Ardersier Port Ltd.
Natural Heritage Management Scheme

September 2018

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EXECUTIVE SUMMARY

Ardersier Port Limited commissioned EnviroCentre to produce a Natural Heritage Management Scheme (NHMS).

This NHMS aims to:

- Define areas that will be managed to offset the key adverse impacts on habitats from the development;
- Set management objectives for these areas that are effective, achievable, sustainable and measurable; and
- Identify opportunities for wider nature conservation benefit, for habitats and species of national and international conservation concern not directly affected by the development.

The objectives of the NHMS are to:

- Propose management measures to conserve and enhance the key habitats of the spit in order that species of national and international importance can continue to be supported on the site;
- Provide management measures to restore and improve the habitat of the lagoon in order to encourage the nesting of terns; and
- Outline a monitoring programme to include bird populations and the potential effect on those bird populations from the deposition of any dredged material during the construction works.

The NHMS evaluates habitats and species on the site, and in line with local nature conservation objectives, and in line with current good practice guidelines, recommends a series of management measures to protect and enhance the habitats and species on the site, and on designated sites immediately adjacent (Inner Moray Firth SPA, Moray Firth SAC, Whiteness Head SSSI).

The NHMS covers four plans – a Spit Habitat Protection & Enhancement Plan; a Lagoon Restoration & Enhancement Plan; a Bird Monitoring Plan; an Invasive Non-Native Species Plan; as well as a section outlining General Ecological Mitigation Measures recommended for the construction phase.

The NHMS has been designed to cover the construction period, and years 1, 2, 3 and 5 of the Port's operation. All actions associated with its implementation will be reviewed through the Ecological Management Group (EMG), and the NHMS will be updated as appropriate.

The overall responsibility for the implementation of the NHMS lies with Ardersier Port Limited, advised by the EMG through the Environmental Clerk of Works (ECoW). The ECoW will be appointed by Ardersier Port Limited on agreement of the NHMS by the EMG. The ECoW will be responsible for coordinating and delivering all the various tasks in order for the NHMS objectives to be met.

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Figures & Tables

1 INTRODUCTION

EnviroCentre Ltd was commissioned by Ardersier Port Ltd to produce a Natural Heritage Management Scheme (NHMS) as part of a suite of documents to support the renewal of the Planning in Principle for the redevelopment of the Ardersier Port. The requirement for a NHMS is based upon the Habitat Management Plan (HMP) 2017 that was developed post –consent in response to previous planning permission and marine licences for the redevelopment of Ardersier Port.

The NHMS will also inform the natural history management during construction and operation of the Port and underpin the Construction Environmental Management Document (CEMD) and Operation Environmental Management Document (OEMD), as required, by licencing consent for planning permission, marine licences and Harbour Revision Order (HRO).

This NHMS will be updated, as required, following pre-construction and other relevant surveys, in consultation with the Ecological Clerk of Works (ECoW) and the Ecological Management Group (EMG).

The EMG will advise the Statutory Harbour Authority in delivering the implementation of mitigation measures set out in the CEMD and OEMD during construction and operation of the Port. As dictated by the *Port of Ardersier Harbour Revision Order (2014), Paragraphs 35 (1) – (9)*, the CEMD and OEMD are required to be signed off by Scottish Ministers ahead of commencement of development or operation of the Port. It is envisaged that the EMG will comprise representation from the following regulatory and statutory bodies, and other relevant organisations:

- Ardersier Port Limited;
- Scottish Natural Heritage (SNH);
- Scottish Environment Protection Agency (SEPA);
- Marine Scotland;
- The Royal Society for the Protection of Birds (RSPB);
- Whale and Dolphin Conservation (WDC);
- Ardersier and Petty Community Council (APCC); and
- The Ministry of Defence (MOD).

This NHMS builds on the assessment set out in the Environmental Impact Assessment Report (EIAR) produced in support of the proposed development at Ardersier Port.

2 AIMS AND OBJECTIVES

This NHMS aims to:

- Define areas that will be managed to offset the key adverse impacts on habitats from the development;
- Set management objectives for these areas that are effective, achievable, sustainable and measurable; and
- Identify opportunities for wider nature conservation benefit, for habitats and species of national and international importance not directly affected by the development.

The objectives of the NHMS are to:

- Propose management measures to conserve and enhance the key habitats of the spit in order that species of national and international importance can continue to be supported on the site;
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- Outline a monitoring programme to include, notable plant species and bird populations and the potential effect on those bird populations from the deposition of any dredged material during the construction works.

This NHMS has been produced following guidance from SNH[1]. It has been compiled from documentation pertaining to the recent Ecological Impact Assessment Report (EIAR) and the previous Environmental Statement (ES) for the site –

- Ardersier Port EIAR, 2018
- Ardersier Port Habitats Regulations Appraisal (HRA)
- The Proposed Offshore Renewables Manufacturing and Port Facility Environmental Statement (ES) dated October 2013;
- The Habitats Regulations Assessment Report for the Off Shore Wind Turbine Fabrication Yard at Ardersier v2, produced by ProGenus Environmental, also dated October 2013;
- The Port of Ardersier Harbour Revision Order 2014;
- Marine Scotland (MS) licence 04850/14/0 – Licence for Marine Construction Works and Deposits of Substances or Objects in the Scottish Marine Area;
- MS licence 04851/16/0 – Licence for the Act of Dredging and Sea Disposal of Dredged Spoil in the Scottish Marine Area; and
- The Highland Council Planning Permission in Principle Decision Notice (reference no: 13/01689/PIP).

[1] Planning for development: What to consider and include in Habitat Management Plans. Available at http://www.snh.gov.uk/docs/B1159444.pdf (accessed February 2017).

3 AREA DESCRIPTIONS

The site description and details of the proposed development are contained within Chapter 3 of the 2018 Environmental Impact Assessment Report (EIAR).

4 HABITATS AND VEGETATION DESCRIPTIONS

Terrestrial habitats

The following summary of the habitats and vegetation on the site, is taken from data obtained by JNCC Phase 1 and Habitat Survey and National Vegetation classification (NVC) work undertaken to inform the EIAR. Full descriptions are detailed within the EIAR Technical Appendix 7.3: The Habitats and Vegetation (NVC) of Ardersier Port, with an overview map provided in Appendix A along with a map showing the loss in vegetation as a result of reinstating the navigation channel.

Semi-natural Broadleaved Woodland is present within the south eastern area of the site succeeding from scrub habitats. These areas are semi-mature woodlands with species including willow (*Salix sp.*), downy birch (*Betula pubescens*) and Scot's pine (*Pinus sylvestris*).

Coniferous Plantation Woodland is present mainly within the south eastern extent of the site, but small plantations are present throughout the site. The plantations are species poor with the dominant species is Scot's pine with Lawson's Cyprus (*Chamaecyparis lawsoniana*) also present.

Scrub is extensive within the south eastern extent of the site and comprises approximately 23% (22.7 ha) of the area of the site. The primary species recorded are gorse (*Ulex europaeus*), broom (*Cytisus scoparius)* and bramble (*Rubus fruticosus*). Areas of dune scrub community are dominated by common sea buckthorn (*Hippophae rhamnoides*). Other areas of dense scrub are located adjacent to the current access road to the site.

Acid Grassland is confined to the south east corner of the site. It is represented by only one NVC community: U4: Sheep's Fescue (*Festuca ovina*) - common bent (*Argrostis capallaris*) - heath bedstraw (*Galium saxatile*) grassland. The grassland is not intensively grazed but is vulnerable to succession.

Unimproved Neutral Grassland is well developed in the south east part of the site and is scattered along the margins of the tarmac road within the site. The grassland is relatively species poor and comprises two NVC communities: MG1 false oat-grass (*Arrhentherum elatius*); and MG10 perennial grass (*Holcus lanatus*) – common rush (*Juncus effusus*).

Dune Grassland, Shingle and Cobbles. The spit includes areas of dune grassland dominated by marram grass (*Ammophila arenaria*) as well as shingle and cobbles.

Marsh/Marshy Grassland is located in the south eastern extent of the site and on the southern edge of the lagoon. Four NVC communities are present: M23b *Juncus effusus – Galium palustre* rush pasture; M27c *Filipendula ulmaria – Angelica sylvestris* mire; MG9 *Holocus lanatus – Deschampsia cespitosa* grassland and MG10 *Holcus lantanus- Juncus effusus* rush-pasture. M23b is the locally extensive with soft rush being the dominant species. These marshy grassland communities are only partially groundwater dependent.

Swamp and Inundation Vegetation is located along the margins of the lagoon. There is also a small section of inundation vegetation at the south east area of the site. Six NVC swamp communities are present within the site: S9 *Carex rostrata* swamp; S12 *Typha latifolia* swamp; S14 *Sparganium eretctum* swamp; S19 *Eleocharis palustris* swamp; S27 *Carex rostrata-Comarum palustre* tall-herb fen and S28 *Phalaris arundinacea* tall-herb fen. S27 is the richest swamp type and is locally extensive just south of the lagoon. None of these swamp communities are GWDTE's.

Two inundation NVC communities are present: SD17 *Potentilla anserine-Carex nigra* dune-slack community and MG12 *Schedonorus arundinaceus* grassland. SD17 community occur close to the margin of the lagoon that is

frequently inundated. This community is a GWDTE. MG12 is also located in the vicinity of the lagoon but is not a GWDTE.

Basin mire is present within the south east of the site. One NVC community is present: M4 *Carex rostrata-sphagnum fallax* mire. This community is dominated by *Carex rostrata* and *Juncus effusus*. This community is moderately groundwater dependant.

Strandline is present along the coastal fringes of the site The northern shore of Whiteness Head comprises shingle banks hosting range of species including a mixture of *Atriplex* species and *Ammophila arenaria*, *Rumex crispus* and *Silene uniflora*. The Spit of Whiteness Head is sandy with good stands of *Cakile* maritime.

