

**Marine Licence Application for Construction Project  
Extension to Marshalling Area at  
St Margaret's Hope Pier, Orkney**

**Revision no.1**

**February 2019**

## **Marine Licence Application for Construction Projects**

Version 1.0

### **Marine (Scotland) Act 2010**

# Marine Licence Application for Construction Projects

Version 1.0

## Marine (Scotland) Act 2010

**It is the responsibility of the applicant to obtain any other consents or authorisations that may be required.**

**Under Section 54 of the Marine (Scotland) Act 2010, all information contained within and provided in support of this application will be placed on a Public Register. There are no national security grounds for application information not going on the Register under the 2010 Act.**

### Public Register

Do you consider that any of the information contained within or provided in support of this application should not be disclosed:

(a) for reasons of national security; YES ☐ NO ☒

(b) for reasons of confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate commercial interest? YES ☐ NO ☒

If **YES**, to either (a) or (b), please provide full justification as to why all or part of the information you have provided should be withheld.

## WARNING

It is an offence under the Act under which this application is made to fail to disclose information or to provide false or misleading information.

Target duration for determination is 14 weeks. Please note that missing or erroneous information in your application and complications resulting from consultation may result in the application being refused or delayed.

Marine licence applications will not be accepted unless accompanied by a cheque for the correct application fee, or if an invoice is requested, until that invoice is settled. Target timelines for determining applications do not begin until the application fee is paid.

### Declaration

I declare to the best of my knowledge and belief that the information given in this form and related papers is true.

Signature

Date

10/2/19

Name in BLOCK LETTERS Redacted

### Application Check List

Please check that you provide all relevant information in support of your application, including but not limited to the following:

- |  |                                     |
|--|-------------------------------------|
| • Completed and signed application form  | <input checked="" type="checkbox"/> |
| • Project Drawings   | <input checked="" type="checkbox"/> |
| • Maps/Charts  | <input checked="" type="checkbox"/> |
| • Co-ordinates of the boundary points of the area of harbour jurisdiction (if you are a statutory harbour authority) | <input checked="" type="checkbox"/> |
| • Method Statement   | <input checked="" type="checkbox"/> |
| • Photographs of the location of the project   | <input checked="" type="checkbox"/> |
| • Additional information e.g. consultation correspondence (if applicable)  | <input checked="" type="checkbox"/> |
| • Noise Registry – Initial Registration Form (if applicable)   | <input type="checkbox"/>            |
| • Pre-application Report (if applicable)   | <input checked="" type="checkbox"/> |
| • Environmental Statement (if applicable)  | <input type="checkbox"/>            |
| • Payment (if paying by cheque)  | <input type="checkbox"/>            |

**1. Applicant Details**

Title: Redacted Initials: Redacted Surname: Redacted

Trading Title (if appropriate): PENTLAND FERRIES

Address: PIER ROAD  
ST MARGARET'S HOPE  
Orkney, kw17 2SW

Name of contact (if different): N/A

Telephone No. (inc. dialing code): Redacted

Email: Redacted

Statutory Harbour Authority? YES ☐ NO ☒

If **YES**, please provide a list of the latitude and longitude co-ordinates (WGS84) of the boundary points of the area of harbour jurisdiction using Appendix 01 Additional Co-ordinates form if necessary.

**2. Agent Details (If any)**

Title: Redacted Initials: Redacted Surname: Redacted

Trading Title (if appropriate): BRECK ENVIRONMENTAL CONSULTANCY

Address: SUMMERHILL  
STRATHPEFFER  
ROSS-SHIRE, IV14 9AZ

Name of contact (if different): N/A

Telephone No. (inc. dialing code): Redacted

Email: Redacted

**3. Payment**

Enclosed Cheque ☐ Invoice ☒

Contact and address to send invoice to:

Applicant ☒ Agent ☐ Other ☐

If **OTHER**, please provide contact details:

Title: Initials: Surname:

Address:

Email:

#### 4. Application Type

Is this application for a new construction site or an existing construction site:

New Site ☐

Existing Site ☒

If an **EXISTING SITE**, please provide the consent/licence number and expiry date:

Consent/Licence Number	Expiry Date
05972/17/10	07/03/18

#### 5. Project Details

(a) Brief description of the project (e.g. construction of a new sea outfall):

Extension to existing marshalling area for ferry traffic - see appendix to Paragraph 5(a0)

(b) Total area of the proposed works (in square metres):

2873 m<sup>2</sup>

(c) Proposed start date (Target duration for determination of a marine licence application is 14 weeks):

on receipt of licenc

(d) Proposed completion date:

12 months after

(e) Cost of the works seawards of the tidal limit of MHWS:

££185 000

(f) Location:

ST MARGARET'S HOPE, ORKNEY  
ND 44550 94025

Latitude and Longitude co-ordinates (WGS84) defining the extent of the project (continue on Appendix 01 Additional Co-ordinates form if necessary):

Latitude									
5	8	°	4	9	.	8	7	0	'N
5	8	°	4	9	.	8	7	1	'N
5	8	°	4	9	.	7	8	4	'N
5	8	°	4	9	.	7	7	4	'N
5	8	°	4	9	.	8	1	0	'N
5	8	°	4	9	.	8	1	6	'N
		°			.				'N
		°			.				'N
		°			.				'N
		°			.				'N

Longitude										
		2	°	5	7	.	7	4	5	'W
		2	°	5	7	.	7	3	0	'W
		2	°	5	7	.	7	0	7	'W
		2	°	5	7	.	7	1	9	'W
		2	°	5	7	.	7	4	6	'W
		2	°	5	7	.	7	3	3	'W
			°			.				'W
			°			.				'W
			°			.				'W
			°			.				'W

(g) Is the project located within the jurisdiction of a statutory harbour authority?

YES ☒ NO ☐

If YES, please specify statutory harbour authority:

ST MARGARET'S HOPE PIER TRUSTEES see append. to para 5(g)

(h) Method statement including schedule of work (continue on separate sheet if necessary):

SEE APENDIX TO PARAGRAPH 5 (h)

(i) Potential impacts the works may have (including details of areas of concern e.g designated conservation and shellfish harvesting areas) and proposed mitigation in response to potential impacts (continue on separate sheet if necessary):

No impacts envisaged

A Eurasian otter survey was carried out for previous application (05972/17/10) dated 22/3/18

See appendix to paragraph 5(i) and enclosed copy of survey

## 6. Deposits and/or Removals

(a) Permanent substance(s) or object(s) to be deposited and/or removed from below MHWS (continue on a separate sheet if necessary):

Type of Deposit/Removal	Deposits		Removals	
	Description	Quantity & Dimensions (metric)	Description	Quantity & Dimensions (metric)
Steel/Iron	sheet piles channels nuts reinforcement appendix 6(a)	No.		No.
		Dimensions		Dimensions
		101.2t Weight (kg/tonnes)		Weight (kg/tonnes)
Timber		No.		No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Concrete	foundation wall anchor blocks	No.		No.
		Dimensions		Dimensions
		1693t Weight (kg/tonnes)		Weight (kg/tonnes)
Plastic/Synthetic	geotextile	630 m <sup>2</sup>		m <sup>2</sup>
Clay ( $< 0.004$ mm)		Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		200t Weight (kg/tonnes)		Weight (kg/tonnes)
Silt ( $0.004 \leq \text{Silt} < 0.063$ mm)		Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)
Sand ( $0.063 \leq \text{Sand} < 2.0$ mm)		100% Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)
Gravel ( $2.00 \leq \text{Gravel} < 64.0$ mm)		151% Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)
Cobbles ( $64.0 \leq \text{Cobbles} < 256.0$ mm)		100% Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)
Boulders ( $\geq 256.0$ mm)		Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)



Pipe		40	Length (m)		Length (m)
			External Diameter (cm/m)		External Diameter (cm/m)
Other (please describe below):					
sewage tr.pl.	GRP tank	1tonne			

(b) Method of delivery of substance(s) or object(s):

All steel is at present in store adjacent to site  
Concrete, clean crushed stone etc delivery by road

(c) For work involving salt marsh feeding, beach replenishment or land reclamation please provide the following information relating to the substance(s) or object(s) to be deposited:

Quantity (tonnes):

N/A tonnes

Nature of substance(s) or object(s) (e.g. sand, silt, gravel etc.):

Source (if sea dredged state location of origin)

Particle size:

Have the substance(s) or object(s) been chemically analysed?  
If YES, please include the analysis data with your application

YES ☐ NO ☐

(d) Temporary substance(s) or object(s) to be deposited below MHWS (continue on a separate sheet if necessary):

Type of Deposit	Description	Quantity & Dimensions (metric)	
Steel/Iron		7	No.
			Dimensions
		4.45t	Weight (kg/tonnes)
Timber			No.
		100sq m	Dimensions
			Weight (kg/tonnes)

Concrete		No.
		Dimensions
		Weight (kg/tonnes)
Plastic/Synthetic		m <sup>2</sup>
Clay ( $< 0.004$ mm)		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)
Silt ( $0.004 \leq \text{Silt} < 0.063$ mm)		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)
Sand ( $0.063 \leq \text{Sand} < 2.0$ mm)		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)
Gravel ( $2.00 \leq \text{Gravel} < 64.0$ mm)		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)
Cobbles ( $64.0 \leq \text{Cobbles} < 256.0$ mm)		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)
Boulders ( $\geq 256.0$ mm)		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)
Pipe		Length (m)
		External Diameter (cm/m)
Other (please describe below):		

**7. Disposal of Dredged Substance(s) or Object(s) at Sea**

(a) Do you intend to apply for a marine licence for sea disposal of dredged substance(s) or object(s) as part of the project?

YES ☐ NO ☒

If YES, please specify nature of substance(s) or object(s) (e.g sand, gravel, silt, clay, rock etc.):

--

(b) Quantity of substance(s) or object(s) (wet tonnes):

	wet tonnes
--	------------

**A separate marine licence application will be required to be submitted for sea disposal.**

## 8. Noise Monitoring

Will loud, low to mid frequency (10Hz to 10kHz) impulsive noise be produced by the project?

YES ☐ NO ☒

If **YES**, which please indicate the noise generating activities and sound frequencies:

Noise Generating Activity	Sound Frequency (Hertz)
Use of Explosives	
Use of Acoustic Deterrent Devices	
Piling	
Other (please describe below):	

If you have ticked **YES**, please complete the Noise Registry – Initial Registration form located at:  
<http://www.scotland.gov.uk/Topics/marine/science/MSInteractive/Themes/noise-reduction>

**Marine licence applications will not be accepted until this form has been completed and submitted.**

## 9. Statutory Consenting Powers

Do you, or (if appropriate) your client, have statutory powers to consent any aspect of this project?

NO

## 10. Scotland's National Marine Plan

Have you considered the application with reference to Scotland's National Marine Plan?

YES ☒ NO ☐

If **YES**, provide details of considerations made with reference to the policies, including but not limited to General Policies 7 and 13 (GEN 7 and GEN 13), that have been considered:

See appendix to paragraph 10

If **NO**, please provide an explanation of why you haven't considered the National Marine Plan?

## 11. Pre-Application Consultation

Is the application subject to pre-application consultation, under The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013?

YES ☒ NO ☐

If **YES**, please indicate the date of the public notice for the pre-application consultation event and the type of consultation event held (a copy of the public notice must be supplied with this application):

Event Type	Date
Public notice	22 March 2018
Public meeting	7 May 2018

## 12. Consultation

List all bodies you have consulted and provide copies of correspondence:

St Margaret's Hope Pier Trustees  
SEPA  
Historic Environment Scotland  
Northern Lighthouse Board  
MCA

See appendix to paragraph 12

## 13. Environmental Assessment

(a) Does the project fall under Annex I or II of the EIA Directive?

Annex I ☐

Annex II ☐

Neither ☒

If **ANNEX I** or **ANNEX II**, please provide the screening opinion issued to you in relation to the project.

(b) Has an EIA been undertaken:

for the marine licence application to which this application relates  
for any other EIA regulator (e.g local authority)

YES ☒ NO ☐  
YES ☐ NO ☐

## 14. Associated Works

Provide details of other related marine projects, including reference/licence numbers (if applicable):

Sea outfall to LWMST does not cross the foreshore but will require to be licensed by SEPA  
See appendix to paragraph 10

## Appendix to Paragraph (5a)

### Description of Proposed Works

The marshalling area at St Margaret's Hope Pier was constructed about 14 years ago and extended in 2017. With the increased amount of traffic using the ferry route between St Margaret's Hope and Gill's Bay in Caithness Pentland Ferries has now ordered a larger ferry and an increased marshalling area is required. This would also remove queueing traffic from the main road.

The area of the extension of the marshalling area will be 2873 m<sup>2</sup> and will fill in a fairly useless area of the foreshore between the existing marshalling area and the main road as can be seen on drawing no SMH 311B.

The seaward face of the proposed works will be steel sheet piles. These are at present on site welded into panels. Their maximum thickness is 10 mm.

The sheet piles cannot be driven as they are already welded and consequently they will be set into a concrete foundation.

Allowing for corrosion in the splash zone of 0.075 mm per side per year, it is clear that these piles would be unserviceable in 30 to 40 years. Consequently a concrete wall 600 mm thick will be cast against the inner face of the piles. This will remove all localised pressure from the piles and the structure will remain in a safe condition even if the piles suffer severe corrosion. The piles/ concrete wall will be retained using 75 mm steel tie rods and 1 m<sup>3</sup> anchor blocks located within the fill material.

There will be drain holes in the piles/concrete wall and clean gravel drainage paths within the fill.

The bulk of the fill will comprise quarried stone, boulders and secondary aggregate. All voids will be filled with sand, silt or scalplings to create a solid fill.

The fill material will be left possibly in excess of a year to ensure that it has drained and that all settlement has taken place. When all settlement has taken place a structural reinforced concrete deck slab will be cast on top of the temporary surface. The construction of this deck does not form part of this application as it is above HAT.

The final reinforcing to the deck slab will be tied to the reinforcing bars in the 600 mm concrete wall to give added support to the whole structure.

A suitable handrail will be erected on top of the 600 mm concrete wall.

