



TETRA TECH
RPS ENERGY

Construction Environmental Management Plan

Prepared for:

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Table of Contents

Contents

1.0 Introduction	2
1.1 Project Background and Consents	2
1.2 Purpose	2
1.3 Scope	3
1.4 Site Location	4
1.5 Construction Environmental Management Plan Structure	4
2.0 Roles and Responsibilities	5
2.1 Overview	5
3.0 Project Description	7
3.1 Construction Activities and Method Statement	7
4.0 Environmental Management	8
4.1 Requirements, Conditions and Obligations	8
4.1.1 Marine Licence	8
4.1.2 Marine Works Licence	15
4.2 Environmental Management	16
4.2.1 Management Evaluation	16
4.2.2 Lessons Learned	16
4.2.3 Overall Management	16
4.2.4 Management Specific to Individual Construction Activities	18
4.2.5 Accidents and Emergencies	20
4.2.6 Biosecurity Risk Assessment	20
5.0 References	21
6.0 Appendices	22
A . 1 Grouting Diagram	22
A . 2 Biosecurity Risk Assessment	23

List of Tables

Table 1.1: Project licences and consents	2
Table 1.2: Other management plans	3
Table 2.1: Roles and Responsibilities	5
Table 4.1: NRW Marine Licence Conditions	9
Table 4.2: Planning Consent Conditions and Restrictions from the Milford Haven Port Authority Marine Works Licence	15
Table 4.3: Vehicles and Equipment	17

List of Figures

Figure 1.1: Site location of the Project	4
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Initialisms	Description
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
INNS	Invasive Non-Native Species Management
MARPOL	International Convention for the Prevention of Pollution from Ships
MHW	Milford Haven Waterway
NRW	Natural Resources Wales
PPE	Personal Protection Equipment
SQEP	Suitably Qualified and Experienced Person
TTRPSE	Tetra Tech RPS Energy Ltd
VPOT	Valero Pembrokeshire Oil Terminal

1.0 Introduction

1.1 Project Background and Consents

Valero Pembrokeshire Oil Terminal (VPOT) Ltd plans to improve the structural integrity and functionality of Jetty Berth 2, which is situated within the Milford Haven Waterway (see Figure 1.1). Over time, the existing dual pile mooring dolphin (BD7) has become loose in its socket. To ensure safe and efficient berthing operations, VPOT Ltd has decided to remove the deteriorating dual piles and replace them with a modern monopile system (hereafter referred to as the ‘Project’). Valero applied to Natural Resource Wales (NRW) and Milford Haven Port Authority for a marine licence and marine works licence respectively, to undertake these works and received the marine licence CML2517 on 23 June 2025 and marine works licence 02/24 on 3 July 2025. Valero also obtained The Crown Estate Landowners Consent on 12 August 2025. The Project is therefore subject to the licences and consents shown in Table 1.1.

Table 1.1: Project licences and consents

Licence/Consent	Legislation	Provider	Date	Licence Number
Marine License	Marine and Coastal Access Act 2009	NRW	23 June 2025	CML2517
Marine Works Licence	Milford Haven conservancy Act 1983	Milford Haven Port Authority	24 June 2025	02/24
The Crown Estate Land Owners Consent	The Crown Estate Act 1961	The Crown Estate	12/08/25	N/A

The works associated with the Project are currently planned to commence 06 October 2025 and be completed over a period of approximately 3 to 4 weeks. The Project consists of the following three licensable activities:

- Demolishing the existing dual pile dolphin structure. These will be transported to the Valero Quay facility in Pembroke Dock for disposal/recycling.
- Installation of a permanent casing for a new monopile. This will be adjacent to one of the dual piles but largely within the footprint of the BD7 platform.
- Installation of a new monopile within this casing including grouting and cementing of the monopile within the casing (up to 70 tonnes of grout may be used).

1.2 Purpose

This Construction Environmental Management Plan (CEMP) has been prepared by Tetra Tech RPS Energy (TTRPSE) on behalf of Valero to discharge the conditions of the NRW Marine Licence, in particular the requirement for a CEMP to mitigate pollution from grouting (see section 4.1 for further details). The purpose of this CEMP is to provide a consolidated document which covers the various environmental requirements for the Project, to enable efficient management and dissemination of these requirements. It will provide a framework through which the potential environmental impacts associated with the Project activities are managed.

The CEMP serves to:

- Provide a mechanism for ensuring the delivery of mitigation measures, to reduce environmental impacts identified in the environmental assessment phase.
- Identify potential environmental risks and impacts arising from construction activities.

- Ensure compliance with legislation and identify where it will be necessary to obtain authorisation from relevant statutory bodies.
- Establish clear procedures and responsibilities for environmental management on-site.
- Promote sustainable construction practices and resource efficiency.
- Ensure effective communication and training for all personnel regarding environmental responsibilities.
- Provide a mechanism for monitoring, auditing, and continuous improvement of environmental performance throughout the construction phase.

This document is a live management tool that will be reviewed and updated regularly to reflect changes in Project scope, site conditions, or regulatory requirements.

1.3 Scope

The scope of this CEMP is for the marine licensable activities associated with the Valero Jetty Berth 2 repair works, as detailed in section 3.0. The CEMP will be applicable to all personnel carrying out activities associated with these works.

This CEMP will focus on the management of the potential effects of construction activities on the environment. Therefore, where specific management plans are required, this CEMP will defer and cross-reference to those plans. The related plans are listed in Table 1.2.

Table 1.2: Other management plans

Plan	Summary	Reference
Marine INNS Biosecurity Risk Assessment and Management Plan	The Biosecurity Risk Assessment and Management Plan details how the risk of potential introduction and spread of INNS will be managed.	Appendix A.2

1.4 Site Location

The location of the Project within the Milford Haven Waterway is illustrated in Figure 1.1.

