

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

Version 1.0

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

## Acronyms

Please note the following acronyms referred to in this application form:

<b>BPEO</b>	Best Practicable Environmental Option
<b>EIA</b>	Environmental Impact Assessment
<b>ES</b>	Environmental Statement
<b>MHWS</b>	Mean High Water Springs
<b>MMO</b>	Marine Mammal Observer
<b>MPA</b>	Marine Protected Area
<b>MS-LOT</b>	Marine Scotland – Licensing Operations Team
<b>PAM</b>	Passive Acoustic Monitoring
<b>SAC</b>	Special Area of Conservation
<b>SNH</b>	Scottish Natural Heritage
<b>SPA</b>	Special Protection Area
<b>SSSI</b>	Site of Special Scientific Interest
<b>WGS84</b>	World Geodetic System 1984

## Explanatory Notes

The following numbered paragraphs correspond to the questions on the application form and are intended to assist in completing the form. These explanatory notes are specific to this application and so you are advised to read these in conjunction with the Marine Scotland Guidance for Marine Licence Applicants document.

### **1. Applicant Details**

The person making the application who will be named as the licensee.

### **2. Agent Details**

Any person acting under contract (or other agreement) on behalf of any party listed as the applicant and having responsibility for the control, management or physical deposit or removal of any substance(s) or object(s).

### **3. Payment**

Indicate payment method. Cheques must be made payable to: The Scottish Government.

**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.**

### **4. Application Type**

Indicate if the application is for a new construction site or an existing construction site. Provide the existing or previous consent/licence number and expiry date if applicable.

### **5. Project Details**

- (a) Give a brief description of the project (e.g. construction of a new sea outfall).
- (b) Provide the total area of proposed works in square metres.
- (c) Provide the proposed start date of the project. The start date will not be backdated, since to commence a project for which a licence has not been obtained will constitute an offence, which may result in appropriate legal action. A licence is normally valid for the duration of the project but not exceeding 3 years. If a project will not be completed before a marine licence lapses, it will be necessary for licence holders to re-apply for a further licence to continue any ongoing work at least 14 weeks prior to the expiry date of the licence. **Target duration for determination of a marine licence application is 14 weeks.**
- (d) Provide the proposed completion date of the project.
- (e) Provide the cost of the works seawards of the tidal limit of MHWS. This estimate should only cover

work taking place below the tidal level of MHWS and must take into consideration the cost of materials, labour fees etc.

- (f) Describe the location of the proposed works. Include a list of the latitude and longitude co-ordinates (WGS84) of the boundary points of the proposed project. WGS84 is the World Geodetic System 1984 and the reference co-ordinate system used for marine licence applications. Co-ordinates taken from GPS equipment should be set to WGS84. Coordinates taken from recent admiralty charts will be on a WGS84 compatible datum. Ordnance survey maps do not use WGS84. In a few cases, (e.g. laying of long pipelines) it may only be practicable to supply co-ordinates for the start and end points.

**Example:** For positions read from charts the format should be as in the example: 55°55.555'N 002°22.222'W (WGS84). The decimal point specifies that decimals of minutes are used and the datum is stated explicitly. If seconds are used then the format should be as in the example: 55°55'44"N 2°22'11"W (WGS84).

**It is important that the correct positions, in the correct format, are included with this application, as any errors will result in the application being refused or delayed.**

To supplement your application, please provide photographs of the project location and submit these with your application. Please also provide a suitably scaled extract of an Ordnance Survey Map (1:2,500 scale but not more than 1:10,000) or Admiralty Chart which must be marked to indicate:

- the full extent of the works in relation to the surrounding area;
- latitude and longitude co-ordinates defining the location of the works;
- the level of MHWS;
- any adjacent SAC, SPA, SSSI, MPA, Ramsar or similar conservation area boundary.

Drawings and plans will be consulted upon. If they are subject to copyright, **it is the responsibility of the applicant to obtain necessary approvals to reproduce the documents and to submit suitably annotated copies with the application.**

**Sewer outfalls, discharge pipes for industrial waste etc.** The size and description of the pipe must be shown on the longitudinal sections and also details of its supports, foundations, methods of jointing and details of any tidal flaps.

**Bridges over tidal waters:** An elevation with longitudinal and cross-sections of the bridge to a suitable scale must show the dimensions of the spans and width of piers, etc. above and below MHWS and the maximum and minimum heights of the undersides of the superstructures above MHWS. The headroom above MHWS and the width of span of the nearest bridges, if any, above and below the site must be stated.

**Tunnels under tidal waters:** The longitudinal section of the tunnel must show the distances between the bed of the river or estuary and the top of the tunnels. Cross-sections must show the internal and external dimensions of the tunnel and particulars of construction. When a proposed future dredging level is known this must also be shown on all sections.

**Overhead cables:** Catenary must be supplied in addition to the site plan showing the minimum clearance of the cable at MHWS and the electrical clearance allowed.

- (g) Indicate if the project is located within the jurisdiction of a statutory harbour authority and provide details of the statutory harbour authority where relevant.
- (h) Provide a full method statement, including schedule of works and the ultimate fate of the structure.
- (i) Provide assessment of the potential impacts the works may have, including interference with other uses of the sea. Please include details of areas of concern e.g. designated conservation areas, such as a SAC, SPA, SSSI, MPA or Ramsar site and shellfish harvesting areas. Further guidance on designated conservation areas can be obtained from SNH at this website:

<http://gateway.snh.gov.uk/sitelink/index.jsp> and guidance on shellfish harvesting areas can be obtained from <http://www.foodstandards.gov.scot/> with regards to the Shellfish Waters Directive (2006/113/EC) which has parameters set to protect the water quality in which edible shellfish are grown.

Applicants should also be aware of the need to pay due regard to coastal and marine archaeological matters and attention is drawn to Historic Scotland's Operational Policy Paper HP6, "Conserving the Underwater Heritage".

Any application for beach replenishment works must be cross checked as to whether the proposed site is a designated bathing water site. If so, all physical works should ideally be done outwith the Bathing Water Season (1<sup>st</sup> June to 15<sup>th</sup> September). Further guidance on the Bathing Waters Directive (2006/7/EC) can be obtained from <http://apps.sepa.org.uk/bathingwaters/>.

Where there are potential impacts from the works, please provide details of proposed mitigation, such as use of MMOs or PAM, in response to potential impacts.

## 6. Deposits and/or Removals

- (a) Complete the table to indicate all permanent substances or objects to be deposited and/or removed from below MHWS. If you propose using types of substances or objects for which a specific box is not provided in the table, please describe the nature of such substances or objects in the box marked "other".
- (b) Please indicate the method of delivery of any substance(s) or object(s) to be placed below MHWS.
- (c) Where the proposed work involves salt marsh feeding, beach replenishment or land reclamation the description of the substances or objects must include details of its chemical quality. Where the substances or objects have not been chemically analysed, MS-LOT may request representative samples for analysis or require the applicant to arrange for analyses to be undertaken before the marine licence application can be determined.
- (d) If temporary deposits are required, please provide details as with the permanent deposits above. The temporary deposit location details (Latitude and Longitude WGS84) must be added to the form, and the period of time the site will be used must be provided. If granting a licence, MS-LOT will include on the document details of any area that has been approved as a temporary deposit site.

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

- (a) If you are proposing to dispose of any excess substance(s) or object(s) arising from the project at sea, a separate marine licence will be required (see Dredging and Sea Disposal application form). The granting of a marine licence for construction projects does not imply that a marine licence for sea disposal will also be granted as different assessment criteria are used to determine each type of application. If a separate application is being submitted for dredging and sea disposal then this must be accompanied with a BPEO report.
- (b) Provide the quantity of dredged substance(s) or object(s) for sea disposal in wet tonnes.

## 8. Noise Monitoring

Under the Marine Strategy Regulations (2010), there is now a requirement to monitor loud, low to mid frequency (10Hz to 10kHz) impulsive noise. Activities where this type of noise is produced include seismic airguns, other geophysical surveys (<10kHz), pile driving, explosives and certain acoustic deterrent devices. Where noisy activity is being undertaken, you must complete an initial registration form for the noise registry which allows you to provide details on the proposed work. Completion of a 'close-out' form, which allows licensees to provide details of the actual dates and locations where the activities occurred, is also required within 12 weeks of the completion of the 'noisy' activity or, in the case of prolonged activities such as piling for harbour construction or wind farms, at quarterly intervals or after each phase of foundation installation.

These forms can be downloaded from:

<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

Please describe in the answer to this question what (if any) statutory responsibilities you (or your client) have to consent any aspect of the project.

