









Introduction

The following Method Statement describes McLH's proposed approach for the design and construction of the Inner Dock East Quay Development. This development aims to create an additional facility that will support the import, assembly, and export of components necessary for energy production in the marine environment, encompassing the Marine Renewables and North Sea Oil & Gas sectors.

The project involves the construction of a new quay within the inner dock to the East side. McLH, as the Principal Contractor, is tasked with designing and building the entirety of the quay, including the infill to the quay structure, surfacing and the associated surface water drainage system. McLH will also design and install the lighting system, as well as all electrical equipment and associated quay furniture for the scheme.











Our Understanding of the Project

As Scotland's most important energy industry port facility, GE Nigg are investing in significant marine upgrades at the Port of Nigg to increase the port facility's deep water quayside capacity. The Inner East Quay development will see an additional 290m of heavy-duty quayside space.

Under a Design & Build contract McLH will be acting as Principal Contractor with the core work activities include, but not limited to:

• Demolition Works

 Removal revetment material / structures forming the dock side slopes and quay furniture

Dredging

- Removal of existing revetment toe material
- Removal of soft material to base of dock will be undertaken by GEG in advance of commencement on site.

Earthworks

 Placement of import fill material behind new quay wall

Reinforced Concrete Works

Cope beam

Quay Wall Structure & Furniture

- o Front quay wall
- Rear anchor wall
- o Tie rod
- Mooring equipment
- Safety ladders
- Cathodic protection
- Life Saving Equipment

Drainage

Positive Surface Water Drainage System

• Electrical Works

High Mast Lighting System





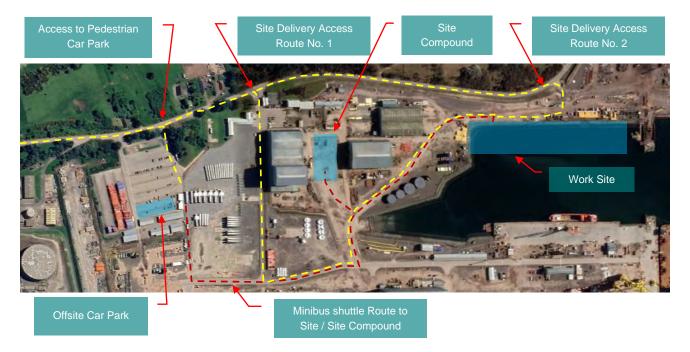




Site Setup / Mobilisation

We understand that the Inner Dock East Quay Development works are to be constructed within a busy live port. It is paramount that a clear CDM site boundary is established and that the site interfaces such as shared access/egress routes into the port are managed effectively so that works can be completed safely and efficiently. This will be achieved through open communication between McLH and GE Nigg and attendance at the weekly HSE briefings organised by GE Nigg.

Once the design and procurement actions are completed during the PCSA and the main contract awarded, McLH will mobilise to site and establish our site compound as shown below.



Proposed Site Layout including Access / Egress

Site Access Routes

McLH is committed to ensuring the safety and convenience of all road users in the vicinity of the construction site. To achieve this, informative signage will be placed along the B9175 and access routes to the site, alerting drivers to the potential presence of construction traffic. These signs will adhere to the guidelines specified in Chapter 8 "Temporary Traffic Measures and Signs for Roadworks."

To manage vehicular movements in the area, extreme care will be taken, and the site will be adequately "policed" to ensure smooth traffic flow. Special attention will be given to the safety of road users during construction activities. Additionally, clear signage will be erected to guide delivery drivers to the designated site access point, minimising confusion and improving efficiency.

In advance of deliveries, all suppliers will receive maps and directions detailing the delivery routes to be used. This pre-planning aims to provide suppliers with forewarning, allowing them to coordinate their deliveries accordingly.

Plant / Material Delivery Route - McLH propose two site vehicular access points. Vehicular Access Point No. 2 will primarily be used for the delivery of quarry infill material and oversized deliveries. Vehicular Access Point No. 1 will be utilised for all other deliveries.









McLH will proactively communicate with GE Nigg at least two weeks in advance to provide detailed information on the materials scheduled for delivery by sea which will primarily be tubular steel piles. Upon the arrival of the materials at the Port of Nigg, we will prioritise utilising the South Quay for the offloading process, subject to availability and operational feasibility.

Once the materials have been offloaded at the south quay, our team will transport the materials to the designated work area. An agreed-upon transportation route will be established in consultation with GE Nigg to ensure seamless movement of the materials from the South Quay to the work site.

Site Operatives Access Routes - Site operatives will utilise the existing offsite car park, as highlighted within the above image. McLH will facilitate a secure and safe access route to the works area and the site compound which will be achieved via a dedicated minibus shuttle service.

The shuttle bus service will operate on a regular schedule providing transportation for all site personnel. By utilising centralised parking at the designated off-site car park we will mitigate potential congestion and parking issues near the working areas and promote safer traffic flow.

Interface Meetings - Throughout the construction process, McLH is dedicated to ensuring minimal disruption to the employer's operations within the site and the nearby road network. To foster effective communication and coordination, McLH's Project Manager will hold regular weekly meetings with representatives of the existing operations. This liaison will help address any logistical concerns and ensure that both parties can operate smoothly and efficiently.

By implementing these measures, McLH aims to uphold safety standards, reduce disruptions, and maintain a harmonious working relationship with the employer and surrounding operations throughout the project's duration.

Site Security

McLH will strictly adhere to Nigg Energy Park's (NEP) existing site security arrangements while also utilising the MSite system for direct work site access. For vehicles requiring direct entry to the construction site, access will be through the main access gate (Vehicular Access Point No.1). To ensure a smooth entry process, McLH will provide GE Nigg with 24 hours' notice prior to requiring vehicular site access.