Open dune has developed towards the head of the spit at Whiteness Head and within the dune area to the south of the spit. Three NVC communities are present: SD4 *Elytrigia juncea* foredune community; SD6 *Ammophila arenaria* mobile dune community and SD11 *Carex arenaria- Cetraria aculeata* dune community.

Dune grassland is located on the spit and covers approximately 14% of the site. Four NVC communities are present within the site: SD7 *Ammophila arenaria –Festuca rubra* semi-fixed dune community; SD8 *Festuca rubra – Galium verum* fixed dune grassland: SD9 *Ammophila arenaria – Arrhenatherum elatius* dune grassland and SD12 *Carex arenaria – Festuca ovina- Argrostis capillaris* dune grassland. SD9 is the most extensive dune grassland community, however SD8 is the richest grassland community. This community is undergoing succession to maritime grassland.

Dune Heath is confined to discreet patches on the spit. Only one NVC community is present: H11: *Calluna vulgaris – Carex arenaria* Heath. *Calluna* is abundant thought with occasional *Erica cinerea, Carex arenaria* and *Agrostis capillaris*.

Maritime coastal grassland has developed locally along shingle towards the western end of the spit of Whiteness Head. One NVC community is present: MC8 *Festuca rubra-Armeria maritime* maritime grassland.

Saltmarsh is present within Carse of Delnies and the just to the west of the lagoon. Four NVC communities are present: SM13 *Puccinellia maritime* saltmarsh; SM13a *Puccinellia maritime* sub-community; SM13b *Glaux maritime* sub-community and SM16 *Festuca rubra* saltmarsh community. None of these communities are groundwater dependant.

Brackish water is present within the lagoon and hosts the locally rare *Potamogeton pectinatus*.

Disturbed ground, spoil and tracks cover a large portion of the site. The disused fabrication yard covers over 80Ha and has been colonised by tall ruderal vegetation and lichen assemblages. Plant species present include *Chamerion angustifolium, Cirsium arvense, Agrostis capilaris* and *Erodium cicutarium*. NVC communities are not well developed in these habitats, with OV27 *Epilobium angustifolium* and OV25 *Urtica dioica - Cirsium arvense* being the only clearly defined types. The disused yard also has scattered scrub and downy birch trees, indicating naturally occurring succession.

Running Water. A flowing drainage ditch was located along the southern boundary of the site, flowing along the edge of the coniferous plantation. Flow rate within this ditch was minimal, and was fed by other drainage ditches from the coniferous plantation. Along its length there were a number of areas where the water lay stagnant with marginal vegetation present.

Buildings were still present on site. These included security huts at the site entrance, portable caravans, a large storage shed and relevant boiler houses.

Invasive species are present on site: *Crassula helmsii* surrounding the lagoon and *Rosa rugosa* on the spit.

Lichen

The following summarises the results of the Lichen survey undertaken in 2018 to inform the EIAR. Technical Appendix 7.4: Whiteness Head, Ardersier Port; Ecological Assessment: Lichens, comprises the full report.

Lichen. In total 131 taxa were recorded during the survey including a number of notable species. 76 taxa were recorded from within the area that will be lost due to dredging. Ninety- six taxa were recorded outwith the area that will be subject to direct impacts from dredging.

Seventeen Nationally Scarce (NS) and five confirmed Nationally Rare (NR) taxa were recorded during the survey. One of the Nationally Scarce species is a Red-listed, Scottish Biodiversity List species. One of the Nationally Rare species is a very rare endemic species with a very specific niche.

Two notable terricolous species were previously recorded in the 2005 study site but not refound in 2018 – *Peltigera neckeri* (NS) and *Bacidia viridescens* (NS). Additional notable species known from outwith the 2018 study site (Coppins & Coppins, 2000) but not recorded by Coppins & Coppins (2005) or in 2018 are:

- Four species on old fence posts - *Cyphelium tigilliare* (NT), *Thelomma ocellatum* (NS) *Protoparmelia oleagina* (NS) and *Strangospora moriformis* (NS). This niche was not seen in 2018 (old posts may have been removed – leaving old posts in situ is recommended when renewing fence lines);
- Four species on pebbles: *Lecidea diducens* (NS), *Lecidea plana* (NS), *Pertusaria lactescens* (NS) and *Stereocaulon leucophaeopsis* (NS); and
- Three species on *Calluna/Erica: Fellhanera bouteillei* (NS), *Lecanora farinaria* (NS) and *Usnea glabrata* (NR).

Marine Habitats

The full report that is the basis for the following summary is contained within Technical Appendix 8.3: Intertidal and Benthic Ecology.

Subtidal and intertidal habitats. During a survey undertaken in 2018 by EnviroCentre, four biotopes were recorded: Fine sand, mobile sand, barren shingle and littoral rock. Fine sand is the dominant habitat within the port shorelines and the northern shoreline of the spit. Mobile sand is present within the exposed areas of the lagoon entrance and along the northern shore line of the spit. Barren shingle is present within the western section of the southern shoreline of the port and along the northern shore of the spit. Littoral rock in the form of riprap stabilising an embankment is present on the southern shore of the port.

An Intertidal habitat survey undertaken for the 2013 ES recorded four biotopes: sublittoral sand in low or reduced salinity, infralittoral mobile clean sand with sparse fauna, *Nephtys cirrosa* and *Bathyporeia spp* in infralittoral sand and muddy sand.

Benthic Fauna. Physalia (2005) undertook sampling of benthic faunal and floral communities, but the number of samples and their locations within the port is not specified. The species found were:

- Algae
    - *Laminaria saccharina*
    - *Fucus vesiculosa*
    - *Fucus distichus* (ssp. *distichus* and *anceps*)
    - *Arthrocladia*

- Crustaceans
    - *Crangon crangon*

- *Neomysis integer*
- *Schistomysis ornate*
- *Idotea neglecta*
- Amphipod sp.

- Polychaete
  - *Kefersteinia cirrata*

- Fish
  - Long-spined Sea Scorpion *Tarulus bubalis*

5 HABITAT EVALUATION AND LEGAL PROTECTION

Evaluation of Habitats and Vegetation on the Site

Priority Annex 1 habitats are considered to be either highly vulnerable and/or exclusively found in the European Union. There are four priority Annex 1 habitats under the EU Habitats Directive within the site, or immediately adjacent to it:

- Coastal saltmarsh;
- Coastal sand dunes;
- Coastal vegetated shingle; and
- Coastal lagoon.

In addition, the Moray Firth Special Area of Conservation (SAC) does include subtidal sandbanks as a site feature. This is considered a marine feature, and measures to monitor or enhance this feature, and to monitor the effects from the sediment contained within this feature upon the SPA bird populations can be found in the Sediment Transportation Monitoring Plan, which forms Technical Appendix 11.3 of the EIAR.

There are several national priority habitats under the UK Biodiversity Action Plan (UKBAP) that occur within or adjacent to the site, and are also considered as priority habitats locally through the Inverness & Nairn Biodiversity Action Plan (LBAP), and subsequent plans for Highland region. These are:

- Coastal saltmarsh (found at Whiteness Head and Culbin Sands);
- Coastal sand dunes (found at Culbin Sands);
- Mudflats (found in the Moray and Beauly Firths); and
- Sublittoral sands and gravels (found in the Moray Firth SAC).

There is also one habitat which does not appear as a national priority, but is considered to be a local priority within Inverness and Nairn – coastal waters (found in Inner Moray Firth). As this constitutes a marine habitat, measures to monitor or enhance this feature are not considered within this NHMS.

There are also several habitats that are classified as features within the Whiteness Head Site of Special Scientific Interest (SSSI):

- Coastal Geomorphology of Scotland;
- Saltmarsh;
- Sand dunes;
- Sandflats; and
- Shingle.

Coastal saltmarsh

Coastal saltmarsh is an Annex 1 habitat as listed within the EU Habitat Directive (Codes 1330 and 1310), and is a priority habitat on the national UKBAP, and therefore found on the Scottish Biodiversity List (SBL). The wider area of saltmarsh at Whiteness Head, immediately adjacent to the site, was specifically named in the Inverness and Nairn BAP as an excellent local example of the habitat. This habitat is best developed in an area known as the Carse of Delnies. Here, the saltmarsh is in good condition and has an abundance of *Salicornia* species and *Suaeda maritima*. According to the JNCC (2008) about 3% of the Scottish coastline consists of saltmarsh. Therefore, it is a comparatively rare habitat and furthermore lower saltmarsh communities containing *Salicornia* are even rarer.

Coastal sand dunes

All of the dune habitats on site are Annex 1 habitats as listed within the EU Habitat Directive. All are BAP priority habitats and are included on the SBL as coastal sand dunes. This habitat is well developed along the spit of Whiteness Head and it merges with the coastal vegetated shingle forming distinct zonations. Many dune communities are represented at this site. The dunes and vegetation situated just north and west of the lagoon are man-made, and depositions from previous dredging for the port. They have partially naturalised over time, but are in variable condition. This system is eroding in places and has also been further disturbed (by additional spoil and the construction of the port facility). Within this broad habitat there are several European Annex 1 Habitats represented at this site - Fixed dunes with herbaceous vegetation (2130) are well represented but there is also some limited development of Shifting dunes (2120) and Embryonic shifting dunes (2110). Also very locally developed are Atlantic De-calcified fixed dunes (2150) and possibly Decalcified fixed dunes with *Empetrum nigrum* (2140).

Coastal vegetated shingle

Coastal shingle seldom occurs outside north-west Europe, Japan and New Zealand, and coastal vegetated shingle is an Annex 1 habitat as listed within the EU Habitat Directive (Codes 1210 and 1220). It is also a feature of the Whiteness Head SSSI, but is not included on the UKBAP or LBAP as a priority habitat.

