

NOTES
1 FOR DETAILS OF NEW JETTY, REFER TO Drg. No. 105069/003.

A	10.05.12	M.H.W.S. LINE SHOWN ON NEW WORKS DRAWING SHEET & PROJECT NAME REVISED	G.A.M.	J.B.
REV	DATE	REVISION DESCRIPTION	DRN	VER

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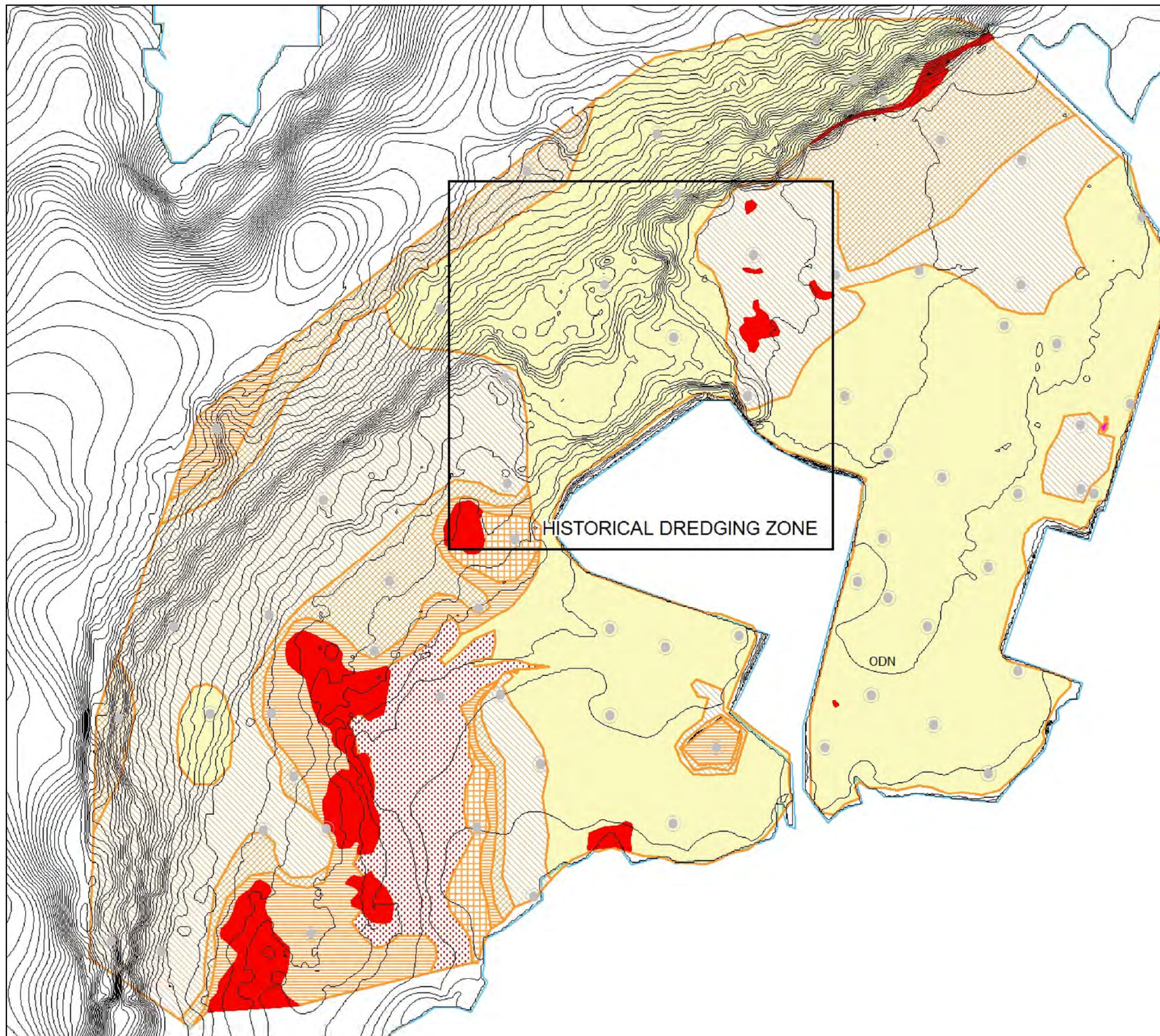
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PROJECT :
CLYDEPORT PROPERTIES Limited
HUNTERSTON QUAY