## 10. Scotland's National Marine Plan

Scotland's National Marine Plan has been prepared in accordance with the EU Directive 2014/89/EU, which came into force in July 2014. The Directive introduces a framework for maritime spatial planning and aims to promote the sustainable development of marine areas and the sustainable use of marine resources. It also sets out a number of minimum requirements all of which have been addressed in this plan. In doing so, and in accordance with article 5(3) of the Directive, Marine Scotland have considered a wide range of sectoral uses and activities and have determined how these different objectives are reflected and weighted in the marine plan. Land-sea interactions have also been taken into account as part of the marine planning process. Any applicant for a marine licence should consider their proposals with reference to Scotland's National Marine Plan. A copy of Scotland's National Marine Plan can be found at: <http://www.gov.scot/Publications/2015/03/6517/0>

Indicate whether you have considered the project with reference to Scotland's National Marine Plan and 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. If you have not considered the project with reference to Scotland's National Marine Plan please provide an explanation.

## 11. Pre-Application Consultation

Certain activities will be subject to public pre-application consultation. Activities affected will be large projects with the potential for significant impacts on the environment, local communities and other legitimate uses of the sea. The new requirement will allow those local communities, environmental groups and other interested parties to comment on a proposed development in its early stages – before an application for a marine licence is submitted. Further information can be obtained from: <http://www.scotland.gov.uk/Resource/0043/00439649.pdf>

If applicable, please provide your pre-application consultation report with your application.

## 12. Consultation (other than carried out under pre-application consultation)

Provide details of all bodies consulted and give details of any consents issued including date of issue.

## 13. Environmental Assessment

- (a) Under the Marine Works Environmental Impact Assessment (EIA) Regulations 2007, there may be a requirement for certain projects to undergo an EIA and produce an ES. If EIA is required, MS-LOT will not determine a marine licence application until the EIA consent decision in respect of the marine licence application has been reached. Please confirm if the project falls under Annex I or II of Directive 85/337/EEC: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0092&from=EN> in relation to the Marine Works (EIA) Regulations 2007.

**Marine licence applications for proposals which fall under the regulations will not be accepted unless a screening opinion has been issued in relation to this.**

- (b) Please indicate if an EIA has been undertaken and whether it was for the marine licence application to which this application relates or for any other EIA regulator (e.g local authority). Please attach any previous ES to the application.

**MS-LOT will not determine a marine licence application until the EIA consent decision in respect of any regulated activity associated with the marine licence application has been reached.**

## 14. Associated Works

Indicate whether the application is associated with any other marine projects (e.g. land reclamation, marine/harbour construction works, dredging and sea disposal etc). If this is the case, provide reference/licence number for the related marine projects.

# Marine Licence Application for Construction Projects

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## 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.

N/A

## 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.

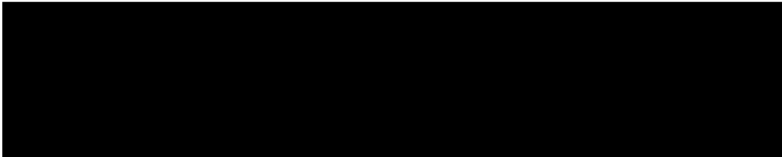
Target duration for determination is 14 weeks. Please note that missing or erroneous information in your application and complications resulting from consultation may result in the application being refused or delayed.

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

19/7/21

Name in BLOCK LETTERS

JAMIE SCOTT

### 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 ☐
- Project Drawings ☒
- Maps/Charts ☒
- Co-ordinates of the boundary points of the area of harbour jurisdiction (if you are a statutory harbour authority) ☒
- Method Statement ☒
- Photographs of the location of the project ☒
- Additional information e.g. consultation correspondence (if applicable) ☐
- Noise Registry – Initial Registration Form (if applicable) ☐
- Pre-application Report (if applicable) ☐
- Environmental Statement (if applicable) ☐
- Payment (if paying by cheque) ☐

### 1. Applicant Details

Title: **Mr** Initials: **B** Surname: **Sydney**

Trading Title (if appropriate): **Caledonian Maritime Assets Ltd (CMAL)**

Address: Caledonian Maritime Assets Ltd, Municipal Buildings, Fore Street, Port Glasgow, PA14 5EQ

Name of contact (if different): **Brian Syndey**

Telephone No. (inc. dialing code): **+44 (0) 1475 440058**

Email: **brian.sydney@cmassets.co.uk**

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: **Mr** Initials: **J** Surname: **Scott**

Trading Title (if appropriate): **Jacobs U.K. Limited**

Address: Jacobs U.K. Limited, 95 Bothwell Street, Glasgow, G2 7HX

Name of contact (if different): **Jamie Scott**

Telephone No. (inc. dialing code): **+44 (0)131 659 1505**

Email: **jamie.scott@jacobs.com**

### 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

#### 5. Project Details

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

The demolition and removal of the Old Pier and associated structures at Brodick Ferry Terminal. The construction of a new section of rock armour revetment at the root of the Old Pier.

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

1350 m<sup>2</sup>

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

01 September 2021

(d) Proposed completion date:

30 April 2022

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

£3,000,000

(f) Location:

Brodick Ferry Terminal, Brodick, Isle of Arran, KA 27 8AY

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

Additional 66 examples form if necessary.

Latitude									
5	5	°	3	4	.	6	0	3	'N
5	5	°	3	4	.	6	1	4	'N
5	5	°	3	4	.	6	3	5	'N
5	5	°	3	4	.	6	5	7	'N
5	5	°	3	4	.	6	6	5	'N
5	5	°	3	4	.	6	6	8	'N
5	5	°	3	4	.	6	6	2	'N
5	5	°	3	4	.	6	5	1	'N
5	5	°	3	4	.	6	4	4	'N
5	5	°	3	4	.	6	3	5	'N

Longitude										
0	0	5	°	0	8	.	3	7	6	'W
0	0	5	°	0	8	.	4	0	2	'W
0	0	5	°	0	8	.	4	1	9	'W
0	0	5	°	0	8	.	4	0	3	'W
0	0	5	°	0	8	.	3	7	7	'W
0	0	5	°	0	8	.	3	4	9	'W
0	0	5	°	0	8	.	2	9	7	'W
0	0	5	°	0	8	.	2	4	1	'W
0	0	5	°	0	8	.	2	2	4	'W
0	0	5	°	0	8	.	2	2	2	'W

SoP1

SoP10

See Appendix 01  
for SoP11-19

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

YES ☒ NO ☐

If **YES**, please specify statutory harbour authority:

Caledonian Maritime Asset Limited (CMAL)

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

Refer to Appendix 03.

(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):

Refer to Appendix 04.



## 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		No.	330 tonnes	No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Timber		No.	130 tonnes	No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Concrete		No.	2240 tonnes	No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Plastic/Synthetic		m <sup>2</sup>	10 tonnes	m <sup>2</sup>
Clay ( $< 0.004$ mm)		Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		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)		Volume (m <sup>3</sup> )	1230 tonnes	Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)
Gravel ( $2.00 \leq \text{Gravel} < 64.0$ mm)		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)		Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)
Boulders ( $\geq 256.0$ mm)	1800 tonnes	Volume (m <sup>3</sup> )		Volume (m <sup>3</sup> )
		Weight (kg/tonnes)		Weight (kg/tonnes)



Pipe		Length (m)		Length (m)
		External Diameter (cm/m)		External Diameter (cm/m)
Other (please describe below):				

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

It is anticipated that the vast majority of material will be transported to and from site by sea on barges. However, there is no restriction on materials entering or leaving the site by the marshalling area, providing that it is coordinated with the Port Manager.

(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.):

N/A

Source (if sea dredged state location of origin)

N/A

Particle size:

N/A

Have the substance(s) or object(s) been chemically analysed?

YES ☐ NO ☒

If YES, please include the analysis data with your application

(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	One jack up barge (4No steel legs) and two spud leg barges (2No legs each plus anchor spread) are anticipated for pile removal	8	No.
		1m diameter tubes 30m long	Dimensions
		120 tonnes tota (approx)	Weight (kg/tonnes)
Timber			No.
			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):	
Use of hydraulic and/or pneumatic breakers to break up concrete structures	
Vibratory equipment used to remove piles	

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?

N/A

## 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:

The works included in this application have been considered accordance with Scotland's National Marine Plan and comply with specific General Policies (GEN) as described below

**GEN 7 Landscape/seascape** This project seeks to remove all existing infrastructure associated with the Old Pier. By doing so, the seabed will be returned to its natural state and result in an overall positive impact on seascape. The rock armour revetment planned under this project is designed to complete the adjacent revetment sections with similar material such that a consistent visual profile is maintained along the waterfront.

**GEN13 Noise** The demolition and removal works will likely involve noise creation due to vibratory pile removal and use of hydraulic breakers. However, the contractor has to measure noise generated by such techniques and demonstrate how the impact of this noise has been mitigated as part of the works. Further consideration of the potential impacts and mitigation due to noise are included in Appendix 04.