A new office and cafeteria will later be constructed on the extended marshalling area and will be served by a sewage treatment plant giving a 30:20 SS:BOD standard with the outfall to LWMST.

### Appendix to Paragraph 5(c)

#### Duration of Project

The work will start on site immediately following the granting of the licence.

The construction will last for approximately 12 months. This does not include the construction of the reinforced deck slab. This is above HAT and as such does not form part of this application. It is probable that vehicles would use the extended marshalling area for several months to allow for all settlement before the concrete slab is cast.

Appendix to Paragraph 5(e)

Estimated gross cost of the proposed works

All materials are at present owned by Mr Andrew Banks/Pentland Ferries and are in stock adjacent to the site of the works with the exception of the concrete, the clean gravel for the drainage layers, some of the reinforcing mesh for the deck slab.

The estimated cost of the works does not include the cost of the materials in stock as they are mainly materials left over from previous contracts and will have been charged against these contracts and will have been notified in previous applications.

The cost of the deck slab and any concrete above HAT are not included.

The cost of the GRP sewage treatment plant tank is included but not the compressors or controls which will be housed in an annex to the office building at a later date. The cost of the sealed steel cover to the STW is not included.

The main costs are the charge out rate for the 35 tonne excavator and the concrete batching plant which will be used for the construction of the foundations and the concrete backing to the sheet pile wall. All plant is owned by Pentland Ferries. These are the only pieces of plant which will be used on site.

The estimated gross cost of the proposed works is £185 000.

Appendix to Paragraph 5(f)

The location of the project is shown on the Location Plan which forms part of Drawing no SMH 311B.

It is a copy of part of 1:25000 scale ND with the central part of the construction being ND 44550 94025

The area of the construction is bounded by the following co-ordinates:

1. N 58° 49.870'	W 2° 57.745'
2. N 58° 49.871'	W 2° 57.730'
3. N 58° 49.784'	W 2° 57.707'
4. N 58° 49.774'	W 2° 57.719'
5. N 58° 49.810'	W 2° 57.746'
6. N 58° 49.816'	W 2° 57.733'

These co-ordinates are shown on drawing no SMH 311B.



Appendix to Paragraph 5(g)

1. The planning authority for the area is  
Orkney Islands Council  
Council Offices  
School Place  
Kirkwall, KW15 1NY

However the planning authority for marine works within the harbour area at St Margaret's Hope is

2. The Clerk to St Margaret's Hope Pier Trustees  
Heads  
St Margaret's Hope  
Orkney, KW17 2TL
3. The land owner is Redacted who owns the foreshore to LWMST
4. Local Harbour Authority is St Margaret's Hope Pier Trustees

## Appendix to Paragraph 5(h)

### Method Statement

The sheet piles for the retaining wall are already welded into panels and consequently cannot be driven. The panels will require to be set into the wet concrete foundation.

Using a 35 tonne tracked excavator remove all silt, sand etc from beach area from existing sea wall to location of foundation and stock pile on site for later use.

Excavate for foundation and stock pile excavated material on site for later use.

Place concrete blocks at intervals in the foundation excavation to ensure that the sheet pile panels do not reach the bottom of the foundation thus cutting it into two halves.

Allowing for 3 deliveries of ready-mix concrete per day, i.e. about 20 m<sup>3</sup>, this will be sufficient for a 10 m length of foundation. Erect temporary support for sheet pile panels and place panels in foundation excavation.

Cast concrete with an additive which prevents cement loss for underwater concrete into foundation excavation.

Once concrete has set, burn holes at 10m intervals in piling at foundation level and fix cuttings of pvc pipe for drainage.

Maintaining a support for the piles now in position, continue with setting the next 10 m length of panels as above.

Continue as above until all panels are in position.

Erect shutter behind panels and cast concrete wall 600 mm thick approximately 1500 mm high and position reinforcing bar.

Place first layer of quarried stone/boulders over the whole area and fill voids with sand/silt etc.

Place clean crushed stone as drainage layer between concrete wall and fill material. Place geotextile between fill and drainage layer.

Place or cast in situ concrete anchor blocks and fit steel tie bars.

Continue with next layer of fill material and fill voids with sand/silt/scalpings.

Erect shutter and construct concrete wall to full height.

Temporary support for sheet piles may now be removed.

Continue fill up to final level,

Cut tops of piles to line and level.

Use infilled area on a temporary basis possibly for over a year to allow all settlement to take place.

Erect batching plant for site batched concrete.

Set reinforcing mesh in position and cast concrete deck slab in alternate panels with 25 mm dowel bars linking panels.

Erect final handrail.

The above would indicate that each activity will be completed before the next starts. In practice, the construction of the concrete wall will probably start when placing of the panels is about 10 m ahead and the placing of fill and drainage material will start as soon as the shutters for the concrete wall have been struck.

#### Additional work for sewage treatment plant

Cast concrete base to line and level on cleaned foreshore behind piles before infill has reached this point.

Cover concrete base with wet mortar and lower GRP tank on to base and position correctly. Fill tank with clean water to prevent flotation as tide rises. This also prevents the tank from distorting when the concrete surround is cast.

Erect shutters and place 300 mm thick anti-flotation concrete surround to tank.

Remove shutters and continue with infill.

100 mm outfall pipe to be constructed vertically within concrete wall and through piles to LWMST. Chamber for anti-flood valve constructed at outfall of tank.

Appendix to Paragraph 5(i)

When the application was made for the previous extension to the marshalling area in 2016 a Eurasian otter survey was carried out for Pentland Ferries by NDR (Environmental Services. A copy is enclosed.

It is not anticipated that there will have been any change since the survey was carried out.

**Proposed extension of marshalling  
area at the Ferry terminal -**

**Pier Road, St. Margaret's Hope,  
South Ronaldsay ORKNEY ISLES**

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*Eurasian otter survey*

**NDR (Environmental Services)**

**Ecological survey report**

prepared for

**Pentland Ferries Ltd**

**[22nd March 2016]**

Redacted

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**Public - unrestricted**

**Project no.:** 503[1603.12]\pf

**Report no.:** EcIA:A.rd1\pf

**Issue no.** issue 1

**Submission Date:** 28th April 2016



**NDR (Environmental Services)**

24 Harland Road, Castletown  
Caithness, Highland  
KW14 8UB  
SCOTLAND

## Report Summary Sheet

**Title** Proposed extension of marshalling area at the Ferry terminal - Pier Road, St. Margaret's Hope, South Ronaldsay ORKNEY ISLES: Eurasian otter survey

**Client** Pentland Ferries Ltd

**Client Reference** 22nd March 2016

**Short description of investigation**

NDR(ES) has been commissioned, by Pentland Ferries Ltd, to undertake an objective otter survey of the area including and surrounding their proposed extension to the marshalling area of the ferry terminal at St. Margaret's Hope.

Marine Scotland have requested the otter survey to be undertaken to determine the likelihood of any impact and whether a species protection plan is required.

This report will review the available data in order to undertake the required assessment and, if appropriate, provide a robust species protection plan.

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This document has been prepared by NDR (Environmental Services) concerning a contract to supply goods and or services and is submitted in accordance with the specified remit of the contract. This report is prepared to comply with the appropriate scientific and legislative standards.

This document shall be deemed to be a draft and incomplete version until such time that it bears an authorising signature on behalf of NDR (Environmental Services). The accuracy of the information or advice contained within this document cannot be relied upon whilst remaining in a draft or incomplete state. Reproduction of any part of this report is strictly forbidden without the written consent of the authorising signatory.

**Report No.** EcIA:A.rd1\pf

**Report Status** issue 1

**Principal Author  
co-authors**

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### NDR (Environmental Services)

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	Name	Signature	Date
Principal Author	Redacted		28 <sup>th</sup> April 2016
Reviewed by	Redacted		2 <sup>nd</sup> May 2016
Authorised by	Redacted		26 <sup>th</sup> May 2016

**Citation:**

Redgate, N. D. (2016) Proposed extension of marshalling area at the Ferry terminal - Pier Road, St. Margaret's Hope, South Ronaldsay ORKNEY ISLES: Eurasian otter survey. NDR(ES) Ecological survey report for Pentland Ferries Ltd. Report - EcIA: A.rd1\pf. NDR(ES), Castletown. 24pp

## Revision History

Issue	Date	Nature & location of amendment
Draft	22 <sup>nd</sup> April 2016	Document first created
1	26 <sup>th</sup> April 2016	Document authorised and issued

## Executive Summary

NDR(ES) has been commissioned, by Pentland Ferries Ltd, to undertake an objective otter survey of the area including and surrounding their proposed extension to the marshalling area of their ferry terminal at St. Margaret's Hope, South Ronaldsay, ORKNEY.

Marine Scotland has requested the otter survey to be undertaken to determine the likelihood of any impact and whether a species protection plan is required.

This report will review the available data in order to undertake the required assessment and, if appropriate, provide a robust species protection plan.

A standard walkover the site and land within 500m was undertaken on 8<sup>th</sup> April 2016.

The brief summary of the reports findings are -

- ◆ The local population of Eurasian otter, *Lutra lutra*, infrequently visits St. Margaret's Hope Bay and on such visits appears to avoid the ferry terminal and adjacent land.
- ◆ An unused holt has been located 400m north of the proposed development site.
- ◆ The development itself will have a neutral impact on the local population of Eurasian otter.
- ◆ As there is no evidence of the local population of Eurasian otter utilising the proposed development site, a Protected Species plan is not required.
- ◆ As a precaution and to implement good site practice, recommended actions are provided for incorporation in to the site management plan during construction.



## 1.0 Introduction

### 1.1 PURPOSE OF REPORT

Our client is seeking planning permission to extend the marshalling area at their ferry terminal at Pier Road, St. Margaret's Hope, South Ronaldsay, ORKNEY.

Marine Scotland has requested the otter survey to be undertaken to determine the likelihood of any impact and whether a species protection plan is required.

NDR(ES) has been commissioned to undertake an objective otter survey for this proposed planning application. This report will review the available data in order to undertake the required assessment and, if appropriate, provide a robust species protection plan.

### 1.2 DEFINITIONS

The following definitions are used throughout this report -

<i>couch</i>	temporary above ground resting place (often during daylight) of the Eurasian animal. It is formed by the otter pulling up tall vegetation and flattening it.
<i>holt</i>	the dwelling place of the Eurasian otter. It is usually a hole in a bank (often with an entrance under water) but also can be located well away from any watercourse. Entrances are frequently overhung by surrounding vegetation.
<i>spraint</i>	faecal pellets of the Eurasian otter.

Photographs, tables and figures are inserted at the appropriate place within the text of the report. All maps are collated and presented at the end of the relevant section. All illustrative material is numbered after the relevant section.

Nomenclature follows that of *The National Biodiversity Network's Species Dictionary* managed by the Natural History Museum<sup>1</sup>, with reference to Harris & Yalden (2008)<sup>2</sup>.

All measurements follow the SI units, time (GMT) and the orientation readings are expressed to the nearest compass point.

### 1.3 COMPETENCY

The author has over 30 years experience of investigating and studying highland & island ecology through surveys and ecological impact assessments. Through these observations it has become apparent that the ecology of the Highlands and Islands is different to the rest of mainland Scotland, as populations are at the edge of their distributional range and occupy sub-optimal biotopes. The author is currently developing and researching the principles of this Fringe Ecology in order to investigate and ratify these observations, develop appropriate research protocols to improve investigative studies and provide a better understanding of the ecology of the Highlands and Islands.

The author was previously<sup>3</sup> registered as a Chartered Environmentalist and full member of the following organisations - Institute of Ecology & Environmental Management, Institute of Environmental Assessment & Management, International Association of Impact Assessment, Bat Conservation Trust and Mammal Society. He is currently a Fellow of the British Naturalists' Association, Royal Entomological Society and a member of the British Ecological Society.

### 1.4 ACKNOWLEDGEMENTS

The author would like to take this opportunity to thank Orkney Wildlife Information and Records

<sup>1</sup> <http://nbn.nhm.ac.uk/nhm/>

<sup>2</sup> Harris, S. & Yalden, D.W. (eds) *Mammals of the British Isles: Handbook*, 4<sup>th</sup> ed. Mammal Society, Southampton. 799pp

<sup>3</sup> Withdrawn status as no longer full-time practitioner.

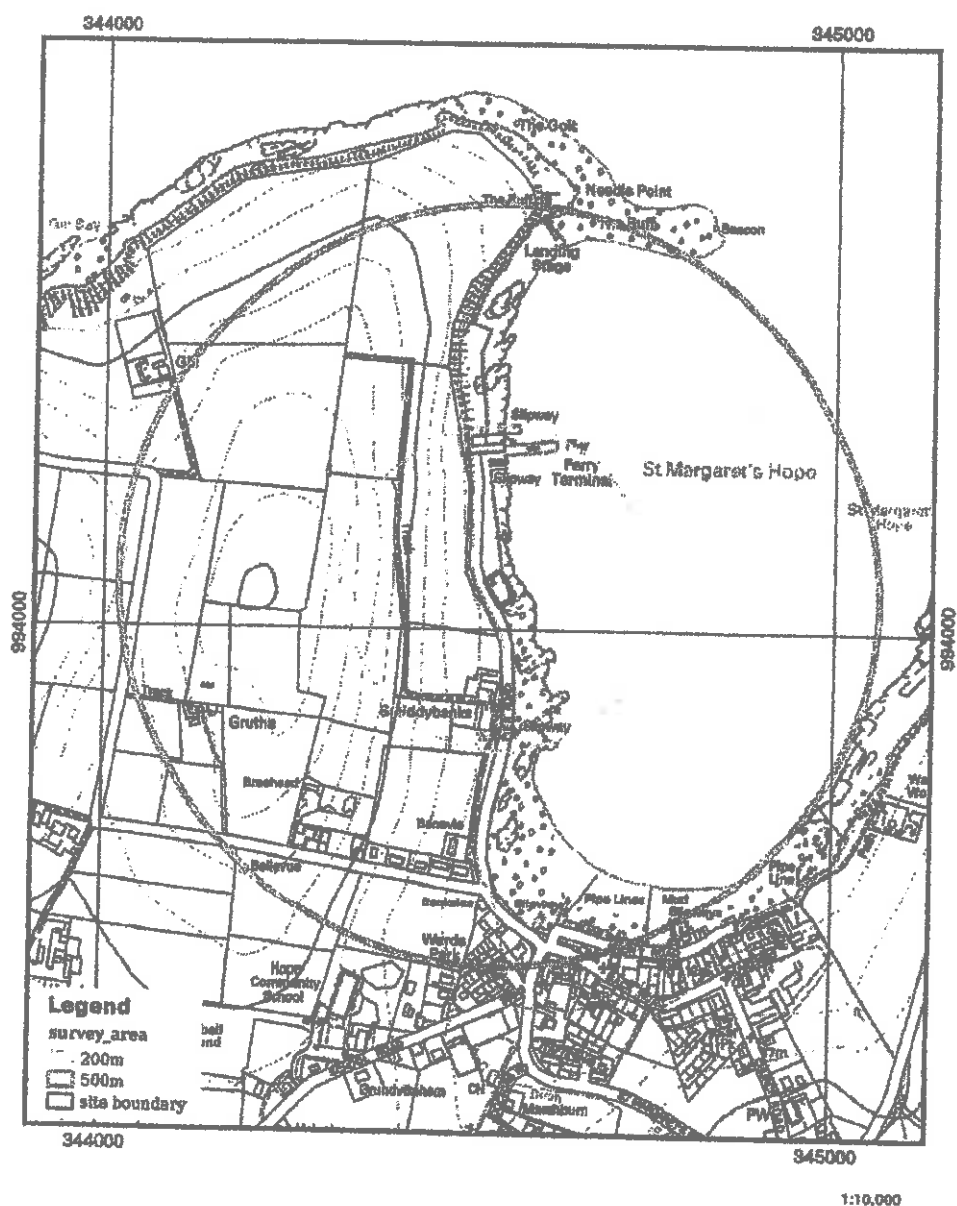
Centre (OWIRC) and National Biodiversity Gateway (NBN) for the provision of biological records.

