

# Hunterston Construction Yard

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## Marine Construction Licence Method Statements

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## 1.0 Introduction

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### 1.1 General

As part of the Marine Construction Licence application in relation to the construction / installation of marine infrastructure seaward of the Marine Licencing Boundary at Hunterston Construction Yard, high-level method statements are required to describe how the marine infrastructure will be constructed / installed.

This document provides a series of high-level method statements to satisfy this licencing requirement.

### 1.2 Environmental Impact Assessment Report (EIAR)

All construction works that relate to licensable activities will be carried out in accordance with the recommendations of the EIAR (Doc. Ref. 13722, Issue 1, dated 26/05/2024).

## 2.0 Existing Revetment Removal Method Statement

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### 2.1 Initial Works

Prior to the removal of the existing rock armoured revetment and bund in front of the new quay wall at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall,

### 2.2 Revetment Description

The existing rock armoured revetment and bund is located on the seaward face of the new quay structure, and is formed by an earthwork bund which is protected on its' seaward face by rock armour of varying sizes. The bund and revetment was originally used to close off the existing dry dock facility within Hunterston Construction Yard.

The new quay wall structure will be formed by utilising the bund as a working platform to allow piles to be driven "in the dry". Consequently, the section of bund and rock armour revetment remaining in front of the quay wall will need to be removed, following construction of the quay wall, to allow vessels to berth at the quay.

### 2.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the removal of the rock armoured revetment and bund;

- Long reach excavator\* located on the deck of the new quay structure,
- Floating barge,
- Long reach excavator\* located on the floating barge,
- Tracked / wheeled excavators, located on / behind the new quay wall,
- 5t dumpers,
- 20t dump trucks,
- Mobile rock crushing plant,
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Communications equipment (radio etc.)

\*it is anticipated that the excavators will be provided with a GPS guidance system to allow the bucket location relative to revetment and bund to be determined at any time.

## 2.4 Method Statement

It is anticipated that the following methodology will be used to remove the rock armoured revetment in front of the quay wall.

1. The long reach excavators will remove the rock armour initially, starting from the top of the revetment and working to the bottom.
2. Individual rocks will be removed by lowering the excavator arm until it is at the uppermost level of rock, the level confirmed by the GPS guidance system. Rock(s) will be lifted by the excavator bucket. Particular care will be taken when lifting rock at the top of the slope to avoid damage to the quay wall.
3. The excavator will lift the rock(s) clear of the water and deposit them into the 5t dumper.
4. The 5t dumper will transport the excavated rock to the mobile rock crushing plant which will be located away from the quay.
5. Excavated rocks may be re-used on-site to repair existing rock revetments around the site area. However, the majority of the excavated rocks will be crushed and screened for re-use as fill or capping material elsewhere on site.
6. Stages 2-5 will be repeated until all rock has been removed.
7. Once rock removal is completed, the bund material will be excavated.
8. Similarly to the rock removal, the bund material will be excavated by the long reach excavators starting from the top of the bund and working to the bottom.
9. The bund material will be removed by lowering the excavator arm until it is at the uppermost level of rock, the level confirmed by the GPS guidance system. Bund material will be lifted by the excavator bucket, taking care to avoid clashing with the quay wall.
10. The excavator will deposit the bund material within a designated area on land, forming suitable stockpiles.
11. Stockpiles will be left in-situ to drain, prior to removal.
12. Where necessary, testing of the drained bund material will be carried out to confirm the presence / level of any contaminants prior to disposal.
13. Once sufficiently drained, stockpile material will be moved into 20t dumpers using tracked / wheeled excavators.
14. When full, the 20t dumpers will transport the bund material from site to an approved waste disposal facility (following receipt of any contaminant testing results).
15. Stages 8-14 will be repeated until all bund material has been removed from in front of the quay wall.
16. Once the initial removal exercise is complete, divers will be utilised to confirm whether any material remains. Particular attention will be paid to the in-pans of the quay structure to check whether any material remains there.