Shingle formations with sufficient stability to support perennial vegetation are a comparatively rare feature in the UK, with vegetated shingle habitat amounting to approximately 5,800 hectares. Whiteness Head is specifically named in the LBAP as an excellent example of a sand and shingle spit enclosing an intertidal system of saltings, sandflats and mudflats, with associated saltmarsh and carseland. It is developed along the spit of Whiteness Head. It contains a range of vascular plants and is important for invertebrates and birds. Shingle structures are of geomorphological interest and at this site have taken the form of a spit and a shingle barrier. Here the shingle feature is not completely independent but forms part of a dynamic coastline with varying deposits of silt and sand. According to JNCC (2008) there is about 700 ha. of coastal vegetated shingle in Scotland and it is considered to be a comparatively rare feature in the UK.

Coastal Lagoon

This is not considered to be a UKBAP Habitat, but coastal lagoons are a European Annex 1 Habitat (1150). At this site the lagoon is best described as isolated and separated from the sea by a barrier (mostly sand or other sediment). At a European scale, this habitat is scarce and its distribution is restricted mainly to the Atlantic coast.

Sandflats

Small areas of sandflats are found on the site, and are a feature of the Whiteness Head SSSI. However, it is not a priority habitat and is not listed within the EU Habitat Directive.

Mudflats

Immediately adjacent to the site is a large expanse of mudflats, although there is very little on site. It is a national priority habitat on the UKBAP, and therefore appears on the SBL. The Moray and Beauly Firths are mentioned as having important examples of mudflats in the Inverness and Nairn BAP.

Evaluation of Habitats on the Site for Birds

The site forms part of the Inner Moray Firth Special Protection Area (SPA). Qualifying features for this European designation under the EU Birds Directive are the non-breeding waterfowl assemblage, including the following species:

- Bar-tailed Godwit (*Limosa lapponica*);
- Cormorant (*Phalcrocorax carbo*);
- Curlew (*Numenius arquata*);
- Goldeneye (*Bucephala clangula*);
- Goosander (*Mergus merganser*);
- Greylag Goose (*Anser anser*);
- Oystercatcher (*Haematopus ostralegus*);
- Red-breasted Merganser (*Mergus serrator*);
- Redshank (*Tringa totanus*);
- Scaup (*Aythya marila*);
- Teal (*Anas crecca*);
- Wigeon (*Anas penelope*).

Breeding Common Tern (*Sterna hirundo*) and Osprey (*Pandion haliaetus*) are also qualifying features.

The site will also form part of the Moray Firth Marine proposed SPA (pSPA). Relevant qualifying features for this proposed designation include Great Northern Diver (*Gavia immer*), Red-throated Diver (*Gavia stellata*), Long-tailed Duck (*Clangula hyemalis*), and Eider (*Somateria mollissima*).

The Whiteness Head SSSI has non-breeding Bar-tailed Godwit and Knot (*Calidris canutus*) amongst its qualifying features.

Table 5.1, below shows the qualifying species of the designated sites, and their legal protection and conservation status. Species placed on Schedule 1 of the Wildlife and Countryside Act 1981 are afforded extra legal protection within the UK. The conservation status uses the Birds of Conservation Concern 4 (BoCC) traffic light system, upon which red-listed species have suffered severe long or medium term declines in their UK population or breeding range; amber-listed species have suffered moderate declines; and green-listed species have no conservation concerns at present.

Table 5-1: Qualifying species of the designated sites, their legal protection and conservation status

Species	Legal Protection		Conservation Status					
	Annex 1	Schedule 1	UKBAP	LBAP	SBL	Red	Amber	Green
Osprey	X	X			X		X	
Great Northern Diver	X	X			X		X	
Red-throated Diver	X	X		X	X			X
Common Tern	X				X		X	
Bar-tailed Godwit	X				X		X	
Scaup		X	X	X	X	X		
Long-tailed Duck		X				X		
Goldeneye		X					X	
Greylag Goose		X					X	
Curlew			X	X	X	X		
Eider				X			X	
Oystercatcher							X	
Redshank							X	
Teal							X	
Wigeon							X	
Cormorant								X
Goosander								X
Red-breasted Merganser								X

A total of 91 species were recorded during the 2018 breeding bird surveys and 2015-2018 wintering bird surveys – 80 of which during the breeding bird surveys and 35 of which during the wintering bird surveys - of which ten are included within either Annex 1 of the Birds Directive or within Schedule 1 Part 1 of the Wildlife and Countryside Act 1981, and thus are afforded maximum protection under either European or national legislation. A further 21 species recorded are considered to be of priority conservation concern, by their presence on the UKBAP, the SBL, or appearing on the BoCC Red List. Technical Appendix 7.1 Terrestrial Ecology and Ornithology EcIA, describes the use of the site by various species.

Whiteness Sands is used by roosting waders, particularly in August and September. The main roost site (at NH771575), is primarily used by Oystercatcher and Curlew. Historically, the principle summer roost was above a sand bank at NH77940 57583 running to NH78145 57563. It was mostly used by Oystercatcher and Bar-tailed Godwit, mainly during August and September. Recently this site has been used by smaller numbers of Oystercatcher, Curlew and a small flock of Ringed Plover (*Charadrius hiaticula*).

The area is prone to disturbance from army personnel at the firing range.

The principal roost tends to be at Whiteness Sands around the point at NH794580. Disturbed birds cross to Whiteness Head and roost on the gravel ridges on the spit around NH801588. These two roosts have been used by most of the wader species and act as the preferred winter roost. Disturbance levels here are low, as dog walkers, horse riding, quad bikes and joggers often disturb the birds on the spit. Both roost locations are vulnerable to fox (*Vulpes vulpes*) predation.

A secondary roost exists at the eastern end of the inner channel at NH816578. This has been used by Oystercatcher, mainly during August and September, and also smaller numbers of Dunlin and Redshank on the small area of saltmarsh.

These two roosts are in the vicinity of the important feeding area of Whiteness Sands. Depending on the time of year, state of the tide and weather, these sites have held most of the birds feeding in this section of the Inner Moray Firth SPA. The high tide Wetland Bird Survey (WeBS) count figures (now ceased) showed that the Fort George to Delnies WeBS section supported more than 7% of the Wigeon and Knot, between 9 and 10% of the Bar-tailed Godwit and Redshank, approximately 11% of the Teal and Curlew and 19% of the Oystercatcher in the wider WeBS site during the 2000s.

Occasionally Redshank roost on the rock armour on the opposite side of the inner channel. During normal and low tides small numbers of Oystercatcher, Curlew and Redshank roost on the saltmarsh at Denies around NH819575. During very high tides, or during periods of very strong westerly winds, larger numbers of Oystercatcher, Bar-tailed Godwit, Knot and Dunlin also move up the inner channel to seek shelter. Knot and Bar-tailed Godwit tend to leave, to roost further east at Nairn bar.

Maintenance of a range of suitable available roost sites in the area is therefore increasingly important. The main factors determining roost selection in waders are, in order of decreasing importance: shelter from wind; proximity to the feeding areas; lack of disturbance; and, predation risk.

The duck are mostly to be found on the lagoon at NH798578, with smaller numbers occasionally on the saltmarsh at Carse of Delnies. Dennis (Technical Appendix 7.6 of the 2013 ES) reported that Eider, Red-breasted Merganser, Oystercatcher and terns used to regularly breed at Whiteness Head. Historically, there were nesting sites on Whiteness Head, and many birds also used areas within the former fabrication yard for nesting. Since the site became vacant, there has been a major increase in the fox population as well as uncontrolled access for dog walkers. This has rendered Whiteness Head, and the sand dune area of the yard unsuitable for breeding. Small numbers of Oystercatcher and Ringed Plover attempt to breed, but the breeding terns are now absent.

The occasional Osprey hunts over the lagoon but would not be disturbed by development. The traditional wader roosts on the outer part of Whiteness Head, on the new spit near the lagoon, on Fort George shore and near the salmon bothy are all now subject to increasing human disturbance.

Evaluation of Habitats on the Site for Protected Species

Mammals

Baseline surveys undertaken in May 2018 to inform the EIAR included searches for bats, badger (*Meles meles*), otter (*Lutra lutra*), water vole (*Arvicola amphibius*) and Great Crested Newt (GCN) (*Triturus cristatus*).

Bats are European Protected Species (EPS) and are therefore protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended). They species is also included on the SBL and it is a priority species identified within the Highland BAP. The woodland and open water on site was considered to be suitable commuting and foraging habitat for a variety of bats, but unsuitable for roosts, as were the buildings and trees on site. No activity surveys were undertaken.

The 2013 national bat monitoring programme distribution maps indicate that soprano and common pipistrelles, brown long-eared bats and Daubenton's bat are widespread and common in the Highlands (Bat Conservation Trust, 2014). The potential commuting and foraging opportunities recorded during the surveys indicates that the site may support a very small proportion of the Scottish and Highland population of all species.

Badger is protected by the Protection of Badgers Act 1992 against killing, injuring or interfering with setts.

No evidence of badger was recorded during the survey. The site was being assessed as being unsuitable for badger as the majority of the site did not offer sett creation or foraging habitat. A small section of sub-optimal sett habitat existed along the banks of the lagoon.

Otter is a EPS and are therefore protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended). This species is also included on the SBL and it is a priority species identified within the Highland BAP.

The site was assessed as being unsuitable for otter holts or resting up sites, due to disturbance issues and lack of suitable locations to build a holt. Three spraints were recorded around the north eastern edge of the lagoon, which would be utilised for foraging due to the presence of amphibians. Otters may also use the watercourses and open water on site for foraging and commuting.

Water vole is protected under the Wildlife and Countryside Act 1981, as amended by the Nature Conservation (Scotland) Act, 2004.

No evidence of water vole activity was recorded on site. The majority of the site did not offer suitable habitat for water vole. A small areas of the site provided sub-optimal habitat for water vole including the small burn along the southern edge of the site.