## 2.0 Site description

## 2.1 LOCATION

The proposed development site is located immediately to the south of the existing marshalling area at our client's Ferry Terminal, on Pier Road, St. Margaret's Hope, South Ronaldsay.

Access to the site (ND 44539 94056) is at the southern corner of the marshalling area and the area of extension will not exceed 0.1/ha., see figure 2.1.



**Figure 2.1: Site location & survey area**

## 2.2 PHYSICAL ENVIRONMENT

### 2.2.1 LANDSCAPE

The landscape around the development site is a sheltered bay between two low lying headlands. The proposed development site is located on a cobble foreshore and abutted against the 4m high sea defence wall of Pier Road, see photograph 2.2.1a & b. The site is situated at the base of the east-facing slope of the Grutha headland.

The headland slope (a former raised beach coastline) is <10m in height: steep (~45°) to the south of the terminal with the gradient increasing (~57°) to the north of the terminal, along with isolated exposed cliff faces. The southern slope supports a thick cover of scrub consisting of small trees and shrubs with a luxuriant herbaceous ground cover. The northern slope is open, with a luxuriant grass sward and scattered trees. Above this former coastal cliff-line, the ground levels out and supports improved grassland with scattered field boundary shrubs, see figure and photographs 2.2.1.



Figure 2.2.1: Aerial image of site and location (9<sup>th</sup> May 2008)

## 2.2.2 Hydrology

Examining the ordnance map and aerial image shows no watercourses on the headland nor elsewhere within the survey area, see figures 2.1 & 2.2.1.

A small burn flows along the eastern edge of St. Margaret's Hope and enters the bay (ND 44955 93633) just outside the survey area. A culverted watercourse under the village flows into the bay (ND 44602 93577) at the centre of the village.

## 2.3 Biodiversity & Legal Designations

Scottish Natural Heritage<sup>1</sup> advise that there are no designated nature conservation sites or seal haul-out sites within the vicinity of the proposed development area. They further advise that the (Eurasian) otter, *Lutra lutra*, a European Protected Species (EPS), is known to occur widely around the coastline of Orkney. Both their breeding and resting sites are strictly protected under the The Conservation (Natural Habitats etc.) Regulations, 1994<sup>2</sup>.

Orkney Island Council<sup>3</sup> lists the (Eurasian) otter as a LBAP species.

## 3.0 Eurasian otter

### 3.1 Historical Data

The Eurasian otter occurs widely throughout the islands of Orkney. Data for the proposed development site and surrounding 10km<sup>2</sup> were provided by OWIRC and NBN, see figure 3.1.

All the records for the Eurasian otter in the northern half of South Ronaldsay are from survey(s) between 1979-1985 and individual records from 1969 or earlier. These records show a widespread occurrence – being recorded from all the 2x2km tetrads around the tetrad (ND49M), in which the ferry terminal is located. There are no records of the Eurasian otter for this particular tetrad (ND49M) and, hence, the area surrounding the proposed development site.

There are only five recent records (2010-2012) and these are from Burray, Glimps Holm and their associated Churchill Barriers, to the north of South Ronaldsay.

The otter is considered to commonly occur wherever there is a watercourse or on the coast. The absence of records for tetrad ND49M may well be a true reflection of the otter's distribution as it may well be deterred by the human activity in the bay. However, there is a single record (spraint) for the otter in the area of St. Margaret's Hope in 1968, which suggests that the otter has visited the bay. This may indicate that, due to the levels of human activity, visits maybe sporadic and, therefore, the likelihood of being observed is very low to not being seen. Our client reports that "none of their staff have seen an otter whilst working on and around the ferry terminal."

It is assumed that there are adequate food resources in the coastal waters for the local otter population and this resource is not a constraint on their occurrence in St. Margaret's Hope Bay. The lack of suitably sized watercourses in tetrad ND49M cannot be a causal factor in the otter's absence from this tetrad. The adjacent tetrads have very similar habitats and very few watercourses, as with the situation with tetrad ND49M. The Eurasian otter is known to travel considerable distances between watercourses and the coast.

Our client commissioned an otter survey "approximately 12 years ago" (~2003?) for a planning application for developing their ferry terminal. Unfortunately, neither our client nor their agent can find a copy of the survey report, which described a "walk over the site and shoreline: the survey did not find any evidence of otter being present" (Cross, pers.comm.).

1 Consultation 9<sup>th</sup> February 2016

2 The Conservation (Natural Habitats etc.) Regulations, 1994:SI 2716. Schedule 2 (as amended)

3 OIC (2002-2013) The Orkney Local Biodiversity Action Plan



**a: Proposed extension area**



**b: Coastal slope adjacent to proposed development area**

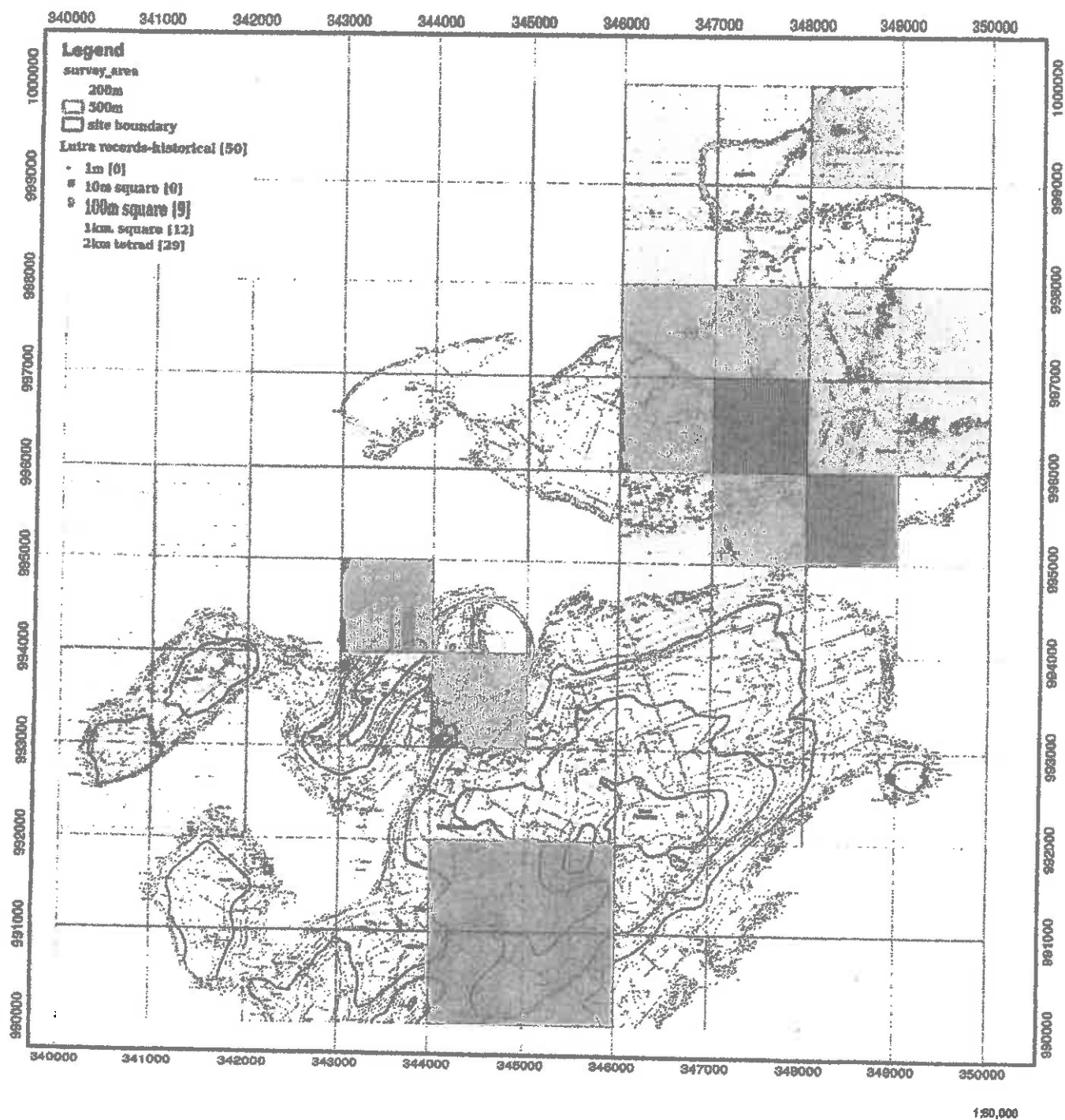


**c: Northern shoreline and coastal slope**



**d: The Ruff sea defences and cobble beach**

**Photograph 2.2.1: Development site and shoreline**



**Figure 3.1: Historical records of Eurasian otter in 10km. square ND49**  
 (deeper shading for 2x2km tetrad represents multiple records)

## 3.2 FIELD SURVEY

### 3.2.1 METHODOLOGY

The field survey was a standard walkover throughout the survey area, searching for field evidence of otter along coastal areas, watercourses and their neighbouring grounds. Whilst walking the coastline, the surveyor walked along the base of the cliffs and raised beaches and moved to the waterline where there were areas of furoid beds on the rocks.

The agricultural land on top of the cliff coastline was not surveyed due to the open landscape. Any holts or couches present would not be directly impacted by the proposed extension, as it is below the cliff top and confined to the foreshore area. This allowed the surveyor to examine the slopes more closely and any pathways observed would indicate a link between these resting places and the shoreline.

Standard guidelines recommend a survey area of 200m from the proposed development area. Due to the large distances otters travel in the Highlands both within and between territories and not being restricted to waterways, NDR(ES) own procedures recommends surveying areas up to 500m distance from the proposed development footprint and not to be confined to watercourses alone.

Field evidence includes spraints, holts, couches, tracks, trails and feeding evidence.

#### Professional obligations

Professional obligations require the surveyor to record any field evidence of the presence or possible presence of other protected and designated species or other ecological interests during the survey.

### 3.2.2 CONSTRAINTS

The time of year precluded the likelihood of discovering any couches due to the post-winter condition of the coastal vegetation. Much of the foreshore is a stony or cobble beach that would not allow the registering of footprints and tidal movement would wash away any spraints.

### 3.2.3 RESULTS

The field survey was conducted on 8<sup>th</sup> April 2016 between 10:15 and 16:00hrs. The weather conditions were bright, sunny with 6/8 cirrus cloud cover and warm with a southerly moderate breeze. The equinox Spring tide was at its highest level at 09:51 and had just begun to ebb at the start of the survey. There was good visibility and no frost or snow on the ground.

The current field survey found no evidence of recent otter activity within the survey area.

**Holts** A small holt (figure 3.2.3, no.1) was discovered to the north of the ferry terminal – holt (N) and is 400m north of the proposed development site. There is a pathway leading from this entrance downslope to the coast, see photograph 3.2.3. The holt is of similar size and location to coastal holts discovered on the north Caithness coastline.

Investigating the entrance and pathway showed no evidence of recent activity. Female otters are smaller than the male and are known to have a number of holts within their territorial range. This holt is most likely used on a very casual basis.

The survey discovered a hole (170m south of the proposed development site) in the sea defence wall that leads to a large dry cavity, see figure 3.2.3, no.2 and photograph 3.2.3e. This cavity has not been used as a holt but it has potential to be a one.

**Pathways & spraints** The only pathway observed was the infrequently used one leading from Holt (N). Investigating this pathway did not yield any spraints or footprints in the patches of damp soil which indicates no recent activity. No other pathway or trail was observed in the vegetation on the full length of the coastal slope within the survey area.

The culverted watercourse in St. Margaret's Hope and the small burn on the eastern edge of the village were investigated for any evidence of spraints, footprints and pathways. No such evidence was discovered.