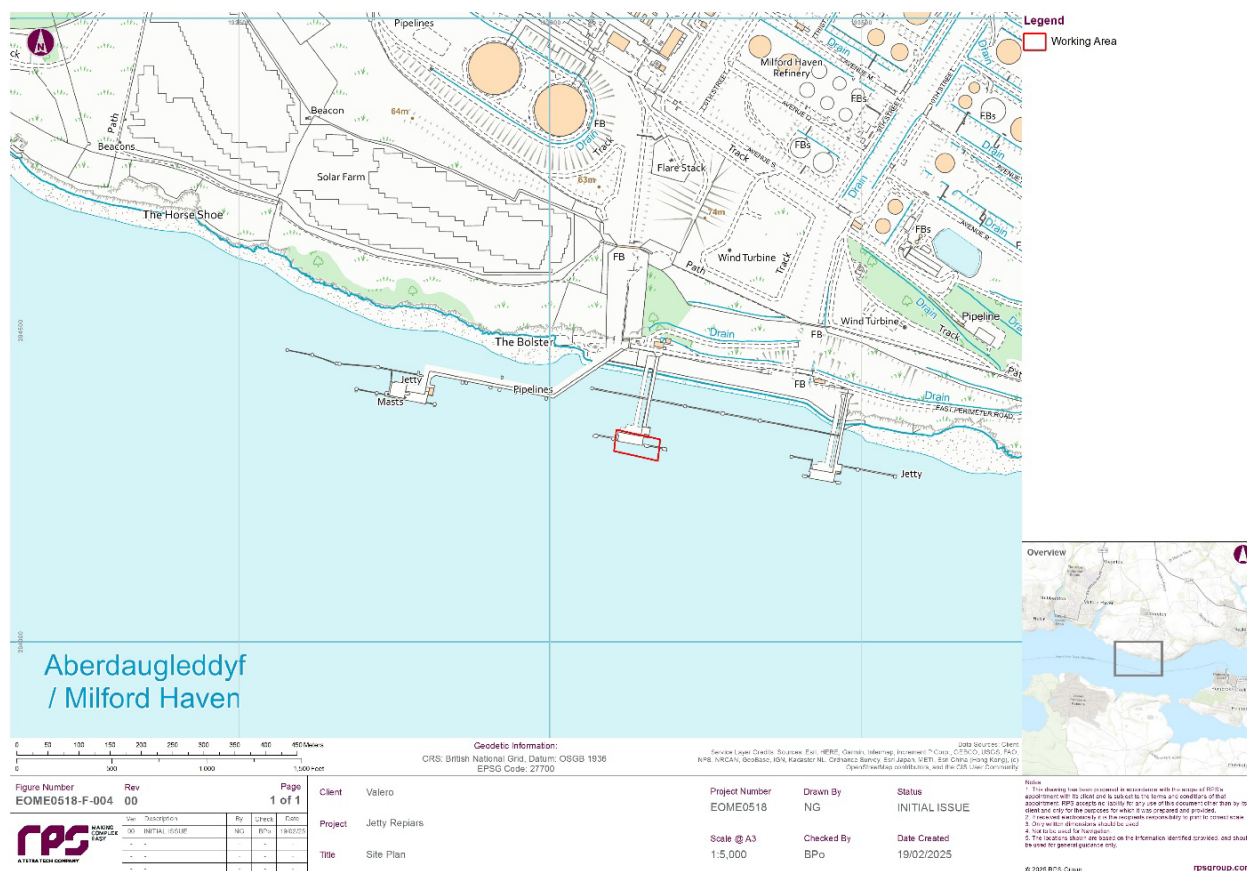


Figure 1.1: Site location of the Project.

1.5 Construction Environmental Management Plan Structure

This CEMP is structured as follows:

- Section 2.0: Roles and Responsibilities – This section describes how the client, contractors and key personnel will support in the delivery and implementation of this CEMP.
- Section 3.0: Project Description – This section describes the construction method statement and activities.
- Section 4.0: Environmental Management – This section outlines how the construction activities will be managed to reduce environmental effects.
- Appendices – This section includes supporting information to the CEMP.

2.0 Roles and Responsibilities

2.1 Overview

This section of the CEMP sets out the roles and responsibilities of all relevant Project personnel in relation to the CEMP. All personnel participating in Project activities have a responsibility to comply with the requirements of the CEMP and have a role to play in the minimisation and mitigation of adverse effects on the environment. The key roles relevant to the delivery and implementation of the CEMP are:

- The Client (Valero);
- Principal Contractor (Mainstay Marine); and
- Sub-contractors (Green C Marine).

These roles are outlined in Table 2.1 below.

It should be recognised that the responsibility for much of the marine environmental monitoring and assessment will lie with the Client and Principal Contractor.

Table 2.1: Roles and Responsibilities

Party	Responsibilities
Valero Pembrokeshire Oil Terminal Ltd (the Client)	• Acting as Client; • Overseeing the CEMP; • Ensuring compliance with the awarded Marine Licences; • Co-ordination between the Principal Contractor, sub-contractors and the external stakeholders as appropriate; • Review applicable environmental documents; • Securing the necessary budget and resource for the implementation of the CEMP; • Implementation of the CEMP; • Coordinating with other Project Managers where work processes and activities require an integrated approach to meet the requirements set out in the CEMP; • Preparing the principal contractor's (and their subcontractors') relevant environmental documentation and providing an appropriate internal review, to ensure that all the requirements of this CEMP are provisioned; and • Planning, conducting, reporting and following up on CEMP evaluations.
Principal Contractor: Mainstay Marine	• Determining whether construction activities are consistent with good practice and agreed-consented methods; • Be the primary site contact with regulators for marine-based activities. Engage with NRW, the Milford Haven Port Authority, and other regulators and stakeholders; • Oversee the delivery of measures included within the CEMP; • Management and implementation of contracted work in accordance with the requirements of this CEMP; • Providing or arranging specific training in relation to ecology in construction management to all levels of Contractors' staff including induction, subject-specific training and toolbox training where appropriate; • Working with the Client as required to ensure the protection of the marine environment from Project activities; • Provision of Suitably Qualified and Experienced Person (SQEP) Contractor Environmental Representation (if applicable); • Monitoring and evaluating compliance with the requirements of this CEMP within their organisation and that of the sub-contractors; • Review risk assessments, method statements and evidence relating to construction activities that may affect the marine environment;

	• Ensuring that agreed requirements set out in this CEMP are communicated to and implemented by sub-contractors; • Conduct regular inspections of works which interface with the marine environment; • Undertake investigations in relation to marine environment incidents and near misses; • Coordinating/managing the interface between contractors and relevant environmental disciplines, to ensure the requirements of this CEMP are implemented; and • Be a primary technical contact for intertidal/marine pollution incidents and make notifications to NRW and the Milford Haven Port Authority, in line with procedures on incident reporting.
Sub-contractor: Green C Marine	• Responsible for providing the barge and all Project works • Responsible for undertaking the drilling activities (via specialist sub sub contractor Fugro); and • Instructing their staff and ensuring that site workers are appropriately briefed on the requirements of this CEMP and any ecologically related procedures and/or plans associated with their work.