Reptiles and Amphibians

The habitat is suitable for adder (*Vipera berus*), slow worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*). All three species of reptile are protected under the Wildlife and Countryside Act 1981 (as amended) and are included on the SBL. There were no sightings of adder, slow worm or common lizard, but all three species are likely to be present in low numbers due to the presence of suitable habitat.

Great crested newt (*Triturus cristatus*) is an EPS and is therefore, protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended). This species is also included on the SBL and as a priority species on the Inverness and Nairn BAP. GCN DNA was not detected in the sample of the lagoon water sent for eDNA analysis, therefore the species was not deemed to be present in the lagoon.

Invertebrates

The habitats within the site are suitable for a range of invertebrate species. Vegetated dune systems and the associated habitats are likely to hold a wide array of insects. The Inverness and Nairn BAP states that Whiteness Head, with "*its distinctive flora, showing a range of coastal species, is a boon for insects, including butterflies*".

Evaluation of Habitats on the Site for Marine Mammals

One of the qualifying features of the Moray Firth SAC is bottlenose dolphin (*Tursiops truncatus*). This is one of many marine mammals that have been recorded in the area.

A full evaluation of marine mammals and potential protection and mitigation measures can be found in the Marine Mammal Protection Plan (Technical Appendix 8.2).

Invasive Species

The introduction of invasive aquatic species to new environments by ships has been identified as a major threat to the world's oceans and to the conservation of biodiversity. A wide range of marine species, carried either in ships' ballast water or on ships' hulls, may survive to establish a viable population in the host environment, becoming invasive, out-competing native species, and multiplying into pest proportions.

The consequences of introducing marine non-native species include:

- Damage and displacement of indigenous species;
- Disruption to sensitive ecosystems;
- The spread of foreign diseases which severely affect native species;
- Interference with river processes with potential of increased flood/drought potential;
- Damage to buildings and marine infrastructure; and
- Damage to human health.

Surveys undertaken for the EIAR recorded New Zealand pygmyweed (*Crassula helmsii*) that was abundant in the vicinity of the lagoon, and is a cause for concern. Beach rose (*Rosa rugosa*) and sea buckthorn (*Hippophae rhamnoides*) have become established along the spit, but cannot be classed yet as being truly invasive, although they should be monitored for further proliferation. Gorse (*Ulex europaeus*) is also prolific on the dune and shingle habitats, and should also be monitored and potentially removed to allow lichens and more habitat-specific ground flora to flourish.

The highly invasive Japanese knotweed (*Fallopia japonica*) occurs in one stand along the west side of the entrance road at approximately NH 830 551, but it is not abundant, although care should be taken not to disturb the patch.

The INNS Japanese wireweed (*Sargassum muticum*) was also recorded. This was present on the north shore of the spit exposed to the Moray Firth. The alga had been washed up on the shore and was not attached to the substrate.

6 LOCAL NATURE CONSERVATION OBJECTIVES

The Highland BAP and the Inverness and Nairn BAP were consulted for a list of local conservation objectives with regard to priority habitats and species. The relevant Highland BAP Action Plan Objectives for 2015 – 2020 are listed in Table 6-1 and the relevant Inverness and Nairn BAP Sea and Seashore Action Plan Objectives for 2004 - 2014[2] in Table 6-2 below.

Table 6-1: Highland BAP Action Plan Objectives for 2015 – 2020

Objectives	Future Actions
Sustainable management of habitats and species: to encourage and promote land management for biodiversity	1 Promote land management for wildlife 2 Develop and trial the Ecosystem Approach

Table 6-2: Inverness and Nairn BAP Sea and Seashore Action Plan Objectives for 2004 – 2014

Objectives	Future Actions
To define acceptable levels of coastal development from a biodiversity viewpoint.	
To encourage organisations to set standards for sewage and waste discharges which safeguard and improve local biodiversity.	1 Strive to ensure that the standards of discharges from sewage treatment plants in the area take into account and safeguard, or enhance, local biodiversity.
To minimise disturbance to wildlife caused by those seeking recreation through increased interpretation, signage and promotion of codes of good practice.	1 Increase promotion, interpretation and signage close to habitat improvement projects to raise awareness of the issues, timescales and the need for measures such as fencing. 2 Provide information at a few key points, including encouragement to restrict dog roaming / keep dogs on leads in sensitive areas. 3 Investigate the potential for one or two low impact viewing facilities elsewhere around the Firth.

[2] There is not a more recent plan for Inverness and Nairn.

7 HABITAT AND SPECIES MANAGEMENT

The anticipated management requirements for habitat and species protection and enhancement across the site. These include:

- Establishing the EMG to advise the Port on the design and implementation of mitigation measures and to undertake ongoing monitoring of designated sites and protected species;
- Implementing habitat enhancement measures such as:
    - New buildings will be constructed on site, which provide new opportunities for nesting birds and roosting bats through the provision of bird and bat boxes;
    - Spit Habitat Protection and Enhancement;
    - New planting will be incorporated into the proposed development;
    - Tern rafts to be provided to create additional nesting opportunities for Common and Arctic Tern (*Sterna paradisaea*);
    - Retain drainage ditch along the southern site boundary to allow any potential otter access;
    - Removal of New Zealand pygmyweed and any other non-native species from the terrestrial lagoon; and
    - No dredging to take place during October to March to avoid the wintering birds season. If dredging is require in October this is only to occur with the approval of MS in consultation with SNH.

The proposed measures have been updated and where appropriate incorporated into the following sections, with key areas identified in the map within Appendix B:

- Spit Habitat Protection & Enhancement Plan;
- Lagoon Restoration & Enhancement Plan;
- Bird Monitoring Plan;
- Invasive Non-Native Species Plan; and
- General Ecological Mitigation Measures.

Spit Habitat Protection & Enhancement Plan

This plan proposes measures for maintaining and improving the integrity and key habitats of the spit, including definition of how the habitats associated with the spit will be managed so that they can continue to support the roost sites, and adverse effects on feeding areas for SPA qualifying species will be minimised.

Roost Disturbance

SNH commented that the development will have a likely significant effect on SPA birds in three ways:

1. Disturbance to the roost site at the end of the spit due to its physical removal;
2. Disturbance to birds at the two roost sites close by; and
3. Impacts on the quality of roosting and feeding habitats due to substrate changes arising from the dredging activity.

The following measures are proposed to avoid adverse impacts to the roost sites from disturbance arising from the construction (and potentially operational) phase of works from arrange of development activities.

The current masterplan stipulates that the end of the spit will be left *in situ* following the capital dredging. This will create an island in the location of the former roost site, which will be safeguarded from disturbance and predation from fox and human activity. Following post-dredge baseline surveys have been undertaken to ascertain the stability of the island, any enhancement or mitigation measures deemed appropriate to improve the roost site will be developed by the Port in consultation with the EMG.

The roost site at the end of the spit is predominantly used in winter months, so in the event that this area may be disturbed, no capital or maintenance dredging should occur between 31st October and 31st March.

Should dredging activity be required for operational reasons during October, this should only be undertaken following discussion with, and the approval of, Marine Scotland in consultation with SNH. In such circumstances, permission may be granted with restricted rights. Restricted rights for dredging during October might include extended exclusion zones or no dredging at high water in proximity to the end of the spit.

Once the capital dredge has been completed, it is possible that some birds may prefer to move their roost location to the end of the foreshortened spit, to the east of the newly-dredged main channel. It is more likely, however, that to avoid undue disturbance, and to continue to utilise their current preferred roost location, the majority of birds will continue to roost at their current location (which will become an island), with some moving to the end of the newly-created spit in the new channel.

Alternative high-tide roost sites exist on Whiteness Sands and on the Moray Firth side of the dunes. These will be available to birds at all times, and under current plans for redevelopment of the site, will be sheltered by stockpiling of dredged materials on top of previously deposited dredgings on the main port facility, thus affording the roost site some protection, and limiting access to the area.

Regular monitoring to evaluate current roost sites, their current structure and locations, will highlight any measures that require advisory input from the EMG. Once these updated baseline surveys have determined the precise locations of any current roost sites, appropriate screening, directional lighting, and recommendations to avoid sensitive timing of certain construction activities will be proposed to minimise any potential disturbance near the roost sites.

Construction activities should not occur within 250m of any current roost site through the winter period, and the integrity of the habitat at any known roost site will be maintained.

Provision of directional lighting and screening if necessary during construction will be agreed with advice from the EMG in accordance with the Pollution Prevention Plan (EIAR Technical Appendix 3.3: CEMD, Appendix E). This states that shades will be fitted to temporary lights to prevent spillage outside the working area, only the minimum amount required for safety will be used and lights will be switched off when not required.

Sediment Transport and Coastal Change

Detailed coastal modelling was undertaken as part of the coastal assessment that informed the EIAR for the dredging and quay construction works. Recommendations for sediment monitoring made within the EIAR have been taken forward and are now detailed within the Sediment Transportation Monitoring Plan (STMP) (EIAR Technical Appendix 11.3). This includes the formation of a Digital Elevation Model of the local area, extending from the sub-tidal zone, through inter-tidal to the spit and dune system beyond. This DEM will be regularly updated to assess the changes within the system over time.

The coastal assessment in the EIAR was based on the following dredge volumes (Table 7-1).

Table 7-1: Capital dredge volumes

Disposal Area	Capital Dredge Volume (m^3)	Comments
Reinstatement of Inner Channel	200,000	Reinstate historically excavated area of inner spit to general profile of surrounding spit.
On-site Storage (on land)	2,100,000	Material stockpiled on site.

No capital dredge arisings will be deposited to the licenced spoil disposal area on Whiteness Sands, with the disposal areas being those identified in Table 7.1. The changes in coastal morphology predicted across the bulk of Whiteness Sands are considered small, however it is recognised that changes in sediment deposition on the roosting and sensitive, intertidal feeding areas could result in the SPA failing both of its conservation objectives due to deterioration of the supporting habitats and a decline in the number of species using the SPA.