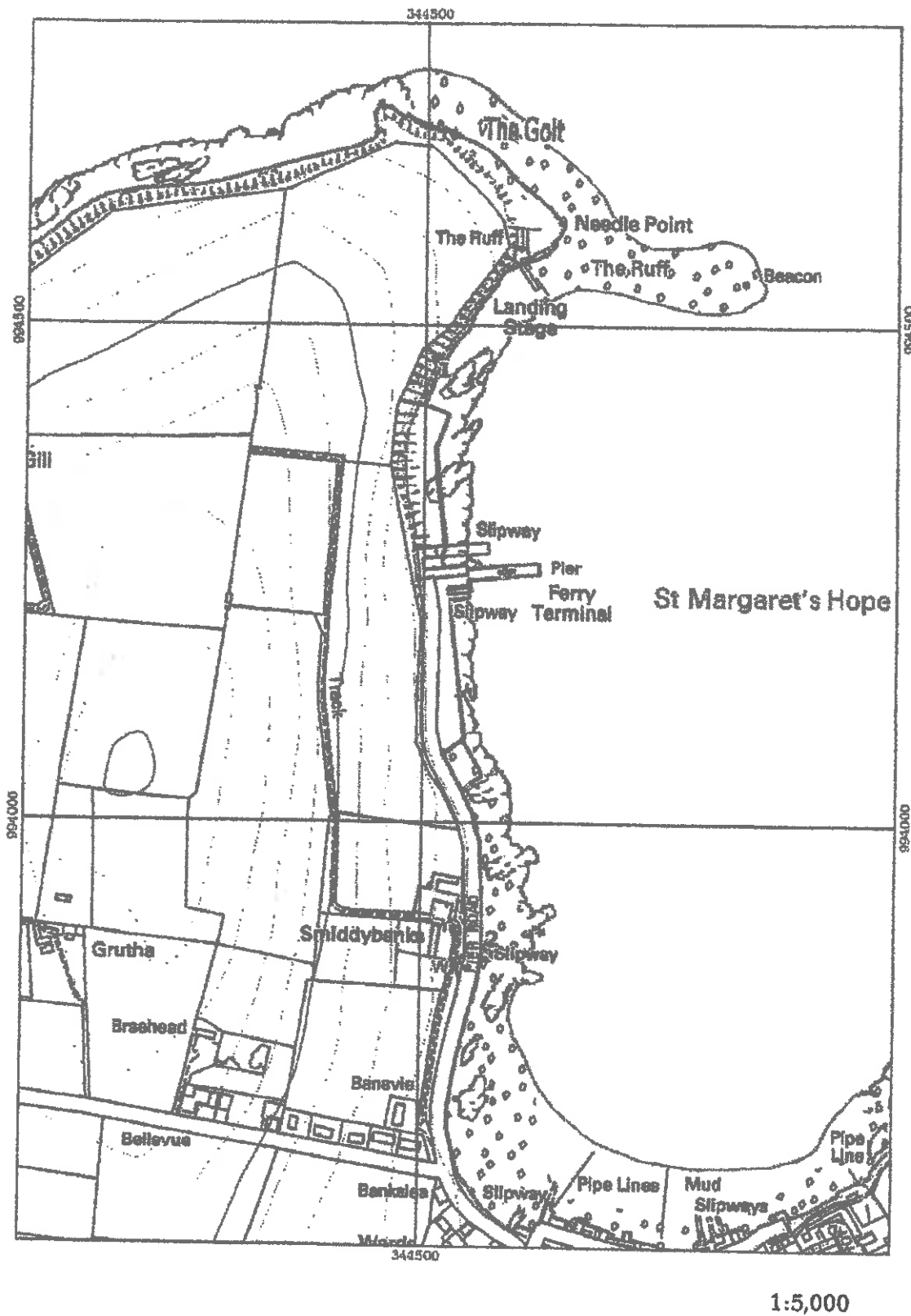


Figure 3.2.3: Eurasian otter survey results

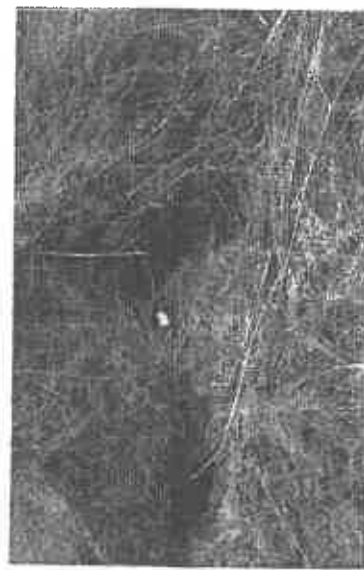




a: Potential holt (arrowed) – pathway can be followed to track

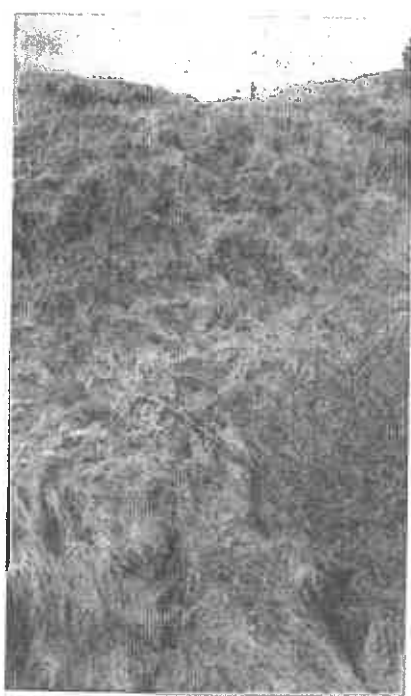


b: Potential holt (N) – entrance & upper pathway



c: Potential holt (N) entrance in mid-slope of northern shore line.  
(large brick – 32x16cm – provides scale)

*Photograph 3.2.3: Potential holt (N) – northern shoreline*



d: Potential holt (N) & pathway



e: Potential holt (S) site in sea defence wall

*Photograph 3.2.3 (cont'd): Potential holt (N) - northern shoreline & (S) - southern shoreline*

### 3.3 SUMMARY

Although there is a dearth of recent records, it is evident that the Eurasian otter occurs widely throughout the northern half of South Ronaldsay.

There is evidence that the otter is present in the area with only infrequent visits to St. Margaret's Bay and, then, the ferry terminal site and the adjacent area are avoided: the nearest evidence to the proposed development site is the currently unused holt (N), 400m north of the proposed development site. There is no evidence of any recent activity.

There are no anticipated impacts and, therefore, the residual impact on the local population of Eurasian otter is neutral.

### 3.4 Recommendations

As there is no evidence of the local population of Eurasian otter utilising the proposed development site, a Protected Species plan is not required.

However, it is recommended that our client's subcontractors follow standard site management practices to avoid any criminal offence being committed should an otter be present on site during construction. Under The Habitats Regulations 1994 (as amended in Scotland), it is an offence to deliberately or recklessly -

- capture, injure or kill such an animal;
- harass an animal or group of animals;
- disturb an animal while it is occupying a structure or place used for shelter or protection;
- disturb an animal while it is rearing or otherwise caring for its young;
- obstruct access to a breeding site or resting place, or otherwise deny the animal use of the breeding site or resting place;
- disturb an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs;
- disturb an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;
- disturb an animal while it is migrating or hibernating;

There is also an offence of strict liability to -

- damage or destroy a breeding site or resting place of such an animal. No motive is required for this offence. Also, these sites and places are protected even if the animal is not there.

It is recommended that the following actions be incorporated into the site management plan -

- ◆ During construction, ensure at night that all open ditches or excavations are covered or ramped (with wooden boards or similar) to enable easy exit by otters and other species;
- ◆ Where possible place caps over the end of all pipes stored on site, or store pipes in a vertical position to minimise risk of entrapment. Where pipes cannot be capped or stored vertically, ensure all pipes are checked for trapped / resting otters before use;
- ◆ Each morning all site storage and construction areas, including spoil piles, will be checked for the presence of otters. If an otter is discovered, seek advice from SNH and leave the otter undisturbed: the animal may well just leave the area in

its own time.

- ◆ Measures will be introduced throughout the site to reduce the potential for otters being injured or killed as a result of road traffic accidents. These measures will include the introduction of mandatory speed limits along the access road and track and throughout the site.

## Appendix to Paragraph 6(a)

### Steel

Sheet piles	81 tonnes
Steel channels	12 tonnes
Tie rods	4.7 tonnes
Nuts + washers for tie rods	234 kg
Nuts + washers for piles	766 kg
Steel reinforcement in wall	<u>2.5 tonnes</u>
Total steel	101.2tonnes

### Concrete

Foundations	405 m <sup>3</sup>
Wall	288 m <sup>3</sup>
Anchor blocks	13 m <sup>3</sup>
Supports for building	20 m <sup>3</sup>
Surround to GRP tank	45 m <sup>3</sup>
Recycled temporary foundation	<u>20 m<sup>3</sup></u>
	791 m <sup>3</sup> = 1819 tonnes

Note The RC deck slab has not been included as it is above HAT

### Fill material

Quarried stone, boulders , secondary aggregate	11400 tonnes
GRP tank	1 tonne
Clean gravel	1009 m <sup>3</sup>
Scalpings 50 mm to dust	1513 m <sup>3</sup>
Silt/sand from excavation	1009 m <sup>3</sup>
100 mm dia pvc pipe	40 m
Geotextile	630 m <sup>2</sup>

### Method of delivery

All steel is at present instore adjacent to site.  
All concrete/crushed stone etc will be by road.

Appendix to Paragraph 6(d)

Temporary supports for the steel piles will be constructed as in the accompanying sketch.

Each steel support will weigh 350 kg

It is unlikely that more than 7 supports will be used at any time

Total weight	2.45 tonnes
--------------	-------------

These will be placed at 5 m intervals and will support

25 m lengths of waling weighing	<u>2.00 tonnes.</u>
---------------------------------	---------------------

Total weight of steel	4.45 tonnes
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These will be removed and reused as the sheet pile wall progresses.

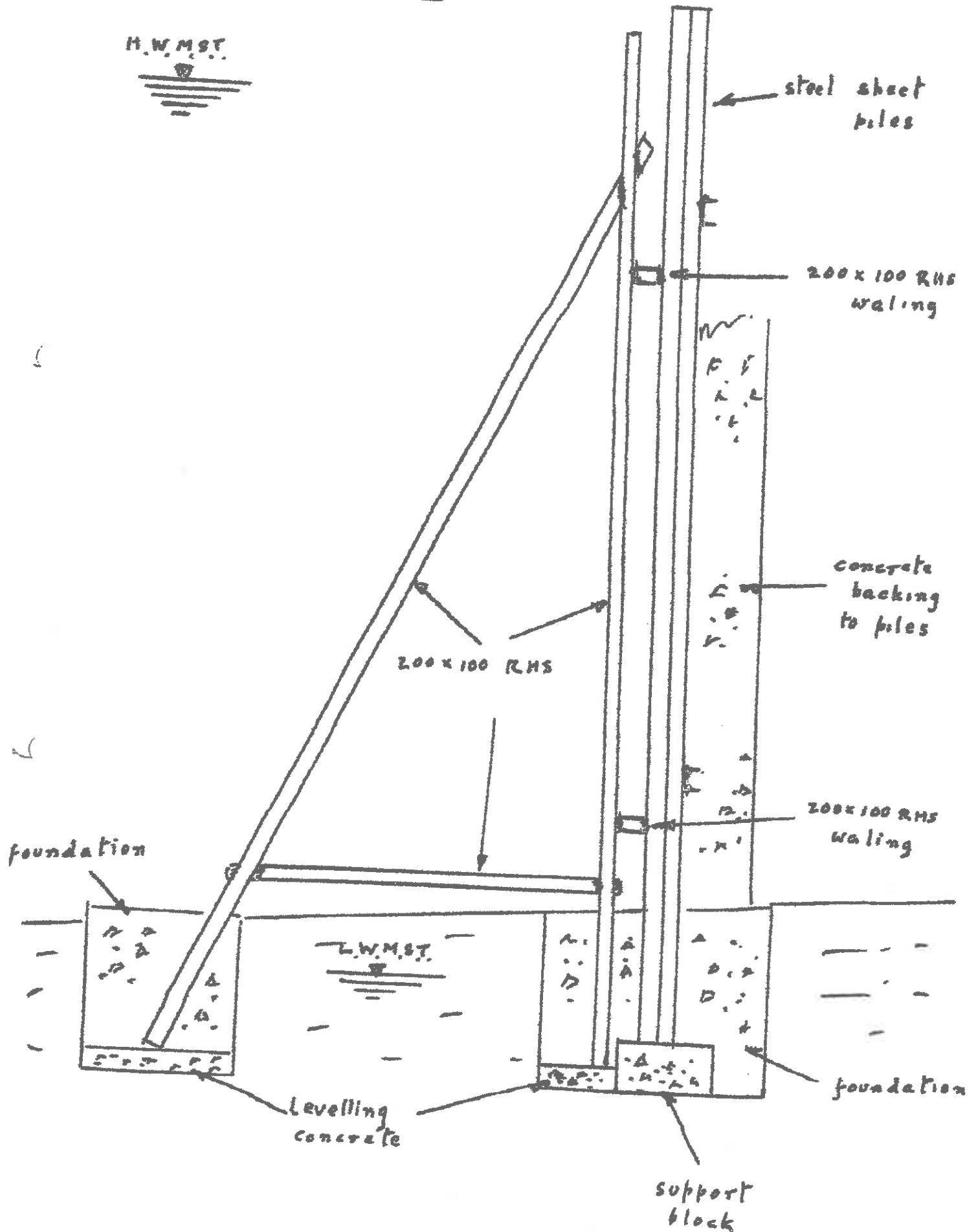
There will be 40 concrete foundations in total for the temporary supports at 0.5 m<sup>3</sup> each = 20 m<sup>3</sup>.

These will be broken up after use and recycled as part of the fill. Weight of concrete 46 tonnes

Timber shuttering to wall, office supports and round GRP tank will be 100 m<sup>2</sup>.

The shuttering will be progressively moved as the sheet pile wall and its concrete backing progresses. The timber shuttering will be removed from site on completion of the wall.

Temporary Support for Sheet Piles  
N.T.S.



## Appendix to Paragraph 10

### Scotland's National Marine Plan

#### Gen. 2 Economic Benefit

The economic benefit particularly to South Ronaldsay, the East Mainland of Orkney and the north east corner of Caithness has been considerable over the last 20 years since the ferry service began. High class new housing can be seen springing up in these areas which until the start of the service was seen very much as a backwater. With the "North Coast 500" tourist routes attracting many more tourists, many of them decide to use the ferry and visit Orkney.

Such is the popularity of the service (it takes about 40% of traffic travelling to Orkney at present), a larger ferry is required and is at present under construction with an expected entry to service during the summer of 2018.