17. If any excess material is found by diver check, stages 8-14 will be repeated until all bund material is confirmed to have been removed.



## 3.0 Anode Installation Method Statement

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### 3.1 Initial Works

Prior to the installation of anodes to the new quay wall at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall,
- Removal of the existing rock armoured revetment in front of the new quay wall.

### 3.2 Anode Description

The anodes to form the cathodic protection to the submerged steel elements of the quay wall have not yet been designed. However, they are anticipated to be formed as long, slender "stand-off" type anodes, with a solid steel rod insert. They will be affixed to the quay structure using a top and bottom steel bracket which will be welded to the quay structure to provide electrical continuity to the anode.

The anodes will be designed such that no part of the anode protrudes beyond the fender line of the quay structure.

### 3.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the fender installation;

- Crawler or mobile crane located on the new quay structure,
- Telehandler,
- Multicat vessel/workboat,
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Welding equipment, suitable for both underwater and "in the dry" use,
- Communications equipment (radio etc.)
- Hand tools.

During diving operations it is expected that there will be constant communication between the crane operator, multicat skipper and diving Supervisor to ensure the works are carried out in a safe manner.

### 3.4 Method Statement

It is anticipated that the following methodology will be used to install the anodes.

18. The anode components (anodes c/w steel rod insert, steel brackets) will be delivered to site via road, and stored within an agreed site storage area until they are ready to be installed.

19. When ready to be installed, the anodes and brackets will be transported to the quay structure via telehandler.
20. The steel brackets for each anode will be installed initially. These will be lifted and lowered on to the deck of the multicat vessel by the crane on the quay structure. Each bracket, which will be of a suitable weight to be manually handles, will be taken by diver an offered up to the correct position on the quay wall.
21. Once in position, the bracket will be fixed to the quay structure via underwater welding.
22. This process will be completed for each top and bottom fixing bracket along the length of the quay.
23. Once the brackets are installed, the anodes will be transported to the quay structure via telehandler.
24. Each anode will be lifted by the crane of the quay deck and lowered into the water, where it will be guided into the fixing brackets by diver.
25. Once in the correct position, the anode will be fixed in place by welding the rod to the fixing bracket below water. This will be carried out for both top and bottom brackets.
26. On completion of welding the anode to the brackets, the chains/strops holding the anode on the crane will be relaxed and disconnected.
27. Upon installation of all anodes, a visual inspection of each anode installation will be carried out by an underwater welding inspector. The purpose of this inspection is to confirm the welds are all satisfactory and will provide electrical continuity between the anode and the steelwork below water.
28. Upon completion of the visual inspection and any other testing/commissioning required by the anode designer, the anode installation will be confirmed to be complete.

## 4.0 Dolphin Installation Method Statement

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### 4.1 Initial Works

Prior to the installation of the dolphins at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall,
- Removal of the existing rock armoured revetment and bund in front of the new quay wall,
- Dredging in front of the new quay wall.

### 4.2 Dolphin Description

The dolphins located in front of the new quay structure at Hunterston Construction Yard are shown on Drawing No. HMY-AHN-00-00-DR-C-9201 and HMY-AHN-00-00-DR-C-9214, and are required to provide suitable mooring points for vessels visiting the site.

It is anticipated that the dolphins will be installed upon completion of the grounding pad, which is shown on Drawing No. HMY-AHN-00-00-DR-C-9201 and HMY-AHN-00-00-DR-C-9202 and is the subject of a separate method statement.

The dolphins will be formed utilising a reinforced concrete cap supported on raking tubular steel piles which will be driven into the seabed.

### 4.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the installation of the dolphins;

- Crawler crane located on the deck of a floating barge,
- Storage barge to contain piles,
- Workboat, e.g. multi-cat or similar,
- Vibrating hammer of suitable size / rating,
- Impact hammer of suitable size / rating,
- Piling gate; the piling gate will be formed using two individual gates to allow raking piles to be positioned,
- Temporary piles if necessary to support the piling gate,
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Communications equipment (radio etc.)