Private vehicles not needing direct access to the construction site will park at the offsite car park and enter NEP through a turnstile operated by GE Nigg, who will oversee the entry process. Upon arrival at the NEP, operatives from the offsite car park will be collected by McLH's dedicated shuttle minibus service, which will transport them from the turnstile area to the construction site, ensuring safe and timely transportation.

To demarcate the construction site, McLH will erect secure 2-meter-high heras type boundary fencing, effectively segregating the works area from adjacent operations at all times. The boundary fencing will undergo daily checks by site personnel to ensure the site remains secure.

In addition to these measures, McLH will employ the MSite system to enhance site access management. As part of the MSite registration process, all operatives will be required to undergo a Port of Nigg induction video and complete an online questionnaire to assess their understanding of safety protocols and site-specific requirements.

Upon successful completion, each operative will receive a swipe card linked to the MSite system, granting them authorised entry to NEP and the construction site. These access control measures











are designed to streamline site access, bolster security, and ensure that all personnel on the construction site are properly trained and authorised, thereby contributing to a safe, productive, and well-coordinated work environment within NEP.

Proposed Method of Works

McLH has developed an outline methodology for the construction of the project, providing a highlevel overview of the planned approach. The works are scheduled to commence on site in August 2024 and are estimated to be completed within a duration of 88 weeks.

McLH will develop upon the comprehensive construction programme contained within section 1.2 of the technical submission to ensure efficient and coordinated progress throughout the PCSA and project timeline. The detailed programme outlines the order in which different tasks and work packages will be executed, taking into consideration dependencies, critical path activities, and resource allocation.

McLH will systematically carry out the various construction activities required for the project as described below. Each activity will be carefully planned, coordinated, and supervised to ensure adherence to quality standards, safety protocols, and project specifications.

McLH will closely monitor the progress of the construction activities and provide regular updates and reports to the GE Nigg. This ensures transparency and facilitates effective communication between all stakeholders involved. Progress reports will include information on achieved milestones, work completed, any deviations from the original schedule, and any other relevant project metrics.

Throughout the construction period, McLH will continuously evaluate and adjust the methodology as necessary to optimise efficiency, address any unforeseen challenges, and ensure successful project delivery. The following outlined methodology provides a framework for the planned construction approach, allowing the GE Nigg to gain a clear understanding of the proposed timeline, activities, and management strategies for the project. The methodology is based on the RD pile wall solution.

Enabling Works

McLH will conduct pre-commencement surveys of the access and working areas on the site. These comprehensive condition surveys are essential to accurately document and assess the existing conditions of both above water and below water elements within the project vicinity. Our approach includes the following key components:

- Above Water Survey We will undertake a photographic condition survey of all existing services, facilities, and adjacent areas that are above water. This survey will be completed within two weeks of the Commencement Date, allowing for an early assessment of the site's existing condition. Our team will capture detailed photographs of the above-water elements, establishing a visual record of the site's state before construction activities begin. This information serves as a reference point for future comparisons, enabling us to monitor any changes or impacts that may occur during the course of the project.
- Below Water Survey To assess the seabed condition in the working area, we will conduct a video seabed survey. This survey will extend 20 meters beyond the designated working area, ensuring a comprehensive assessment of the underwater environment. Our skilled divers will perform the survey, using a structured grid pattern of 3 x 5 meters to ensure systematic coverage. Through this underwater video survey, we will document the seabed's condition, potential hazards, and any notable features.











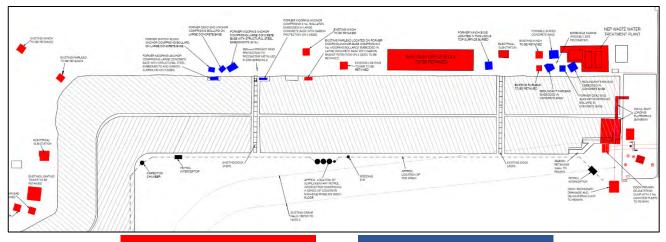
The below water survey is of particular significance, as it provides critical information for planning and executing underwater construction activities. Understanding the seabed condition will help us identify any potential obstacles or challenges along the pile line that may require to be addressed during construction.

 Completion Survey - Upon the successful completion of the construction works, McLH will undertake comprehensive condition surveys which will be undertaken both above and below water to assess the site's post-construction state. These completion condition surveys play a crucial role in documenting the final condition of the project area, enabling a thorough comparison with the pre-construction surveys conducted earlier.

Site Clearance

McLH will clear the works area and the proposed site compound of debris and vegetation using an excavator, with the materials loaded onto lorries and disposed of in accordance with the Site Waste Management Plan (SWMP). As highlighted in Arch Henderson drawing 225083/003, various redundant structures have been identified for removal, including foundation bases for bollards, lighting towers, snatch blocks etc. These structures will be demolished using an excavator fitted with a rock breaker and disposed of in accordance with the SWMP.

We propose to relocate the East Quay Office block to an area acceptable to GE Nigg which will then allow access for the installation of the anchor wall piles. To protect the integrity of existing structures that are to remain during the construction works, structures such as lighting towers, substation, dewatering intake structures etc. fencing will be erected and segregated from the works area. The small boat landing platform and gangway will have an exclusion zone established where plant / machinery will not be permitted to encroach. These structures will be highlighted to all operatives during the site induction process and included in the Risk Assessment and Method Statement (RAMS).



Structures to Remain

Structures to be Removed









Stage No. 1 Temporary Works Stone Platform

The installation of the new quay wall will be carried out using a methodology that involves the utilisation of a temporary stone bund, with material being sourced from the nearby Castlecraig Quarry. This approach offers several key advantages, particularly in terms of mitigating the environmental risks associated with open water piling and minimising the potential impact on marine mammals caused by underwater noise. It also offers considerable cost and programme risk benefits in comparison to the potential use of marine plant. The majority of the material within the stone bund will be re-used as backfill material behind the quay wall.