**Section 13 Shipping, Ports, Harbours and Ferries** As this is a demolition of an unused ferry terminal, the long-term impact on ferries, harbours etc. will be negligible. During construction, the Contractor will liaise and coordinate movements of any vessels they use, taking cognisance of the adjacent ferry terminal. Requirement of this are outlined in the works Scope.

**Socio-economic benefits** Although minor, the main socio-economic benefit from demolition of this structure will be through the improved landscape being more appealing to arriving tourists as well as improving the look for local residents in general. It will also remove the requirement to pay to inspect and repair an unused structure to prevent collapse. Short-term economic benefit will be the presence of a contractor and supervision team during the off-season of tourism, who will utilise local accommodation and services.

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

N/A

### 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
Pre-application consultation statement received from MS-LOT confirming that no pre-application consultation is required.	30th April 2021

### 12. Consultation

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

N/A

### 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):

N/A

## Appendix 01 - Marine Licence Application Additional Co-ordinates

Please use this appendix to provide any additional latitude and longitude co-ordinates (WGS84) for your marine licence application. Please identify the location details and provide exact latitude and longitude co-ordinates (WGS84).

[illegible]

[illegible]

## Declaration

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

## 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.**

Signature

# Jamie Scott

Digitally signed by Jamie Scott  
DN: cn=Jamie Scott, c=GB,  
o=Jacobs UK Limited,  
email=jamie.scott@jacobs.com  
Date: 2021.07.19 12:30:39 +01'00'

Date

19/7/21

Name in BLOCK LETTERS

JAMIE SCOTT

**Please check carefully the information you have given**

## Appendix 02

### Drawings and Photographs







## LOCATION PLAN

NAT10 Scale

TABLE 1: Setting Out Points

Point No.	Easting	Northing
SOP-01	202183.6	655626.16
SOP-02	202187.82	6559.8.73
SOP-03	2021.1	655688.83
SOP-04	202186.1	65627.78
SOP-05	202188.38	6560.1.9
SOP-06	202217.60	6560.5.07
SOP-07	202271.28	656033.13
SOP-08	202229.00	656009.98
SOP-09	2023.6.70	655958.89
SOP-10	2023.8.86	655978.82
SOP-11	202322.35	655938.85
SOP-12	202322.09	655937.16
SOP-13	202298.31	6559.0.3
SOP-14	202258.5	6559.0.3
SOP-15	20221.5	655930.3
SOP-16	202208.1	655628.87
SOP-17	202207.66	655931.19

## SAFETY, HEALTH AND ENVIRONMENT INFORMATION

The hazards noted below are in addition to those normally associated with the type of work outlined on this drawing.

Construction Phase (including partial demolition)

Post Construction Phase (at least 100m)

The above notes are included on the assumption that works will be carried out by a competent contractor using an approved safe method of working (e.g. risk assessment and method statement).

## Notes:

- Do not scale from this drawing.
- All dimensions are in metres unless noted otherwise.
- SCP coordinates are relative to OSG83.
- From SOP-13 to SOP-15 and SOP-17 to SOP-18 to be confined to pavement with no overtopping of marshalling area.
- From SOP-16 to SOP-17 to be confined to marshalling area with no overtopping of white line between areas 1 and 5.

NO.	REVISION	DATE	BY	CHK
1	Rev. 1.0	2023/08/01	JAC	OK
2	Rev. 1.1	2023/08/01	JAC	OK

This drawing is a technical drawing and is not to be used for any other purpose without the written consent of Jacobs.

## Legend

Boundary of the site

DO NOT SCALE

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BROCK DEMOLITION

Drawn by

Checked by

Approved by

Project number

0

## LOCATION PLAN & SITE BOUNDARY

PRELIMINARY

AS SHOWN @ A1

DO NOT SCALE

Rev

0

B2395000-JAC-DR-001



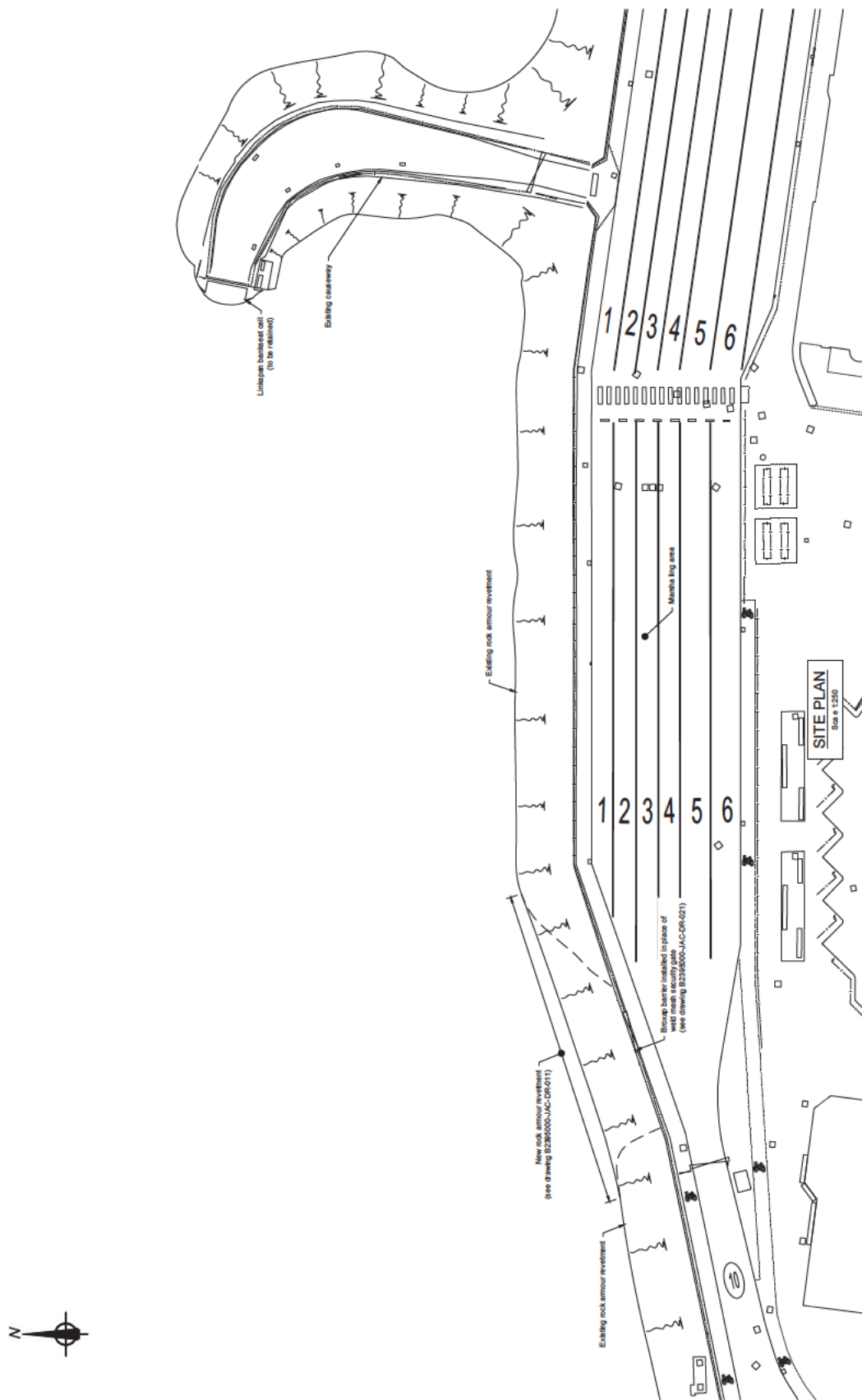
**SAFETY, HEALTH AND ENVIRONMENT INFORMATION**

The hazards noted below are in addn to those normally associated w th the types of work deta led on this drawing

Construction Phase (including partial demolition)

Post Construction Phase (through life)

The above notes are included on the assumption that works will be carried out by a competent contractor using an approved safe method of working (e.g. risk assessment and method statement).