During diving operations, it is expected that there will be constant communication between the crane operator and diving Supervisor to ensure the works are carried out in a safe manner.

#### **4.4 Method Statement**

It is anticipated that the following methodology will be used to install the dolphins at the required locations.

1. The floating barge which supports the crawler crane and the storage barge will be towed to the required position using the multicat vessel.
2. The crane will lift the first temporary pile that is required to support the piling gates.
3. The pile will be positioned in the correct location on the seabed.
4. Once in position, the temporary pile will be driven into the seabed using the vibrating hammer. If found to be necessary the impact hammer may be employed to overcome resistance.
5. Once the first temporary pile is driven in position, any remaining temporary piles will be installed following steps 2 – 4.
6. Upon installation of the temporary piles, the piling gates will be lifted by the crawler crane.
7. The piling gates will be offered up to the temporary piles, and then fixed in the required position, e.g. by welding.
8. Once the piling gates are in position, the first raking pile will be lifted by the crawler crane.
9. The raking pile will be positioned through the piling gates, with care taken to protect any paintwork applied to the piles.
10. Once in position, the rake and location of the pile will be checked by an engineer prior to driving.
11. Raking piles will be driven using the vibrating hammer initially. If found to be necessary the impact hammer may be employed to overcome resistance.
12. It is anticipated that the rake and position of the pile will be constantly checked throughout the driving process to ensure that it remains in the correct location.
13. Once the first pile is installed, steps 9-13 will be repeated for the piles of the dolphin.
14. Steps 1 – 13 will be repeated for each subsequent dolphin where necessary.
15. Upon completion of the dolphin piling, any ancillary works required to the piles, e.g. preparation of the pile heads, will be carried out from a suitable temporary access platform. This platform may be part of the piling gate.
16. Once pile preparation is completed, the reinforced concrete caps may be placed upon the piles.

17. It is anticipated that the caps will be formed off-site as precast concrete shells. The shells will be placed over the piles at as high a tide level as possible on the basis that the underside of the shells will be positioned below MHWS.
18. Once the shells are in position, any required reinforcement will be installed within the shells. Access will be via temporary access platforms installed between the dolphins.
19. Once reinforcement is fixed and checked, concrete will be poured into the shells. This placement will in individual lifts as necessary.
20. Any required furniture, e.g. bollards, will have their anchors cast-on to the concrete pours. The furniture can then be fixed once the concrete has undergone a period of curing.
21. Upon confirmed completion of the dolphins, the plant used may be de-mobilised.

## 5.0 Drainage Outfall Installation Method Statement

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### 5.1 Initial Works

One of the first tasks that will need to be completed prior to the construction of the new quay wall at Hunterston Construction Yard is the installation of 2 No. new drainage outfalls. These outfalls are required to accommodate surface water run-off during construction works.

It is anticipated that these 2 No. outfalls will be constructed through the existing bund initially prior to construction of the quay structure. The outfalls will be protected prior to piling works commencing, piling will then be carried out around the outfalls.

### 5.2 Later Works

Following the completion of the new quay structure, a further of 3 No. new outfalls will need to be installed on the outer face of the quay wall.

### 5.3 Drainage Outfall Description

#### 5.3.1 INITIAL INSTALLATION

The drainage outfalls located either side of the new quay structure at Hunterston Construction Yard are shown on Drawing No. HMY-AHN-00-00-DR-C-9213. These comprise of a tubular steel drainage pipe which will be brought through the revetment from land. At the termination of the pipe(s) temporary steelwork will be provided to protect the pipe(s) during construction of the key structure.

A flap valve will be installed across the outfall pipe to prevent backflow as a result of tidal variation.

#### 5.3.2 DURING CONSTRUCTION

The 3 No. drainage outfalls located within the face of the new quay wall structure at Hunterston Construction Yard are also shown on Drawing No. HMY-AHN-00-00-DR-C-9213. These comprise of a tubular steel drainage pipe which will be brought through to the face of the quay wall from land and through the quay wall infill material. At the termination of the pipe the infill sheet piles will be cut to accommodate the pipe, prior to the installation of a flap valve across the outfall pipe.