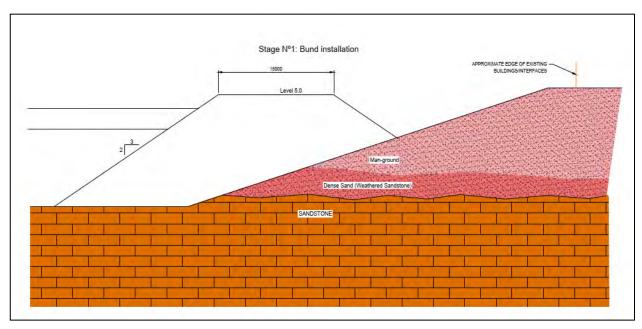
When constructing the bund McLH will ensure that the underwater toe of the bund does not encroach on the required navigational clearance of 100m from the west quay. Once installed bouys will be installed to mark the edge of the bund to avoid a hazard to navigation.

As mentioned above, by constructing a temporary stone bund, it provides a barrier between the piling activities and the open water. This helps to contain the noise generated during the installation process, reducing its propagation into the surrounding marine environment. As a result, the potential disturbance to marine mammals, particularly dolphins which is known to be sensitive to underwater noise, is minimised.

The use of locally sourced material from a nearby quarry for the construction of the temporary bund further enhances the project's environmental sustainability. By utilising local materials, it reduces the need for long-distance transportation, thereby reducing carbon emissions associated with transportation and minimising the ecological footprint of the project.

On completion of constructing the new quay wall, the stone bund material will be incorporated into the permanent works as fill material behind the quay wall. This approach adds value to the project in terms of both cost-effectiveness and sustainability.

Once the temporary stone bund is in place, the piling work for the quay wall can be safely carried out with minimised impact on marine mammals and reduced disturbance to the marine environment.



Proposed Cross Section of Temporary Stone Bund







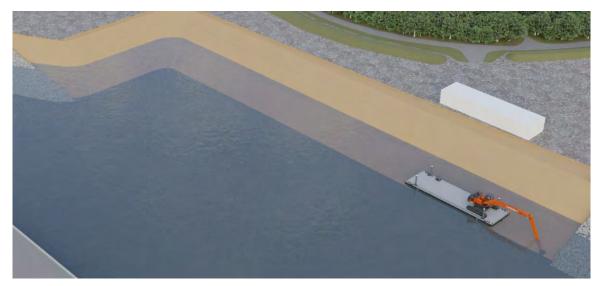


Stripping Existing Revetment

The initial stage of the project involves the removal of the existing embankment's rock armour, followed by the placement of the stone bund working platform. This process is crucial in preparing the site for subsequent construction activities.

A long reach excavator operating from land will carry out the task of stripping the existing rock armour, steps, handrails etc. from the embankment. This excavator, with its extended reach, allows for efficient access and removal of the rock armour from the top and bottom of the revetment slope. The long reach excavator will carefully handle the rock armour and place it at the top of the embankment where it will then be recovered for loading onto tipper lorries for processing on site for future reuse or disposal.

A long reach excavator working from spud leg barge will then be utilised for excavating the toe of the bund and clearing the pile line. Care will be taken to ensure the stability and safety of the excavator during the excavation process.



Stripping of Existing Rock Armour

Loading and Disposal:

Tipper lorries will be positioned to receive the stockpile of rock armour from the top of the embankment. The excavator operator will deposit the rock armour into the lorries, ensuring proper distribution and securing the load for transportation to a crusher plant located on site. The rock armour will be processed on site and will be later incorporated into the permanent works.

Clearance along Proposed Pile Line:

After the existing revetment has been stripped of the rock armour, an important task will be to minimise the risk of obstructions along the proposed pile line. To address this, the long reach excavator will perform a strip along the designated pile line. The excavator located on a spud leg barge will carefully manoeuvre along the pile line, systematically removing any potential high-level obstructions that could impede the installation of the new quay wall piles.

Placement of Stone Bund:

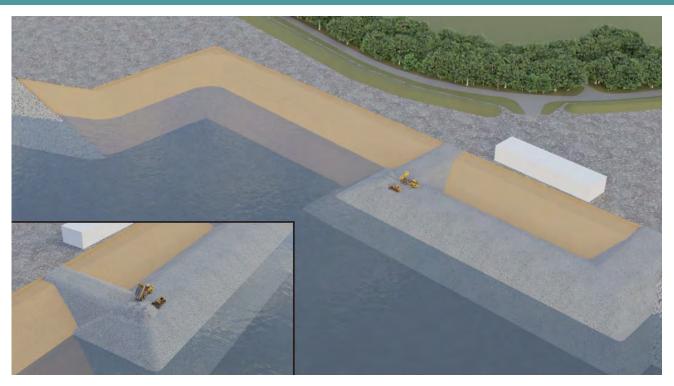
Once the existing revetment has been stripped of the rock armour, the next step involves the construction of the stone bund. The stone will be carefully positioned using a long reach excavator working from the existing embankment and arranged to form a temporary working platform for the subsequent construction of the quay wall.











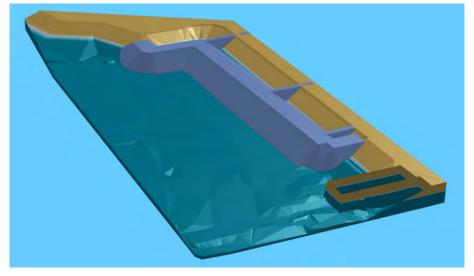
Formation of Temporary Stone Bund

Proposed Layout of the Stone Bund:

The temporary stone bund will feature a crest working platform of approximately 15-meter width and a slope angle of 2V/3H. With a crest width of 15 meters, it allows sufficient space for operatives, equipment, and materials to manoeuvre during the installation of the quay wall.