**Notes:**

### Investing in the

## PROPOSED ARRANGEMENT

### Transfer of values

PRELIM

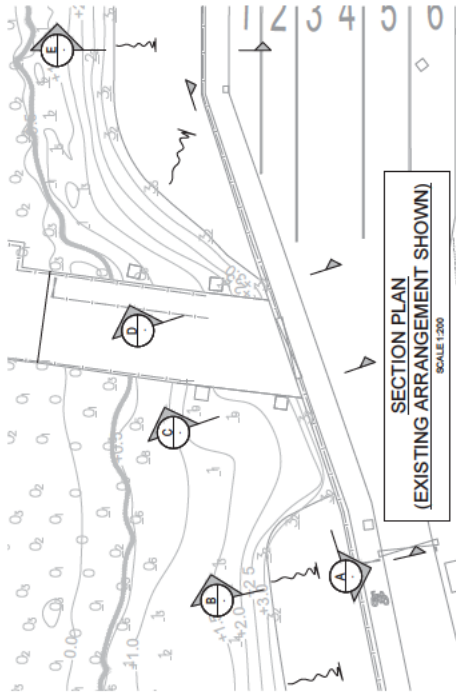
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PRELIMINARY		

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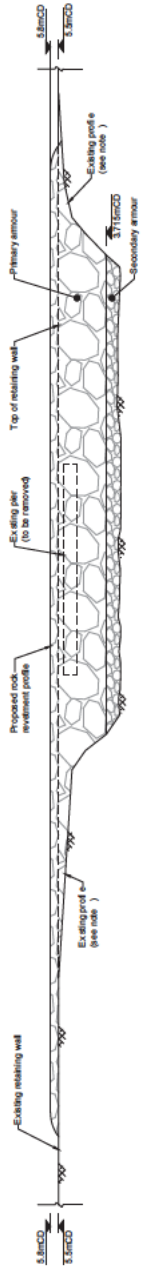
32395000-JAC-DR-003 Accession number	32395000-JAC-DR-003 Accession number
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03

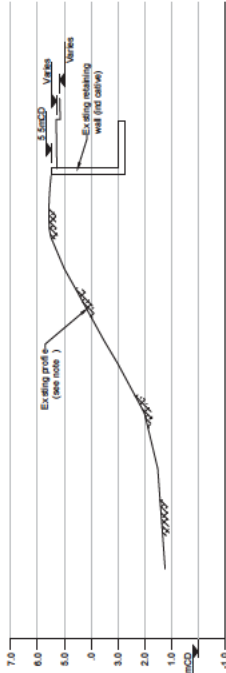




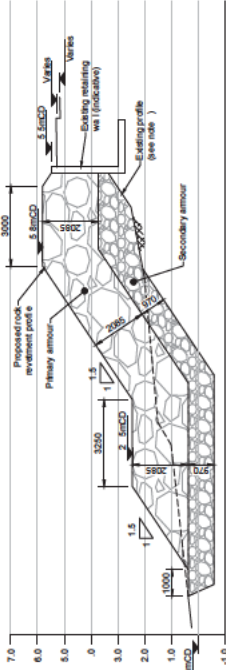
SECTION PLAN  
(EXISTING ARRANGEMENT SHOWN)  
SCALE 1:200



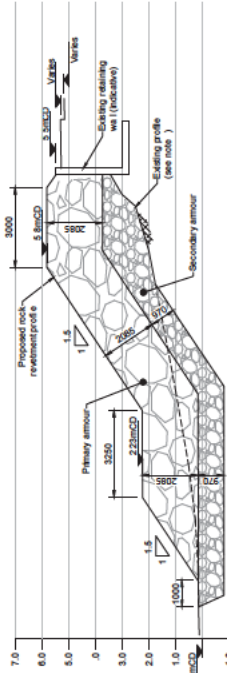
SECTION A  
(LONG SECTION THROUGH PROPOSED REVETMENT)  
Scale 1:100



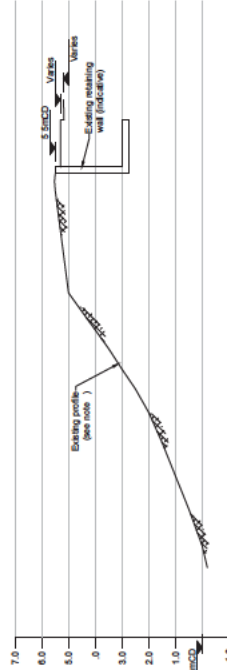
SECTION B  
Scale 1:100



SECTION C  
Scale 1:100



SECTION D  
Scale 1:100



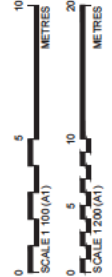
SECTION E  
Scale 1:100

SAFETY, HEALTH AND ENVIRONMENT INFORMATION
The hazards noted below are in addition to those normally associated with the type of work conducted on the following Construction Phase (including partial demolition) of the existing retaining wall and the proposed rock revetment. Due to the possibility that the existing rock armour may have been destabilised by wave action.
Real Construction Phase (Brock Dock) PH1
The above notes are included on the assumption that works will be carried out by a competent contractor using an approved safe method of working (e.g. the assessment and method statement).

NO.	REVISION	DATE	BY	CHK	APP	CHK
1	Issue 1	12/01/2024	JAC	JAC	JAC	JAC
2	Issue 2	12/01/2024	JAC	JAC	JAC	JAC
3	Issue 3	12/01/2024	JAC	JAC	JAC	JAC
4	Issue 4	12/01/2024	JAC	JAC	JAC	JAC
5	Issue 5	12/01/2024	JAC	JAC	JAC	JAC
6	Issue 6	12/01/2024	JAC	JAC	JAC	JAC
7	Issue 7	12/01/2024	JAC	JAC	JAC	JAC
8	Issue 8	12/01/2024	JAC	JAC	JAC	JAC
9	Issue 9	12/01/2024	JAC	JAC	JAC	JAC
10	Issue 10	12/01/2024	JAC	JAC	JAC	JAC

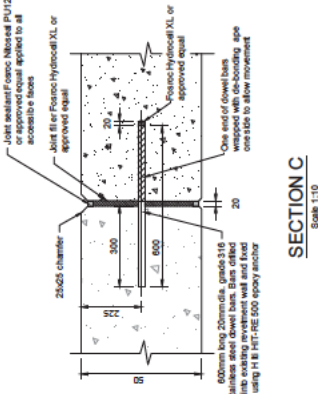
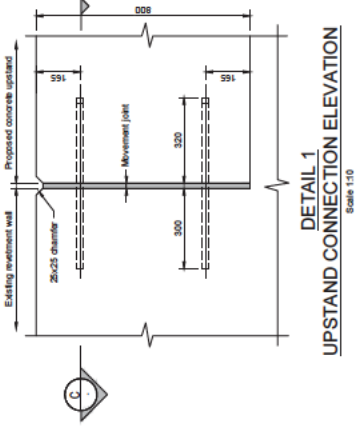
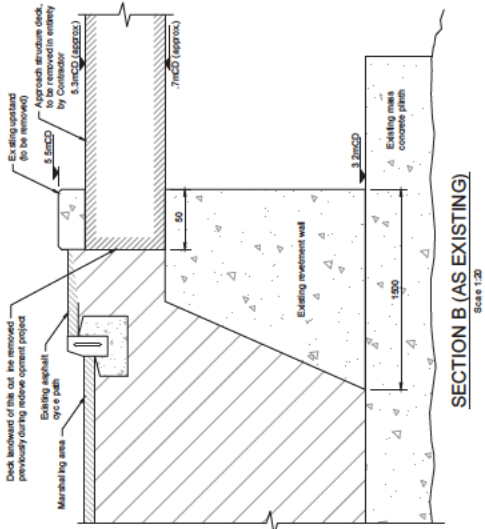
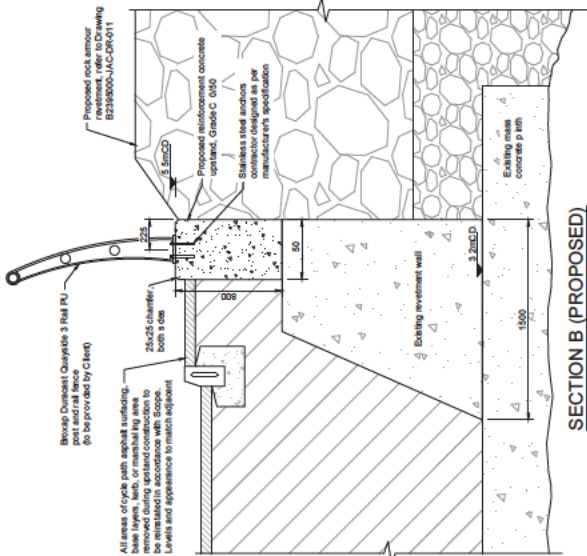
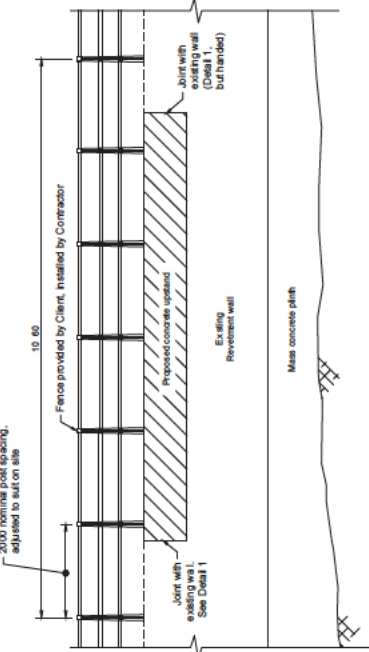
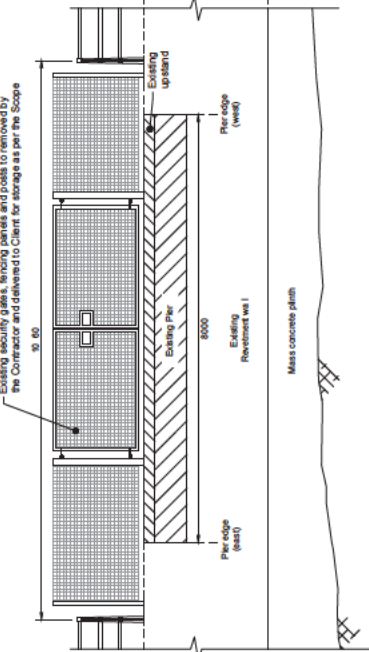
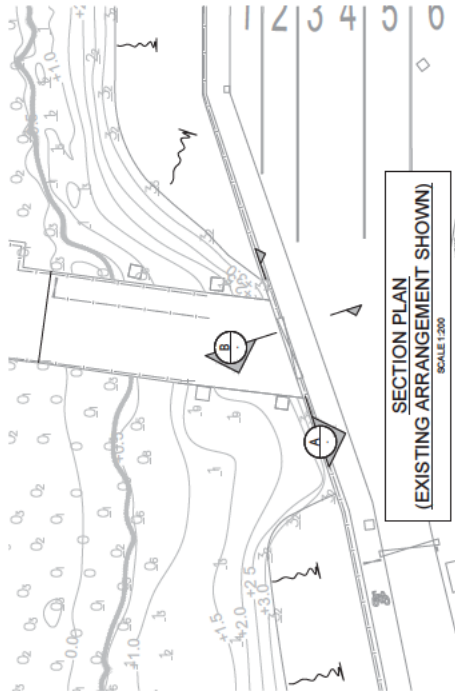
- Notes:
- Do not scale from a drawing.
  - All dimensions in metres unless otherwise noted.
  - All levels in metres above chart datum unless noted otherwise.
- Existing profile based on multi-beam bathymetric survey completed by AspectLand and Hydrographic Surveys in November 2018.