### 5.4 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the installation of the drainage outfalls;

- Crawler or mobile crane located on the existing bund,
- Long reach excavator located on the deck of the bund,
- Tracked / wheeled excavator on the deck of the quay structure,
- 20t dumper(s),
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,

- Welding equipment,
- Underwater cutting equipment (e.g. oxyacetylene torch or similar),
- Communications equipment (radio etc.).

During diving operations it is expected that there will be constant communication between the crane operator and diving Supervisor to ensure the works are carried out in a safe manner.

## **5.5 Method Statement**

### **5.5.1 INITIAL INSTALLATION**

It is anticipated that the following methodology will be used to install the initial drainage outfalls within the existing bund either side of the quay wall. Note that the excavation and installation of the outfall pipe will be carried out from land.

1. The long reach excavator will be used to excavate the existing rock armour and bund material at the location of the outfall,
2. Once excavation is substantially completed, the area will be carefully surveyed. Where any overdigging has occurred, this will be backfilled using a suitable granular material,
3. The base of the excavation will be prepared to accommodate the outfall pipe. A suitable geotextile will be placed initially over the existing revetment material to prevent loss of fine material. If any existing geotextile is found then the new geotextile will be lapped on to this,
4. The geotextile will be lifted into position by the crane on the surface of the bund. The geotextile will then be rolled and fixed in position by divers,
5. If necessary, the outfall pipe will be brought through the bund from the land side,
6. Backfilling around the pipe will be carried out if necessary. This will be achieved by backfilling with a suitable granular material, e.g, Class 6A in accordance with MCHW. The material will be placed by the excavator,
7. The flap valve will be lifted into position using the crane. Once in position, the flap valve will be bolted or welded to the pipe. Given the invert level of the pipe (+1.50mCD) is it anticipated that the installation of the flap valve will be carried out in the dry by divers on the surface of the water,
8. Upon installation of the flap valve, rock armour will be placed around the pipe, to suit the existing revetment, if necessary. This will be completed by the long reach excavator lifting rocks into position,
9. Upon installation of any remedial rock armour, the outfall installation will be complete.

### **5.5.2 WITHIN QUAY WALL**

It is anticipated that the following methodology will be used to install the drainage outfalls within the quay wall. Note that the excavation and installation of the outfall pipe will be carried out from land.

1. The drainage pipe will be installed behind the quay wall, stopping short of the rear face of the quay structure by 1m (nominally),

2. Excavation will be carried out either side of the rear face of the quay structure using the excavator on the deck of the structure. Excavation will be completed to a suitable level below the invert level of the drainage pipe in this location,
3. Once excavation is complete, the location of the pipe entry point on the rear face of the quay structure will be carefully set out, and checked against the as-installed position of the drainage pipe,
4. A hole will be cut through the sheet piles forming the rear face of the quay structure at the set-out position. Given the invert level of the drainage pipes in this location (>2.0mCD) it is anticipated that this work will be carried out "in the dry" during low tide levels,
5. Once a suitable hole is cut in the sheet piles, the drainage pipe will be brought through the rear face and into the quay structure. It is anticipated that this will be completed by lowering a section of pipe into the void within the quay structure and connecting it to the previously installed pipe,
6. Any new steelwork required to seal / strengthen the sheet piles around the installed pipe will be completed. It is anticipated that this will be completed in the dry using welding equipment,
7. Once the pipe is through the rear face and the sheet piles sealed / strengthened, backfilling of material will be completed outwith the quay structure, with compaction of the same carried out,
8. Excavation within the quay structure up to the rear of the front face of the quay wall will then be carried out by the excavator on the deck of the quay structure,
9. Once excavation is complete, the location of the pipe entry point on the front face of the quay structure will be carefully set out, and checked against the as-installed position of the drainage pipe,
10. A hole will be cut through the sheet piles forming the rear face of the quay structure at the set-out position. Given the invert level of the drainage pipes in this location (1.5mCD) it is anticipated that this work will be carried out "in the dry" during low tide levels. Care will be taken to ensure that fill material does not wash out of the quay structure and into the river when the tide rises, e.g. via installation of a temporary filter / screen,
11. Once a suitable hole is cut in the sheet piles, the drainage pipe will be brought through the front face and out of the quay structure. Similarly to the rear face installation it is anticipated that this will be completed by lowering a section of pipe into the void within the quay structure and connecting it to the previously installed pipe,
12. Any new steelwork required to seal / strengthen the sheet piles around the installed pipe will be completed. It is anticipated that this will be completed in the dry using welding equipment, however divers may need to be utilised on the outer face (working above the surface),