The temporary stone bund will have the inclusion of spurs. These connecting pathways establish a link between the land and the crest working platform, enabling easy entry and exit for piling plant equipment, excavators, cranage etc. By providing direct access to the temporary stone bund, the spurs contribute to the overall efficiency of the construction project. They eliminate the need for extensive detours or alternative routes, reducing travel time and integration between the land and the construction site, whilst also reducing the quantity of stone fill material required.

Proposed layout of the temporary stone bund and proposed spurs is shown below.



Temporary Stone Bund Layout





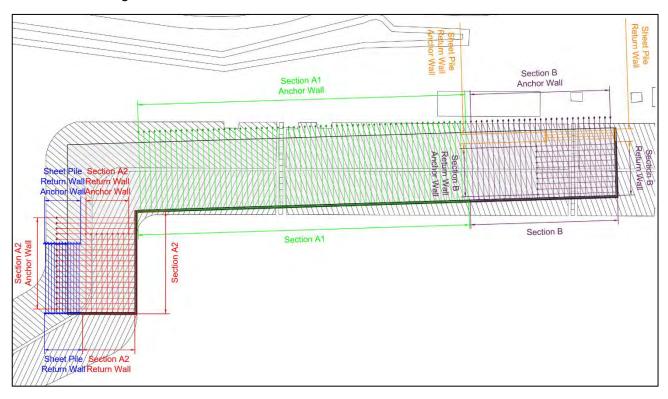




Stage No. 2 Installation of Main Pile Wall

Stage 2 of the works involves the installation of the main pile wall and anchor wall, which will begin once the temporary stone bund has been constructed. The main pile wall will be constructed using 610mm diameter RD piles with varying wall thickness. These RD piles are made of spirally welded steel and have interlocking clutches, forming a combi-type wall.

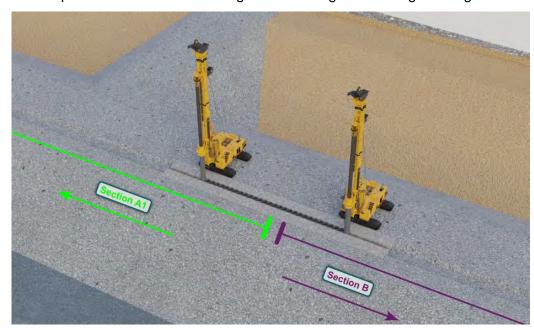
The process of installing the piles will be carried out using two leader rigs working from the stone bund commencing at Section A1 and Section B interface as shown below.



Phasing Plan

Set out pile line:

The location of the piles will be marked and aligned according to the design setting out information.





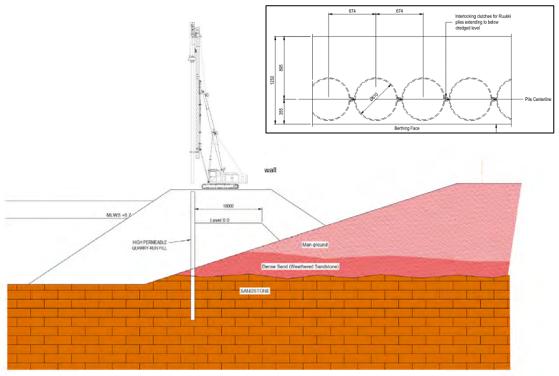






Set up temporary pile guide frame:

A temporary pile guide frame will be constructed using two steel beams. This guide frame ensures the accuracy of pile installation. It will be designed to accommodate 10 piles, allowing for relatively quick installation by completing 10 piles before moving the guide frame to the next position to repeat the process.



Installation of RDI Piles

Place the RD pile into the guide frame:

Temporary loading holes will be installed along the length of the works. Using the winch from the piling rig, the RD Pile will be positioned into the loading hole. The piling rig will then lower the kellybar and Down-the-Hole Hammer (DTH) into the RD pile. The wings on the DTH are extended and engage with the pile allowing the pile to be lifted by the rig with the kellybar and DTH inside.

Drill the pile to the required toe level:

Once drilling starts, the DTH cuts ahead of the steel casing drilling a hole with a diameter slightly greater than that of the steel casing and clutch at approximately 674mm dia od. This allows the steel casing to follow down simultaneously behind the DTH.

High pressure air discharged through flushing holes in the face of the DTH push the drill arisings back up the casing to be caught by a 'shroud' and discharged into a skip or other means of spoil collection. The DTH will be driven by compressed air will be used to drill the pile to the desired toe level.

The DTH hammer pile is excellent at dealing with varying rock strengths, enabling it to penetrate the ground effectively. The DTH hammer will provide additional benefits by having a lower noise level at receptors than a conventional crane suspended impact hammer as the noise emitted by the DTH is shrouded and attenuated by the ground and will reduce further with depth.









Seat the pile to the bottom of the drilled socket:

On completion of drilling and the recovery of the Kellybar / DTH to the surface, the piles are firmly seated to the bottom of the drilled socket using the crowd force of the rig. This ensures a secure connection between the pile and the bedrock.

Engage the interlock with the previous pile:

Once the pile is installed to the correct toe depth, the next RD pile is pitched and is interlocked with the previously installed pile and the above procedure repeated.

Fill the pile with sand: The piles are then partially filled with sand in preparation of installing the tie rods. This filling process provides additional stability to the pile and prevents any potential voids within the pile.





Installation of RD Piles at Peterhead

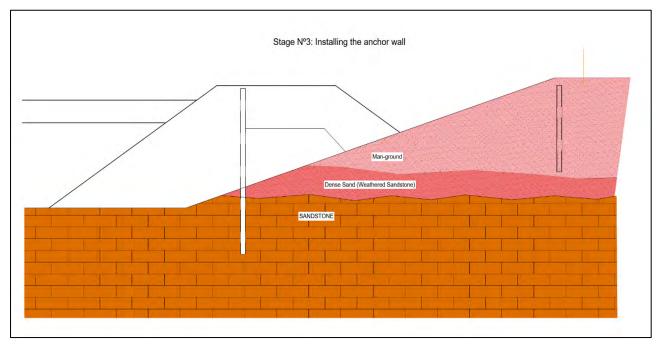






Stage No. 3 Anchor Wall Installation

As the front quay wall progresses, so will the rear anchor piles which will be rotary bored. The anchor piles will be constructed using steel tubular piles 610dia. x 12.5mm thick installed at 2.7m centres.