With the present ferry and its proposed replacement having open vehicle decks, this is the only method of transporting hazardous material, e.g. fuel oil, diesel etc but not LPG into the island without using a specially chartered ship.

The economic benefit to some of Orkney's smaller islands is that at certain times, special trips may be carrying, for example, wind turbine parts which could not easily be done without a private charter.

#### Gen 3 Social Benefit

The ferry service is run from time to time to allow shopping trips from Orkney to Inverness or Wick with returns on the same day. Sports clubs regularly use the service for team matches on mainland Scotland and during the season of agricultural shows, the ferry introduces an additional sailing for those wishing to attend. The service is at these times full to capacity and the larger ferry is required, consequently the larger marshalling area is required.

#### Gen 4 Co-existence

There is an existing small building on the pier which houses lobster ponds and other existing pier buildings have been leased to a marine based company. At present there is very little traffic generated by these enterprises. With the proposed increased size of the marshalling area, traffic which at present parks on the road to the pier will park in the marshalling area leaving considerably more vehicular space for these other enterprises.

#### Gen 5 Climate Change

This section should be read in conjunction with "Additional Information – calculation of design tide level"

Global warming at present is estimated to cause a rise in sea level of 1 mm per year. Take Newlyn for example, mean sea level has risen by 200 mm in the last 200 years. This rise in sea level does not take into account isostatic rise in land levels following the end of the last ice age. The ice sheet only extended to the south of the Midlands and consequently Newlyn



would not have been covered with ice and there would be no isostatic land rise to compensate for the rise in sea level.

Isostatic rise is taken as approximately a third of the thickness of ice accumulated during the ice age. Central Perthshire shows the greatest rate of land rise of approximately 4 mm per year with Orkney showing a rise of 1 mm per year balancing the 1 mm per year sea level rise.

It is considered by some bodies that the rate of rise in sea level is increasing but these vary so much that no absolute figure can be allocated to them.

At present there is no intention to design the marshalling area for sea levels other than those calculated as shown to raise the level of the marshalling area above that of the road leading to it. It would be unproductive leaving, at times of extreme high tide, the marshalling area high and dry but with no access to it as St Margaret's Hope and the road to the pier would be submerged.

Should Orkney Islands Council at some time in the future decide to raise the level of the road and construct flood defence works for St Margaret's Hope, that would be the time to consider any possible raising of the level of the marshalling area.

Global warming is more likely to cause problems due to increased rainfall, not a problem for the marshalling area, and possibly increased storm surges. These have been dealt with in the section regarding the calculated tide height.

#### Gen 6 Historic Environment

The existing stone built pier is the only point which can be considered historic environment. It was built at a time when nearly all vessels would have been sailing vessels or ones with very low-powered steam engines. However, with the advent of more powerfully engined vessels, the pier has tended to be undermined by the wash from these vessels and has been progressively upgraded with steel sheet piles to prevent further undermining. The north face of the pier is still stone faced.

The proposed extension to the marshalling area will not impact on the pier, as its nearest point will be over 100 m from the pier.

#### Gen 7 Landscape /Seascape

When the application for the previous extension to the marshalling area (05972/17/10) was being considered, Orkney Islands Council as Planning Authority and as a consultee considered that a sheet piled sea wall may not be visually acceptable.

It was pointed out that every commercial pier in Orkney is of sheet piled construction and that the Planning Authority was quite happy with them. Further, the sheet piled wall would provide a berthing face for smaller vessels and probably would not be seen. No more was heard from the Orkney Islands Council.

The area of foreshore to be covered by the proposed extension to the marshalling area can be seen on the enclosed photographs. It does not appear to have any recreational or visual benefit and as such would not be missed if the marshalling area was extended over it.

The office /cafeteria/waiting room does not form part of this application but will require planning permission when Orkney Islands Council as Planning Authority will have an opportunity to comment on its visual impact.

#### Gen 8 Coastal Processes and Flooding

This has been covered under comments on Gen 5 –Climate Change and under “Additional Information – design tide levels”

#### Gen 9 Natural Heritage

This is covered by the Eurasian otter survey by NDR (Environmental Services) which formed part of application 05972/17/10 and is reproduced here under appendix to paragraph 5(i)

#### Gen 10 Invasive non-native species.

Not appropriate to this application

#### Gen 11 Marine Litter

Not appropriate to this application but litter bins will be provided adjacent to the proposed office block.

#### Gen 12 Water Quality and Resource

Not appropriate to this application

#### Gen 13 Noise

It is anticipated that there will be no more noise or vibration during the construction phase than is produced during the day to day running of the ferry service.

All excavation will be in the strata known as Eday Marle. This can be easily excavated and there will be no requirement for a rock-breaker or other similar attachment for the excavator.

The sheet piles are presently welded into panels and as such cannot be driven by a piling hammer as in normal construction.

A strip foundation will be excavated and the pile panels will be gently lowered into wet concrete in the foundation trench.

#### Gen 14 Air Quality

It is not envisaged that the air quality during construction or use after construction will be worse than in any car park. With the strong winds encountered most of the time in Orkney, the air quality will possibly be much better than that encountered in any car park.

#### Gen 15 Planning Alignment A

The construction of a larger marshalling area appears to comply precisely with this planning alignment.

Public service vehicles both in Orkney and in Caithness are timetabled to co-ordinate with ferry arrival and departure times. Times for sailing are scheduled to allow vehicles leaving Orkney optimum travelling time going south or easy travelling for those visiting Orkney. The larger marshalling area will make it easier for vehicles to be positioned according to size and type which should make loading the ferry more efficient.

#### Gen 16 Planning Alignment B

Not appropriate to this application

#### Gen 17 Fairness

It is considered that this application treats all those with a marine interest at St Margaret's Hope pier with fairness.

#### Gen 18 Engagement

There will be consultation with all interested bodies as part of the application process.

#### Gen 19 Sound Evidence

Tide levels etc have been calculated using historic data and sound scientific evidence.

#### Gen 20 Adaptive Management

Pentland Ferries is a young company having been operating between Gill's Bay in Caithness and St Margaret's Hope for about 20 years. It is growing rapidly as can be seen by their purchase of a second and larger new ferry. The management has proved that it can adapt to all aspects of the ferry service and has even attempted to set up new ferry routes further south in Scotland.

#### Gen 21 Cumulative Impacts

The main impact of the proposed development will be the introduction of full sewage treatment from the office and waiting room. This will reduce the flow to the existing septic tank which serves all properties at the ferry terminal. The cumulative impact should be a reduction in bacteria etc entering St Margaret's Hope bay.

## Additional Information

### General Notes

With the increased volume of traffic using the Gill's Bay to St Margaret's Hope ferry service Pentland Ferries has purchased a new ferry which is due to arrive during the spring of 2019. This ferry is 20 m longer and 2 m wider than the existing.

With the increased volume of traffic which will queue while waiting to board the larger ferry a larger marshalling area is required.

The existing booking office is at the wrong side of the road and people wanting to book must cross the road.

A new office with cafeteria constructed on the enlarged marshalling area will avoid interaction between pedestrians and traffic.

The existing septic tank serving the existing waiting room is not suitable for additional loading, consequently a new sewage treatment plant designed to give a final effluent standard better than 30 ppm SS and 20 ppm BOD will be constructed within the extended marshalling area with a sea outfall to LWMST. This outfall will require to be registered with SEPA.

Services for the proposed office and STW will be taken from the existing office block and will not impede on the proposed works.

The reinforced concrete deck slab and underbuilding for the proposed office and STW are above HWMST and consequently the volume and costs of the reinforced concrete are not included in this application.

Drain holes have been left at the base of the piles. These will allow water to drain away quickly from behind the sheet pile/concrete wall thus preventing a build up of pressure behind the wall during periods of low tide.

The final surface of the marshalling area will have a 150 mm fall towards the sea. This will allow for road drainage to continue as at present and run across the marshalling area. A drainage channel will be formed in the concrete around the office and STW to prevent puddles forming at these locations.

Enclosed are the following:

1. Calculations of appropriate tide levels up to and including the 1 in 200 year return period design level.
2. A copy of an extract from the recent safety file for the construction of the present extension to the marshalling area. The drawings have not been included but the rest of the material is pertinent to this application/contract.

## Extension of Marshalling Area at St Margaret's Hope Pier

### Design Levels

The design levels for the marshalling area extension, the floor level of the proposed harbour office and cafeteria and the level of the lids to the proposed sewage treatment plant are based on the predicted extreme tide level with a 1 in 200 year return period, i.e a 0.5% probability.

As there is no tide gauge at St Margaret's Hope pier all tidal predictions are based on those taken from Admiralty tide tables for Widewall Bay, a distance of some 7 or 8 km south west measured around the coast. Predictions of tide heights in the Admiralty tables are given to "Chart Datum" which is generally taken as equating to the lowest astronomical tide at that location. Land levels are quoted to a datum referred to as Ordnance Datum (Newlyn) which is regarded as mean sea level at Newlyn in Cornwall. The difference in level between these two data is 1.67 m at Widewall Bay, OD being the higher of the two.

The following levels have been taken from the Admiralty tables for Widewall Bay:

LAT	MLWS	MHWS	HAT
-0.3 m	0.4	3.6	4.1

Converting this to Ordnance Datum we get:

LAT	MLWS	MHWS	HAT
- 1.97	-1.27	1.93	2.43

These figures are based on barometric pressure being normal and no storm surge or waves causing raised tides.

With a barometric pressure drop of 1 millibar the tide can be expected to rise by about 10 mm.

Extreme high pressure over the Atlantic Ocean coupled with extreme low pressure over the North Sea would create a storm surge of skew surge passing through the Pentland Firth. This surge usually follows the tidal wave by about two hours and does not fully add to the maximum tide level caused by astronomical forces together with barometric heightening.

Figures taken for Wick and Aberdeen which are in similar meteorological areas to St Margaret's Hope (Widewall Bay) show that each has a predicted 1 in 200 year return period extreme tide of 2.89 m OD and 3.17 m OD respectively. This compares with predicted HAT from the Admiralty tables of 2.29 m OD and 2.55 m OD respectively, i.e. an increase of 0.60m and 0.62 m respectively.

It is reasonable to assume that a 1 in 200 year return period extreme tide at St Margaret's Hope (Widewall Bay) would be 0.60 m above the predicted HAT, i.e.  $2.43 + 0.60 = 3.13$  m OD.

The low point on the coast road to the pier at St Margaret's Hope which is at the entrance to the marshalling area is covered by the tide at about 5 yearly intervals. This coincides with a 1

in 5 year return period of 2.66 m OD. For design purposes we will take this as the road level at the entrance to the marshalling area.

The 1 in 200 year return period tide level is 3.03 m OD, some 0.37 m above road level.

This figure coincides exactly with the extreme level encountered at St Margaret's Hope and Burray in January 2005, when these areas flooded by over 300 mm above road level.

On the same day both Aberdeen and Wick recorded their highest ever tide levels. These levels were both 0.51 m above their respective HAT predicted levels. This equates to 1 in 60 to 1 in 70 return period high tide. It should also be noted that on the same day there was no flooding recorded at Kirkwall.

It is assumed that the additional 100 mm above the predicted HAT at St Margaret's Hope compared with Wick and Aberdeen would be due to the storm surge passing through the Pentland Firth where St Margaret's Hope would be more exposed to the surge wave than would Wick and Aberdeen on the East Coast.

This is the only occasion when a tide level has been seen anywhere near this level by residents who have lived in St Margaret's Hope for over 70 years.

Taking road level as above at 2.66 m OD and with a fall of 1 in 200 across the marshalling area to allow for surface water run-off, the level at 30 m from the road will be  $2.66 - 0.15 = 2.51$  m OD. This will be the surface level beside the new office block/cafeteria. To keep the floor level of the office above the 1 in 200 year return period tide level the floor level will require to be raised to 3.03 m OD or by at least 0.52 m.

It should be noted that BS6394 for the Design of Maritime Structures recommends that a 1 in 100 year return period for tide levels is used for design purposes. The difference between 1 in 100 and 1 in 200 year return period levels is only 60 mm.

If the floor level of the office is constructed to the 1 in 200 year level, there will be a factor of safety of 60 mm above that recommended in BS6394.

Normally an additional allowance would be made above the 1 in 200 year level to allow for wave run-up. In this case there is a limited fetch from due north of 2 km from the Burray shore. This gives a calculated maximum wave height of 0.5 m which corresponds with the maximum observed wave height in the bay. Run-up will be very limited. In Kirkwall where there is a calculated wave height of 1.5 m, the accepted figure for run-up over a sloping grassy shore is 0.6 m. It is not considered that wave run-up will be of any significance to this structure.

For a domestic building, it is considered mandatory that an escape route is provided above the predicted tide level + the predicted wave run-up.

In this case, if the tide level is above the level of the marshalling area deck, the ferry will not run, there will be no vehicles in the marshalling area and the office will be closed, consequently there is no requirement for the provision of an escape route.