3.0 Project Description

3.1 Construction Activities and Method Statement

Valero plans to improve the structural integrity and functionality of Jetty - Berth 2 at VPOT in the Milford Haven Waterway (MHW). The Jetty-Berth 2 extends 120 m in a south-by-south-westerly direction from the northern bank into the MHW (Figure 1.1).

Over time, the existing 2-pile mooring dolphin (BD7) has become loose in its socket. To ensure safe and efficient berthing operations, VPOT Ltd has decided to undertake maintenance activities. This involves removing the deteriorating historic structure and replacing it with a modern monopile system.

The Project comprises three marine licensable activities as described below:

- Demolition and removal of existing dual pile dolphin structure:
 - A crane on a floating barge will be used.
 - The existing top side structure will be removed and stored on a barge. The existing dolphin structure will be demolished in sections and lifted onto a barge, with existing piles cut off as close to the seabed as possible.
 - All materials arising from these works will be removed via a support barge and unloaded at the Valero Quay facility in Pembroke Dock for disposal/recycling.
- Installation of permanent casing for new monopile:
 - A permanent casing will be lowered to the seabed using a crawler crane and driven by the top side drill rig vibro hammer into the seabed.
 - The casing will be installed adjacent to one of the previous piles, but largely within the shadow footprint of the dolphin.
- Installation of new monopile including grouting and cementing of the monopile within the permanent casing:
 - The permanent casing installed as part of the activity listed above will be drilled to install a new monopile casting. Excavated material will pass through the drill pipe, and all drill arising discharged to the seabed.
 - The new monopile (2.5 m in diameter) will be lowered into the casing. The monopile will be grouted to the casing and filled with concrete from the bottom of the pile until the top of the seabed level.

How these activities will be appropriately managed to minimise risk to the environment is described in Section 4.2.3: Management of Construction Activities.

4.0 Environmental Management

4.1 Requirements, Conditions and Obligations

This section describes the requirements, conditions and obligations set out within the Marine Licence CML2517, and how each requirement (or part of a requirement) will be addressed, identifying the mechanism within the CEMP to ensure compliance.

4.1.1 Marine Licence

Table 4.1 summarises and sets out how each Marine Licence condition (or part of a condition) will be addressed, as appropriate, identifying the mechanism within the CEMP to ensure compliance.

Table 4.1: NRW Marine Licence Conditions

Condition	CEMP Reference or Compliance Mechanism	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable)
Notification and Inspection			
3.1 Notification of Commencement			
3.1.1	The Licence Holder must notify the Licensing Authority no less than 10 days before the commencement of the Licensed Activities, or an individual phase of the Licensed Activities, is expected to commence.	N/a	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.1.2	The Licence Holder must notify Welsh Government Marine and Fisheries Division (Control and Enforcement Branch) no less than 10 days before the commencement of the Licensed Activities, or an individual phase of the Licensed Activities, is expected to commence.	N/a	MarineLicensingEnforcement@gov.wales
3.1.3	The Licence Holder must ensure that local mariners and fishermen's organisations are made fully aware of the Licensed Activities through legal notices to mariners 10 days prior to the commencement of the Licensed Activities.	N/a	Local mariners and fishermen's organisations to be notified through notices to mariners (https://kingfisherbulletin.org/) and to local harbours and ports
3.2 Notification of Vessels and/or Vehicles			
3.2	The Licence Holder must ensure that the details of the vessels and/or vehicles utilised to undertake the Licensed Activities are submitted to the Licensing Authority and Welsh Government Marine and Fisheries Division (Control and Enforcement Branch) at least 24 hours prior to the commencement of the Licensed Activities.	N/a	MarineLicensingEnforcement@gov.wales
3.3 Notification of Agents/Contractors/Sub-contractors			
3.3	The Licence Holder must ensure that details of any agent(s), contractor(s) or sub-contractor(s) utilised to undertake the Licensed Activities are submitted to the Licensing Authority at least 24 hours prior to the commencement of the Licensed Activities.	See section 2.0 for contractor roles and responsibilities.	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.4 Notification of HM Coastguard			
3.4	The Licence Holder must ensure that the HM Coastguard is made aware of the Licensed Activities at least 24 hours prior to the	N/a	zone28@hmcg.gov.uk

Condition	CEMP Reference or Compliance Mechanism	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable)
	commencement by contacting the National Maritime Operations Centre at zone28@hmcg.gov.uk .		
3.5 Inspection of Licensed Activities			
3.5	The Licence Holder must allow Marine Enforcement Officers or any other person authorised by the Licensing Authority to inspect the Works at any reasonable time.	N/a	N/a
3.6 Notification of Completion			
3.6.1	The Licence Holder must notify the Licensing Authority within 10 days of completion of the Licensed Activities	N/a	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.6.2	The Licence Holder must notify Welsh Government Marine and Fisheries Division (Control and Enforcement Branch) within 10 days of completion of the Licensed Activities.	N/a	MarineLicensingEnforcement@gov.wales
3.7 Accident or Emergency			
3.7.1	If, by reason of force majeure any substances or articles are deposited otherwise than as permitted as part of the Licensed Activities or in the Licensed Area full details of the circumstances shall be notified to the Licensing Authority within 48 hours of the incident occurring	See sections 4.2.3 and 4.2.4.1.	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.7.2	If it is necessary for the Licence Holder to recover or remove any equipment, plant or machinery used to undertake the Licensed Activities that have been dropped as a result of an accident or emergency, the Licence Holder is permitted to do so provided that the methodology for such recovery or removal has been approved by the Licensing Authority.	See section 4.2.3.	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.8 Distribution of Copies of this Licence			
3.8	The Licence Holder is required to ensure that a copy of this Licence is given to: • All agent(s), contractor(s) and sub-contractor(s) whose names have been provided to the Licensing Authority under condition 3.3; and • The Masters of any vessels and transport managers responsible for the vehicles employed in accordance with this Licence	N/a	N/a