Installation Anchor Piles

The installation process for the anchor wall is as follows;

Leader rig positioning:

The leader rig will position at the designated location for the installation of the anchor pile, as set out by the McLH engineer. Once in position, the leader rig will pitch the tubular pile, positioning it in preparation for rotating to the specified toe level of -5mCD.

Relocating the piling rig:

Once the pile has reached the specified toe level, the piling rig will be repositioned to the next designated tubular pile installation location.

Repeating the process:

The piling rig will repeat the above steps, pitching the next tubular pile and driving it to the specified toe level. This process will be repeated for each anchor pile along the rear wall.



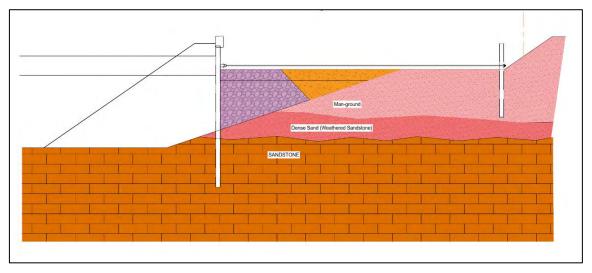






Stage No. 4 - Excavate / Infill to underside of tie rod / Installation of Tie Rods

As the construction of the front quay wall and anchor wall progresses, the next step involves the installation of tie rods. The tie rods will be installed by excavating behind the newly installed quay / anchor wall, to a level below the proposed new tie rod level of +2.0mCD.



Installation Tie Rods

Tie rods will be installed as follows;

Main Quay Wall Tie Rod Connection Detail:

- Precast D-Block installation: After the combi wall is installed, a precast D-Block with an embedded hex nut, plate, and ball joint will be cast in concrete into the front wall. This D-Block serves to transfer forces to the centre of each tube in the wall, ensuring structural integrity.
- Installation of wailing beam: At the back of the main quay wall, a 2No. PFC 430x100mn wailing beam will be installed. The wailing beam running horizontally will be bolted to the tubular piles, enhancing the stability of the quay wall.

Anchor Wall Tie Rod Connection Detail:

- Placement of anchor piles: The anchor piles will be installed as close as possible to the line of force they will experience during service. Special consideration will be given to the additional forces introduced by settlement of fill, especially focusing on bending at the wall connection.
- Burning a hole through the pile: A hole will be burned through the anchor pile, allowing the tie rod to pass through. The tie rod will be attached to an asdo backing plate for secure connection and support.

Installation of Tie Rods:

- Grading the excavation works: The excavation behind the walls will be graded as required to ensure that the tie rods rest at the correct design angle.
- Manoeuvring tie rods into place: The tie rods will be installed using a 100-ton crawler crane, telehandler, or 360 excavators. This equipment will be used to carefully position the tie rods in their designated locations.
- Lifting and support: The tie rods will be lifted using a stiff lifting beam with supports placed approximately every 5 meters to ensure stability during installation.



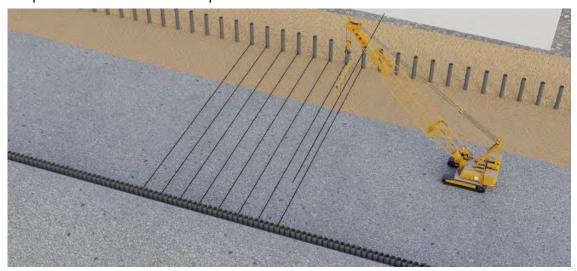








• **Tightening and preloading:** Once the tie rods are fully connected over a section, they will be tightened and nominally preloaded to eliminate any slack in the rods. This preloading helps to secure the tie rods in position.

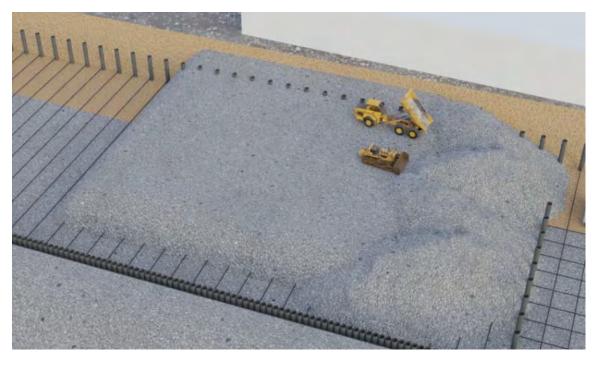


Installation Tie Rods

Stage No. 5 - Backfill around Anchor Wall

Backfill above Tie Rods:

• Placing backfill and compacting material: After completing a section of tie rods, the area will be backfilled to the underside of the cope beam. Excavators will place the material and it will be compacted in layers using twin drum rollers. The compaction process ensures that the material achieves the designed densities, providing stability and support.



Backfilling above Tie Rods









Stage No. 6 - Backfill around Quay Wall & Construction of Capping Beam

Removal of Temporary Bund:

Once the area of infill material has been constructed up to the underside of the capping beam, the next step involves the removal of the temporary bund along the front of the quay wall. To carry out this task, a long reach excavator will be positioned, operating from the top of the newly constructed quay wall. The excavator will carefully remove the temporary bund material, which will then be incorporated into the permanent works as infill material.

Any surplus material will be removed from the site in accordance with the Site Waste Management Plan. Bund removal will be phased along the length of the quay to align with tie rod installation to allow material removed from the bund to be re-used as backfill material in areas further along the quay.