Results of the bird monitoring and the sediment monitoring will be assessed together, and appropriate mitigation measures or recommendations for future dredging disposal details will be formulated as required.

Subsequent to the assessment undertaken as part of the 2013 ES, the Scottish Government has recently completed the National Coastal Change Assessment (NCCA). The NCCA establishes historic coastal change in order to estimate past erosion/accretion rates and then project these into the future using a Coastal Erosion Susceptibility Model (CESM) to limit erosion to areas where the hinterland is susceptible to erosion. The NCCA aims to identify areas which may remain susceptible to erosion in the coming decades and require the development of future management and adaptation plans robustly based on a strategic and objective evidence base. Whiteness Head is identified as an area susceptible to erosion and the sediment data collected as part of this plan will contribute to future management and adaptation plans.

The spatial and volumetric assessment of sediment change within the local DEM will provide an accurate assessment of how the local area is adapting and responding to the dredging and disposal activities. This can then be compared to previous model predictions undertaken and to provide valuable calibration data for future models to inform the planning of future maintenance dredging activities and placement of dredged material.

Potential future adaptation plans may include consideration of the use of the licenced spoil disposal area below -5 m Chart Datum, or replenishing the spit with arisings from maintenance dredging.

Monitoring of changes in vegetation structure on the spit will allow formulation of management measures, in association with other measures on access restriction and habitat management. Such changes in spit composition are long-term issues which should be addressed more thoroughly within the OEMD.

These aspects of the Spit Habitat Protection & Enhancement Plan will be central to planning the future maintenance dredge activities, and the analysis of the monitoring data along with the reporting and recommendations will be fed back through the EMG to reach an agreed plan of action for future dredging and disposal.

Access Management

Several species of tern, wader and duck formerly bred on the shingle spit. Due to an increase in predation and human disturbance since the closure of the former fabrication yard on the site, breeding has ceased. Any access management beyond the construction period will need to address the potential of breeding birds returning to the spit, and have been included in this section where relevant.

The spit will be protected by a range of access management measures. These may include:

- Fencing across the spit to control the level of mammal activity on the spit, and minimise predation by fox, and other mammals;
- Fencing off the roost sites and known breeding areas to discourage mammal predation;
- Transgress onto the spit, particularly by construction plant, will be avoided as vehicular movement along the pathways on the spit could have a detrimental impact on the upper and lower plant communities present;
- Creating areas for roosting and breeding which are less vulnerable to avian predation, which may include regular site visits by surveyors / the ECoW; and
- Signage for walkers and/or cordoning off roost sites and known breeding sites to discourage human access.

One known bird roost to the west of the proposed development may be within 100m of construction activity. Birds may habituate to the close presence of the operational works, although disturbance from activity on the site is likely during the construction period. It is likely that screening may be required to blind the roost to minimise disturbance.

Screening of site activity does not account for the adverse effects of predation that the introduction of structures creates. Construction activity may limit the use of site buildings as look-out posts for predators.

Access will be restricted to alternative roost sites during the construction phase by the physical presence of stockpiled material which will be specifically designed to protect them.

Habitat Management and Enhancement

Regular monitoring will provide field data on current bird roost numbers and locations, but it is possible that two opposing habitat management measures may be required in different areas along the spit to ensure the spit habitat is protected, and any roosts that that occur on the shortened, landward side of the newly dredged channel are conserved.

The shortened spit may be affected by blown sand that may allow vegetation to colonise previously un-vegetated areas, thus obstructing the clear sight lines that roosting birds prefer. In order to provide an open sightline for roosting birds, any encroaching vegetation should be removed, or cut low to keep the stabilising roots in situ, where practicable to a distance of 20m.

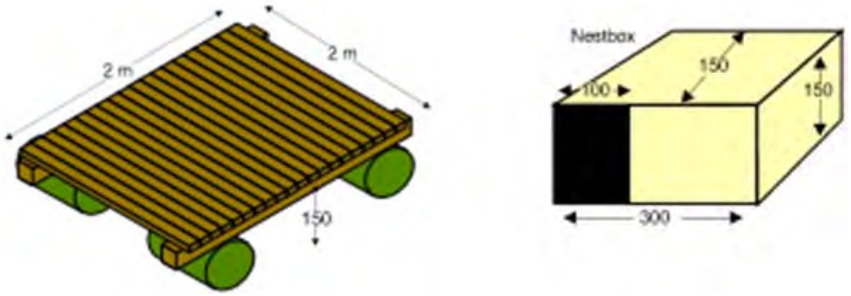
Further east along the spit, re-instatement of the leeward side of the spit will restore the spit to full width where it has historically been narrowed. This will be achieved through the placement of 200,000 m^3 of dredged sand within the inner channel against the spit. The material will be placed to ensure that a similar angle of repose to that of the surrounding ground is achieved, both above and below the water level. A jute mesh matting or similar will be anchored into the restored ground surface above the mean high water spring tide level. This area is relatively sheltered compared to the outer face of the spit. Planting will be undertaken into this matting, which will include transplanting of marram grass, sand couchgrass (*Elymus farctus*) or lyme grass (*Leymus arenarius*) to encourage the growth of new foredunes along the toe of existing dunes, as these species are tolerant to occasional inundation by seawater. Planting grasses from seed can be undertaken but will not normally be successful in the very active foredune environment. A similar approach will be taken in areas where the dune system is less stable and increased vegetation may help to trap windblown sand. These natural dune grasses act to reduce wind speeds across the surface, thereby trapping and holding sand. They grow both vertically and horizontally as the sand accumulates. Marram grass is particularly effective as it positively thrives on growing dunes, and is perhaps the easiest to transplant.

The provision of three tern rafts, to provide additional nesting opportunities for Common and Arctic Tern, will be constructed and installed within the head of the inner channel behind the spit. The precise design and locations will be agreed with the EMG with the indicative zone shown in Appendix B.

The rafts should be clear of vegetation, covered only in shingle. Any plant growth may encourage other species, which will deter terns. The floor should be about 150mm above water level. The edge should be fenced to a height of 250mm with a fence strong enough not to be damaged by perching wildfowl. Allow about 0.5m² per pair of terns and ensure there are some markers such as stones for surveyors and birds to be able to identify territories and nests.

The provision of nest boxes upon the raft to protect the young chicks from predation is optional, but often used for protected species and species with a high conservation concern.

For further construction advice, the following documents should be referenced:
https://www.rspb.org.uk/Images/Designofrafts_tcm9-212589.pdf and
https://www.bto.org/sites/default/files/u15/downloads/publications/guides/nestbox.pdf



Source: https://www.rspb.org.uk/Images/Designofrafts_tcm9-212589.pdf

Figure 7-2: Example of Common Tern raft and potential chick shelter

Due to an expanding proliferation along the landward side of the spit, removal of the invasive *Rosa rugosa* and sea buckthorn should also be undertaken where possible, using traditional root-digging methods. This will lead to an increase in native vegetation cover.

One of the main threats to the shingle and dune heath habitat is expansion of gorse. Although a native plant, and not considered an INNS, gorse removal (and follow up control) would be suitable mitigation to offset the loss of shingle habitat due to dredging.

Care should be taken to avoid damage to the patches of stabilised, exposed shingle and dune heath between the patches of scrub as these will act as sources for lichen colonisation.

Lagoon Restoration & Enhancement Plan

Measures for restoring and improving the habitat of the lagoon and other waterbodies on site will include measures for the removal of Non-Native Invasive Species.

The control and removal of New Zealand pygmyweed will be undertaken through a combination of chemical and shading control measures[3], in association with SNH. This treatment is likely to be undertaken over a period of at least four years.

Once treated, plants are removed and composted offsite. Monitoring will be undertaken regularly at intervals of 3-6 months for at least 5 years following any apparent elimination. All treatment would be undertaken by suitably qualified staff, with appropriate biosecurity measures in place to halt the spread of the species to other parts of the site, or outwith the site.

However, due to the abundance of the New Zealand pygmyweed, it may not be possible to treat successfully using these methods, and any attempt to control or eradicate the New Zealand pygmyweed will lead to complications with other flora in that habitat, namely the rare nodding beggarticks (*Bidens cernua*), which should be protected at this site.

Bird Monitoring Plan

In line with advice from the EMG, regular monitoring of the bird populations on site, and within the adjacent designated land should be undertaken. As a minimum, the following surveys should be carried out throughout the construction phase, and updated as required through the operational phase[4]:

- Monthly winter high tide roost counts (between September and March to monitor the composition of species and the number of birds);
- Monthly winter seabird surveys (between September and March to monitor the level of feeding and/or loafing birds on the adjacent stretch of sea; possibly undertaken in association with the winter high tide roost counts);
- Passage and winter low tide wader counts (between August and April to monitor the numbers of birds feeding on Whiteness Sands; to monitor any effects on the main feeding areas from sedimentation and/or windblown sand deposits);
- Annual breeding bird surveys (between April and July with emphasis on newly-created habitat along the spit and on the tern rafts);
- Nest monitoring and implementation of an exclusion zone around any protected species breeding on site (between April and July/August which may include raptors, wildfowl or wader species).

All construction activities should aim to commence outside the bird breeding season (late-March to mid-August). Birds returning to the area to breed will then have the opportunity to nest away from potentially disturbing activities that are already in operation.

Although construction works are scheduled to occur through the non-breeding season – this is the season in which many species are present in their highest numbers. However, the effects on bird life on the site are considered to be not significant, and thus, it there is no need for sensitive timing of construction works (other than dredging) with regard to non-breeding birds at the development.

Construction impacts on overwintering birds will be controlled by avoiding peak overwintering periods through October to March for dredging activities. During the breeding season, works will be timed so that no more that one of the identified roosts is disturbed at any given time. A quiet zone around the major roost sites will be established.