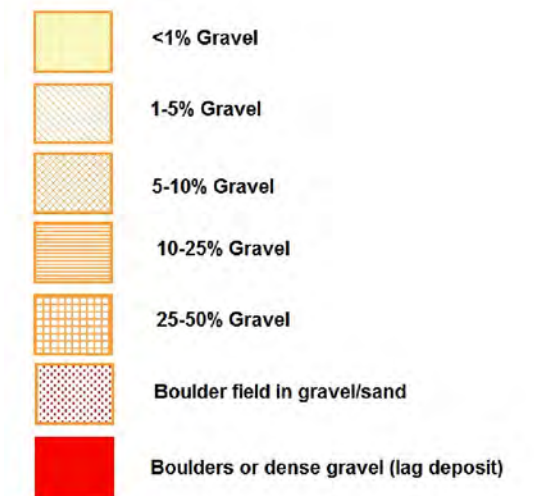
TITLE :
SITE LAYOUT

DRAWN : G.B.	DATE : 11.04.11	VERIFIED : JB	APPROVED : J.B.
SCALE : (A1) 1:1000	DRAWING STATUS : REPORT		

DRAWING No : 105069/002	REV : A
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Legend



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Client	Clydeport
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Project	Hunterston Quay
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Title	Gravel Deposits
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Status	FINAL
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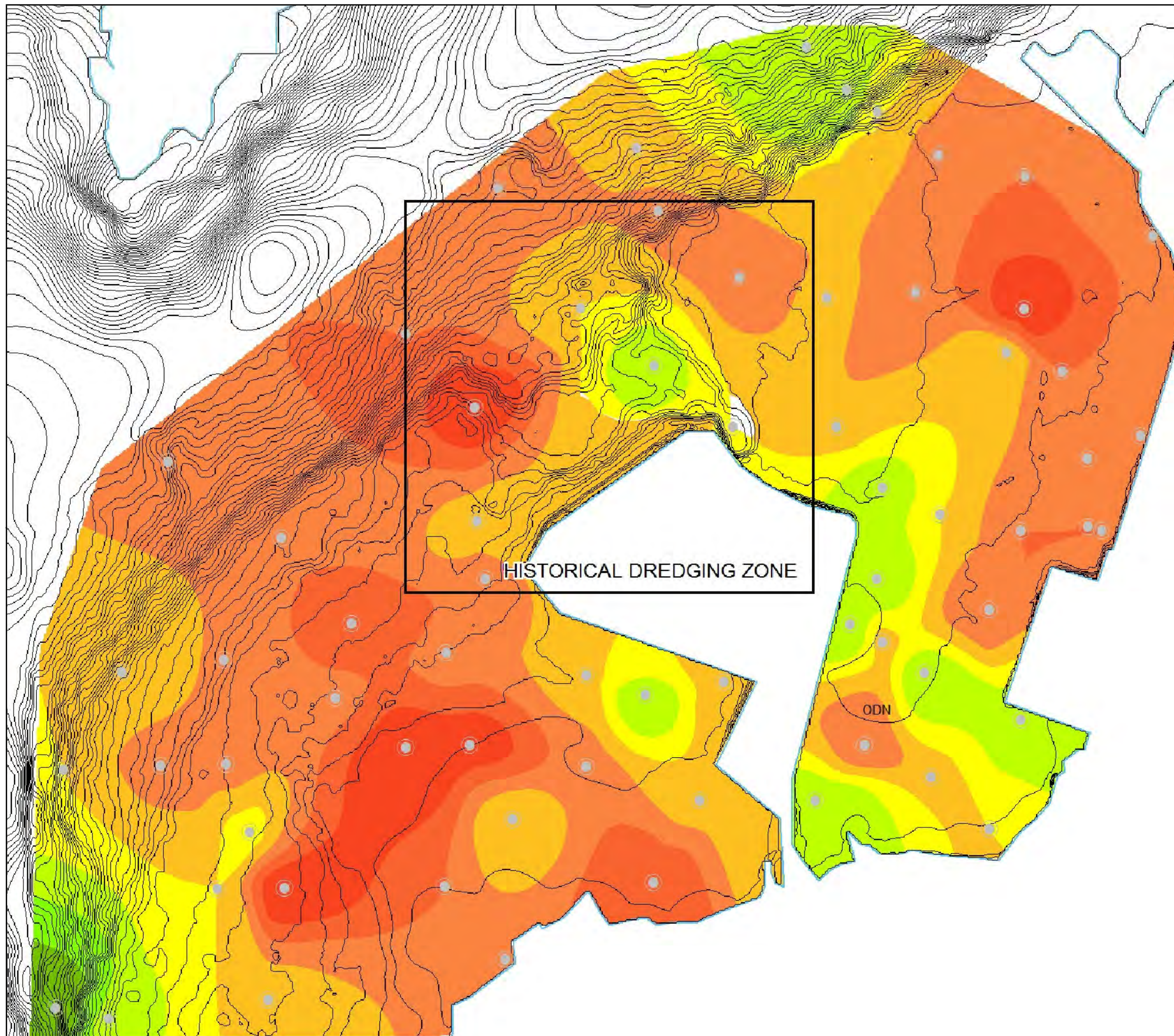
Drawing No.	161511J-007	Revision	
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Legend