Removal of Temporary Stone Bund

Installation of Capping Beam

The installation of the capping beam will take place after the removal of the stone bund along the length of the quay wall and will be constructed using in-situ reinforced concrete. The site engineer will set out the extent of the capping beam and check the levels for compliance.

To facilitate the construction of the capping beam, we will use a proprietary system known as the Dawson Capping System. This system will be attached to the RD piles with operatives working from a man riding basket suspended from a crane. On completion, a safe and secure working environment will be created for the construction of the capping beam.









As part of the capping beam construction process, the reinforcing steel cage will be fixed in-situ, with the assistance of the site crane. Once the steel reinforcement has been properly tied and checked for compliance, the next step involves erecting the formwork. The attendant crane will be used to facilitate this process. Bolt box assemblies, necessary for the installation of the required quay furniture, will be cast into the concrete works of the capping beam.

The formwork will be carefully secured and aligned to ensure precise dimensions. After thorough checks have been conducted to verify the accuracy of all measurements, the concrete can be placed. This can be accomplished using either a concrete pump or a crane equipped with a concrete skip. The positioning of the concrete pump will be coordinated by a banksman, who will ensure its proper placement for the discharge of concrete into the desired areas.

Once the concrete has been placed, the formwork will be left in place until the concrete has achieved sufficient strength. At that point, the formwork can be struck, allowing for the next section of the capping beam construction to proceed. This process will be repeated until the entire remainder of the capping beam has been completed.

In order to prevent any spillage of concrete into the water column, appropriate measures will be implemented when carrying out concrete works in close proximity to the quay edge. These measures will help protect the surrounding environment and ensure that the construction activities do not have any adverse effects on the water quality or marine life.

Installation of Quay Furniture

Bollards:

During the concrete works for the capping beam, the bollards will be incorporated into the structure. To ensure proper positioning and secure installation, a template for each bollard will be suspended from the formwork, with the holding down bolts extending downward into the capping beam's reinforcing steelwork. These bolts will be oriented vertically to allow the bollards to fit over them once the concrete works are completed.

After the concrete has been poured and allowed to cure, the bollards will be lifted and positioned over the cast-in bolts. This lifting process will be carried out using a telehandler or a similar lifting device, ensuring safe and precise placement. To secure the bollards in position, the underside of each bollard will be filled with 50mm of non-shrink grout, enhancing stability and preventing movement.

Ladders:

The installation of steel ladders along the length of the quay wall will involve using a combination of a telehandler and a man riding basket suspended from a crane. The process ensures the safe and efficient placement of the ladders along the wall.

Cathodic Protection

The Cathodic Protection design will be completed by a subcontractor, who specialise in designing and manufacturing anodes for the sacrificial protection of steel. Personnel involved in the design, supervision of installation and commissioning of the CP will have the appropriate level of competence, certified in accordance with EN 15257 with details submitted to PM for acceptance.

The CP will be installed using a dive squad and mobile crane working from the quay edge. Details and location of diving works will be provided to the Harbour Master, with the diving supervisor in direct communications at all times in line with diving regulations.











Divers will be set into the water by use of personnel basket or a fixed ladder. Anodes and brackets will be lifted into the water via telehandler or similar and air lifted into position. Divers will weld brackets to the pile clutches and attach anodes along the total length of the works.

Site Services

As the backfilling progresses, a squad will commence the installation of pipework, ductwork and construction of manholes, pits, and chambers.

Drainage:

The finished drainage excavation depths will vary and will out fall through interceptors before final discharge through the quay wall. Side slopes will be stabilised by suitable batter slopes and trench box supports used as appropriate. Once formation level is reached pipe bedding material will be installed, the pipework will be placed in the trench and the surround material installed from the excavator bucket and backfilling of the trench carried out using selected backfill material.

Drainage lines will be set by firstly constructing the manholes. Tie-in's will be carried out using rocker pipes. Drainage falls will be checked during installation using lasers and spirit levels. Care will be taken to ensure that adequate depths of pipework and cover are achieved. Testing of all installed pipework will be carried out upon completion including cleansing the system and CCTV inspection in accordance with the specification.

Drainage will be installed at the back of the quay wall along its length. This will be achieved by employing divers to create slot drains along the clutches of the RD piles at approximately -7.5mCD. Surface water drainage will consist of channel slot drains and carrier pipes which will be cast into the concrete surface slabs.

Interceptors:

As part of the works, interceptors are to be installed as show on the drainage layout drawing. Tanks will be offloaded and stored on site in a manner that will prevent damage to the tanks. McLH site engineers will mark out the location and level of the tank.

An excavator will dig to the required level and then slew the tank into position using spreader beams. When the tank is sitting in the excavation, McLH will ensure that it is backfilled strictly in accordance with the manufacture recommendations i.e. filling the tank with water as the backfill is being placed around the tank. McLH site engineer will ensure that there are no voids surrounding the tank, and that it is sufficiently supported during backfilling operations.

Concrete Surfacing Works

When the subbase has been compacted and levelled, concrete surfacing works will commence. The proposed surface includes 300mm thick steel fibre reinforced concrete pavement. Formwork will be erected as required which will form the concrete reinforcement topping for the slab.

Prior to concrete being poured McLH site engineer will check shuttering and cleanliness. Concrete will be compacted using a high frequency concrete poker and finished as required. The layout of pours will be in a grid format with formwork erected around each pour and propped to ensure stability. The concrete will be pumped directly from the lorry where a concrete gang will compact and screed the concrete to the required levels.









Lighting

Lighting cable ducting will be placed into the newly constructed in-situ reinforced concrete bases. Once complete the new columns will be installed using a lifting device. The columns will be step hinged, socketed and secured in position to allow all commissioning works to proceed.