Condition	CEMP Reference or Compliance Mechanism	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable)
	whose details have been submitted to the Licensing Authority under condition 3.2.		
3.9 Inspection of Documents			
3.9	Copies of this Licence shall be made available at the following locations: - at the address of the Licence Holder specified in section 1.2; - at any site office, located at or adjacent to the Licensed Area, used by the Licence Holder or its agent(s), contractor(s) or sub-contractor(s) responsible for the loading transportation or deposit of any substances or articles permitted as part of the Licensed Activities; and - on board each vessel or vehicle carrying out Licensed Activities. The documents referred to in this Condition shall be available at all reasonable times for inspection by officers appropriately authorised by the Licensing Authority and authorised Marine Enforcement Officers at the locations stated in that paragraph.	N/a	N/a
Vessels, Plant and Equipment			
3.10	Notified Contractors, Vessels and/or Vehicles only to Carry out Licensed Activities. Only those agent(s), contractor(s), sub-contractor(s), vessels and/or vehicles whose details have been notified to the Licensing Authority may operate under the terms of this Licence. Any changes must be notified to and be approved by the Licensing Authority in writing prior to any such agent, contractor, subcontractors or vehicles carrying out any Licensed Activities pursuant to or otherwise operating under this Licence.	N/a	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.11 Refuelling of Plant and Equipment			
3.11	The Licence Holder must ensure that plant, vehicles and machinery are not refuelled on the foreshore or in the sea.	See section 4.2.3.2.	N/a
3.12 Equipment, Structures and Access			
3.12	The Licence Holder must ensure that all equipment, temporary structures, access tracks, waste and/or debris associated with the Licensed Activities are removed on completion of the Licensed activities.	See sections 4.2.3.2 and 4.2.4.1.	N/a

Condition	CEMP Reference or Compliance Mechanism	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable)
Safety			
3.13 Removal of Deposited Material			
3.13	If the Licensing Authority considers it necessary or advisable for the safety of navigation, the Licence Holder must remove any deposit specified by the Licensing Authority or Marine Enforcement Officers within one month of notice being given by the Licensing Authority, and shall not replace such material until the Licensing Authority has given its written approval	N/a	marinelicensing@cyfoethnaturiolcymru.gov.uk
Pollution Control			
3.14 Pollution Prevention			
3.14	The Licence Holder must ensure that pollution prevention best practice is adhered to at all times. Any incidents must be reported to the Licensing Authority as soon as possible using the hotline number 0300 065 3000.	See sections 4.2.3.1 and 4.2.3.2.	0300 065 3000
3.15 Spillage of Pollutants			
3.15	The Licence Holder must employ bunding, storage facilities and spill kits to contain and prevent the release of fuel, oils and chemicals associated with the plant, refuelling and construction equipment into the marine environment. Secondary containment must be used with a capacity of no less than 110% of the container's storage capacity.	See sections 4.2.3.1 and 4.2.3.2.	N/a
3.16 Prevention of Disposal of Man-made Debris			
3.16	The Licence Holder must ensure that all reasonable precautions are taken to prevent the disposal of man-made debris to the marine environment. Such material must be removed immediately and be disposed of appropriately. If it is not possible to prevent manmade debris from entering the marine environment during the Licensed Activities, the Licensed Activities must cease immediately.	See sections 4.2.3.2 and 4.2.4.1.	N/a
3.17 Cleanliness of Equipment			
3.17	The Licence Holder must ensure that equipment, machinery and Personal Protection Equipment (PPE) are washed with freshwater	See section 4.2.3.2.	N/a

Condition	CEMP Reference or Compliance Mechanism	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable)
	and/or thoroughly airdried before deployment and before moving between locations.		
Activity Specific Conditions			
3.18 CEMP			
3.18.1	The Licence Holder must submit a CEMP to the Licensing Authority for written approval at least 6 weeks prior to commencement of the Licensed Activities. No Licenced Activities may be undertaken prior to written approval from the Licensing Authority.	N/a	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.18.2	The Licence Holder must ensure that any actions outlined in the documents detailed in condition 3.18.1 are implemented as approved in writing by the Licensing Authority. Any proposed changes to the actions outlined in the documents must be submitted to and approved in writing by the Licensing Authority prior to any changes being enacted.	N/a	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.19 Biosecurity Risk Assessment			
3.19.1	The Licence Holder must submit a Biosecurity Risk Assessment to the Licensing Authority for written approval at least 6 weeks prior to commencement of the Licensed Activities. No Licenced Activities may be undertaken prior to written approval from the Licensing Authority.	See Appendix A.2.	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.19.2	The Licence Holder must ensure that any actions outlined in the documents detailed in condition 3.19.1 are implemented as approved in writing by the Licensing Authority. Any proposed changes to the actions outlined in the documents must be submitted to and approved in writing by the Licensing Authority prior to any changes being enacted.	See Appendix A.2.	marinelicensing@cyfoethnaturiolcymru.gov.uk
3.20 Coatings			
3.20	The Licence Holder must ensure that any coatings/treatments used in carrying out the Licensed Activities are suitable for use in the marine environment and are used in accordance with best environmental practice.	See section 4.2.3.2.	N/a
3.21 Use of Render and Concrete			
3.21.1	The Licence Holder must ensure that no waste concrete slurry or wash water from the use of concrete or cement are discharged into	See section 4.2.4.3.	N/a

Condition	CEMP Reference or Compliance Mechanism	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable)
	the marine environment. Concrete and cement mixing and washing areas should be contained and sited at least 10 m from any watercourse or surface water drain to minimise the risk of runoff entering a watercourse.		
3.21.2	The Licence Holder must ensure that if concrete is to be sprayed in the vicinity of the marine environment (e.g. bridges, retaining walls, etc.), suitable pollution prevention measures are taken to prevent rebounded or windblown concrete from entering the water environment.	See section 4.2.4.3.	N/a
3.22 Concrete Cure Time			
3.22	The Licence Holder must ensure materials used are suitable for use in the marine environment and works should be timed to ensure maximum concrete cure time.	See section 4.2.4.3.	N/a

4.1.2 Marine Works Licence

Pursuant to its powers under Section 18 of the Milford Haven Conservancy Act 1983, the Milford Haven Port Authority imposes the consent conditions and restrictions presented in Table 4.2.