[3] Clarke S, Hennessy M. 2015. New Zealand pygmyweed. Version 1.0. In *The Species Action Framework Handbook*, Gaywood MJ, Boon PJ, Thompson DBA, Strachan IM (eds). Scottish Natural Heritage, Battleby, Perth.

[4] To be agreed with the EMG within the Operation Environment Management Document (OEMD).

The major mitigation with regards to any potential nesting birds will be to avoid disturbance. It will be the responsibility of the ECoW to search the development site prior to construction to ensure birds (nesting/raising young) are not using existing infrastructure.

Further monitoring may be required as deemed appropriate, in line with activities of the ECoW and following advice from the EMG.

Invasive Non-Native Species Plan

Ardersier Port Limited will act in accordance with The Code of Practice on Non-Native Species (approved by the Scottish Government in 2012 and made under 14C of the Wildlife and Countryside Act 1981), Amended by The Wildlife and Natural Environment (Scotland) Act 2011. This will include undertaking risk assessments relevant to all scheduled activities to minimise the risk of introducing marine non-native species into the adjacent waterbodies.

Toolbox talks will be given and posters to aid identification of non-native species will be disseminated to all members of staff involved in the project. These will aid on the management and control of marine non-native species.

Ideally, all equipment and vessels required will be from within biogeographic regions where possible, and all have undergone the necessary inspections (and certification) prior to arriving on site.

Biofouling is also considered one of the main vectors for bio-invasions, and is described as the undesirable accumulation of micro-organisms, plants, algae and animals on submerged structures (especially ships' hulls).

In order to reduce the risk of spreading invasive non-native species, the following is advised:

- Remove any visible plant, fish, animal matter and mud from the vessel, in particular the hulls should be cleaned regularly.
- Safely dispose of any plant and animal material removed from the vessel.
- Toolbox talks will be given and posters to aid identification of non-native species will be disseminated to all members of staff involved in the project. These will aid on the management and control of marine non-native species.
- Ideally, all equipment and vessels required will be from within biogeographic regions where possible, and all have undergone the necessary inspections (and certification) prior to arriving on site.

Should marine non-native species be identified on site, these sightings should be reported to the relevant authority. Should marine non-native species be identified on site, these sightings should be reported to the relevant authority. Useful contacts are listed below:

- Scottish Natural Heritage (SNH): non_native_species@snh.gov.uk
- Marine Scotland: marinescotland@scotland.gsi.gov.uk
- SEPA https://www.sepa.org.uk

General Ecological Mitigation Measures

An Environmental Clerk of Works (ECoW) will be appointed to ensure delivery of the CEMD and be the lead representative of Ardersier Port Limited on the EMG to oversee construction. The ECoW will ensure that good practice measures with regards to all environmental issues, including the protection of breeding birds and vegetation monitoring are implemented.

Monitoring of vegetation will be undertaken during construction, and then in years one, two, three and five of the operation of the development, and reported through the EMG. Longer-term monitoring will be considered by the EMG if appropriate.

Any required changes to mitigation and habitat enhancement as a result of monitoring activity can be co-ordinated through the EMG.

Prior to the placement of dredge arisings on land, a permanent bund will be constructed to provide screening of potential bird roost sites to Whiteness Sands. Once the permanent bund has been created a temporary bund will be constructed with dredge arisings around the remaining coastal perimeter as shown in Appendix B.

Provision of bird and bat boxes on some of the new buildings to be constructed on site, which may provide new opportunities for nesting birds and roosting bats in suitable locations.

A planting scheme across the site will be developed with advice from the EMG to enhance the general biodiversity and vegetation across the site. Such habitat creation may include:

- An enhanced wetland biodiversity in the lagoon area; and
- Newly planted trees, to screen the site from the wider area and create a wildlife corridor.

Monitoring of lichen populations to provide enhanced protection from disturbance or overshading by INNS and other more prolific flora, and to monitor the population in the event of seawater overtopping the spit during storm conditions.

The drainage ditch along the southern site boundary will be kept with minimal culverting or diverting to allow any potential otter access.

8 PROGRAMME

The programme of works is detailed in Table 8-1 below.

Table 8-1: Programme of NHMS actions at Ardersier Port

Activity	Frequency	Timing (in relation to dredge)		
		Pre	During	Post
BASELINE SURVEY				
Updated baseline survey (all biota)	Once	✓	✓	✓
BIRD MONITORING				
Winter high tide roost surveys	Annual (Sept-Mar)		✓	✓
Winter seabird surveys	Annual (Sept-Mar)		✓	✓
Breeding bird surveys	Annual (Apr-Jul)			✓
Nest monitoring	Annual (Apr-Jul)			✓
ECOLOGICAL MONITORING				
Vegetation (including lichen) monitoring	Annual (Summer)	✓		✓
Mammal surveys	Annual	✓	✓	✓
INNS MANAGEMENT				
Removal of New Zealand pygmyweed	Once			✓
ACCESS MANAGEMENT				
Installation of signage	Once			✓
Implementation of exclusion zones for protected species	Once			✓
HABITAT MANAGEMENT				
Production and installation of tern rafts	Once			✓
Creation of new roost sites	Once			✓
Vegetation removal/cutting on the spit	Annual			✓
Vegetation transplanting on the spit	Once			✓
Planting of new trees	Once			✓
Provision of bird and bat boxes	Once			✓

9 REVIEW

The NHMS and all actions associated with its implementation will be reviewed through the EMG, and the NHMS will be updated as appropriate upon completion of the initial five-year monitoring period.

The NHMS will remain the same document for the CEMD and the OEMD, and will be updated as appropriate.

10 RESPONSIBILITIES

The overall responsibility for the implementation of the NHMS lies with Ardersier Port Limited, advised by the EMG through the ECoW. The ECoW will be appointed by Ardersier Port Limited on acceptance of the NHMS by the EMG. The ECoW will be responsible for coordinating and delivering all the various tasks in order for the NHMS objectives to be met. The responsibilities for the various tasks are detailed in Table 10-1 below. The EMG will track the progress and implementation of the NHMS and advise the Port on any outstanding actions along with the relative importance of any programme slippage. The updates to the plan will be carried out by the Port in consultation with the EMG and ECoW.

Table 10-1: Responsibilities

Task	Responsibility
BASELINE SURVEY	
Updated baseline survey (all biota)	ECoW/Specialist Contractor
BIRD MONITORING	
Winter high tide roost surveys	ECoW/Specialist Contractor
Winter seabird surveys	ECoW/Specialist Contractor
Breeding bird surveys	ECoW/Specialist Contractor
Nest monitoring	ECoW/Specialist Contractor
ECOLOGICAL MONITORING	
Vegetation (including lichen) monitoring	ECoW/Specialist Contractor
Mammal surveys	ECoW/Specialist Contractor
INNS MANAGEMENT	
Removal of New Zealand pygmyweed	Specialist Contractor
ACCESS MANAGEMENT	
Installation of signage	ECoW/Specialist Contractor
Implementation of exclusion zones for protected species	ECoW/Specialist Contractor
HABITAT MANAGEMENT	
Production and installation of tern rafts	ECoW/Specialist Contractor
Creation of new roost sites	Specialist Contractor
Vegetation removal/cutting on the spit	ECoW/Specialist Contractor
Vegetation transplanting on the spit	Specialist Contractor
Planting of new trees	Specialist Contractor
Provision of bird and bat boxes	Specialist Contractor

REFERENCES

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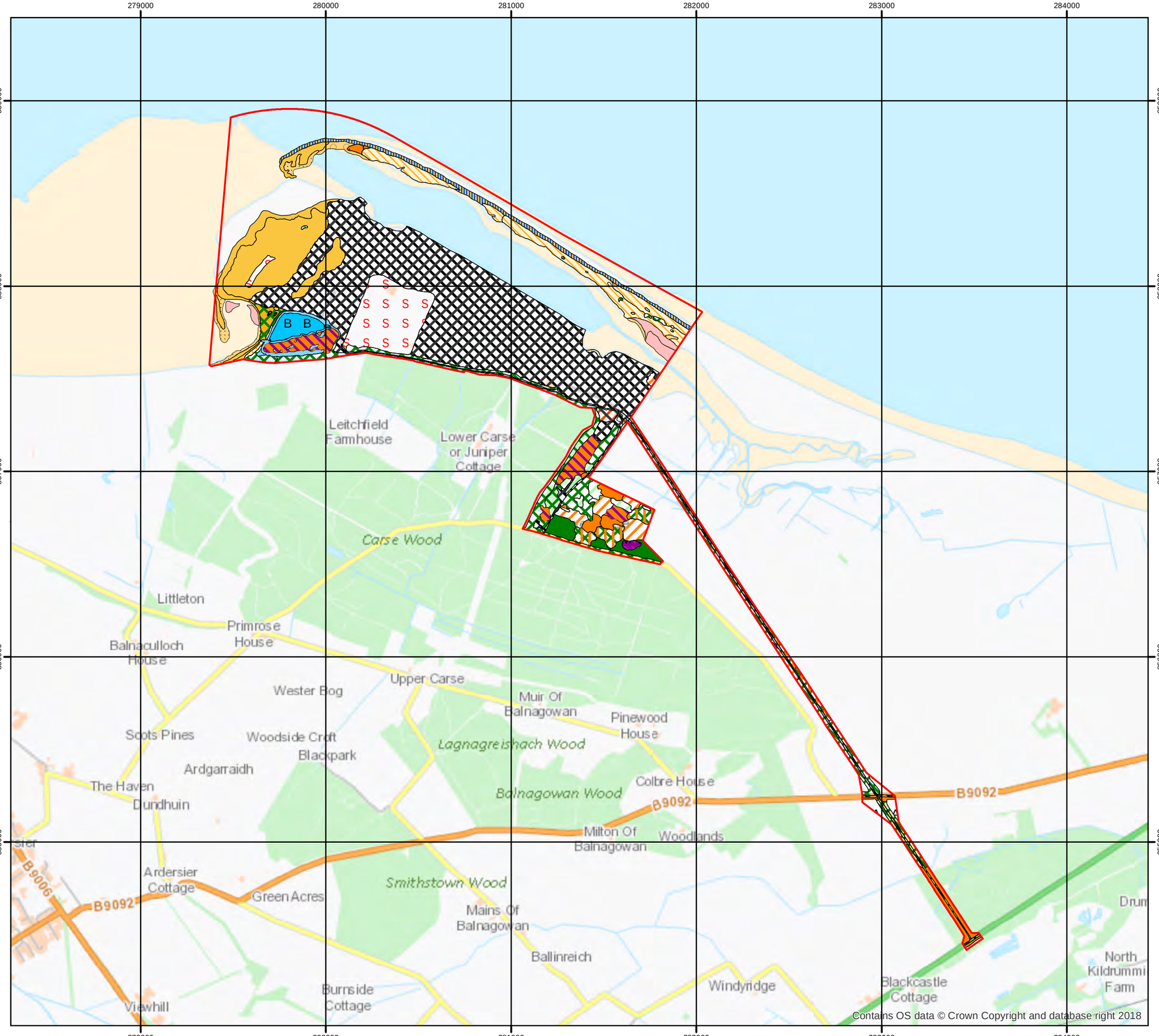
APPENDIX A: 2018 HABITAT MAP