13. Once the pipe is through the front face and the sheet piles sealed / strengthened, backfilling of material will be completed within the quay structure, with compaction of the same carried out,
14. The flap valve will be lifted into position in front of the pipe using the crane on the quay structure. The flap valve will be guided into position using divers,
15. Once in position, the flap valve will be fixed to the face of the pipe by welding. It is anticipated that this will be carried out in the dry using divers working on the surface of the water,
16. Upon installation of the flap valve, the outfall installation will be complete.

## 6.0 Fender Installation Method Statement

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### 6.1 Initial Works

Prior to the installation of fendering to the new quay wall at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall,
- Removal of the existing rock armour to the existing revetment in front of the new quay wall,
- Removal of the existing revetment in front of the new quay wall.

### 6.2 Fender Description

The proposed fenders are shown on Drawing No. HMY-AHN-00-00-DR-C-9201, HMY-AHN-00-00-DR-C-9202 and HMY-AHN-00-00-DR-C-9210 and are formed using 2 No. SCN type elastomeric units, by Trelleborg or similar accepted, positioned vertically. A steel fender panel, formed by a hollow steel box structure faced with a min. 25mm thick Ultra High Molecular Weight Poly-Ethylene (UHMWPE) facing will be affixed to the SCN units.

To allow the upper SCN unit to be affixed to the structure, it is anticipated that suitable threaded steel sockets will be cast-in to the concrete cope, to prevent the need to post-drill fixings.

To allow the lower SCN unit to be affixed to the quay structure, a "spool" piece, formed using a circular steel plate and CHS section, will be used. The circular plate will be fabricated to include all holes required for fixing of the SCN units.

Chains and associated steel brackets will be provided to either side of the fenders to help resist lateral movement. Steel brackets will be affixed to the cope using cast-in sockets, and the facing panels will be c/w suitable brackets to affix the other end of the chain.

A total of 32 No. fenders are to be installed.

### 6.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the fender installation;

- Crawler or mobile crane located on the new quay structure,
- Telehandler,
- Multicat vessel/workboat,
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Welding equipment, suitable for both underwater and "in the dry" use,

- Communications equipment (radio etc.)
- Hand tools.

During diving operations it is expected that there will be constant communication between the crane operator, multicat skipper and diving Supervisor to ensure the works are carried out in a safe manner.

## 6.4 Method Statement

It is anticipated that the following methodology will be used to install the fenders.

