporary, and as such no likely significant effect on the seals are expected.

While the sea deposits sites are located within the designated seal haul-out site, the shallower sea deposit site will likely be primarily used during high tide when the haul-out is unavailable. However, the deeper areas may be used for depositing at low tide if required. Suitable distance to the seals will be maintained during the deposit operations, and drone monitoring of the Ardersier seal haul-out site during multicat vessel operations has shown that hauled out seals have not reacted to operations taking place 250 m from the multicat vessel (evidence from unpublished University of Aberdeen monitoring in 2025). Furthermore, while the seal haul-out site has the potential to be used for seal pupping during the summer months, surveys conducted by AP have found that pupping seals do not favour the Ardersier seal haul-out site and instead migrate to the other areas of the Moray Firth to pup.

During the dredging campaign, the main disturbance will therefore be to seals in the water. The maintenance dredging campaign will be temporary and the vessel traffic will not be increased from the baseline. A suitably qualified MMO will however be in place and an established marine mammal mitigation zone of 200 m will be implemented during all sea deposit activities. If marine mammals are observed within the marine mammal mitigation zone then the deposit activity will not commence until the area has been clear for at least 20 minutes. This will also mitigate against any impacts on harbour seals from the Dornoch Firth and Morrich More SAC. No MMO watch will be in place if plough dredging is required for seabed levelling. This is due to the distance to the seal haul-out (ie. operations taking place within the harbour). Marine Mammal Observation Logs will be maintained throughout the maintenance dredging campaign and will be made available on request.

3.2.2 Birds

A number of rare and vulnerable birds and migratory bird species are designating features of the Moray Firth SPA and Inner Moray Firth SPA in which the maintenance dredging operations will occur. As part of the EIA Report for the port development, maintenance dredging operations were identified as having the potential to impact on the birds within the area through visual and noise disturbance and sediment dispersal. However, further analysis found the level of impact to be negligible and not significant for all designating features of the SPA's due to the temporary nature of the operations (Graham and Sibbald, 2018). While vessel lighting and vessel presence have the potential to impact on birds, these effects are not likely to be significant due to no change in baseline vessel lighting and traffic as a result of the dredging. A 100 m exclusion zone will however be observed around the nearby roosting sites year



round (Figure 3-1). In addition, the operations will be short lived and within the existing navigation channel so no impacts on foraging areas are expected.

3.2.3 Bottlenose Dolphin

Bottlenose dolphins are a designating feature of the Moray Firth SAC with the feature currently found to be in favourable condition. Up to 60% of the East Coast bottlenose dolphin population have been seen within the SAC in 16 years out of the 21 years surveyed, with 103 individuals counted in 2016 (EnviroCentre, 2018). Chanonry Point, approximately 3 km northeast of Ardersier is a well-known hotspot for bottlenose dolphins with monitoring showing dolphins present on 90% of days between May and September.

As discussed in Section 3.1.1, vessel and dredging noise, could result in the PTS for all marine mammals at 3 m from the source of the noise and for TTS at 230 m for all mammals when including harbour porpoise, and only 2 m when harbour porpoise are excluded, assuming animals will flee when they hear the noise, (Graham and Sibbald, 2018). As the dredging options will be localised within the port and port entrance, and the PTS and TTS distances are very small for bottlenose dolphin, maintenance dredging operations are not likely to result in a significant effect on the bottlenose dolphin population in the Moray Firth SAC. In addition, due to the short distance to the deposit site, the shallow depth at the deposit site, and the presence of an MMO and a 200 m marine mammal mitigation zone, no additional impacts from sea deposit operations are expected.

3.3 WFD Considerations

Consideration of the WFD objectives was carried out to assess whether the proposed maintenance dredging and sea deposit activities will cause or contribute to the deterioration of the current status of the water body, or jeopardise the water body achieving good status. The current water body status for the Moray Firth and Whiteness Head to Burghead is 'Good'. The WFD assessment considers the following key receptors that contribute to the waterbody status:

- Hydromorphology;
- Biology – sensitive habitats and species;
- Water quality;
- Protected areas; and
- INNS.

Table 3-3 provides the consideration of each of the receptors. The assessment concludes that the maintenance dredging within the boundaries of previous dredging is not capable of affecting the status of the Moray Firth and Whiteness Head to Burghead waterbody.