- Legend
- Primary rock armour
  - Secondary rock armour



Client	Jacobs
Project	BROCK DEMOLITION

Drawing title			Drawing status	
PROPOSED REVETMENT PLAN AND SECTIONS			PRELIMINARY	
Scale	AS SHOWN @ 1:1	DO NOT SCALE		
Issued by		Rev	0	
Checked by				
Drawn by				
Drawing number			B2395000-JAC-DR-011	



SAFETY, HEALTH AND ENVIRONMENT INFORMATION	
The hazards noted below are in addition to those normally associated with the type of work detailed on this drawing.	
Construction Phase (including partial demolition)	
C1: Special care is to be taken when taking the new section of revetment into the existing revetment, due to the possibility that the existing rock armour may have been consolidated by wave action.	
Post Construction Phase (through life)	
The above notes are included in the drawing and the work to be carried out by a competent contractor using approved safe methods of working (e.g. risk assessment and method statement).	

- Notes:
- Do not scale from this drawing.
  - All dimensions in metres unless otherwise noted.
  - All levels in metres above chart datum unless noted otherwise.
  - Existing profile is based on multi-bathymetric survey completed by Aspect Land and Hydrographic Surveys in November 2018.
  - For details of reinforcement refer to drawing B2395000-JAC-DR-022.

NO.	REVISIONS	DATE	BY	CHK	APP
1	Issue 1	10/01/2020	JAC	JAC	JAC
2	Issue 2	10/01/2020	JAC	JAC	JAC
3	Issue 3	10/01/2020	JAC	JAC	JAC
4	Issue 4	10/01/2020	JAC	JAC	JAC
5	Issue 5	10/01/2020	JAC	JAC	JAC
6	Issue 6	10/01/2020	JAC	JAC	JAC
7	Issue 7	10/01/2020	JAC	JAC	JAC
8	Issue 8	10/01/2020	JAC	JAC	JAC
9	Issue 9	10/01/2020	JAC	JAC	JAC
10	Issue 10	10/01/2020	JAC	JAC	JAC

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**CIVIL**  
Engineering & Construction

**BRODICK DEMOLITION**

Client: **BRODICK DEMOLITION**

Project: **BRODICK DEMOLITION**

PROPOSED PIER ROOT MODIFICATIONS	
Drawn by: <b>JAC</b>	Checked by: <b>JAC</b>
Scale: <b>AS SHOWN @ A1</b>	DO NOT SCALE
Drawn date: <b>10/01/2020</b>	Drawn number: <b>0</b>
Preliminary	
B2395000-JAC-DR-021	





## 1. Introduction

This document references the supporting drawings and contains photographs in support of a Marine License application for the demolition of the 'Old Pier' and associated structures at Brodick Ferry Terminal.

### 1.1 Referenced Drawings

The project drawings included with the Marine License application are as follows:

Table 1 Drawings

Drawing No.	Title
B2395000 Figure 1	Site Location
B2395000-JAC-DR-001	Location Plan and Site Boundary
B2395000-JAC-DR-002	Existing Infrastructure
B2395000-JAC-DR-003	Proposed Arrangement
B2395000-JAC-DR-011	Proposed Revetment Plan and Sections
B2395000-JAC-DR-021	Proposed Pier Root Modifications
B2395000-JAC-DR-022	Proposed Concrete Upstand Reinforcement Details

## 1.2 Supporting Photographs

The following photographs of the site as-existing are included in support of the application.



Figure 1 View on pier head from northeast



Figure 2 Inner mooring dolphin from south



Figure 3 Inner mooring dolphin (left) and outer berthing/mooring dolphin (right) from north





Figure 4 Pier approach and pier head from outer berthing/mooring dolphin



Figure 5 West side of pier approach and berthing/mooring dolphins from marshalling area





Figure 6 Pier building, deck and approach to marshalling area from pier head



Figure 7 Pier approach from west





Figure 8 Pier approach from east



Figure 9 Pier approach to marshalling area from pier head, showing revetment to be completed





Figure 10 Pier head, inner lifting dolphin (left) and outer lifting dolphin (right)

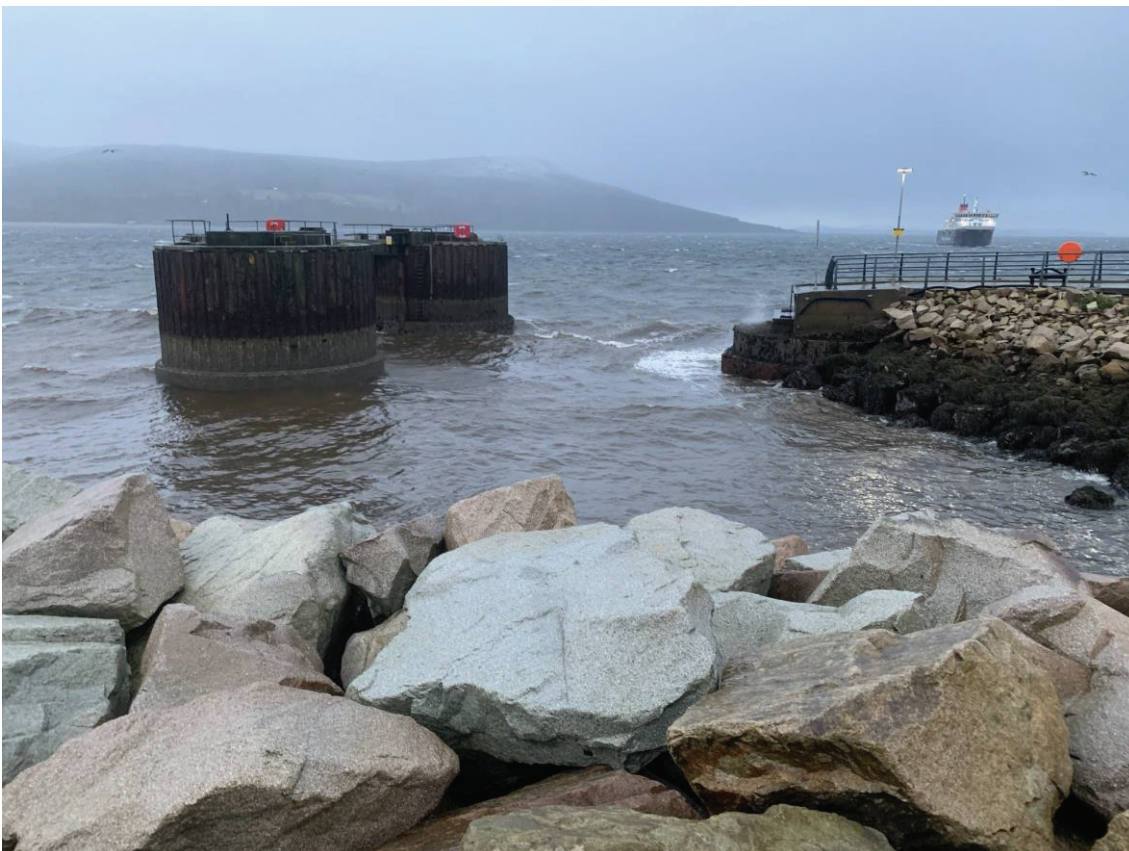


Figure 11 Lifting dolphins (left) and causeway (right, to be retained) from marshalling area



# Appendix 03

## Method Statement

## 1. Introduction

This document details an outline method statement for the demolition of the structures associated with the 'Old Brodick' Ferry Terminal in support of a Marine License application.