Demobilisation

Upon the successful handover of the construction works, the site compound will be demobilised and removed from the site. This process involves dismantling and disassembling the various structures that comprise the site compound, including site huts, storage containers, temporary offices, and any other facilities that were established for the construction project.

Once the site huts and other structures have been removed, any necessary remedial works to the parking and compound areas will be undertaken. This may include repairing any damage caused during the construction activities, restoring the site to its original condition, and ensuring that the parking and compound areas are safe.

The site will be fully handed back for client use, indicating that all construction-related activities have been completed, and the site is ready for the client to utilise as intended. This marks the end of the construction phase and the transition to the operational phase of the project.

In parallel with the demobilisation of the site compound, major plant and machinery used during the construction will be progressively removed from the site as work items are completed. This ensures that equipment is safely removed and no longer obstructs the site or poses any potential hazards.



Works Complete









Project Environmental Risks

The following table outlines proposed environmental mitigation measures for the Inner Dock East Quay Development. The proposed works are located within in a marine environment and adjacent to multiple ecologically significant areas with protected status. These areas include the Moray Frith SAC (Special Area of Conservation), the Cromarty Firth SPA (Special Protection Area), and the Dornoch Firth and Morrich More SAC.

Of particular importance within the Moray Firth SAC are the Sutors, which serve as crucial foraging and feeding grounds for bottlenose dolphins. In response to these concerns, the following environmental mitigation measures have been developed to minimise the project's potential adverse impacts while safeguarding the integrity of the protected marine ecosystems.

McLH CEMP will incorporate the following site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the construction phase of the project. These measures have been developed to comply with consent conditions and environmental legislation, whilst implementing best industry practice.

	ASPECT	IMPACT	CONTROL MEASURES TO BE TAKEN
	Construction Run-off	Silty and/or contaminated water entering watercourses. Suffocation of fish.	 Use of geotextiles to filter sediments from entering the water course. Sediment control measures in accordance with Technical Guidance PPG01 General Guide to the prevention of water pollution
Pollution of Water	Groundwater from excavations	Contaminated water entering watercourses.	 Existing surface water drainage and discharge points mapped on site (McLH ECO Map) with agreed mitigation measures in place as required including water quality monitoring points, sediment traps, settlement lagoon and oil interceptors.
Pollution of Watercourses and Land	Spillage of chemicals	Chemical entering watercourse. Subject to prosecution.	 Develop a site-specific Environmental Management Plan which includes a pollution incident management plan / spill response plan. These plans will be updated regularly. Spill kits at hand with operatives trained in proper use. Chemicals securely stored on site in accordance with PPG 26 All operatives to comply with Port of Nigg Spill Contingency Plan Use of biodegradable oils in plant where possible









	ASPECT	IMPACT	CONTROL MEASURES TO BE TAKEN	
	Spillage of fuel during construction Vehicle washings including wheel washing. Cementitious Wash water Cementitious Wash water Cementitious Wash water Fuel entering watercourse. Contaminated water entering watercourses during construction phase Release of highly alkaline water into watercourses/dr ains.		 All refuelling to take place at designated refuelling points using drip tray and with spill kit at hand. Refuelling points highlighted within McLH Eco Map. 	
			 Existing surface water drainage and discharge points mapped on site with agreed mitigation measures in place including water quality monitoring points, sediment traps, settlement lagoon and oil interceptors. PPG6 Working at demolition & construction sites strictly adhered to. 	
			 Control Measures in accordance with PPG6 Working at demolition & construction sites Develop method of construction, i.e. reduce in-situ concrete where possible, with preference with precast favoured adjacent to water courses. 	
	Sewage from welfare facilities	Sewage entering watercourse. Breach of consent.	 McLH shall provide a link to the existing foul sewer, or maintain serviced septic tank arrangements throughout the project for sewage only. Use of serviced chemical toilets. Toilets to be located away from any water bodies. 	
Waste	Domestic waste	Attract vermin/pests. Disease risk. Windblown plastic waste may cause problems for wildlife.	 A "Waste Management Compound" will be provided on site to enable waste to be efficiently segregated to optimise recycling potential. Personnel informed of waste management arrangements during inductions and toolbox talks. Regular removal of domestic waste from site. A site-specific Site Waste Management Plan (SWMP) will be developed based on the principles of the Waste Hierarchy of waste prevention, reuse, recovery, recycling and as such the generation of waste will be minimised. A SWMP will be produced for the works and maintained throughout the project. Ongoing reviews 	











	ASPECT	IMPACT	CONTROL MEASURES TO BE TAKEN
			will be carried out and the SWMP actions and strategies will be actively promoted through, inductions, site notice boards, and designer / subcontractor / supplier liaison.
	Disposal of controlled / hazardous waste	Failure to comply with Duty of Care can result in prosecution.	 Disposal of hazardous waste to licensed facilities under the control of a "Hazardous Waste Consignment note" (Copies of Consignment Notes and licences to be obtained by McLH and retained on site); All controlled waste will be disposed of in line with current legislations and Site Waste Management Plan.
	Plant/Vehicle Exhaust Emissions	Contribution to local and global air quality problems.	 Plant will only be running when required. Well maintained modern equipment used with service records. Equipment checked regularly.
Emissions/Nuisance	Construction Noise	Nuisance to neighbours / Enforcement action.	 Noise monitor installed and monitored in the Village of Cromarty Use of silenced plant as far as practically possible McLH will adopt measures contained within BS 5228:2009 – Noise and vibration control on construction and open sites Work will be kept to normal working hours except in exceptional circumstances and on agreement with the Client and Project Manager. Plant will be throttled back or switched off when not in use.
nce	Lighting	May cause nuisance to neighbours.	 MCLH will provide lighting to ensure that the work sites are isolated, independent from port operations, and inaccessible by unauthorised personnel. MCLH will obtain approval in advance for the lighting of all the Contractor's equipment and for the lighting of temporary works Site lighting shall be arranged to have no negative impact on the port's ongoing activities and environmental factors adjacent to the site, including navigation. If