Legend

Planning Boundary

JNCC Code

A1.1.1	H1.1	J5
A1.2.2	H1.2	J5/B1.1
A2.1	H1.2/H5	
A2.1/B1.1	H2.6	
B1.1	H6.5	
B2.1	H6.5/A2.1	
B5	H6.6	
C3.1	H6.7	
E3.2	H6.8	
F1	H8.4	
F2.1	I2.2	
G1.6	J1.1	

Do not scale this map

Client: Ardersier Port Ltd

Project: Arderseir Port Redevelopment

Title: Phase 1 Habitat - Map Overview

Status: FINAL

Drawing No.: 670191-007

Revision:

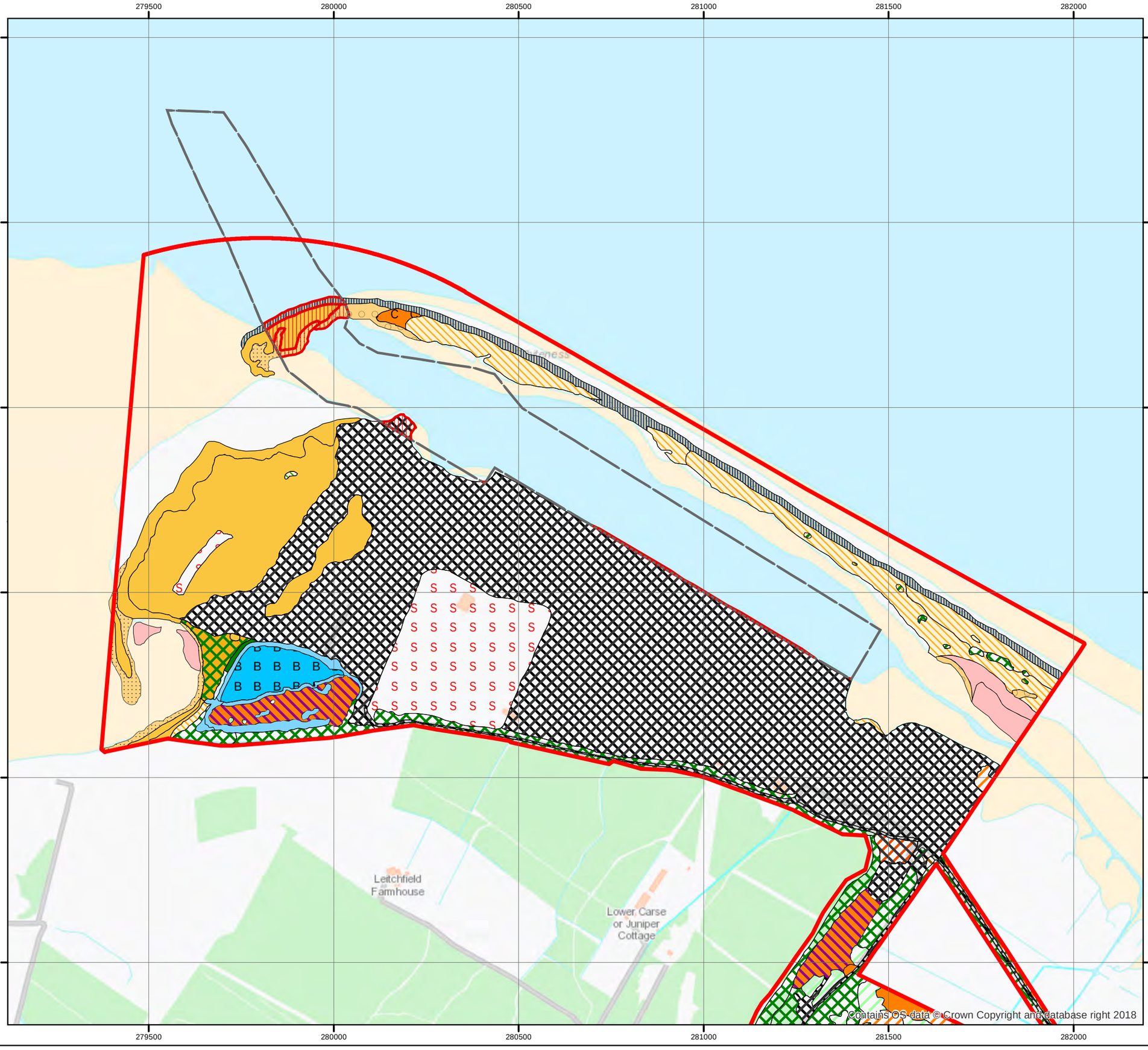
Scale: 1:20,000

A3

Date: 05 Sept 2018

Drawn	Checked	Approved
SMC	KC	KC

ENVIRO Centre
Craighall Business Park, Eagle Street, Glasgow, G4 9XA
Tel: 0141 341 5040
Fax: 0141 341 5045



Legend

- Site Boundary
- Habitat Loss
- Capital Dredge Extent 2018 License Application

JNCC Code

A1.1.1	H1.1	J5
A1.2.2	H1.2	J5/B1.1
A2.1	H1.2/H5	
A2.1/B1.1	H2.6	
B1.1	H6.5	
B2.1	H6.5/A2.1	
B5	H6.6	
C3.1	H6.7	
E3.2	H6.8	
F1	H8.4	
F2.1	I2.2	
G1.6	J1.1	

Do not scale this map

Client: Ardersier Port Ltd

Project: Ardersier Port Redevelopment

Title: Phase 1 Habitat Loss

Status: FINAL

Drawing No.: 670191-012

Revision:

Scale: 1:10,000

A3

Date: 24 Sep 2018

Drawn	Checked	Approved
SMC	MC	KMD

ENVIRO Centre
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Fax: 0141 341 5045

APPENDIX B: HABITAT MANAGEMENT PLAN MAP

Legend

- Vegetation/Predation Control
- Spit Restoration
- Tip of Spit to Remain In-situ
- Lagoon Restoration
- Tern Rafts
- Land Storage Area Bund
- Harbour Revision Order Works
- Quay Wall Construction Works Extents 2018 License Application
- Capital Dredge Extent 2018 License Application
- Mean Low Water Spring (MLWS)
- Mean High Water Spring (MHWS)

Note:

Tidal contours from May 2018 Aspect Topographic and Bathymetric survey

Land storage area bunds formed prior to material placement and lower slopes partially retained in vicinity of roost sites.