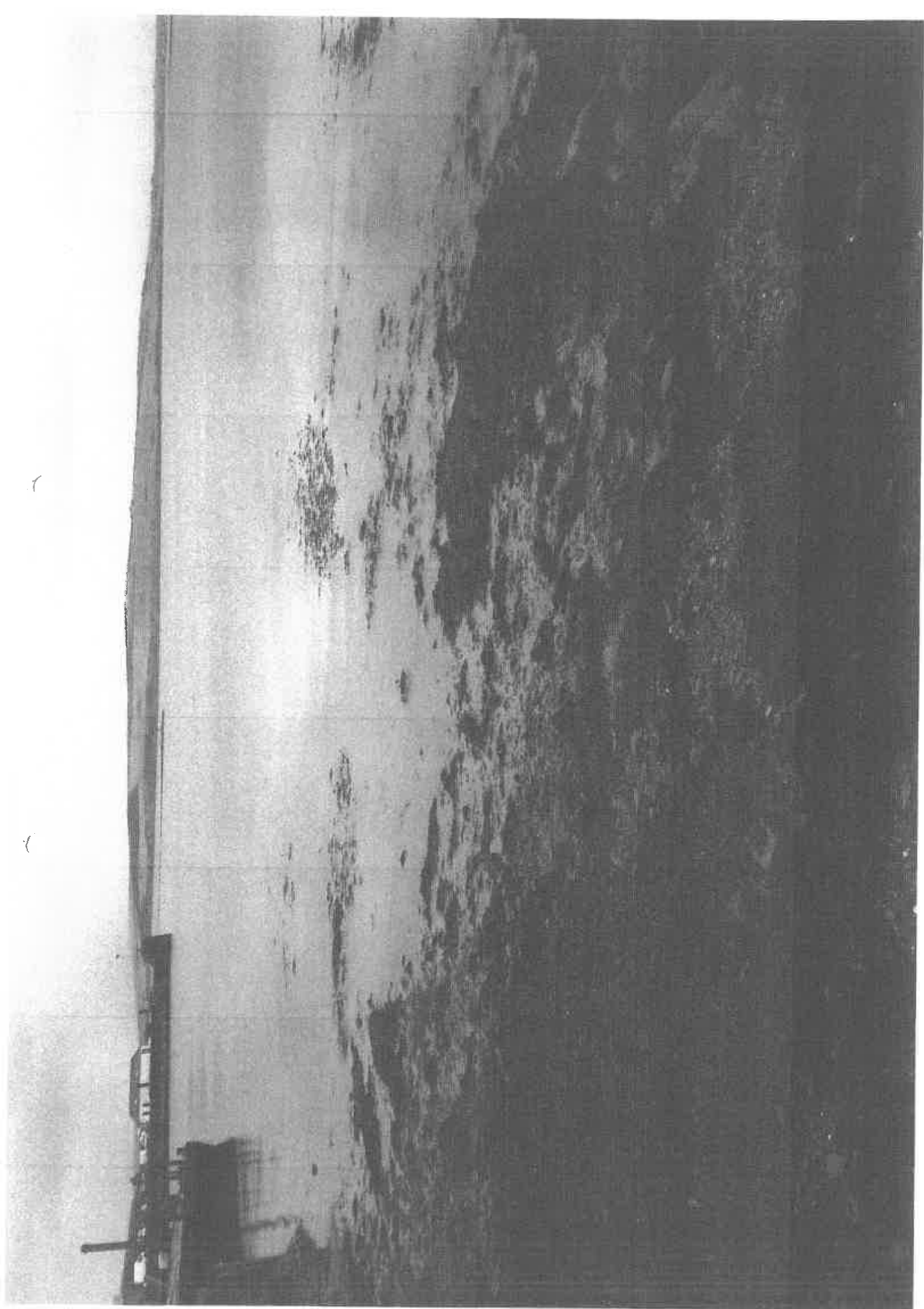
The sewage treatment plant to serve the office block will require to have its lids above tide levels, i.e. at floor level of the office block. Should sea water enter the plant through the lids,

it would kill the bacteria which treats the sewage. It would not be practicable to have completely sealed lids as they would require to be opened to allow emptying of sludge on a 60 day cycle.

If it was practicable to have sealed lids, the treatment plant could be constructed with the lids at ground level but a pumping station would then be required to pump the effluent out against the pressure of the tide.

With the treatment plant raised so that the lids are at floor level of the office block, a tidal anti-flooding ball valve could be fitted to the outfall pipe such that at times of extreme high tide, the ball valve would prevent sea water entering the plant through the outfall. There would be sufficient storage in the plant to retain the effluent until the tide receded.

Using these levels, the height of the marshalling area deck beside the sheet piling will be 2.5 m OD above a beach level of -1.27 m OD, i.e. a height of 3.77 m.







# **Extension to Marshalling Area at St Margaret's Hope Pier, Orkney**

## **Construction Phase Health & Safety Plan**

**Pentland Ferries  
St Margaret's Hope  
Orkney**

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## **Health & Safety Plan**

### **Construction (Design and Management Regulations 2015)**

#### **1.0 The Project**

The Project comprises the extension in a southerly direction of the marshalling area for the ferry terminal at St Margaret's Hope pier. The area of the extension is 1000 m<sup>2</sup>.

The extension will comprise a steel sheet piled wall backed with reinforced concrete. There will be drain holes through the steel/concrete and the area to be filled from foreshore level to existing marshalling area level will be filled using carefully placed baled hydraulically squashed motor tyres with all spaces between the bales filled with gravel/crushed stone. There will be clean crushed stone placed over each layer of baled tyres to act as a drainage layer. The maximum height will be three bales.

A reinforced concrete deck slab will be constructed on top of the infilled area and a suitable handrail will be constructed at the seaward edge.

#### **1.01 Client**

Pentland Ferries  
St Margaret's Hope  
Orkney  
KW17 2SW  
Tel: 01856 831900

#### **1.02 Principal Designer under CDM Regulations**

Redacted

B.Sc, C.Eng, M.I.C.E.  
Breck Environmental Consultancy Services  
Summerhill  
Strathpeffer  
Ross-shire  
IV14 9AZ  
Tel: 01997 420111

#### **1.03 Designer/Engineer**

Redacted

B.Sc, C.Eng, M.I.C.E.  
Breck Environmental Consultancy Services  
Summerhill  
Strathpeffer  
Ross-shire  
IV14 9AZ  
Tel: 01997 420111

#### **1.04 Temporary Works Co-ordinator**

Redacted

B.Sc, C.Eng, M.I.C.E.

### 1.05 Principal Contractor

Pentland Ferries  
St Margaret's Hope  
Orkney  
KW17 2SW  
Tel: 01856 831900

### 1.06 Management Structure for the Works

Redacted Managing Director and Contracts Manager

### Operatives

### 1.07 Location of Works

St Margaret's Hope Pier, Orkney  
ND 445 944

### 1.08 General Description of the Construction Work

An access will be constructed from the existing marshalling area to the foreshore. The area to be raised to form the extension to the marshalling area is above the low water mark. All debris and loose material will be cleared from the area of foreshore to form a sound base for the construction.

The sheet piles which will form the outer skin of the sea-ward wall are at present welded together to form panels and as such cannot be driven as would be normal with sheet piles.

Temporary supports for the piles will be erected to the seaward side of the pile wall and a foundation trench minimum 1.0 m deep will be excavated. The base of the trench will have precast concrete blocks placed at intervals to prevent the sheet piles from passing completely through the concrete foundation. Holes will be burnt in several of the piles to allow the concrete to pass through the piles to ensure a suitable "grip"

Concrete with an additive to prevent cement loss when covered with seawater will be poured into the trench and the panels of piles lowered into the wet concrete and secured to line and level.

Holes cut in sheet piles and drainage pipes inserted.

Foundation and shuttering prepared for first concrete lift behind sheet piles. Concrete with additive cast 1.2 m high behind piled wall.

First layer of fill material carefully placed. Geotextile rolled out over seaward side of fill between fill material and concrete. Crushed single size stone placed between geotextile and concrete to act as a drainage layer.

Gravel/crushed stone placed over fill material and vibrated, if necessary, to fill all interstices between boulders to form a drainage path and a level working base for the next row of tyres.

Raise shutter for concrete and pour next concrete lift.

Carefully place fill material, raise geotextile and drainage layer and infill with gravel/crushed stone.

Tie back concrete lift to anchor blocks in fill.

Repeat as above with third lift leaving reinforcing bars protruding from top of concrete to tie into deck slab reinforcement. Finish top gravel/crushed stone layer to line and level and allow for settlement, make up fill as necessary.

Place reinforcing mesh in panels and secure to reinforcing bars in concrete wall.

Cast concrete deck slab in panels and remove all temporary support.

Erect barrier at seaward side and adjust existing stone wall between new marshalling area and existing road to suit altered traffic marshalling.

Paint lines as necessary.

It should be noted that most of the work will take place in tidal conditions.

The concrete batching plant will be set up well to the north of the pier to prevent any blown cement or dust from the batching plant from reaching the public waiting to board the ferry. Concrete will be delivered to the site using concrete mixer trucks.

## 1.9 Timescale for Completion of Works

The work will start on site in the spring of 2019.

The construction work should be virtually complete with the concrete deck in place in time for the increased ferry traffic in early summer 2020.

## 2.0 Existing Environment

### 2.01 Site Situation

The site is situated between HWMST and LWMST marks lying within the pier area at St Margaret's Hope and extends southwards by approximately 40 metres from the existing marshalling area with its seaward face in line with that of the existing.

Stored materials and concrete batching plant will be located within the industrial area to the north of the pier buildings, a distance of about 300 metres from the construction area. There will be a limited amount of storage adjacent to the site on the marshalling area and once the first and second lifts of fill material is in position storage of gravel/crushed stone will be on top of the fill and not on the existing marshalling area.

The site is relatively sheltered and should not suffer down-time due to wave action during the winter months.

## 2.02 Existing Structures and Services

The construction area is to the south of the existing marshalling area which has been completed with a partially open face to easily allow an extension to be constructed. There are no services on site. Rainwater from the road frequently runs across the surface of the existing marshalling area into the sea or through holes in the existing wall into the sea. This situation will continue once the extension is completed.

## 2.03 Site Investigation

The site lies between HWMST and LWMST. The underlying stratum is Eday marl which dips at about 10° to the sea. There is a thin layer of silty sand over the marl. An otter study was carried out as part of the licence application for the work. There was no indication of the presence of any otters.

## 2.04 Interaction with Ferry Traffic

With the construction work taking place during the winter months when there are reduced numbers of vehicles using the ferry, it will be fairly easy to segregate construction traffic from ferry traffic. All construction traffic will use the road when travelling from the storage area to the north of the pier buildings and all ferry traffic will be within the existing marshalling area.

There will be no movement of construction traffic while the ferry is loading or unloading.

There will be relatively few movements of construction traffic. These will comprise a concrete mixer truck used for construction of the foundation and the construction of the concrete fill behind the sheet piled wall.

There will then be a lengthy period while the fill material and the gravel is placed before the concrete deck is constructed. During this period most materials will be stored within the site.

When constructing the deck, the contractor may decide to reposition the batching plant within the construction site well to the south of any parked vehicles. At this stage there should be no interaction between any construction plant and vehicles waiting to board the ferry.

At all times the traffic will be monitored and improvements to directions, signage and procedures will be introduced if it is considered these measures will improve site safety.

## 2.05 Access to Site

Access to the site is via the existing marshalling area which in turn is accessed from the Pier Road at St Margaret's Hope. Access will be through the gated Heras fence which will prevent interaction between site work and traffic waiting to board the ferry.

Appropriate warning signs will be erected to warn ferry users of construction traffic.

Access to the concrete batching plant is from the Pier Road and through the access to the industrial area to the north of the pier and pier buildings.

Initial stock piles will be in the industrial area but these will be moved on to the site once the initial layer of baled tyres and gravel has been placed.

During the initial stage of the construction work, deliveries of materials from storage and of concrete in mixer trucks will pass along the pier road to the construction site. A stone wall will separate this delivery traffic from the ferry traffic with the exception of the actual access to the construction site.

Appropriate signs will be erected adjacent to the ferry booking office where pedestrians will have to cross the Pier Road.

Construction vehicles will not be permitted to operate on the road or the access to the site while traffic is boarding or exiting the ferry.

## 2.06 Existing Information

This can be gained from the contract drawings and the other study, both of which were required for purposes of licensing the construction work.

## 3.0 Drawings

### 3.01 Contract Drawings

See appendix A 06 Drawing Schedule

## 4.0 The Design

Significant hazards and a broad indication of the precautions assumed for dealing with them.

### 4.01 Hazard

### Precaution

Interaction between ferry traffic and construction traffic

Heras fence to be erected across access to site and adequate signage to be used.  
A traffic flow plan for construction traffic and deliveries outwith the construction site will be implemented.  
No construction traffic outwith the site will be permitted while the ferry is loading or unloading.  
Construction traffic outwith the site will be separated from ferry traffic by a stone wall 900 high.

Temporary storage of materials

During the initial stage of the construction work most of the materials to be used will be stored in the industrial area to the north of the pier and pier buildings, some 300 m from the construction site.  
As work on the site progresses, deliveries of materials will be directly on to the site thus eliminating the requirement to transport materials from storage to the



	<p>Site.</p> <p>Public access to the industrial area is not permitted.</p>
Existing Services	There are no existing services on site.
Confined Space Working	There will be no confined space on site.
Lone-worker	No lone worker will be permitted
Tidal Working	<p>The site is located between HWMST and LWMST. This means that virtually all work prior to placing the final gravel layer and constructing the concrete deck will have to be carried out during periods of low tide. A concrete additive will be required to prevent the rising tide from washing the cement out of recently poured concrete in the foundation and the concrete back to the sheet piled wall.</p> <p>Where appropriate, the workforce will wear buoyancy aids and a safety boat will be available at all times. This will be in addition to their normal PPE.</p>
Working with Cement, particularly during periods of strong wind	<p>Every precaution must be taken to prevent cement dust being blown from the batching plant during periods of strong wind.</p> <p>The cement will be stored in a locked steel storage container in 1 tonne bags and the bags carefully transported to the batching plant taking every precaution to prevent spillage particularly during periods of high wind.</p> <p>It is imperative that all operatives and those working in the vicinity of the batching plant must wear eye protection.</p>
Dust from crushed stone stockpiles	<p>Similar to above, blown dust must be eliminated from stockpiles or during transportation.</p> <p>Stockpiles will be hosed to prevent dust from blowing and lorries transporting the gravel will have their loads covered.</p> <p>Operatives must wear eye protection.</p>
Working adjacent to contractors' plant	All operatives to wear a minimum of high visibility clothing, hard hat, steel toecap boots and appropriate eye protection and gloves for the work in hand.
Working with sheet piles	<p>The sheet piles will be provided welded into panels and can only be handled as panels.</p> <p>These panels will be positioned using either a very large excavator or a crane each fitted with suitably certificated spreader bar and chains.</p>

Before setting the panels into the foundation trench, substantial temporary supports will be constructed which will prevent the panels from moving in the wet concrete foundation due to wind or wave action.

A construction vehicle fitted with a working basket will be required to allow an operative to disconnect the lifting equipment from the piles once in position.

Lifting and placing the panels will not be permitted when wind speed exceeds 20 mph.