1. The fender components (SCN units, pre-fabricated facing panels, pre-fabricated spool pieces, chains, and all associated fixings and brackets) will be delivered to site via road, and stored within an agreed site storage area until they are ready to be installed.
2. The spool piece will be installed initially. This will be taken from storage and transferred to the quay via telehandler.
3. The spool piece will be lifted by the crane on the quay structure and lowered into position against the quay wall. The piece will be installed by divers welding the CHS to the tubular king piles of the quay wall at the required locations and levels. It is likely that much of this work will be carried out by welding below water given the tide levels at the site. Care will need to be taken to ensure that the circular plate is oriented correctly to ensure the fixing holes are in the correct position.
4. Whilst the spool pieces are being installed, the facing panels will be affixed to the SCN units. This will be carried out in a suitable area onshore in order to minimise the number of crane lifts required and the works to be carried out below water. It is anticipated that the facing panels and SCN units will be fixed by means of bolting.
5. Once the spool pieces are installed, the fabricated facing panels and SCN units will be transferred to the quay structure via telehandler.
6. Each fabricated unit will be lifted and lowered into position using the crane on the quay. Divers will be utilised in the water to guide the unit into its correct position against the spool piece and cast-in sockets in the cope.
7. Once in the correct position, the fabricated unit will be fixed to the structure by bolting the SCN units through cast-in sockets on the cope and circular plate of the spool piece.
8. On completion of all bolting, the chains/strops holding the fender unit on the crane will be relaxed and disconnected.
9. Divers will be removed from the water.
10. Once the unit is installed, the chain brackets will be installed to the concrete cope, again making use of cast-in sockets. This will be carried out from the deck of the multicat vessel.
11. Chains will be affixed to the chain brackets on the cope and to the facing panel using suitable shackles, again from the deck of the multicat vessel.
12. Chains will be tensioned using an integral chain tensioner, in accordance with the fender manufacturer's instructions.

13. Following tensioning of the chains, any testing/commissioning required by the fender manufacturer can be carried out.
14. Upon completion of any testing/commissioning, the fender installation will be confirmed to be complete.

## 7.0 Grounding Pad Installation Method Statement

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### 7.1 Initial Works

Prior to the installation of the grounding pad in front of the new quay wall at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall,
- Removal of the existing rock armoured revetment and bund in front of the new quay wall,
- Dredging in front of the new quay wall.

### 7.2 Grounding Pad Description

The grounding pad located in front of the new quay structure at Hunterston Construction Yard is shown on Drawing No. HMY-AHN-00-00-DR-C-9201 and HMY-AHN-00-00-DR-C-9202, and is required to provide a level area to allow particular vessels to become grounded at low tide levels.

It is anticipated that the grounding pad will be placed upon completion of the dredging exercise immediately in front of the new quay wall.

The grounding pad will be formed using a suitable granular material that can be considered to be self-compacting below water, such as Class 6A material in accordance with the MCHW, or a suitably engineered rock fill material.

### 7.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the installation of the grounding pad;

- Long reach excavator\* located on the deck of the new quay structure,
- Long reach excavator\* located on the deck of a suitable barge,
- Split hopper barge,
- Workboat, e.g. multi-cat or similar,
- 20t dumpers
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Communications equipment (radio etc.)

During diving operations, it is expected that there will be constant communication between the long reach excavator operator(s) and diving Supervisor to ensure the works are carried out in a safe manner.

\*it is anticipated that the excavators will be provided with a GPS guidance system to allow the bucket location relative to seabed to be determined at any time.

## 7.4 Method Statement

It is anticipated that the following methodology will be used to install the grounding pad the required location.

1. A suitable geotextile will be installed over the area of the grounding pad initially. The purpose of the geotextile is to provide additional strength to the existing seabed material and to provide a suitable separation layer between the seabed and grounding pad.
2. Rolls of geotextile will be lifted and positioned on the seabed using the arm of the long reach excavators positioned both on the quay structure and on the barge.
3. The top end of the geotextile will be secured by divers using pins or similar.
4. The geotextile will be rolled out over the extents of the ground pad by divers. Once the rolls are fully utilised the bottom ends will be secured to hold them in position.
5. When ready to be used, the material to be used as the grounding pad will be delivered to site using a 20t dumper. The material will be off-loaded on the deck of the quay structure. The material will be stockpiled to allow continuous installation operations.
6. Material will be lifted by the bucket of the long reach excavator and lifted into the split hopper barge, which will be moored at the quay.
7. The barge will be towed to the required position over the grounding pad location by the workboat.
8. When in position, the split hopper barge will open, allowing the fill material to fall to the seabed. The split hopper barge will then be towed back to the quay structure to be re-filled.
9. Steps 6 – 8 will be repeated until there is a sufficient volume of material on the seabed to allow it to be moved into position.
10. The long reach excavators will be used to move the grounding pad material on the seabed. The material will be moved via the excavators buckets, with GPS used to ensure the correct levels and positions are achieved.
11. Particular care will be taken at the edges of the grounding pad, to ensure the slopes are within defined gradients to ensure stability.
12. Following anticipated completion of the grounding pad, a bathymetric survey will be conducted to confirm the levels achieved. Should this survey identify either high spots or depressions on the grounding pad, further works will be undertaken to achieve the required level, e.g. "sweeping" to remove high spots, or addition of further material to infill depressions. Divers may be employed to investigate if deemed necessary.
13. Steps 12 – 13 will be repeated until the grounding pad is confirmed to be at the correct extents and level throughout its plan area.