Table 4.2: Planning Consent Conditions and Restrictions from the Milford Haven Port Authority Marine Works Licence

Condition Number	Condition	Where the condition has been addressed in this CEMP	Contact Detail (If Applicable or Required)
1	The VPOT shall give notice in writing to the Milford Haven Port Authority's Harbourmaster ten days before commencement of work, quoting Marine Works Licence No. 02/24.	N/a	mwl@mhpa.co.uk
2	The VPOT shall ensure that the works are carried out in accordance with the plans attached to the application.	See section 4.2.	N/a
3	The works, when completed, shall be maintained and operated in an efficient condition and manner and shall not, whether by reason of the manner in which they are used by operation or maintained, otherwise, hinder or endanger navigation in the Haven.	See section 4.2.	N/a
4	Both during construction and after completion, the works shall at all times be marked and lit by in such a manner as the Harbourmaster may from time to time require.	See section 4.2.	N/a
5	The VPOT shall ensure that the works are not altered or extended without notice and approval being served on the Milford Haven Port Authority in accordance with Section 18 of the Milford Haven Conservancy Act, 1983.	N/a	mwl@mhpa.co.uk
6	The VPOT shall remove or relocate the works within 30 days if the Milford Haven Port Authority shall give written notice to them requiring such removal or relocation.	N/a	mwl@mhpa.co.uk
7	The VPOT shall remove the works in their entirety from the Haven if they cease to be in use.	See section 4.2.	mwl@mhpa.co.uk
8	The VPOT shall advise the Milford Haven Port Authority upon completion of the works.	N/a	mwl@mhpa.co.uk
9	All spoil arising from the works, including dredgings, shall only be disposed of in a manner and in locations approved by the Harbourmaster or relevant licencing authority.	See section 4.2.	N/a
10	The VPOT shall obtain all other consents from landowners and statutory bodies as may be required for the works. Copies to be submitted to the Milford Haven Port Authority prior to commencement of the works: A. Marine Licence (NRW); B. Planning consent (local planning authority); and C. Crown Estate Licence.	Relevant consents and licenses are detailed in Table 1.1. See Table 4.1 for the details of the conditions of the NRW Marine Licence and section 4.2 for how compliance with these conditions will be ensured.	mwl@mhpa.co.uk

4.2 Environmental Management

This section describes how the Project activities will be managed in relation to the marine environment.

4.2.1 Management Evaluation

The evaluation of compliance will be undertaken through site/vessel inspections and incident monitoring. Inspections of the aspects of the Project that interface with the marine environment are to be undertaken by the Client and/or Principal Contractor, or contractor delegate thereof.

4.2.2 Lessons Learned

Where improvements and/or additional management are identified as part of the Management Evaluation, these will be included within this CEMP as it evolves.

4.2.3 Overall Management

The following sections detail overall management measures that will be applied during the Project activities.

4.2.3.1 Material and chemical storage

Chemical substances

Personnel undertaking work activities will be required to comply with all relevant legislation and with the Client/Principal Contractor's health and safety standards to ensure that all chemicals brought onto the site are approved, used and stored compliantly.

Storage and waste management

Best practice measures shall be implemented to prevent contamination of the marine environment from oils and chemicals stored on site. As part of best practice, bunding may be used as a preventative barrier to surround chemical containers, such as a bunded tray, chemical store or similar, as appropriate. The bunding is required to act as secondary containment should there be a leak from the chemical container. The capacity of the secondary containment must be at least 110% of the total volume of chemicals in the container (as per condition 3.16 of the NRW Marine Licence, Table 4.1). If required, spill kits will be employed to contain and prevent the release of fuel, oils and chemicals associated with project vessels and equipment into the marine environment.

Materials

Only the following materials will be used during the Project activities:

- steel/iron;
- concrete / cementitious grout;
- silt; and
- sand.

4.2.3.2 Pollution Prevention

An accidental spill has the possibility to lead to pollution within the Milford Haven Waterway, which could have environmental effects. To manage issues with pollution, strict protocols for pollution prevention will be in place for the duration of the Project activities, including measures to prevent spills and manage waste (as per condition 3.14 of the NRW Marine Licence, Table 4.1). Any incidents must be reported to the Licensing Authority as soon as possible using the hotline number 0300 065 3000. The risk of pollution will be minimised by adherence to International Convention for the Prevention of Pollution from Ships (MARPOL).

To manage pollution from shore-based activities and machinery during construction, fuel and hazardous materials will be securely stored away from the shoreline, with designated refuelling areas equipped with spill response kits. Regular maintenance and inspections of machinery are crucial to prevent leaks, and all machinery used in construction will be well maintained (as per condition 3.16 of the NRW Marine Licence, Table 4.1).

In addition, all equipment, machinery and PPE used will be washed with freshwater and/or thoroughly airdried before deployment and before moving between locations, to help reduce potential for pollution and cross-contamination (as per condition 3.17 of the NRW Marine Licence, Table 4.1).

Vessels

All vessels (e.g. the barges) shall display the appropriate day shapes / navigation lights as required under the International Regulations for Preventing Collisions at Sea (COLREGS).

All vessels (e.g. the barges) must be loaded appropriately such that their cargo cannot be lost overboard, for example in bad weather.

All reasonable precautions will be taken to prevent the disposal of man-made debris to the marine environment. Such material will be removed immediately and be disposed of appropriately. If it is not possible to prevent man-made debris from entering the marine environment during the Project activities, they will be ceased immediately. Should material be lost into the marine environment it must be reported to the Licencing Authority. There may be a requirement to recover the material. This will need to be done in liaison with the Licencing Authority, who will determine the time within which the material may be located and recovered.

As per condition 3.10 of the NRW Marine Licence (see Table 4.1), only those agent(s), contractor(s), sub-contractor(s), vessels and/or vehicles whose details have been notified to the Licensing Authority may operate. Any changes will be notified to and be approved by the Licensing Authority in writing prior to any such agent, contractor, subcontractors or vehicles carrying out any Licensed Activities.

Vehicles and equipment

Vehicles and equipment (e.g. the crawler crane, vibro hammer, and drilling equipment) may contain fuels, oils as well as other hazardous substances, which possess the potential for spillages and leaks (Table 4.3).

Table 4.3: Vehicles and Equipment

Type of Equipment	Location	Available Spill Containment
Crawler Crane	Jack Up	Spill kit containing nappies, boom and granules.
Generator	Jack Up	Bunded enclosure, Spill kit containing nappies, boom and granules.
Hydraulic Power Pack	Jack Up	Bunded enclosure, Spill kit containing nappies, boom and granules.
Drill Rig	Jack Up	Spill kit containing nappies, boom and granules.
Lighting Tower	Jack Up/Shore Based	Spill kit containing nappies, boom and granules.
Forklift	Shore Based	Spill kit containing nappies, boom and granules.
Vans	Shore Based	Spill kit containing nappies, boom and granules.
Generator	Shore Based	Spill kit containing nappies, boom and granules.
Jack Up Barge	-	Spill kit containing nappies, boom and granules.
Floating Crane Barge	-	Spill kit containing nappies, boom and granules.