#### 4.02 Designer's Risk Assessments

The designer's risk assessment are attached in the appendix. Pentland Ferries will produce method statements to reduce and control risks identified in the Designer's Risk Assessment.

#### 5.0 Construction Materials

##### 5.01 Materials Requiring Particular Precautions

Cement for concrete and crushed stone/gravel will require careful handling to prevent dust blowing during periods of strong wind.

The steel sheet piles will be provided welded into panels. Care will be required while lifting and placing these panels particularly during periods of high wind. These operations should be suspended where the wind speed exceeds 20 mph.

The concrete additive used to prevent cement loss for underwater concreting must be COSHH registered, stored carefully and used in accordance with the manufacturer's instructions.

#### 6.0 Site Wide Elements

##### 6.01 Sanitation and Messing Facilities

The operatives will use Pentland Ferries large general purpose shed located in the industrial area to the north of the pier and pier buildings as their mess room, which contains toilet, office, mess-room, drying facilities etc. The operatives will ensure that the facilities are maintained in a clean and tidy state.

##### 6.02 Laydown Area, Storage

Initially all storage of materials including concrete batching will be adjacent to the large general purpose shed to the north of the pier and pier building. This area will also be used for delivery of spare parts for plant and machinery.

Fill material will be delivered directly to the working area and no storage area will be required.

During the construction of concrete deck, all materials with the possible exception of cement will be laid down within the working area.

## 7.0 Overlap with Client's Undertaking

There will be no overlap with construction plant and ferry traffic. The construction plant will work entirely behind a Heras fence.

Deliveries of materials and concrete from the lay-down area and batching plant to the site will be carefully controlled. There will be a stone wall between the delivery traffic and the ferry traffic with the exception of the exit from the industrial area and the entrance to the working area through the gate in the Heras fence.

No movement of delivery traffic will be permitted while the ferry is loading or unloading.

Personnel may cross the ferry traffic stream when entering or leaving the facility. The number of personnel will not exceed 5.

## 8.0 General Site Rules – Pentland Ferries

### 8.01 Working Practices

This section details the rules and standards which relate to all employees at work, contractors and visitors. It is the responsibility of all to obey these rules and to behave in a safe manner whilst at work.

Deliberate contravention of these rules shall be considered a break in an employee's contract of employment or a breach of contract from that employee's employer.

1. No machine, item of plant or equipment is to be operated by any person, unless they have been trained and are authorised to do so.
2. All machine guarding is to be in place and correctly adjusted, prior to the machinery being used.
3. Any fault, defect, including damage, or malfunction in any item of machinery, plant, equipment, tool or guard, must be reported immediately.
4. No machine, plant or equipment is to be left unattended or cleaned whilst in motion unless the operative is authorised to do so.
5. Repairs, maintenance or adjustments to machines, plant or equipment are only to be carried out by authorised personnel only.
6. All substances are only to be stored and used in accordance with the manufacturer's written instructions, and returned to storage after use.
7. All hazard notices or warning signs displayed on site are to be obeyed.
8. All safety equipment and facilities provided are to be used and not misused or wilfully damaged.
9. The work area is to be kept clean and tidy at all times; all waste is to be disposed of in the correct container.
10. All liquid spillages are to be cleaned up immediately.
11. Emergency exits and equipment are not to be obstructed.
12. Any use of, or damage to, fire fighting equipment is to be reported immediately.
13. Prompt medical assistance must be sought for any injury received at work, and the injury must be reported as soon as possible.

### 8.1 Sub-contractors

No sub-contractors will be used during the contract.

## 8.2 Communicating with Workforce

All employees will receive a site induction before commencing work on the site (copy attached)

All relevant information for the safe construction of the Works shall be provided to Pentland Ferries' workforce by their representative.

## 8.3 Health & Safety Goals

Pentland Ferries' health and safety goal is to have an injury free project.

The Directors and Management of Pentland Ferries are fully committed to the Health, Safety and Welfare of their employees, and fully accept responsibility for other persons who may be affected by their activities on the project.

## 8.4 Health and Safety File

The Construction Phase Health and Safety plan will be developed by Pentland Ferries with details on management and prevention of health and safety risks created by them providing a co-ordinating mechanism as construction progresses.

This will enlarge into the Health and Safety File which will follow the format required by the CDM principal designer.

On handover of the Works, the Health and Safety File will alert those responsible for the completed project to the risks that must be managed when the structure is maintained, repaired, renovated or demolished.

## 1.0 Continuing Liaison

### 9.01 Principal Contractor/ CDM principal designer

Pentland Ferries will alert the CDM principal designer of any eventualities or conditions during the construction phase resulting in substantial design changes which might affect resources for control of health and safety, as soon as he is aware of any such circumstances.

### 9.02 Meeting and Co-ordination

Meetings will be held as deemed necessary to review the Works and co-ordinate construction and health and safety matters.

## Appendix A.01

### Emergency Procedures

In the event of an emergency, the Emergency Co-ordinator Mr Andrew Banks or his deputy shall inform the required emergency services:

Police, Fire, Ambulance Tel. 999

Site location: St Margaret's Hope Pier, Orkney

Site contact: Mr Andrew Banks

Pentland Ferries main office tel 01856 831900

Appointed person: Mr Andrew Banks

The Emergency Co-ordinator, or his deputy, shall direct the emergency services to the casualty/ incident on site, and provide assistance whilst they are on site.

First Aid kits are kept in the messing hall, the ferry terminal building and on board the ferry which may be at its berth at the time of any incident.

Incidents/ accidents not requiring 999 emergency call out may be dealt with at:

Daisy Villa

West End, St Margaret's Hope

Tel: 01856 831206

Balfour Hospital

Accident and Emergency

New Scapa Road

Kirkwall

Tel: 01856 888000

## Appendix A.02

### Accidents, Dangerous Occurrences and Ill Health

All accidents or dangerous occurrences must be reported by Pentland Ferries' representative on site and recorded on an Accident Report Form.

The local Health and Safety Executive Office (Longman Road, Inverness. Tel: 01463 234141) will be informed by the Principal Contractor if

1. A person dies as a result of an accident caused by or connected with the work.
2. A person suffers a major injury/accident (including admission to hospital for more than 24 hours) or a health condition as a result of an accident caused by or connected with the work.
3. A "dangerous occurrence" takes place because of or in connection with the work.
4. A person at work is prevented from working for 7 or more days as a result of an injury or illness caused by an accident at work.
5. A person at work is affected by a "specified disease" diagnosed by a doctor as attributable to their work.

## Appendix A.03

### Contractors' Method Statement

#### Construction of Temporary Support for Sheet Pile Panels

Drawing	See attached sketch
Plant	360° tracked excavator Loadall with man basket Welding equipment Cutting equipment Concrete batching plant Concrete mixer truck Lifting frame and chains Safety boat Survey equipment
PPE	HI-viz clothing, safety boots/waders, hard hats, life jackets, welding mask welding gloves, eye protection, gloves
Personnel	Excavator operator, banksman, welder. Concreter/labourer, surveyor, batching plant operator, driver for mixer truck
Procedure	Using 200 x 100 RHS steel, fabricate "A" frames as per sketch Excavate foundation holes for bases of "A" frames and place concrete With suitable additive in holes all to the correct level. Note all work is tidal and very little time will be available for work on the foreshore. Once concrete has set within foundation holes lower "A" frames into position and set to line and level. Weld walings into position to secure "A" frames to line and level. Fill foundation holes with concrete Continue as above until the temporary supports extend to the full length of the prepared sheet-piled wall.

#### Foundation for Sheet Pile Panels

Plant	360° excavator Concrete mixer truck Survey equipment Poker vibrator
PPE	HI-viz clothing, safety boots/waders, hard hats, life jackets, eye protection, gloves
Personnel	Excavator operator, concreter/labourer, surveyor
Procedure	Excavate to line and level foundation trench as per drawing, minimum depth 1.0 m and width sufficient to support concrete fill behind sheet piled wall plus 1.0 m minimum for the sheet pile.

As the tide will cover the excavation twice each day, the excavation will require to be carried out in short sections to prevent the excavation from collapsing due to the action of the tide.

The contractor will decide on the length of foundation to be excavated without fear of collapse depending on the work rate available from plant and labour.

Concrete blocks will be placed in the bottom of the trench at suitable intervals to support the steel panels and to allow the concrete of the foundation to pass under the panels. This will prevent the foundation from acting as two separate supports, one on each side of the panel.

The concrete blocks will be placed correctly to line and level and the trench filled with concrete with a suitable additive to prevent loss of cement when the foundation is covered with seawater.

#### Placing Sheet Pile Panels

Plant	Excavator with lifting bar and chains, or crane Welding equipment Cutting equipment Loadall with man basket Survey equipment
PPE	Hi-viz clothing, hard hats, safety boots/waders, eye protection, welding mask and protective clothing, gloves including welding gloves, buoyancy aids
Personnel	Excavator/crane operative, welder, 2 labourers/concreters
Procedure	Sheet pile panels to be lifted from stock pile adjacent to the working area using either a 360° tracked excavator fitted with a suitably certificated lifting beam and chains or a tracked crane with similar beam and chains. The panels to be lifted carefully lowered into the wet concrete of the foundation ensuring that they are correctly placed to line and level and are supported top and bottom by the temporary support system. Once positioning is correct, temporarily weld or similarly fix the panels both top and bottom to the supporting frame. Cut drain holes in the panels just above the foundation and insert pvc drain pipes.

#### Concrete behind Sheet Pile Wall

Plant	Excavator, concrete batching plant, concrete mixer truck, powered wood working tools, poker vibrator, survey equipment
PPE	Hi-viz clothing, safety boots/waders, eye protection, hard hats, gloves
Personnel	Shuttering joiner, excavator operator, batching plant operator, mixer truck driver, labourer/concreter

Procedure	<p>Fabricate 1.2 m high timber shutters, clean and if necessary scabble surface of foundation.</p> <p>Erect shutters and check levels</p> <p>Erect substantial timber shutter supports.</p> <p>Ensure that drain pipes pass through the shutters</p> <p>Fill shutters with concrete with suitable additive, vibrate and finish to level</p> <p>Continue the above procedures extending the foundation, the sheet piling and the first concrete lift behind the wall until the whole extent of the wall has been completed.</p> <p>Remove shutters from behind wall.</p>
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#### Filling the Area behind the Wall

Plant	360° excavator, dump truck, poker vibrator
PPE	Hi-viz clothing, safety boots/waders, hard hats, eye protection, gloves
Personnel	Excavator operator, dump truck driver, labourers
Procedure	<p>Clean all debris from working area.</p> <p>General fill material to be placed firmly and securely on the base of the working area leaving space for the drainage layer of single size crushed stone behind the concrete.</p> <p>Place geotextile down the face of the baled tyres beside the concrete wall and fill between the concrete and the geotextile with crushed single size stone.</p> <p>Import gravel and crushed stone and spread over the whole area of fill material ensuring that all gaps etc are completely filled, using a poker vibrator if necessary.</p> <p>Construct layer of gravel/crushed stone over the fill material to level to provide a working surface for the next lift of baled tyres.</p>

#### Raising the Wall/Infill

Continue as above with the timber shutter, the concrete fill and the fill material. When the shutter is removed, fill area behind the wall with the raised geotextile and crushed stone drainage layer.

Continue as before positioning the fill material and infilling with gravel. After this lift tie the steel sheet piled wall back to anchor blocks located within the fill.

Continue as above with a third lift of concrete leaving reinforcing bars projecting from the top of the pour to connect with reinforcing mesh in the deck slab.

Continue as before, raising the drainage, the fill and the gravel and finish the gravel layer to suitable level and falls for the construction of the deck slab.

Remove temporary supports on seaward side of the sheet piled wall and if necessary cut the top off the piles to the correct level.



### Concrete Deck Slab

Plant	Concrete batching plant, concrete mixer truck, hydraulic concrete finishing roller, excavator, poker vibrator, survey equipment.
PPE	Hi-viz clothing, hard hats, safety boots, eye protection, gloves, buoyancy aids when appropriate.
Personnel	steel fixer, shuttering joiner, batching plant operator, mixer truck driver, excavator operator, 2 minimum concreters/labourers.
Procedure	<p>Tie reinforcing mesh to reinforcing bars in concrete wall.</p> <p>Set shutters to allow concrete to be poured in alternate panels to correct line and level.</p> <p>Place reinforcing mesh in appropriate panels.</p> <p>At this stage, the batching plant may be moved on to or adjacent to the area to be concreted.</p> <p>Pour, vibrate and finish alternate panels.</p> <p>Repeat with adjacent panels until whole area has been concreted.</p> <p>Erect safety rail at seaward edge of construction and alter existing stone wall beside the road as required.</p> <p>Tidy up site and paint lines for traffic.</p>

## Appendix A 04

### Risk Assessment

Location: St Margaret's Hope Pier, Orkney

Operation/Process: Fabrication and erection of temporary supports for sheet piled wall

Equipment Used: Steel cutting and welding equipment

360° tracked excavator

Loadall with man basket

Concrete batching plant

Concrete mixer truck

Lifting frame and chains

Safety boat

Survey equipment

	Yes	No
Can task be eliminated		X
Substances used: are COSHH assessments required	X	

Additive for concrete to prevent cement loss requires COSHH assessment.

### Hazards Identified

Risk	Low	Medium	High
Personnel working adjacent to plant		X	
Personnel working at height		X	
Personnel working in tidal conditions	X		
Excavation for foundation and filling with concrete	X		
Positioning and welding into position temporary supports		X	

Exposed persons Those involved in task	Total number 4
Frequency of exposure	1 to 2 hours per day depending on tidal conditions for about 2 weeks in total

Control Measures	Extent to which control measures reduce risk
Appropriate ppe to be worn at all times	Reduces risk of eye injury or cement burns. Reduces risk of drowning if falling into tidal water
Banksman present during all lifting operations	Reduces possibility of heavy objects being moved by crane or excavator contacting anything other than their correct final position

Site to be kept tidy, good housekeeping	Reduces risk of trip, slip or vehicle accident
Cement to be stored and handled in such a way that it is protected from the wind	Reduces risk of eye injury or cement burns
No transportation of materials from storage or batching plant to site while ferry traffic is boarding or leaving the ferry	Reduces risk of accidents at times of high traffic activity adjacent to the site
Safety boats available at all times	Instant response should anyone fall into the harbour
Life belts available	Additional support should anyone fall into the harbour
Tool box talk prior to positioning the supports for the sheet pile panels	Everyone on site to know exactly what they should be doing when positioning and securing the heavy supports
Appropriate ppe to be worn when welding. All site operatives to be made aware that welding is about to take place	Essential for welders to prevent burns, any eye injury. Possibility of temporary blindness reduced for site operatives if they know that welding is about to take place

#### Additional measures required

None

Monitoring results

Assessor  
Redacted

Position  
Principal Engineer

Date  
July 2017

### Risk Assessment

Location: St Margaret's Hope Pier, Orkney

Operation/Process: Foundation for sheet piled wall

Equipment used: 360° excavator, concrete batching plant and mixer truck, poker vibrator  
Safety boat.