It is noted that the methodology discussed herein has been developed as part of the design stage, prior to contractor involvement. Therefore, some variation is expected within the bounds permitted by the requirements of the Scope.

An aerial view of the site is shown in Figure 1-1 for ease of reference.

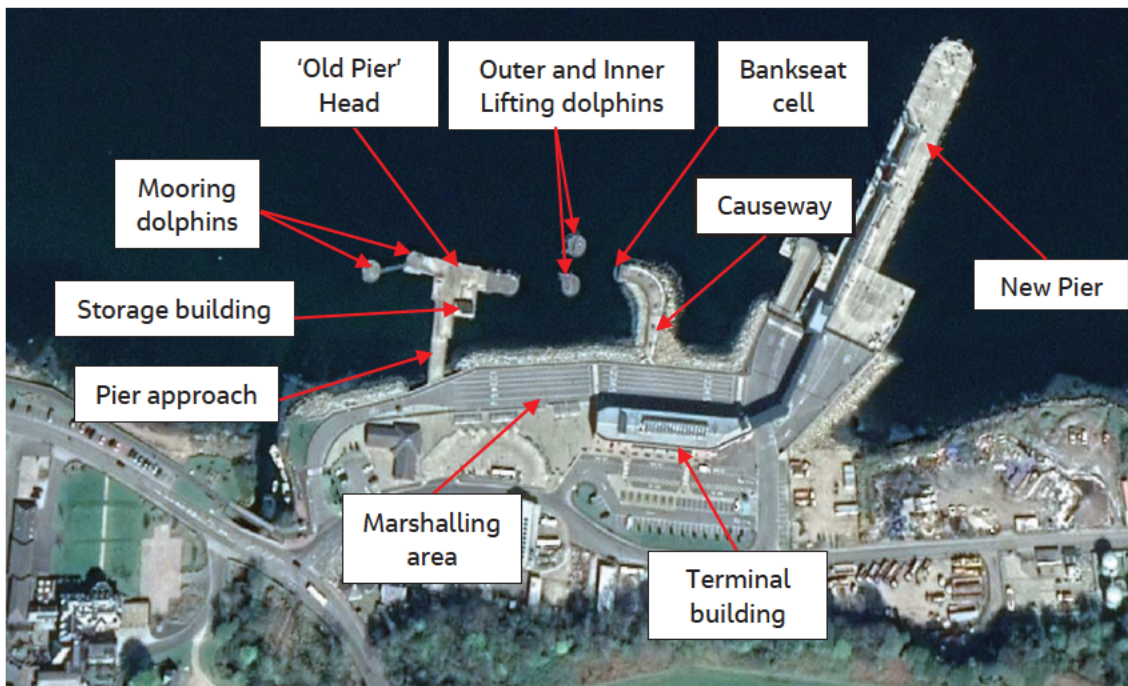


Figure 1-1 Aerial view of Brodick Ferry Terminal (source: Google Maps)

The works comprise the demolition of the following items:

1. Pier approach structure
2. Pier head, including 2No. support cells and legacy pier area
3. Storage building on pier head
4. Outer lifting dolphin
5. Inner lifting dolphin
6. Inner mooring dolphin
7. Outer berthing/mooring dolphin
8. Fender piles, bearing piles, sheet piles, cut-off piles and foundation plinths
9. Concrete decks of the pier approach and pier head including ramps, surfacing and concrete upstands
10. All mooring bollards

11. Fendering and rubbing strips
12. Fencing and handrailing
13. Passenger access system rails, which are cast into the deck of the pierhead
14. Lighting fixtures and supports
15. Stairs, walkways, and ladders
16. Services including cabling and piping
17. Miscellaneous deck furniture
18. Concrete scour mattresses, gabion baskets and repair concrete on seabed

Summary of items to be constructed as part of the works:

1. Rock armour revetment at root of removed pier
2. Construction of concrete upstand and provision of handrailing to replace mesh gates at root of pier

The following structures are to be retained as part of the works:

1. Bankseat cell
2. Causeway

## 2. Record of Structures

The following sub-sections describe the structures that are to be removed under the demolition project.

### 2.1 Approach Structure

Legacy approach structure (installed circa. 1970), consisting of:

- Concrete deck, shallow arched concrete supported by longitudinal I-beams
- Alternating timber and reinforced concrete bearing piles
- Some timber piles are encased in concrete
- Timber cross-bracing beams and transverse beams on underside of deck and at low water
- Reinforced concrete longitudinal beams
- 3No. fuel pipes fixed to underside of deck, which have been degassed as part of previous Brodick Redevelopment Project

New section of approach structure (installed 1994), consisting of reinforced concrete deck including ramp from legacy structure up to new pier head level. Considered as part of new pier head below. Note that no new steel piles are present underneath the ramp or the legacy structure.

### 2.2 Pier Head

Legacy pier head (installed circa. 1970), consisting of:

- 450mm thick concrete deck
- Timber bearing piles
- Storage building present

New pier head (installed 1994), consisting of:

- Reinforced concrete deck (flat slab construction), overlaid on legacy pier
- 39No. vertical tubular steel bearing piles
- Pierhead structure dowelled into the existing berthing dolphin at the west end and supported by cells A and B at the east end.

### 2.3 Pier Head Cells A and B

- 1970s construction
- Steel sheet piles forming 8.4m diameter cells
- Granular infill
- Concrete collars installed in 1993
- Fendering (Cell A fendering replaced 2000)

- Scour blankets in place between cells B, C and D

## **2.4 Outer lifting Dolphin (Cell C)**

- 1970s construction
- Steel sheet piles forming 8.4m diameter cells
- Granular infill
- Concrete collars installed in 1993
- Fendering
- Scour blanket in place between cells B, C and D

## **2.5 Inner Lifting Dolphin (Cell D)**

- 1970s construction
- Steel sheet piles forming 8.4m diameter cells
- Granular infill
- Concrete collars installed in 1993
- Fendering (replaced 2000)
- 2006 bag work repairs to further undercut piles and cell filled with sand to replace lost fill
- Scour blanket in place between cells B, C and D

## **2.6 Inner Mooring Dolphin**

- Constructed in 1993
- Steel tubular raking piles
- Deep concrete cap, sized to avoid tension in raking piles
- Fendering
- Granular fill
- Access walkway to outer dolphin
- Stair down to pier
- MV rubber fenders

## **2.7 Outer Berthing/Mooring Dolphin**

- Constructed in 1994 together with new pier head
- Reinforced concrete monolith, cast within permanent sheet pile shuttering

- Temporary sheet piling and framing is cast in place
- Fendering

## **2.8 Deck Furniture**

- Steps up to inner mooring dolphin from pier head
- Bridge to outer berthing/mooring dolphin from inner mooring dolphin
- Ladders
- Handrails
- PAS gantry rails

## 3. Demolition Methodology

### 3.1 Assumptions

The demolition methodology is based on the following assumptions:

- Vehicle access through the new marshalling area for the demolition works is likely to be restricted by load restriction in place on existing pier approach.
- All demolition arisings are disposed of on land. No disposal at sea is anticipated.
- All demolition arisings are inert.
- Work carried out during normal working hours.
- Work carried out outwith the bird breeding season, which occurs from April to August.

### 3.2 Demolition Plant

Due to the load restrictions on the pier approach structure and access via the marshalling area, it is considered that the demolition works will be completed using marine plant.

The marine plant is likely to consist of a crane barge to remove the fixings, metalwork, fendering, deck sections and piles. A second barge with an excavator will be required to remove fill material from the cells and to remove grout mattresses and any deposits on the seabed that occur as part of the demolition works. 4No. spud legs associated with the crane barge and two barges with 2No. spud legs each are allowed for in the quantities calculation.

The excavator may also be fitted with a hydraulic breaker to facilitate breaking up of the concrete cell caps, areas of the concrete deck, the inner mooring dolphin head, and the concrete within the outer berthing/mooring dolphin.

Additional supply barges will be required to transport the material away from site. They may also be used to land the larger concrete sections on for further break-down. Catchment pontoons and an inflatable boom are likely to be required to catch and contain arisings from the demolition works. Additional work boats supporting divers and specialist cutting contractors are also envisaged.