DOMINANT SAND MODE
Secondary modes shown as text
PHI UNITS

- 1.5 to 1.75 Medium sand bedload transport
- 1.75 to 2.0 Medium sand bedload transport
- 2.0 to 2.25 Medium sand bedload transport
- 2.25 to 2.5 Sand most easily set in motion by currents
- 2.5 to 2.75 Fine sand fallout zone
- 2.75 to 3.0 Fine sand fallout zone
- 3.0 to 3.25 Very fine sand fallout zone
- 3.25 to 3.5 Very fine sand fallout zone

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Client
Clydeport

Project
Hunterston Quay

Title
Sand Deposits

Status
FINAL

Drawing No. 161511J-008	Revision
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Scale NTS	A3	Date 3 January 2013
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Drawn JS	Checked MN	Approved EC
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





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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

-  Construction Area 300m Buffer Zone
- High Tide Wader Roost Sites
 -  Curlew Roost Site
 -  Oystercatcher Roost Site
 -  Redshank Roost Site
 -  Wader Roost (Several Species)

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Client
Peel Ports Group

Project
Hunterston Marine Yard

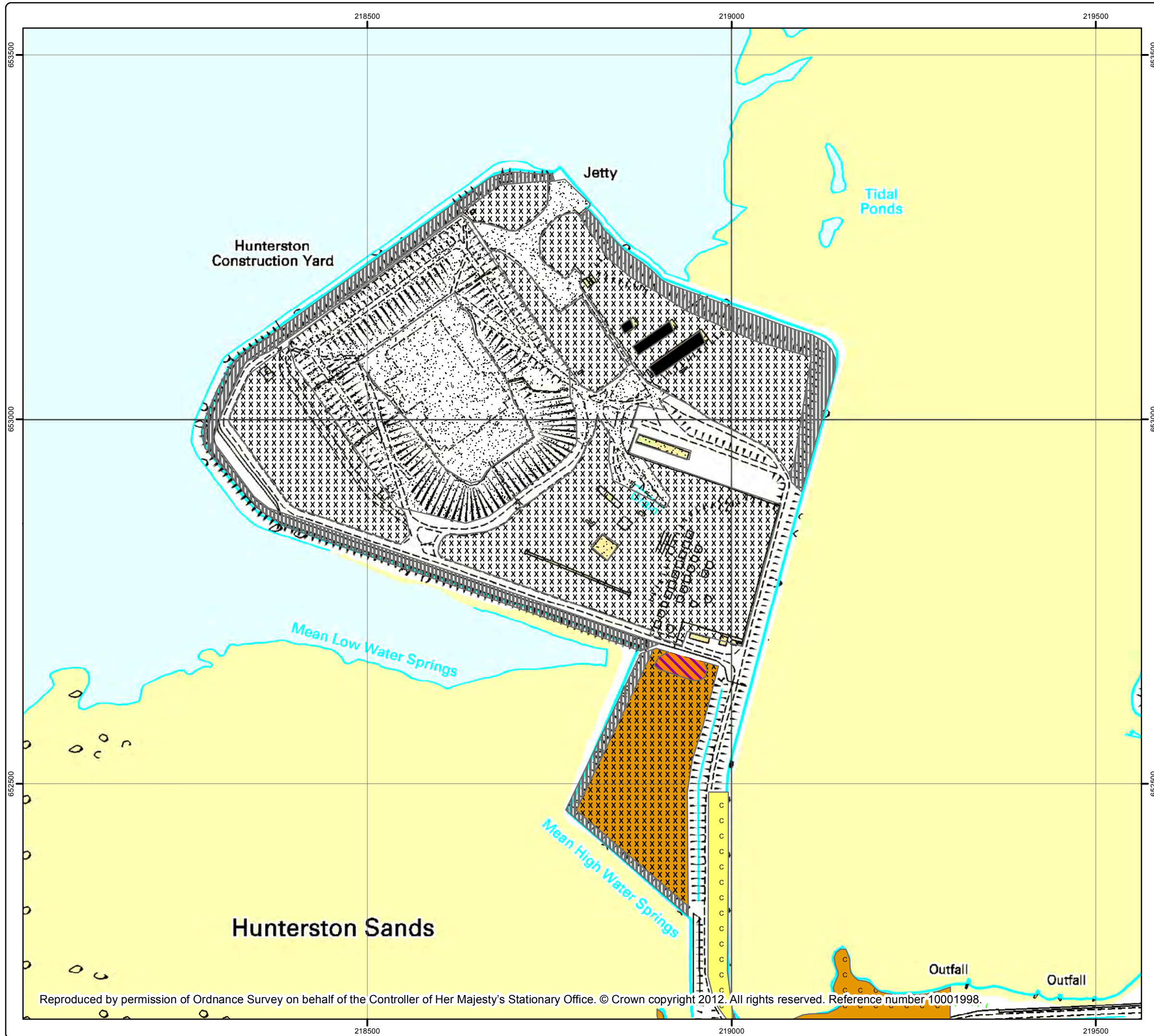
Title
High Tide Wader Roost Sites

Status	Final
Drawing No.	Revision
168612-003	

Scale	A3	Date
1:15,000		19 Jan 2017
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Legend

JNCC Code

-  B4 Improved grassland
-  B5 Marsh/marsh grassland
-  D1 Coastal heathland
-  H8.4 Coastal grassland
-  H8.4/J1.3 Coastal grassland/ESP
-  J1.3 Ephemeral /short perenial
-  J3.5 Sea wall
-  J3.6 Building
-  J4 Bare ground

Do not scale this map

Client
Clydeport

Project
Hunterston Quay

Title
Phase 1 Habitat Survey

Status
FINAL

Drawing No.
161511j-004

Revision

Scale
1:5,000

A3
Date
4 January 2013

Drawn
MN

Checked
FM

Approved
EC



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B INTERTIDAL SURVEY



Hunterston Quay Remedial Works Eelgrass and Horse Mussel Intertidal Survey



September 2012



EnviroCentre Document No. 5079
EnviroCentre Project No. 161511j
Status Final

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Date of Issue September 2012

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Hunterston Quay Remedial Works Eelgrass and Blue Mussel Intertidal Survey

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Appendix A – Drawings

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Drawings

Drawing No 105069/002 Rev A	Site Layout