14. Upon confirmed completion of the grounding pad, the plant used may be de-mobilised.

## 8.0 Ladder & Handhold Installation Method Statement

### 8.1 Initial Works

Prior to the installation of ladders and handholds to the new quay wall at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall, c/w recesses to accommodate ladders,
- Removal of the existing rock armoured revetment and bund in front of the new quay wall.

### 8.2 Ladder and Handhold Description

The proposed ladder and handhold locations along the quay structure are shown on Drawing No. HMY-AHN-00-00-DR-C-9201.

The ladders are anticipated to be LifeLadders, by Port-Safety ApS (<https://port-safety.com/en/>). The ladders are formed using reinforced plastic modules, connected together using Kevlar tensioning cords. The ladders will extend from max. 150mm below cope level to at least 1m below Chart Datum (-1.0mCD). The ladders will be positioned within a recess in the concrete cope which will correspond with an inpan in the quay structure.

The ladders will be affixed to the quay via stainless steel brackets in accordance with the manufacturer's requirements.

Hand grip bars will be provided within a suitable recess within the deck of the cope.

Handholds are anticipated to be formed using galvanised steel chain which will be fixed to the underside of the cope. The chains will be provided c/w oversized loops at regular centres, and will extent to a level of -1.0mCD. No fixings will be provided to the chains other than to the concrete cope.

A total of 19 No. ladders and 20 No. handhold chains are to be installed.

### 8.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the fender installation;

- Crawler or mobile crane located on the new quay structure,
- Telehandler,
- Multicat vessel/workboat,
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Welding equipment, suitable for both underwater and "in the dry" use,



- Communications equipment (radio etc.)
- Hand tools.

During diving operations it is expected that there will be constant communication between the crane operator, multicat skipper and diving Supervisor to ensure the works are carried out in a safe manner.

## **8.4 Method Statement**

It is anticipated that the following methodology will be used to install the ladders and handholds.

1. The ladders will be delivered to site in their component sections, e.g. reinforced plastic modules, Kevlar tensioning cords, etc.
2. Handholds are anticipated to be delivered to site pre-fabricated to minimise site welding.
3. The ladder and handhold components (ladders, handhold chains and all associated fixings and brackets) will be delivered to site via road, and stored within an agreed site storage area until they are ready to be installed.
4. Ladders and handholds will be transferred to the quay structure from the storage area via telehandler.
5. Each ladder will be assembled on the quayside, in accordance with the manufacturer's attached methodology,
6. Prior to lifting the ladders into position, the stainless steel fixing brackets will be installed. Fixings to the cope will be installed from the multicat vessel. Brackets below water will be installed by divers.
7. Once the stainless steel brackets are installed, the ladders will be lifted by crane and lowered into position within the cope recess and against the quay wall.
8. Once in position the ladder will be affixed to the stainless steel brackets in accordance with the attached installation methodology.
9. Once the ladder is installed and all fixings complete, the chains/strops holding the ladder on the crane will be relaxed and disconnected.
10. Each handhold chain will be lifted by crane and lowered into position against the quay wall.
11. The handhold chain will be bolted to the underside of the concrete cope using a cast-in fixing. It is anticipated that this work will be carried out from the deck of the multicat vessel.
12. Once the handhold chain is installed and all fixings complete, the chains/strops holding the handhold chain on the crane will be relaxed and disconnected.
13. Upon completion of any testing/inspection, the ladder & handhold installation will be confirmed to be complete.