Land-based vehicular plant is expected to be limited to vehicles to support manual demolition tasks such as removing deck furniture. A 7.5 tonne limit is in place to allow limited vehicular access to access the pier. This type of vehicle would typically be used to transport hand tools and smaller items such as railings to and from the site.



### 3.3 Reinforced Concrete Deck Removal

It is envisaged that most of the pier deck can be removed in sections that are sawn in gridlines between piles, rather than breaking up the concrete in place using a hydraulic breaker. The outline process is as follows:

1. Survey pile dimensions and positions
2. Mark out pile positions, cut gridlines and core positions on deck
3. Position crane barge and supply barge alongside the section location
4. Position catchment pontoons below cutting and coring locations
5. Core holes for lifting and wire saw access
6. Position crane and lifting gear over section and attach before taking up calculated section weight
7. Cut along grid lines using diamond tipped floor saw
8. Pass diamond wire down through access holes, around pile and back up through deck to wire saw unit
9. Saw through pile using wire saw
10. Lift section onto supply barge using crane

Diesel or petrol powered diamond floor saws are available with a diamond tipped blade diameter of up to 1200mm, capable of cutting reinforced concrete to a depth of 500mm comfortably. This is sufficient to cut either the legacy reinforced concrete deck or the 'new' deck in one pass but will not pass through both where they are present on top of one another.

In this situation, it may be possible core through both new and legacy deck and attach lifting anchors to the underside of the legacy deck to allow attachment of lifting gear. Thereafter, the pile could be cut as described above using the wire saw. Alternatively, the new deck may require to be broken up using a hydraulic breaker and the legacy deck underneath removed using the above technique.

### 3.4 Pile Extraction

After the concrete deck is removed, the reinforced concrete and timber bracing beams can be removed by supporting with crane and sling arrangement before cutting through the fixing arrangements. Thereafter, the timber and reinforced concrete piles will be left free-standing and ready for extraction. It is expected that the removal of piles and bracings will be undertaken in sections to avoid having several piles cantilevering with associated risk of collapse.

The Crown Estate have been engaged previously regarding their expectations of the demolition project. Their baseline is that the seabed should be returned to its original condition and that all installed material should be removed down to bedrock.

It was noted by Bidwells that consideration would be given to relaxing these requirements if they were not achievable on the basis of technical, environmental, and cost grounds. In the instance where the contractor can demonstrate that sections of the piles are unable to be removed, it is acceptable for the contractor to cut the piles off at 2m below seabed. This will require an agreement to be put in place between CMAL and The Crown Estate to cover any ongoing liability.

### **3.4.1 Reinforced Concrete and Timber Pile Removal**

It is anticipated that removal of the timber and concrete piles that support the legacy approach and pier head structures, as well as the fender piles, will be initially attempted using the crane and a rigging arrangement. The rigging arrangement may include either a clamp around the pile or drilling a hole through the pile for fixing to. A calculated upwards pull will be applied to the pile in attempt to remove the pile.

In the event that the above lift is unsuccessful, a vibratory hammer can be attached to the pile head and suitably clamped. The crane then applies the same calculated upwards pull while the vibrator seeks to disturb the skin friction that is retaining the pile in place. If removal by both direct pull and vibration pull are unsuccessful, the method for cutting for piles off at 2m below seabed level is likely to involve use of either a wire saw unit or Broco burner.

### **3.4.2 Steel Tubular Pile Removal**

The removal procedure for the steel piles is expected to follow the similar staged approach of direct pull, vibration pull and, if necessary, cut off below the seabed. In contrast to the clamping fixing method, the concrete plug within the head of the pile can be chipped out using a breaker before cutting holes to receive lifting shackles, providing a more robust lifting mechanism.

## **3.5 Building Removal**

No significant loads are to be placed on the deck in the area adjacent to the building. Therefore, it will most likely be demolished using a hydraulic breaker on the barge-mounted excavator.

## **3.6 Cell Removal**

The inner and outer lifting dolphin and the two pier head cells are of similar construction and may be removed in a similar manner.

The concrete cap may be broken down using a non-explosive expanding demolition grout (Dynacem or equivalent) prior to removing the broken pieces. Alternatively, a hydraulic breaker attached to the excavator may be used to break up the concrete.

Following removal of the concrete caps, the fill material inside can be removed as far as is practical using the excavator. The material will be removed from site via the barges for disposal elsewhere.

The concrete collars that are present on each of the cells will require to be removed. This is likely to be undertaken by a series of vertical cuts using a diamond tipped saw, while they are supported by the crane from above by pre-fixed anchors. It is anticipated that the fill material should be removed before cutting off the collars to avoid the cells that have most likely deteriorated collapsing outwards under lateral earth pressure.

Following removal of the concrete collars, the sheet piles that form the cell wall will be removed using direct pull or vibration pull with a clamping vibration head.

## **3.7 Inner Mooring Dolphin Removal**

The deep reinforced concrete block that forms the head of the inner mooring dolphin will require to be broken up prior to removal as it is not practical to lift at once. It is proposed that the same non-explosive expanding demolition grout may be added to pre-drilled holes to facilitate break-up.

Ultimately, the hydraulic breaker attached to the long reach excavator is likely to be required to assist with the break-up and removal. Several catchment pontoons or alternative measures will need to be in place to catch the arisings.

Following removal of the concrete cap, the steel tubular support piles can be removed using the same techniques as described in Section 3.4.2.

### **3.8 Outer Berthing/Mooring Dolphin Removal**

The outer mooring dolphin features a large concrete monolith, which envelopes the temporary piling and bracing that assisted in the construction. The structure is likely to require considerable effort to break up and it is recommended that the non-explosive expanding demolition grout is used as much as possible to facilitate break up. The hydraulic breaker is expected to further assist with this operation.

As the concrete monolith is contained within the sheet piled cell, it is anticipated that arisings can be more readily caught and controlled when compared the inner mooring dolphin. However, it is likely that a ring of catchment pontoons or a bespoke collar and net system is required around the perimeter during the concrete break up.

Following removal of concrete core, the sheet piles that form the cell wall will be removed as described in Section 3.5.

### **3.9 Furniture Removal**

Fendering and deck furniture will be removed using the crane barge and assisted by hand tools where appropriate.

### **3.10 Surveys**

Pre and post-works video and bathymetric surveys of the seabed are required as part of the works to demonstrate that all man-made materials and obstructions have been removed in accordance with the scope.

## 4. Construction Methodology

This section briefly discussed the anticipated methodology for the construction of the rock armour revetment.

At present, a new rock armour revetment is in place along the new retaining wall that was constructed as part of the new pier works. There is a break in the rock armour revetment where the pier extends from the retaining wall that will leave a gap in the revetment when the pier is removed. It is anticipated that this gap will be filled with rock armour that is consistent with the adjacent revetment. The retaining wall does not rely on rock armour by design but the rock armour will protect against spray and wave overtopping due to increased exposure as a result of the pier removal.

Options for delivering and placing the rock armour are either using marine plant, or by having the material delivered by land immediately adjacent to where it is to be placed, subject to liaison and agreement with the Harbour Manager.

## 5. Schedule of Works

The anticipated schedule of works for the project is summarised below:

1. Mobilisation
2. Demolition, removal and disposal of pier head and approach structure, including all connected items
3. Demolition, removal and disposal of inner lifting dolphin, including all connected items
4. Demolition, removal and disposal of outer lifting dolphin, including all connected items
5. Demolition, removal and disposal of inner mooring dolphin, including all connected items
6. Demolition, removal and disposal of outer berthing/mooring dolphin, including all connected items
7. Recovery, removal and disposal of non-natural items identified on the seabed
8. Supply and construction of rock armour revetment at root of the pier
9. Erection of quayside barrier at root of old pier
10. Demobilisation

## Appendix 04

### Impacts and Mitigation



## 1. Introduction

This appendix provides a high-level review of sensitive ecological features in the vicinity of the proposed works and details potential impacts of the works on these features. Proposed mitigation and good practice measures to avoid or reduce these impacts are also discussed.

## 2. Baseline Conditions

### 2.1 Designated Sites

The following designated sites are present within 10km of the Brodick Ferry Terminal.