Drawing No 161511j-003	Eelgrass and Horse Mussel Intertidal Survey

1. INTRODUCTION

1.1 Background

Clydeport Ltd (client) plans to upgrade and extend an existing quay at their construction yard and to undertake associated dredging. A Screening Opinion from Marine Scotland was requested by the client to determine if an Environmental Impact Assessment (EIA) would be required. Marine Scotland consulted the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) and North Ayrshire Council and concluded that an EIA would not be required (Ref: Mike Bland, letter dated 15/03/2012).

Marine Scotland have however requested that an Environmental Review is completed that gives consideration to a number of issues which were listed in their correspondence (letter dated 15/03/12) concerning the need for species specific surveys, mitigation to protect adjacent habitats, biosecurity and pollution prevention measures.

EnviroCentre Ltd was commissioned to undertake field survey and reporting for horse mussel (*Modiolus modiolus*), common eelgrass (*Zostera marina*) and dwarf eelgrass (*Z. noltii*) (referred to as 'target species') to address Issue 1:

"There is potential for the presence of eel grass beds featuring Zostera noltii and Z. marina on the site of the proposed dredge pocket. These are Scottish Biodiversity strategy/List priority habitats. There is also potential for UKBAP horse mussels within the proposed dredging footprint. The presence of horse mussels and zostera should be checked and, if present, mitigation proposals to maximise the conservation of these habitats/species incorporated in the application."

This report provides the following in order to address Issue 1:

- Methods;
- Desk Study;
- Field Survey Results; and
- Mitigation Measures, where appropriate.

Drawing No 105069/002 Rev A, Appendix A shows the site layout.

2. METHODS

2.1 Desk Study

The desk study involves a search for any statutory or non-statutory designated sites and existing records of horse mussels and eelgrass within a 2km radius, using the following sources:

- SNH SiteLink¹ for information on statutory designated sites;
- The North Ayrshire Local Plan² for non-statutory designations;
- Scottish Biodiversity List³ for species considered important to the conservation of biodiversity;
- NBN Gateway⁴ for previous records of protected or notable species;
- Marine Life Information Network (MarLIN)⁵ for general species information; and
- UK Biodiversity Action Plan (BAP)⁶ and Ayrshire Local Biodiversity Action Plan (LBAP)⁷ for priority species records.