No hydrocarbon or oil-type residue can enter the marine environment. Plant nappies should be used to capture any potential oil/hydrocarbon drips and should be stored at a minimum of 10 m away from any watercourse, body or drain. As per condition 3.11 of the NRW Marine Licence, plant, vehicles and machinery will not be refuelled on the

foreshore or in the sea, to reduce the potential for spillages into the marine environment (Table 4.1). Where there is a requirement to refuel equipment on the barges, spill kits and drip trays shall be used in support of the refuelling activities as outlined above under ‘Storage and waste management’.

Coatings

As per NRW Marine Licence condition 3.20, any coatings/treatments used will be suitable for use in the marine environment and are used in accordance with best environmental practice (see Table 4.1). This is to ensure that hazardous chemicals that may be toxic, persistent or bio-accumulative are not released into the marine environment and to minimise the risk of marine pollution incidents by adopting best practice techniques.

4.2.3.3 Dropped Object Notification

The contractor is required to notify the Licencing Authority of all dropped objects as soon as reasonably practicable and to remove all dropped objects under condition 3.7 of the NRW Marine Licence (Table 4.1). Minimum details required on the dropped object include:

- Date, Time, Sea state;
- Coordinates (WGS84 DDD°MM.MMM’);
- Details on the object/material dropped; and
- Plans to recover the object/material.

4.2.4 Management Specific to Individual Construction Activities

The Project works consist of the following activities:

- Demolition and removal of existing dual pile dolphin structure;
- Installation of permanent casing for new monopile; and
- Installation of new monopile including grouting and cementing of monopile within the permanent casing.

4.2.4.1 Demolition and Removal of Existing Dual Pile Dolphin Structure

As detailed in section 3.1, this activity involves the following:

- Use of a crane on a floating barge.
- Removal of existing top side structure and storage on a barge. The existing dolphin structure will be demolished in sections and lifted onto a barge, with existing piles cut off as close to the seabed as possible.
- All materials arising from these works will be removed via a support barge and unloaded at the Valero Quay facility in Pembroke Dock for disposal/recycling.

Removing existing linkspans

When undertaking this activity, due consideration should be given as to how the top side structures are removed, and any waste arisings or materials that might enter the marine environment. Condition 3.12 of the NRW Marine Licence require the Licence Holder to “*ensure that all equipment, temporary structures, access tracks, waste and/or debris associated with the Licensed Activities are removed on completion of the Licensed activities*” (see Table 4.1). The Waste (England and Wales) Regulations 2011 establish a legal framework for treating waste. This has been designed to protect the environment and human health by emphasising the importance of proper waste management and recovery and recycling techniques to reduce pressure on resources and improve their use. Waste generated by a project or activity must in general terms be dealt with in an environmentally friendly way. To achieve this, the Waste (England and Wales) Regulations 2011 describe a waste hierarchy which gives an order of preference for how waste is dealt with (prevention, re-use, recovery for other purposes such as energy, and finally disposal).

All materials arising from this Project activity will be removed and unloaded at the Pembroke dock for disposal and/or recycling, thus fulfilling the licence condition and ensuring compliance with the Waste (England and Wales) Regulations 2011.

Demolition of the existing dolphin structure

During the demolition of the existing dolphin structure, materials should be appropriately managed to prevent loss to the marine environment, such as using sheets to capture falling debris from entering the marine environment. All incidents of dropped or lost material must be reported promptly using the established procedures to mitigate potential environmental effects.

Jack up barge placements

The placement of the jack up barge spud legs has the potential to impact the environment through disturbance to the seabed. As outlined in the Marine Environmental Appraisal, all reasonable endeavours will be made to ensure that, once the jack up barge is in position, subsequent movements are limited where possible but noting that this will be dependent on ground conditions and weather.

4.2.4.2 Installation of Permanent Casing for the New Monopile

As detailed in section 3.1, this activity involves the use of a crane to lower the permanent casing to the seabed, and a vibro hammer to drive it into the seabed. The casing will be installed adjacent to one of the previous piles, but largely within the shadow footprint of the dolphin. There are no NRW Marine Licence conditions specific to these activities which have not already been covered in section 4.2.3.

4.2.4.3 Installation of New Monopile including Grouting and Cementing of Monopile within Casing

As detailed in section 3.1, this activity involves the following:

- drilling to install a new monopile into the permanent casing detailed in section 4.2.4.2, with discharge of drill arisings to the seabed adjacent to the works; and
- grouting the new monopile in the casing and filling with concrete from the bottom of the pile until the top of the seabed level.

Careful consideration must be given to the grouting and cementing activities regarding any materials that might enter the marine environment.

Use of render and concrete during grouting

When working with cementitious materials in the marine environment, quick-setting cement should be used and best practice followed to avoid environmental effects, fulfilling NRW Marine Licence condition 3.22 (Table 4.1). Further guidance for working with cement (and grout) can be found in the Construction Industry Research and Information Association (CIRIA) guidance document C674: Use of concrete in maritime engineering; a guide to good practice (CIRIA, 2006).

The permanent casing containing the grout is larger in diameter than the drilled rock socket. The casing will be vibrated/hammered until refusal by the rock and therefore will be sealed at this joint, eradicating any chance of grout leakage. The only means of grout release to the water is over the top of the permanent casing. The annulus between the rock and the pile will require 10.08 m³ of grout, and the annulus between the casing and the monopile will require 21.9 m³ of grout. This totals to 32 m³ of grout.

The grout and concrete may be either pumped from the shore or mixed onboard the jack up barge and may be re-pumped or stored in temporary holding tanks awaiting use. The storage of the grout / concrete and associated supply lines may pass along the approach jetty and on the jack up barge.

The amount and flow of grout will be monitored very carefully, the installer will only pump in 30.5 m³ of grout ensuring the grout ends 1 m from the top of the sleeve. The new monopile has grouting tubes pre-installed inside of it. These

tubes are made from standard carbon steel and start at the top of the monopile, running down through it and exit at different levels. Some tubes exit through the bottom of the monopile into the rock socket, and others into the permanent casing, therefore everything will be filled from the bottom up. Any hoses used will be connected to the installed grouting tubes, therefore, if there was a leak on a connection from the hoses to the tubes this would still be inside the pile and cause no potential contamination to the marine environment. The grouting diagram is shown in Appendix A.1.