Designation Title	Type of Designation	Distance from Proposed Project (at closest point)	Feature of Importance
South Arran	MPA (Nature Conservation)	1.8km south	Burrowed mud Kelp and seaweed communities on sublittoral sediment, Maerl beds Maerl or coarse shell gravel with burrowing sea cucumbers Ocean quahog aggregations ( <i>Arctica islandica</i> ) Seagrass beds Shallow tide-swept coarse sands with burrowing bivalves
Arran Moors	SSSI	2km west	Upland assemblage (habitat) Breeding bird assemblage Hen harrier ( <i>Circus cyaneus</i> ) (breeding)
	SPA	2km south-west	Hen harrier (breeding)
Clauchlands Point – Corrygills	SSSI	2.5km south-east	Maritime cliff Saltmarsh Upland mixed woodland Tertiary Igneous (geology)
Gleann Dubh	SSSI	4km west	Breeding bird assemblage Upland assemblage (habitat)
Arran Northern Mountains	SSSI	4km north-west	Beetle assemblage Breeding bird assemblage Dragonfly assemblage Ordovician Igneous (geology) Tertiary Igneous (geology) Upland assemblage (habitat) Upland birch woodland Vascular plant assemblage
Ard Bheinn	SSSI	9km west	Hen harrier (breeding) Tertiary Igneous (geology)

## 2.2 Protected Species

Data suggests that low numbers of cetaceans (mainly harbour porpoise (*Phocoena phocoena*) and occasionally bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*) and minke whale (*Balaenoptera acutorostrata*)) may be transient in the area, with only harbour porpoise likely to be resident year-round (Marine Scotland, 2021, Hague et al., 2020, Mills et al., 2017). Both grey seals (*Halichoerus grypus*) and harbour seals (*Phoca vitulina*) are present in the Firth of Clyde, but at relatively low densities compared to other Scottish regions (Marine Scotland, 2021, Hague et al., 2020, Mills et al., 2017). The closest designated seal haul out site is the Sound of Pladda Skerries, 15km from the works.

A variety of demersal and pelagic fish species are known to occur in the Firth of Clyde in addition to commercially important shellfish such as nephrops (*Nephrops norvegicus*) and scallops (*Pecten maximus*). However, the area around the proposed works has not been identified as an important area for any of these species groups (Mills et al., 2017).

In addition to the marine species mentioned above, the proposed works have the potential to affect other protected species. An active otter (*Lutra lutra*) holt has been recorded adjacent to the old pier. Surveys are on-going to determine the level of use, however it was recorded as a breeding holt in 2017 (Echoes Ecology Ltd, 2017). Nesting black guillemots were recorded beneath the old pier in 2014 (Echoes Ecology, 2014). No nesting guillemots were recorded in 2020, although surveys were conducted late in the breeding season so do not confirm absence of this species.

## 2.3 Protected Habitats

No priority marine feature habitats have been identified within 2km of the proposed works. EUSeaMap data classified the seabed habitats in the vicinity of the works are classified as low energy rock and sand habitats (EMODnet, 2021).

## 3. Potential Impacts and Mitigation

Demolition works have the potential to impact benthic species through direct contact with the removal apparatus and smothering of the seabed as well as also having the potential to impact cetaceans and fish species through increased sedimentation within the water column resulting from the movement of materials/vessels, making it more difficult for these species to navigate/find food.

During the proposed works the Contractor will observe any sediment and material movement and increase mitigation where required due to changing tidal/wave movements such as the use of silt booms.

Underwater noise has the potential to impact marine species. Activities with the greatest potential to result in underwater noise are:

- Breaking of concrete cell caps, areas of the concrete deck, the inner mooring dolphin head and the concrete within the outer berthing/mooring dolphin. Previous underwater noise monitoring during above-water concrete breaking operations using hydraulic breakers has recorded peak noise levels of 160 dB re 1µPa at a range of 400m (Nedwell et al., 2008) and 189-205 dB re 1µPa at 10m (Escuade, 2012).
- Cutting of piles, if required. The use of underwater diamond wire cutters has been shown to result in noise increases of up to 15dB for frequencies above 5kHz, at 100m from source, but generally difficult to discern above background noise, where vessels are in the vicinity (Pangerc et al., 2016).
- Dredging. A study of noise during harbour dredging at Shetland found that backhoe (excavator) dredging produced noise of between 145 – 162 dB re 1µPa at 7m from source, reduced to 132 - 136 dB re 1µPa at 105m (Nedwell et al., 2008).

Marine mammals are known to be more sensitive to impulsive noise than non-impulsive (Southall et al., 2019). Underwater cutting and dredging activities are non-impulsive noise sources, however the noise produced by a hydraulic concrete breaker has been shown to be impulsive in character (Escuade, 2012).

Harbour porpoise are considered to be one of the more sensitive marine mammal species, generally with lower noise thresholds than other species. Reviews of the hearing abilities of marine mammals have indicated that exposure to noise above 140 dB re 1µPa results in profound and sustained avoidance behaviour (Southall et al., 2007) and that non-impulsive noise over 153 dB re 1µPa (sound exposure level (SEL)), and impulsive noise over 140 dB re 1µPa (SEL) and 196 dB re 1µPa (peak sound pressure level (SPL)) has the potential to result in temporary effects on the hearing of harbour porpoise (Southall, et al., 2019). Using the noise levels presented above it is considered unlikely that any disturbance effects of underwater noise will occur as a result of the pile removal or dredging, as individuals would have to be extremely close to the works. There is however potential for effects on marine mammals during concrete breaking. While the works will be outside the sensitive breeding and calving period (between May and August (IAMMWG et al., 2015)), the number of marine mammals likely to be affected is low and soft-start procedures will be employed, to further mitigate the potential for disturbance it is proposed that JNCC guidelines, specifically in relation to presence of a Marine Mammal Observer (MMO), be applied during use of the hydraulic breaker unless otherwise confirmed with MS-LOT, and the need for a disturbance licence for marine mammals be discussed with MS-LOT.

Basking sharks (*Cetorhinus maximus*) have been recorded in the vicinity of Brodick Bay, however, this species is only present during the summer months and is not considered sensitive to underwater noise due to lack of a swim bladder (Popper et al., 2014). As the works will not be undertaken March to August inclusive (as mitigation for breeding birds), there is no predicted effect on basking sharks.

Several species of marine fish, e.g. Atlantic cod (*Gadus morhua*) and herring (*Clupea harengus*) are considered susceptible to barotrauma as a result of exposure to noise. Criteria for impulsive sound (Popper et al., 2014) suggest that there is potential for temporary threshold shift in these species exposed the noise generated by concrete breaking, however, these fish would have to be in close proximity to the works and, with soft-start procedures in place, this is considered unlikely. Behavioural responses and masking of biological sounds may result from the concrete breaking works, however, in the vicinity of the active ferry terminal, this is unlikely to represent a significant effect for these species.

The demolition methods are considered to minimise the impacts of underwater noise. All concrete breaking will be conducted above water. For removal of the concrete deck it is proposed that the deck be cut into sections and lifted out of position. The preferred method for concrete breaking of the pier heads and mooring and lifting dolphins is the use of non-explosive demolition grout. It is likely however, that a hydraulic breaker will be required to complete the concrete breaking process for at least some of the elements. It is roughly estimated that there will be around two weeks of concrete breaking activity spread throughout the 18 week demolition period. The preferred method of pile removal is by upward pulling, with vibratory assistance if required. Only if this proves unsuccessful will the use of underwater cutting equipment be considered, to remove piles 1m below bed level. Should this be necessary it is expected that a diamond wire cutter would be used. The amount of dredging required as part of the proposed works is limited.

A CEMP will be required during demolition and construction and will outline best practice and all land-based plant will have plant nappies in place when stationary and any fuel bowsers, or other plant will be placed atop oil drip trays. As part of the CEMP, species specific protection plans will also be implemented. Best practice guidelines will be followed at all times during demolition and construction.

With regards to vessel movement, Brodick is an operational terminal. Given the frequency and nature of existing vessel movements in the area it is anticipated that species within the local environment are naturalised to vessel movements and it is not anticipated that the proposed Project, during demolition or construction, will have any significant residual effects on biodiversity.

As otter are a European Protected Species, an otter disturbance licence will be required for the proposed works, which are within 30m of the holt. The holt is currently being monitored to determine whether it is being used for breeding (as otter cubs have been recorded at this location in previous years) and to inform the licence

application. Mitigation measures will be stipulated as part of the licence and may include no working during hours of darkness and soft starts of machinery to reduce disturbance.

The demolition of the old pier will result in the loss of black guillemots nesting sites identified by Echoes Ecology Ltd (Echoes Ecology Ltd, 2014). However, suitable nesting sites were incorporated during construction of the new Brodick Ferry Terminal, with ten guillemot nest boxes installed under the new pier. As observed by Echoes Ecology Ltd, black guillemots have previously made use of artificial nest boxes on the old pier.

Works within the area of potential impact to breeding black guillemots and other breeding birds should be avoided throughout the core breeding bird season (March to August inclusive), when nesting locations become protected by law.

If demolition is to be undertaken during the breeding season, mitigation will be required to ensure that all potential black guillemot nest sites are excluded prior to mid-April on the structures to be demolished. Where possible, plywood should be securely fixed/nailed over cavity entrances to prevent access. Where this is not possible, metal mesh should be used to tightly pack the cavities and secured in place to prevent the birds from attempting to remove the mesh. To prevent injury to or entrapment of birds, the mesh should have a small hole size (approximately 13mm).

Taking into account the mitigation measures identified, residual effects as a result of the proposed works are not anticipated to be significant.

## 4. References

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