Do not scale this map

Client
Ardersier Port Ltd

Project
Ardersier Port Redevelopment

Title
Habitat Management Plan

Status
FINAL

Drawing No.	Revision
670191-019	

Scale		Date
1:10,000	A3	27 Sep 2018

Drawn	Checked	Approved
JS	KMD	KMD

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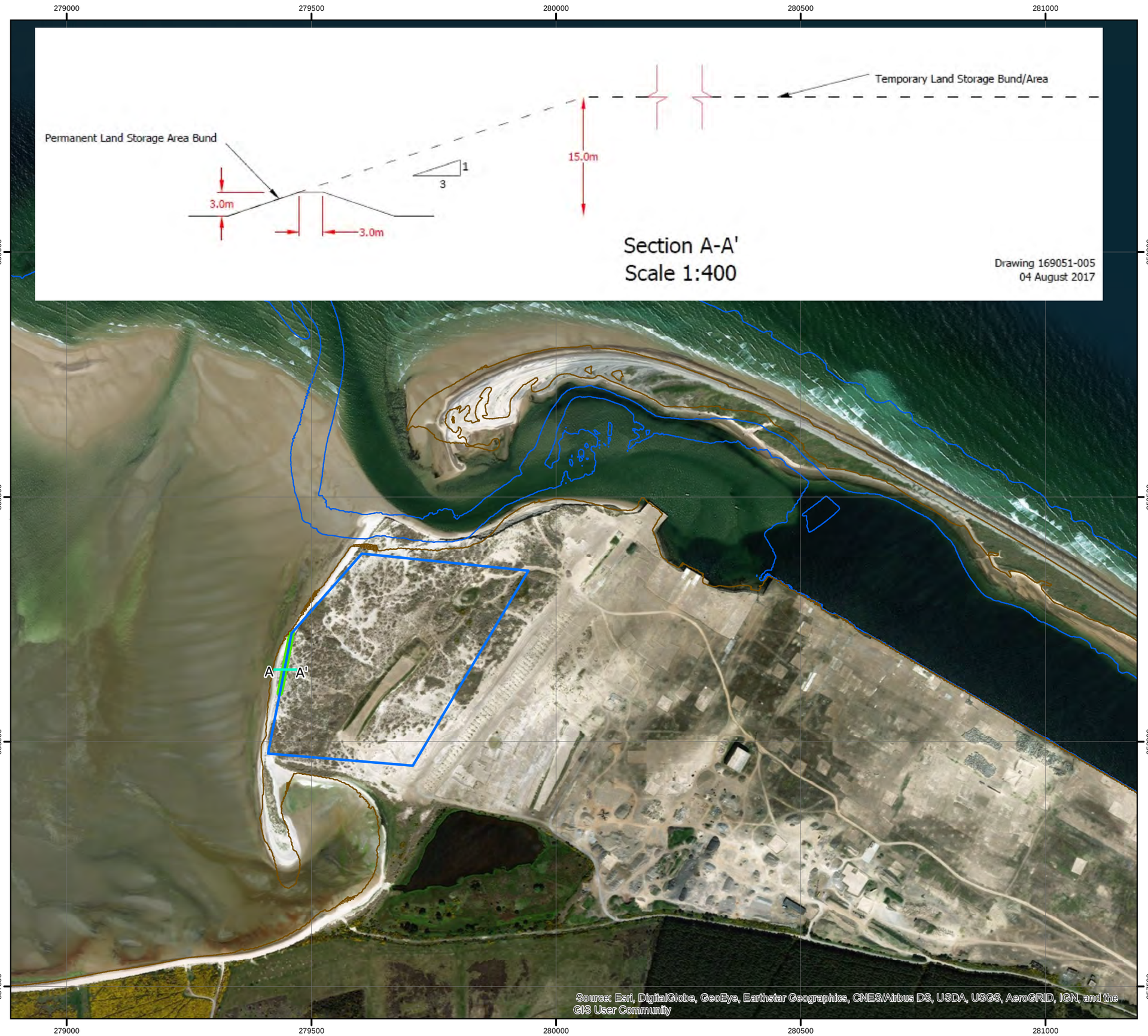

Legend

- Permanent Land Storage Area Bund
- Dredge Storage Area
- Section Line
- Mean Low Water Spring (MLWS)
- Mean High Water Spring (MHWS)

Note:

Tidal contours from May 2018 Aspect Topographic and Bathymetric survey

Length of Permanent Land Storage Area Bund ~ 120m

Permanent land storage bund to be created prior to any construction or dredging works.

Land storage area bunds formed prior to material placement and lower slopes partially retained in vicinity of potential roost sites.

Do not scale this map

Client
Ardersier Port Ltd

Project
Ardersier Port Redevelopment

Title
Land Storage Area Bund

Status
FINAL

Drawing No.	Revision
670191-018	

Scale		Date
1:7,500	A3	24 Sep 2018

Drawn	Checked	Approved
MS	GD	KMD

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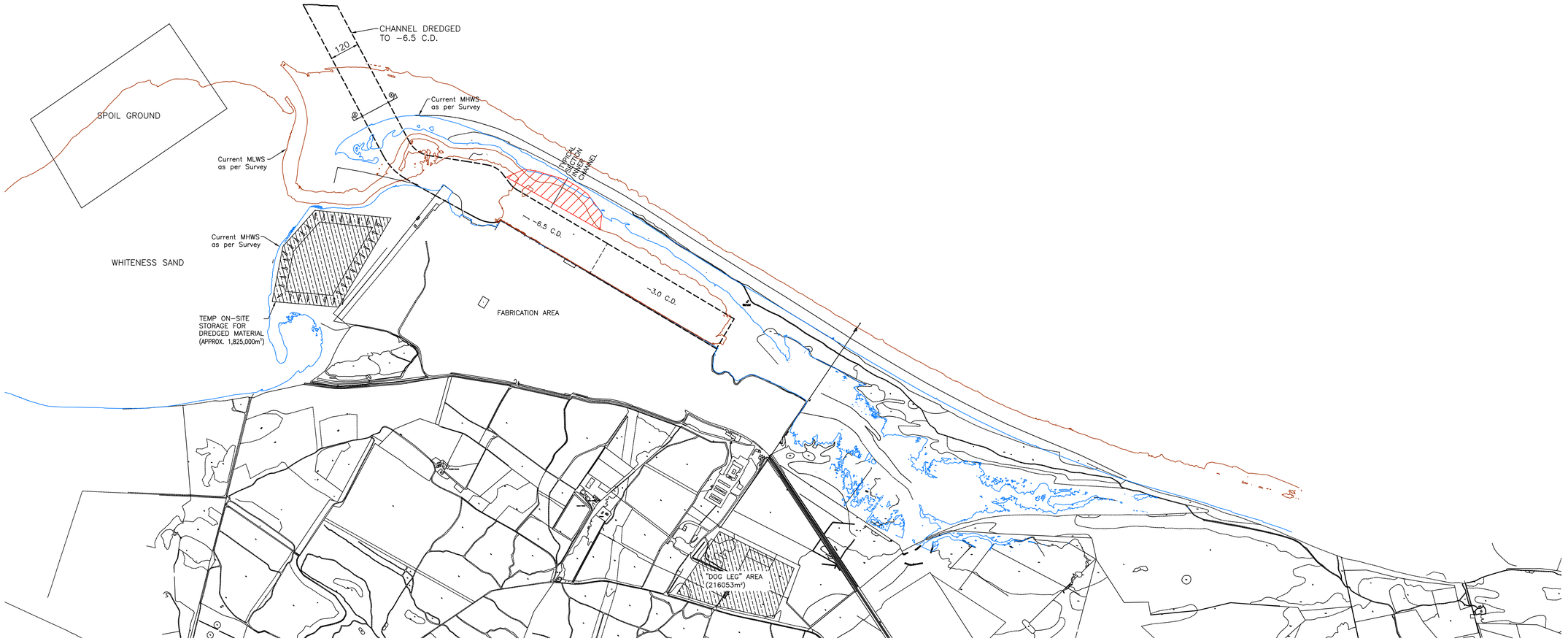
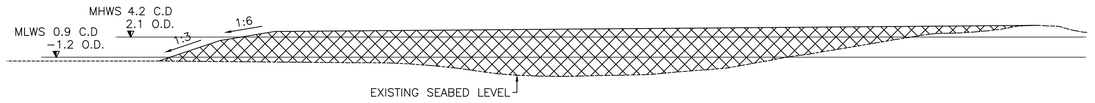
APPENDIX C: INNER CHANNEL DREDGE DEPOSITION/RESTORATION AREA

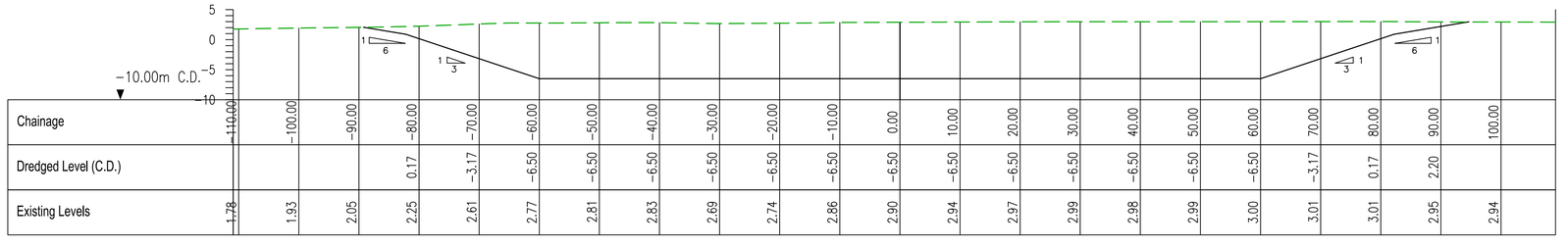
Drawing 167112-25F – Dredged Material Deposit Areas



KEY PLAN
SCALE 1:10000



TYPICAL SECTION INNER CHANNEL (SPIT REINSTATEMENT)
SCALE 1:500



Chainage	−110.00	−100.00	−90.00	−80.00	−70.00	−60.00	−50.00	−40.00	−30.00	−20.00	−10.00	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
Dredged Level (C.D.)				0.17	−3.17	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−6.50	−3.17	0.17	2.20	
Existing Levels	1.78	1.93	2.05	2.25	2.61	2.77	2.81	2.83	2.69	2.74	2.86	2.90	2.94	2.97	2.99	2.98	2.99	3.00	3.01	3.01	2.95	2.94

TYPICAL SECTION X−X
SCALE 1:500

TOTAL DREDGED VOLUME = 2,300,000m³	
FILL AREAS	
REF.	VOLUME
DOG LEG	275,000m³
SPIT (INNER CHANNEL)	200,000m³
DISPOSAL TO SPOIL SITE ON WHITENESS SANDS	0m³
ON−SITE TEMPORARY STORAGE	1,825,000m³
TOTAL	2,300,000m³

REV	DATE	REVISION	DRN	CHK
F	19/07/18	REDRAWN FROM AFCA DWG. No. CA4393/706E	DM	AM

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email : inverness@arch-henderson.co.uk
Web : www.arch-henderson.co.uk
Civil Engineers Architects
Structural Engineers CDM Co-ordinators
Environmental services Geotechnical services
Aberdeen Dundee Glasgow Lerwick Inverness Stromness Thurso

PROJECT :
ARDERSIER PORT LTD
ARDERSIER PORT REDEVELOPMENT

TITLE :
DREDGED MATERIAL DEPOSIT AREAS

DRAWN :	DATE :	CHECKED :	AUTHORISED :
DM	19/07/18	AM	AM

SCALE : (A1) AS SHOWN
DRAWING STATUS : -

DO NOT SCALE

DRAWING No : 167112/25
REV : F