Previous reports⁸ have been completed on the intertidal habitats located immediately to the north, south and east of the proposed quay extension and dredge pocket and this information has been used to inform the field survey and reporting.

2.2 Field Survey

A series of transects were undertaken at 20m intervals parallel to the shoreline and these extended across the intertidal flats into the channel, as far as could be safely waded. A glass-bottomed bucket was used to view the substrate and search for the target species. At the furthest point from shore, where the water depth prevented the surveyor from continuing, the grapnel was thrown out into the channel to trawl for species evidence.

The following equipment was used:

- Grapnel;
- Glass-bottomed bucket;
- GPS; and
- Camera.

The area surveyed is shown in Drawing No 161511j/003, Appendix A.

¹ SNH SiteLink, available from <http://gateway.snh.gov.uk> (accessed 24/05/12)

² <http://www.north-ayrshire.gov.uk/BusinessAndTrade/PlanningAndBuildingStandards/LocalPlan-GeneralInformation.aspx> (accessed 24/05/12)

³ <http://www.biodiversityscotland.gov.uk/advice-and-resources/scottish-biodiversity-list/how/> (accessed 24/05/12)

⁴ NBN Gateway Available from <http://data.nbn.org.uk> (accessed 24/05/12)

⁵ <http://www.marlin.ac.uk/species.php> (accessed 24/05/12)

⁶ <http://jncc.defra.gov.uk/page-5717> (accessed 24/05/12)

⁷ http://www.ayrshire-jsu.gov.uk/albap_reports.html (accessed 24/05/12)

⁸ Marine Environmental Consultants (2005) Intertidal habitat Survey: Portencross SSSI, North Ayrshire, ERT 1415.

DH Ecological Consultancy (2005) Nationally Scarce plant survey and woodland national Vegetation Classification survey of Portencross SSSI, North Ayrshire. Scottish Natural Heritage Commissioned Report No. 080 (ROAME No. FO4L107)

2.3 Constraints

There is an area of subtidal habitat located immediately in front of the existing quay that has previously been dredged. This area was too deep to safely wade and the sea bed could not be viewed with the glass-bottomed bucket. The grapnel was thrown out into the dredge area to check for the target species. However, it was not possible to reach all areas of the dredge footprint due to the depth of the channel. This restriction was not considered to significantly affect the survey results for the following reasons:

- The target species are unlikely to utilise habitat in deep water (eelgrass is associated with water depths up to four metres and horse mussel will tolerate depths up to five metres).
- The grapnel, when trawled into the dredge pocket returned with large wrack species. These species shade out species such as eelgrass.
- No evidence of washed out eelgrass or horse mussels was found in the intertidal habitat immediately adjacent to the dredge area. This could be expected where beds of these species are present.

3. RESULTS

3.1 Desk Study

The desk study results are presented in Table 3.1. These relate the existence and details of designated areas and of previous data available on the habitats and species of interest.

Table 3.1: Desk Study Results

Source	Feature	Description
SNH Sitelink	Portencross Site of Special Scientific Interest (SSSI)	<ul style="list-style-type: none"> • Located immediately adjacent to the south east of the proposed works. • A great variety of seashore habitats with interesting plants and the best mud flats for wildfowl and waders in the Clyde.
North Ayrshire Local Plan	Southannan Site of Importance for Nature Conservation (SINC)	<ul style="list-style-type: none"> • Located approximately 1.5km to the north east of the proposed works. • SINC No. 86 in Local Development Plan.
Scottish Biodiversity List	Eelgrass and Horse mussel Dwarf eelgrass	<ul style="list-style-type: none"> • Included on the priority list for the UK, and which are present in Scotland. • Included to ensure consistency in approach between terrestrial/freshwater habitats/species and marine features and ensures that Scotland can help the UK to meet its international obligations for marine features. • Identified as important by the Scottish public. • An observed, estimated, inferred or suspected significant decline (exceeding expected or known natural fluctuations) in numbers, extent or quality of a marine habitat or species in Scotland (for species, quality relates to life history parameters). Significant decline should be assessed as 25% reduction of area or numbers, or other appropriate threshold (which must be stated and justified). -included to be consistent with the UK criteria.
NBN Gateway	Horse mussel (<i>Modiolus modiolus</i>) Eelgrass (<i>Zostera marina</i>) Eelgrass (<i>Zostera noltii</i>)	<ul style="list-style-type: none"> • No records within site boundary. Closest records of blue mussel beds are at Millport approx.1.5km to the west. • No records within search area. • No records within search area.
UK BAP	Seagrass (eelgrass) Beds Horse Mussel Beds	<ul style="list-style-type: none"> • UK Priority Habitat with a Habitat Action Plan (HAP) • UK Priority Habitat with a Habitat Action Plan (HAP)
Ayrshire LBAP	Intertidal Zone: sediment shores and Benthic Zone	HAP to safeguard the associated sublittoral flora and fauna. The target species (<i>Zostera and Modiolus</i>) are not listed as priority species under the LBAP but form components of the key habitats for which Local HAPs have been prepared.