As per NRW Marine Licence condition 3.21.1, no waste concrete slurry or wash water from the use of concrete or cement will be discharged into the marine environment (Table 4.1). Concrete and cement mixing and washing areas will be contained and sited at least 10 m from any watercourse or surface water drain to minimise the risk of runoff entering a watercourse. Good practice and extreme care must be taken for all works involving cement and concrete near watercourses and waterbodies. If produced, waste concrete slurry and wash water must be disposed of correctly off-site to an appropriately licensed facility.

Additionally, as per NRW Marine Licence condition 3.21.2, suitable pollution prevention measures are required to prevent rebounded or windblown concrete from entering the water environment, if spraying of cement or concrete is required in the vicinity of the marine environment (Table 4.1). However, spraying of cement or concrete will not be undertaken as part of the Project activities, thus in compliance with this condition.

The conditions specific to concrete usage will minimise the risk to the marine environment associated with wet concrete contamination.

4.2.5 Accidents and Emergencies

During the Project activities, incidents could occur that may affect the marine environment. These will be managed by the competent contractor in accordance with established protocols and regulatory requirements. The contractor is responsible for implementing appropriate procedures to address and resolve any issues that arise promptly and effectively. This includes managing the response to any environmental or operational incidents that may impact the surrounding area. Any near-miss or incidents that have the potential to affect or have affected the marine environment should be reported to the Licencing Authority within 48 hours (Table 4.1).

Reporting

A comprehensive report will be prepared for each incident, detailing the nature of the incident, actions taken, and any outcomes or effects. This report will be included in the Project's documentation and reviewed to ensure compliance and facilitate continuous improvement.

4.2.6 Biosecurity Risk Assessment

As per NRW Marine Licence condition 3.19, a Biosecurity Risk Assessment has been completed and is presented in Appendix A.2. A low risk level was identified for all vessels, immersible equipment, and activities associated with the Project.

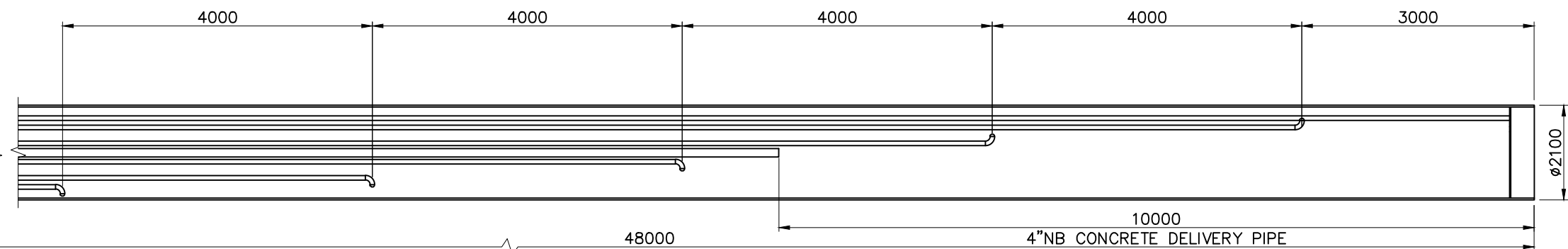
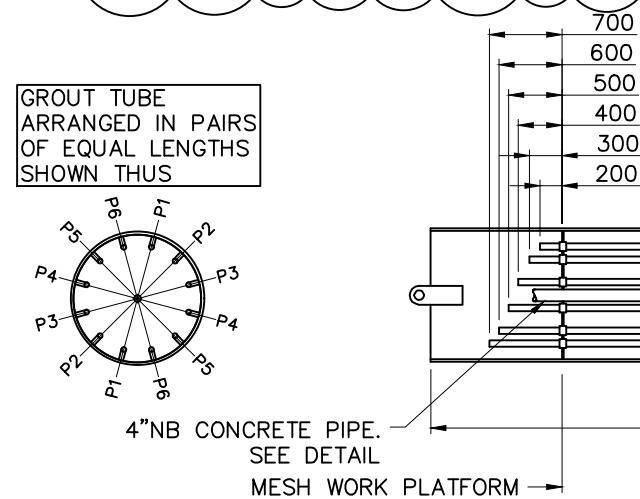
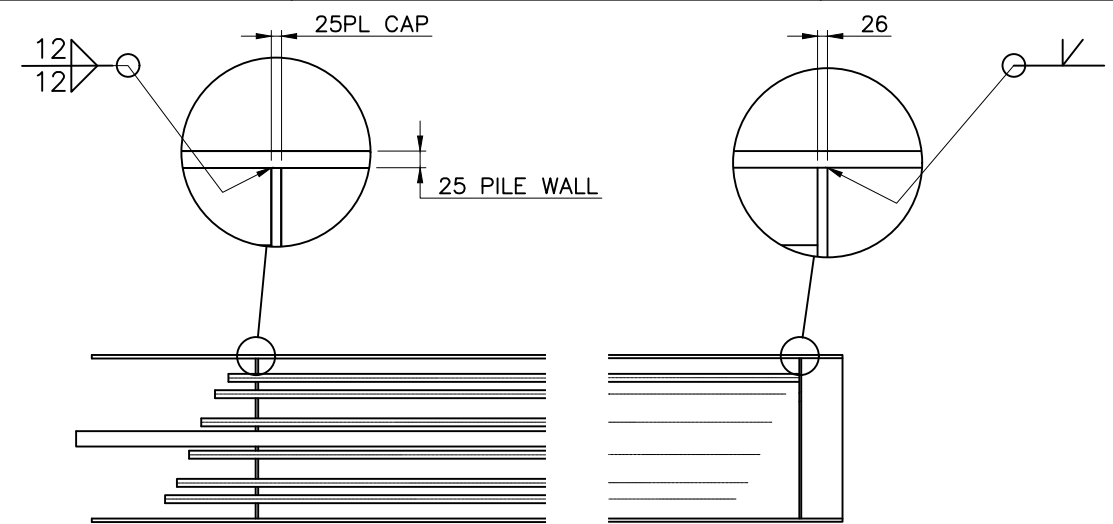
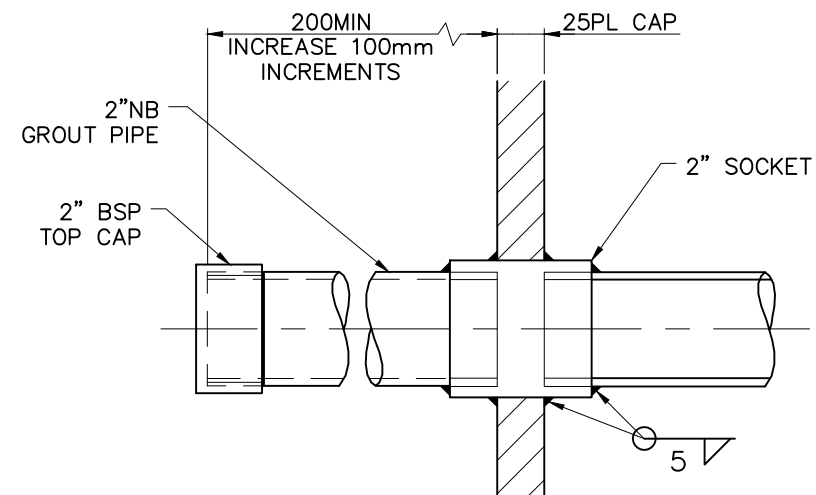
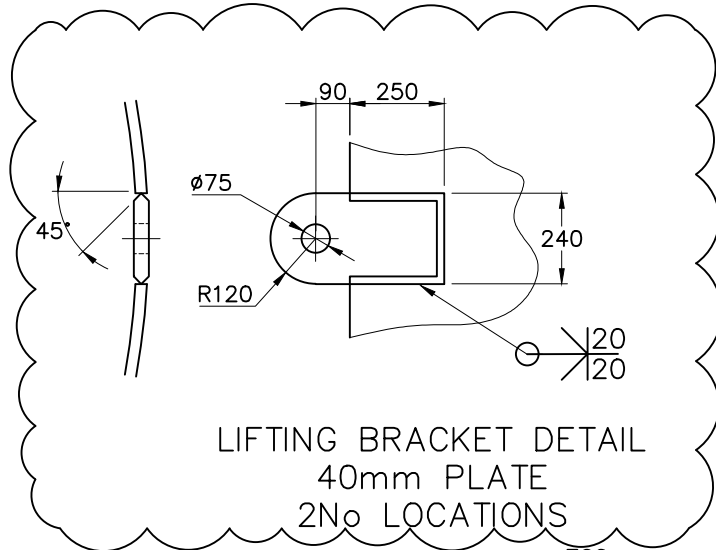
5.0 References