	Yes	No
Can task be eliminated		X
Substances used: are COSHH assessments required Cement and cement additives	X	

### Hazards Identified

Risk	Low	Medium	High
Personnel working adjacent to plant		X	
Personnel working with cement/concrete		X	
Personnel working in tidal conditions	X		

Exposed persons Those involved in risk	Total number 4
Frequency of exposure	1 to 2 hours per day Duration depends on tidal conditions About 2 weeks in total

Control measures	Extent to which they control risks
Cement to be bagged and protected from wind when loading the batching plant	Reduces the risk of eye injury and cement burns
Concrete mixing to be halted during periods of high wind	As above
Banksman to control movement of mixer truck on site	Reduces the possibility of vehicle accident near the foundation excavation

### Additional measures required:

A skip with tremmie suspended from the excavator may be required when placing the concrete if it is considered that the ground conditions adjacent to the foundation excavation are not sufficiently stable to allow the mixer truck near to the excavation particularly after the excavation has been covered by the tide several times.

### Monitoring Results

Assessor  
Redacted

Position  
Principal Designer

Date  
July 2017

### Risk Assessment

Location: St Margaret's Hope Pier

Operation/Process: Erection of sheet piled wall

Equipment used: 360° excavator or crane with lifting bar and chains  
welding equipment,  
loadall with man basket  
safety boat

	Yes	No
Can task be eliminate		X
Substances used: are COSHH assessments required		X

### Hazards Identified

Risk	Low	Medium	High
Personnel working adjacent to steel panels being craned into position		X	
Personnel working at height	X		
Personnel working in tidal conditions	X		
Site welding at height		X	

Exposed persons Those involved in risk	Total number 4
Frequency of exposure	1 to 2 hours per day depending on tidal conditions About 2 weeks in total

Control measures	Extent to which they control risks
Operation to be suspended if wind speeds exceed 20 mph	Reduces risk of panels being blown about and possibly causing injury
Steel panels to be welded to steel supports before releasing lifting chains	Reduces possibility of panels moving and causing an accident due to tidal or wind conditions
Banksman to direct lifting operations	Ensures that all those involved in the operation are aware of movement of panels
Tool box talk to be carried out before operation starts	Ensures that all site operatives know exactly what they should be doing during the lifting and placing of the panels

### Additional measures required

Excavator may be required to hold the panels against the supports during welding at times of high wind

### Monitoring Results

Redacted

Position  
Principal Engineer

Date  
July 2017

### Risk Assessment

Location: St Margaret's Hope Pier

Operation/Process: Construction of concrete wall behind steel piled wall

Equipment used: 360° excavator with skip

Concrete batching plant

Concrete mixer truck

Poker vibrator

Timber shutters with suitable joinery tools

	Yes	No
Can task be eliminated		X
Substances used : are COSHH assessments required Cement and cement additives	X	

### Hazards Identified

Risk	Low	Medium	High
Personnel working adjacent to plant		X	
Personnel working with cement/concrete		X	
Personnel working in tidal conditions and during final lift working over water	X		

Exposed persons Those involved in risk	Total number 4
Frequency of exposure	1 to 2 hours per day for the first concrete lift 2 to 4 hours per day for the 2 <sup>nd</sup> concrete lift Over 4 hours per day for the third lift All depending on tidal conditions About 6 weeks in total

Control measures	Extent to which they control risks
Cement to be bagged and protected from wind when loading batching plant. Eye protection to be worn	Reduces risk of eye injury and cement burns
Concrete mixing to be halted during periods of high winds	As above
Placing of shuttering panels to be halted during periods of high wind	Reduces risk of an accident should a shuttering panel be blown about during a strong wind

### Additional measures required

None

Monitoring results

Assessor

Redacted

Position

Principal Engineer

Date

July 2017

### Risk Assessment

Location: St Margaret's Hope Pier

Operation/Process: Placing quarries stone/boulders as fill for marshalling area extension

Equipment Used: 360° tracked excavator

Dump truck

Poker vibrator

	Yes	No
Can task be eliminated		X
Substances used: are COSHH assessments required		X

### Hazards identified

Risk	Low	Medium	High
Personnel working in vicinity of boulders being positioned – risk of being trapped/crushed	X		
Personnel working in tidal conditions	X		

Exposed persons Those involved in risk	Total number 3
Frequency of exposure	1 to 2 hours per day for the first lift 2 to 4 hours per day for the 2 <sup>nd</sup> lift Over 4 hours per day for the 3 <sup>rd</sup> lift Depending on tidal conditions About 8 to 10 weeks in total

Control measures	Extent to which they control risk
Operatives instructed to stand well clear as boulders are being loaded on to site and being placed	Reduces risk of operatives being accidentally hit by a moving boulder
Crushed Stone to be vibrated into all voids between the bales and covering layers to be substantially tracked by the excavator	Ensures that there is a sound and level working surface prior to placing the subsequent lifts of bales Reduces the possibility of slips, trips or vehicles driving on unstable ground

### Additional measures required

None

### Monitoring Results

Assessor  
Redacted

Position  
Principal Engineer

Date  
July 2017

### Risk Assessment

Location: St Margaret's Hope Pier

Operation/Process: Construct reinforced concrete deck slab

Equipment used: Concrete batching plant

Concrete mixer truck

Poker vibrator

Hydraulic concrete roller/finisher

Joinery saws and tools for shutters

Steel cutting tools for reinforcement

	Yes	No
Can task be eliminated		X
Substances used: are COSHH assessments required Cement	X	

### Hazards Identified

Risk	Low	Medium	High
Personnel batching and working with concrete		X	
Personnel working over water	X		
Personnel working at height	X		
Cutting reinforcing steel and placing	X		
Trip hazards due to shutters being laid out as panels for casting as alternative panels of concrete decking	X		

Exposed persons Those involved in risk	Total number 4
Frequency of exposure	All of working day for about 6 weeks

Control measures	Extent to which they control the risk
Cement for concrete batching to be bagged and protected from wind when loading the batching plant Eye protection to be worn	Reduces risk of eye injury or cement burns
Concrete batching to be suspended during periods of high wind	As above
Operatives to wear buoyancy aids when working at the edge of the structure	Reduces possibility of drowning should operatives fall into the sea
Safety boat available	As above
Operatives to be trained in operation of the hydraulic concrete finisher	Reduces risk of accident if operative is untrained

### Additional measures required

None

### Monitoring Results

Assessor  
Redacted

Position  
Principal Engineer

Date  
July 2017



## Appendix A 05

### Pre-Construction Information Documents

Ecological Survey Report dated 28<sup>th</sup> April 2016

Schedule to Licence no 05972/17/10 dated 08/3/2017 issued by Marine Scotland (enclosed)

Method Statement which formed appendix to paragraph 7 of the application to Marine Scotland (enclosed)

## Appendix A 06

### Drawing Schedule

Drawings nos SMH 311B

SMH 312C

SMH 313B

**Part 2 - Conditions**

1. The licensee must notify the licensing authority of the date of commencement and the date of completion of all operations relating to the licence. Separate notifications are required at the times of commencement and completion.
2. The licensee must ensure that only the deposits listed in Part 1 of the licence are deposited during the execution of the works and that all substances or objects deposited during the execution of the works are inert and do not contain toxic elements which may be harmful to the marine environment, the living resources which it supports or human health.
3. The licensee must remove all temporary deposits listed in Part 1 of the licence before the expiry date of this licence. This licence shall not continue in force after the expiry date of 07 March 2018.
4. The licensee must ensure that any debris or waste materials arising during the course of the works are removed from the site of the works for disposal at an approved location above the tidal level of Mean High Water Springs.
5. The licensee must ensure that all works are undertaken in strict accordance with the recommendations of the Otter Report dated the 28 April 2016.
6. The licensee must ensure that no more than 1150 tonnes of baled tyres are to be stored on the site and used in the works.
7. Where it is proposed to use tyres as part of the construction, the licensee must ensure that only compressed, banded tyre bales made in accordance with PAS 108 can be used in the construction phase.
8. Prior to the commencement of works a Suitable Qualified Engineer (SQE), approved by the licensing authority, must be appointed by the licensee for the period of the construction works.
9. The licensee must ensure that the works are inspected by the SQE and a report including evidence that appropriate standards have been met during the construction phase, is submitted to the licensing authority for approval.
10. Prior to the commencement of works the SQE approved by the licensing authority, must be appointed by the licensee for the period of the construction works.
11. The licensee must ensure that all tyre bales are inspected by the SQE and any deemed not fit for purpose must be disposed of at a site which has been an appropriate waste management licence granted by SEPA.
12. The licensee must ensure that the tyre bales are placed in position in strict accordance with the PAS 108 standard.
13. The licensee must ensure that that the roadside drainage remains effective permanently.
14. The licensee must, within 28 days of completion of the works or within 28 days of the date of expiry of the licence, whichever is the sooner, submit a written report to the licensing authority stating the nature and quantity of all substances and objects deposited below

Mean High Water Springs under authority of the licence. Where appropriate, nil returns shall be provided.

15. The licensee must notify Source Data Receipt, The Hydrographic Office, Admiralty Way, Taunton, Somerset, TA1 2DN (e-mail: [sdre@ukho.gov.uk](mailto:sdre@ukho.gov.uk); tel.: 01823 337900) of both progress and on completion of the works supply a copy of the licence, and wherever possible, 'as built plans', in order that all necessary amendments to nautical publications are made.
16. The licensee must issue a Notice to Mariners in advance of the proposed start date, clearly stating the nature and duration of these operations.
17. The licensee must ensure that a copy of this licence is given to each contractor appointed to carry out part or all of the works in order that they are clear about the extent of 'the works' for which consent has been given and the conditions that are attached to the consent.
18. The licensee must consult with the responsible local navigation authority and the Harbour Authority/Commissioners where appropriate, who may wish to issue local warnings to alert those navigating in the vicinity to the presence of the works during the construction.
19. The licensee must ensure appropriate steps are taken to minimise damage to the seabed by the works.
20. The licensee must ensure the seabed is returned to the original profile, or as close as reasonably practicable, following the completion of the works.
21. The licensee must ensure the best method of practice is used to minimise re-suspension of sediment during these works.
22. The licensee must ensure suitable bunding and storage facilities are employed to prevent the release of fuel oils, lubricating fluids associated with the plant and equipment into the marine environment.
23. If it is desired to display any marks or lights not required by this licence then details must be submitted to the Northern Lighthouse Board and their ruling complied with. The display of unauthorised marks or lights is prohibited.
24. The licensee must ensure that the works are maintained at all times in good repair.
25. The licensee must ensure that no deviation from the schedule specified in the licence is made without the further written consent of the licensing authority.
26. The licensee must ensure that no radio beacon or radar beacon operating in the marine frequency bands is installed or used on the works without the prior written approval of the licensing authority.
27. In the event of the licensed operations being discontinued the works must be removed and the site cleared to the satisfaction of the licensing authority.
28. The licensee must remove the works from below the level of Mean High Water Springs, or such alterations made, within one month of notice being given by the licensing authority at any time it is considered necessary or advisable for the safety of navigation, and not

replaced without further consent by the licensing authority. The licensee shall be liable for any expense incurred.

29. Any person authorised by the licensing authority must be permitted to inspect the works at any reasonable time.
30. The licensee must ensure that copies of the licence are available for inspection by any authorised Enforcement Officer at:
  - a) the premises of the licensee;
  - b) the premises of any agent acting on behalf of the licensee; and
  - c) the site of the works.
31. In the event of the licensee becoming aware that any of the information on which the issue of the licence was based has changed, the licensing authority must be immediately notified of the details.

## Appendix A 07

### Responsibilities for Health & Safety – Pentland Ferries

Redacted

Managing Director

## Appendix A 08

### Introduction to Safe Systems of Work SSOW

Knowledge, skills, competence, attitude

Principles of work control and how work is controlled within the SSOW system

Main legal requirements:

PPE Personal protection equipment

COSHH Control of substances hazardous to health

PUWER Possession and use of work equipment regulations

LOLER Lifting operations and lifting equipment regulations

Health & Safety at Work Act 1974 – primary legislation

Health & Safety Guidance 250 – guidance document – good practice

Manual Handling Regulations

Working at height

Use of electrical equipment

Noise

Use of hazardous substances

Use of work equipment

## Appendix A 09

Site Safety Induction Information and Confirmation

Appendix A 09

Induction Confirmation

Site: St Margaret's Hope Pier, Orkney

Person giving induction:

Date of induction:

The following items have been explained to the inductee:

- The Company's policy for health, safety and welfare.
- Allocation of safety responsibilities.
- Site specific rules.
- Safe systems of work, where applicable.
- General hazards in and around their work area.
- Specific hazards allied to their work area including the detail of the risk assessment and noise implications of that task.
- Fire and emergency procedures (including the location and use of extinguishers).
- First aid – names and locations of appointed persons/first aiders, introduction to them, position of first aid boxes and rules for their use.
- Use, availability and storage of protective clothing and equipment.
- Procedures for reporting accidents, injuries and property damage.
- Welfare – location of messing facility, toilets and other welfare matters.
- The importance of hygiene and health.

I have received the site safety induction and understand the safety requirements and obligations placed upon me.

Signed by.....(having received safety induction)

Print name.....

Company.....

This form is to be held in the site records.