Table 3:1 Desk Study Results (Cont'd)

Marine Life Information Network (MarLIN)	Common eelgrass Dwarf eelgrass Horse mussel	<ul style="list-style-type: none"> • National Importance – scarce • National Importance – scarce • Not listed under any importance categories
Intertidal Habitat Survey: Portencross Coast (SSSI), North Ayrshire	Dwarf eelgrass	<ul style="list-style-type: none"> • <i>Zostera noltii</i> bed on Southannan Sands opposite Fairlie Village, approx 1.7km from the proposed works. • <i>Zostera noltii</i> bed on Hunterston sands approx. 700m to the south of the site. • Significant densities of eelgrass were recorded at each of the above sites. The survey was completed during 2005.
Nationally Scarce Plant Survey and woodland National vegetation Classification survey of Portencross SSSI, North Ayrshire	Common eelgrass Dwarf eelgrass	<ul style="list-style-type: none"> • No plants were found. • Extensive beds were recorded covering 15ha on Southannan Sands and 18ha on Hunterston Sands immediately adjacent to the site.
EnviroCentre Report	Dwarf eelgrass	<ul style="list-style-type: none"> • <i>Zostera noltii</i> bed on Southannan Sands was surveyed and mapped in 2010.

Blue mussel (*Mytilus edulis*) has not been identified by Marine Scotland as a target species for inclusion in the Environmental Review. However, this species forms a UK BAP Priority Habitat for which a HAP has been prepared. Extensive blue mussel beds have been recorded on the lower shore on Southannan Sands opposite Fairlie Village, approx 1.7km from the proposed works⁹.

3.2 Field Survey

The survey was completed on 3rd May 2012 during optimal survey conditions, low tide (0.4m), flat sea, excellent visibility (Photo 1).



Photo 1: Optimal survey conditions

No evidence of dwarf or common eelgrass, horse mussel or blue mussel was discovered in the survey area.

⁹ Marine Environmental Consultants (2005) Intertidal habitat Survey: Portencross SSSI, North Ayrshire, ERT 1415.

The survey area is characterised by fine sand and sandy mud substrates with occasional cobbles and pebbles close to the strandline and bordering the rock armour that forms the landward survey boundary (Photos 2 and 3).



Photo 2: Foreshore where extended rock armour and dredging will occur.



Photo 3: Area in front of existing quay to be dredged.

3.3 Discussion

The survey area is located on a moderately exposed shoreline, resulting in suboptimal conditions for the target species (horse and blue mussel can tolerate moderately tide swept areas). Exposed areas of coast receive greater wave action and turbulence which can prevent the target species becoming established. The existing colonies of eelgrass, blue and horse mussel (refer to Table 4.1) are found in sheltered areas of coastline. Furthermore, the presence of these species in areas adjacent to the site in conjunction with their absence from within the site, suggests habitat conditions are unsuitable as otherwise these species would extend their current distribution in the locality.

3.4 Conclusion

The survey concludes that eel grass beds featuring *Zostera noltii* and *Z. marina*, blue mussel (*Mytilus edulis*) and horse mussel (*Modiolus modiolus*), although they have been identified in areas adjacent to the site, are not present within the dredging footprint at Hunterston Quay.

4. MITIGATION

The following mitigation is provided as eelgrass and mussel beds are present adjacent to the site. The target species are sensitive to smothering and increases in suspended sediment/turbidity in the water column and these effects could result from dredging activities. As such:

1. Consideration should be given to the use of a suction hoe dredger as this will reduce the quantity of sediments in the water column.
2. Activities where there is a higher risk of sediment being released in larger quantities could be undertaken when the tide is receding thus sediments would not be washed onto the shoreline.

APPENDIX A

Drawings