CIRIA. (2006). Use of concrete in maritime engineering: A guide to good practice (C674). Available at: <https://www.ciria.org/ItemDetail?iProductCode=C674&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91>. Accessed on: 01 July 2025.

6.0 Appendices

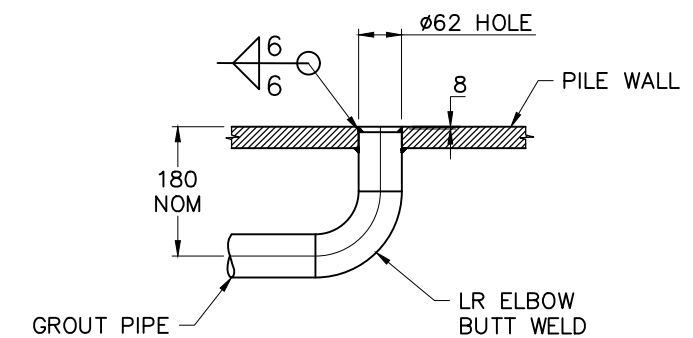
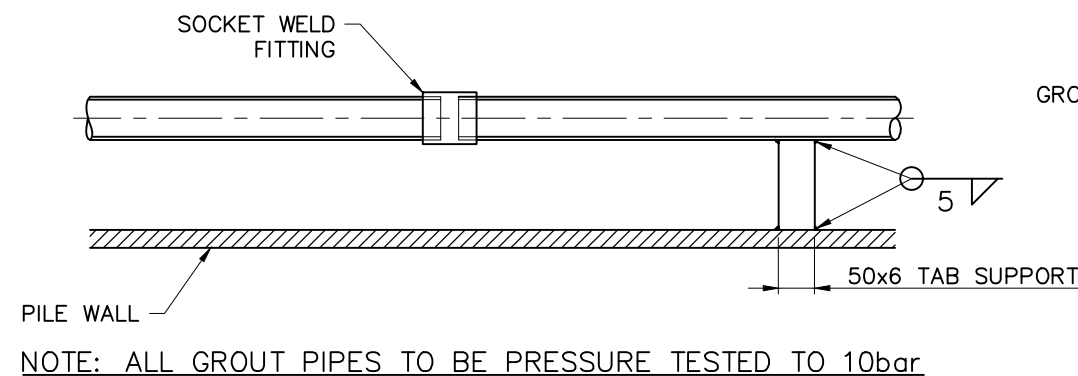
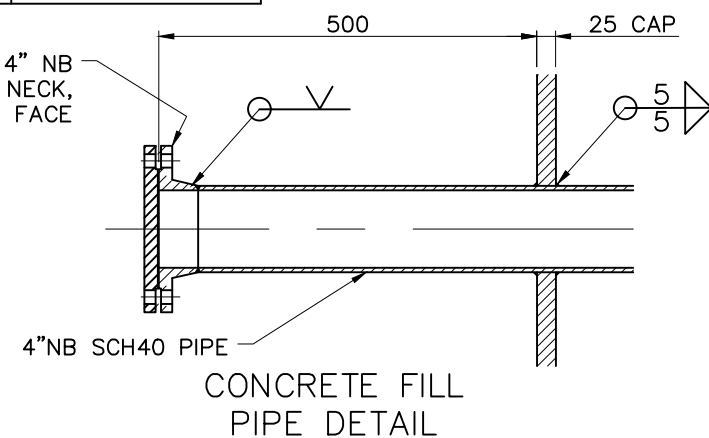
A.1 Grouting Diagram

6273 - GROUT PIPE ARRANGEMENT
DRAWN: NJS
DATE: 20/11/24



6 PAIRS OF GROUT
PIPE EQUI SPACED

PIPE LENGTHS (APPROX)	
PIPE PAIR	LENGTH (mm)
P1	46700
P2	44100
P3	40200
P4	36300
P5	32400
P6	28500



Tee Welding Detail

NOTES:
1 No SET OF PILE ANCILLARIES REQUIRED.
DOLPHIN BD6 48m LONG & 2.1m DIA.

A. 2 Biosecurity Risk Assessment