Table 3-3 WFD Assessment

KEY RECEPTOR	COMMENT	POTENTIAL FOR AFFECTING THE WATERBODY STATUS
Hydromorphology	Dredge area has been subject to a Morphological Impact Assessment System (MImAS) prior to the capital dredging taking place. No hydromorphological impacts beyond what was assessed in the recent MImAS assessment are expected due to the dredged being carried out within the boundaries of the previous dredging. In addition, bathymetry at the Whiteness Sands B and C deposit sites and along the edge of Whiteness Sands will be recorded annually throughout the 3 year maintenance dredging licence.	No
Biology – habitats and fish	The dredge site is not classified as a highly sensitive area and has recently been subject to capital dredging. The impact of increased turbidity, sedimentation and habitat loss are considered not to be significant as per assessment above.	No
Water Quality	Sediment sampling within the dredge area has been carried out and only insignificant contamination was measured. No impacts on water quality from the proposal are anticipated.	No
Protected Areas	As detailed in Table 3-2 the dredge and deposit sites are within the Moray Firth SPA and SAC and the Inner Moray Firth SPA and Ramsar site and the deposit site is located within the Whiteness Sands SSSI and the Ardersier seal haul-out site. As the dredge site has recently been capital dredged and the deposit sites are regularly used, impacts on qualifying interests of designated sites are not likely. In addition, mitigation summarised in Section 5 will be implemented.	No
INNS	<p>No marine non-native invasive species have been recorded within the dredge site, so any introduction or spread of INNS is considered low. Japanese wireweed (<i>Sargassum muticum</i>) was found to be present along the north shore of the spit at the Ardersier Port during initial survey work as part of the Marine EIA for the port development, however, the wireweed was unattached and therefore not growing at this location (EnviroCentre, 2018).</p> <p>Slipper limpet (<i>Crepidula fornicata</i>) has been recorded in the wider Rosemarie and Cromarty area, but not at Ardersier Port (low water inspections have been taking place). An Operational Biosecurity Plan will be in place during the maintenance dredging campaign to monitor and mitigate against potential INNS that might be discovered at a later date.</p>	No



4 IMPACTS ON OTHER USERS OF THE SEA

4.1 Navigation Safety

Maintenance dredging activities will result in a negligible increase in vessel activity within the dredge area and along the route to the Whiteness sands deposit sites as only one vessel will be used in an active port. AP is a SHA for the dredge area and will issue appropriate local navigation warning if required to make local sea users aware of the dredging activities.

Following the completion of the construction phase for the port, a Marine Safety Management System will be finalised to ensure the safe navigation of vessels using the Ardersier Port. No impacts on navigation safety are therefore anticipated.

4.2 Commercial Fisheries

The entrance to the Ardersier Port and the sea deposit sites are located in ICES rectangle 44E5. While fishing is not allowed within the SHA area, in which the dredging will occur, the sea deposit site sites outwith this area, and therefore impacts on commercial fisheries have been considered.

Over the last 5 years the area has only been primarily targeted for shellfish species with 64 tonnes landed in 2023 with a value of £63,721, which in 2023 accounted for 100% of landed value and weight (Marine Directorate, 2024). When compared to this rest of the UKCS in 2023, ICES rectangle 44E5 only accounted for a minute fraction of landed weight and value, being 0.012% and 0.008% respectively. While there is shown to be some commercial fisheries in vicinity of the Ardersier Port, the contribution to the overall UKCS value is minimal and the number of days spent fishing has been disclosive for the last 5 years. As a result, due to the temporary nature of the maintenance dredging operations each year, and the small area that will be disturbed, the Impact on commercial fisheries is expected to be minimal.



5 CONCLUSION

While a number of designated sites are located within the vicinity of the proposed operations, the potential impacts on the surrounding environment are considered to be minor or negligible for reasons detailed in Section 3. Mitigation will be implemented to further reduce these impacts. The proposed mitigation measures are as follows:

- The use of an MMO during sea deposit operations to ensure that no marine mammals are present within 200 m of the sea deposit location prior to the deposit. If marine mammals are observed within the marine mammal mitigation zone then the deposit activity will not commence until the area has been clear for at least 20 minutes.
- 100 m exclusion zone implemented around the six roosting sites, year round, located within the vicinity of operations to avoid disturbance relating to the presence and noise of the vessel.

Finally, the deposit of the dredged material within the Whiteness Sands B and C deposit sites has the potential to aid in the maintenance of the Whiteness Sands SSSI, providing environmental benefit to the local area.



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