## 9.0 Sub-Surface Revetment Installation Method Statement

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### 9.1 Initial Works

Prior to the installation of the sub-surface revetments to either side of the new quay wall at Hunterston Construction Yard, it is anticipated that the following works will have been completed;

- Construction of new cofferdam quay structure, which is formed by a tubular piled combi-wall with double sheet pile infill panels,
- Construction of the concrete cope to the outer quay wall,
- Removal of the existing rock armoured revetment and bund in front of the new quay wall,
- Dredging in front of the new quay wall.

### 9.2 Sub-Surface Revetment Description

The sub-surface revetments located wither side of the new quay structure at Hunterston Construction Yard are shown on Drawing No. HMY-AHN-00-00-DR-C-9201 and HMY-AHN-00-00-DR-C-9212, and are required to protect the dredged slopes in these locations.

It is anticipated that the slopes of the revetments will be completed to the underside of the revetment level by dredging, which is the subject of a separate dredging and disposal licence application.

Once the slopes are prepared, the revetment is formed by a primary layer of engineered rock up to 2m deep overlying a secondary rock layer up to 1m deep. This rock will have the effect of stabilising the slope and protecting it against scour due to vessel and environmental actions.

### 9.3 Plant & Equipment Required

The following plant and equipment is anticipated to be required for the removal of the rock armoured revetment and bund;

- Crawler or mobile crane located on the deck of the new quay structure,
- Long reach excavator\* located on the deck of the new quay structure,
- 20t dumpers
- Dive team, in accordance with the Diving at Work Regulations,
- Dive Spread,
- Communications equipment (radio etc.)

During diving operations, particularly the installation of geotextile, it is expected that there will be constant communication between the crane operator and diving Supervisor to ensure the works are carried out in a safe manner.

\*it is anticipated that the excavators will be provided with a GPS guidance system to allow the bucket location relative to revetment and bund to be determined at any time.

## 9.4 Method Statement

It is anticipated that the following methodology will be used to install the sub-surface revetments.

1. A suitable geotextile will be installed over the dredged slopes initially, to mitigate against loss of fine material through the revetment.
2. Rolls of geotextile will be lifted and positioned at the top of the dredged slope by the crane located on the quay structure.
3. The top end of the geotextile will be secured by divers using pins or similar.
4. The geotextile will be rolled out over the extents of the slope by divers. Once the rolls are fully utilised the bottom ends will be secured to hold them in position.
5. When ready to be used, the rock to be used as the secondary revetment layer will be delivered to suit using a 20t dumper. The rock will be off-loaded on to the deck of the quay structure, with care taken to prevent damage to the rock. The rock will be stockpiled to allow continuous installation operations.
6. Rocks will be lifted by the bucket of the long reach excavator and lifted into position, as confirmed using the GPS guidance system. Deposit of material will be started from the bottom of the slope.
7. The rocks will be carefully placed to avoid damage to both the rocks and the geotextile.
8. Rock will be positioned in 2 No. layers of approx. 500mm depth each. On completion of the first rock layer, divers will enter the water to inspect and record any issues.
9. Upon correction of any issues raised, the initial rock layer will be confirmed as complete and the primary rock installation will commence.
10. When ready to be used, the second (outer) rock layer will be delivered to suit using a 20t dumper. The rock will be off-loaded on to the deck of the quay structure, with care taken to prevent damage to the rock. The rock will be stockpiled to allow continuous installation operations.
11. The first stage of the primary rock installation will be to install a revetment toe, to provide stability to the primary layer.
12. The primary layer installation will follow stages 6-9, following which the sub-surface revetment will be confirmed as complete.