	ASPECT	IMPACT	CONTROL MEASURES TO BE TAKEN
			required, Lighting within the compound shall be fitted to the Welfare Cabins and be directed only onto the walkway below. Lights will also face inland only so not to illuminate sea side. The same methodology shall be adopted if setting up mobile tower lights.
Aiı	r Quality	From vehicle movements, demolition, stockpiling etc.	 Liaise with GE Nigg on the management of Air Quality during the construction phase. The following mitigation measures should be applied during the construction phase to limit air pollution which includes; The Site Management team will monitor the site and will implement dust suppression measures as necessary. The creation of dust through site activities will be minimised wherever possible. Dust suppression will be used to minimise the generation of dust and other airborne particulates. Site speed limits shall be adhered to at all times to aid the minimisation of nuisance on the wider site area. Submitting and agreeing a Dust Management Plan highlighting risk allocation, acknowledgement and acceptance of risk Regular Site Inspections will be completed by McLH SHEQ Officer to monitor compliance and record results.









	ASPECT IMPACT		CONTROL MEASURES TO BE TAKEN	
	Odours	Intrusive smells emanating from site works cause nuisance	 All vehicles will have to re-fuel within a designated fuelling area as stipulated in the eco map, away from the public. Alternatively, vehicles can fill up prior to arrival to site. All burning / welding activities will be carried out in accordance with McL&H permit to work system. Exclusion zones will be set up to segregate personnel that are not involved in the process from the work, by means of visual barrier McLH do not permit the lighting of fires on any construction site. All site personnel are trained fire wardens and any subcontractor found lighting fires will be removed from site with immediate effect. All COSHH materials that are used on site must be COSHH assessed by the Site Engineer. A full COSHH assessment will include details such as specific exclusion zones, PPE and whether or not mechanical ventilation is required. 	
Traffic	Traffic / Pedestrian Access	Increased Congestion within Port, effects on pedestrian amenity and pedestrian delay	 Construction traffic only permitted on routes as identified within the Traffic Management Plan Erection of advanced warning signs to identify site entrance Traffic control systems and the use of highly skilled and trained banksmen to accompany vehicles as they enter and exit the site Well signposted routes, publicised temporary footways and signage during construction works Delivery of site materials to avoid peak port traffic 	
Marine Operations	Marine Mammals	The selected construction method for the quay wall will involve piling through a temporary stone	The chosen method of construction for the quay wall at the project site involves utilising a temporary stone bund for piling, ensuring the avoidance of open water piling throughout the project's execution. This approach is designed to minimise potential environmental impacts on the marine ecosystem, particularly sensitive areas with protected status.	









ASPECT	IMPACT	CONTROL MEASURES TO BE TAKEN
	bund, and there are no plans for open water piling during the project. However, in the unlikely event that open water piling becomes necessary, the following mitigation measures will be put in place.	One of the key advantages of the proposed construction method of the quay wall is the use of RD Piles, which will be drilled to level, as opposed to employing impact or vibrating methods. This choice offers multiple benefits, including the reduction of underwater noise during installation. Drilled piles generate significantly less noise compared to traditional impact or vibrating methods, thereby minimising potential acoustic disturbances to marine mammals and other aquatic fauna.
		McLH's choice of using a RD pile wall solution, which involves drilled tubular piles through a temporary stone bund, offers several environmental advantages, primarily related to the mitigation of waterborne and airborne noise. Noise Reduction: The temporary stone bund serves as a barrier that helps to contain and minimise the transmission of noise generated during the construction process. It effectively restricts the spread of waterborne and airborne noise, reducing its impact on the surrounding environment. This is particularly beneficial in areas where noise pollution can have detrimental effects on local ecosystems, wildlife, and nearby
Piling	Noise / Vibration	Environmental Protection: By implementing the RD pile wall solution and utilising a temporary stone bund, McLH demonstrates a commitment to protecting the environment. The containment of noise not only benefits human inhabitants but also minimizes disturbance to wildlife habitats, aquatic ecosystems, and sensitive ecological areas in the vicinity of the construction site. Compliance with Regulations: Many environmental regulations and guidelines govern construction projects, including those related to noise pollution. By employing a RD pile wall solution with a temporary stone bund, McLH ensures compliance with these regulations,
		demonstrating responsible and environmentally conscious practices.









	ASPECT	IMPACT	CONTROL MEASURES TO BE TAKEN	
			Preservation of Ecological Balance: Construction activities can potentially disrupt the natural balance of ecosystems, particularly those near water bodies. The RD pile wall solution with a temporary stone bund helps to maintain the ecological equilibrium by minimising disturbances caused by noise and vibration. This contributes to the preservation of aquatic life, including fish, marine mammals, and other organisms that may be sensitive to noise-induced stress.	
			Community Relations: Implementing measures to reduce waterborne and airborne noise demonstrates a proactive approach to addressing concerns from local communities. By choosing an environmentally friendly solution, McLH can enhance community relations, promoting goodwill and cooperation throughout the construction process.	
Ш	Site cabins	Depletion of non-renewable resources/carbo n emissions.	 Use of modern well insulated cabins PIR Lighting; Push Taps in Cabins; Plant Maintenance Sheets 	
Energy	Vehicles and plant	Fuel resource depletion, pollutant emissions & project costs.	Daily inspections of plant and ensure faults are closed out;	
	Birds	Disruption to nesting birds / injury	 Conduct thorough pre-nesting surveys of the construction site and surrounding areas to identify nesting sites and potential breeding habitats for birds. Establish buffer zones around known or potential nesting sites to prevent disturbances from construction activities. Restrict access to these areas during the breeding season to minimise human interference. Consult ornithologist regarding nesting birds Tool box talks to operatives raising awareness about the importance of bird nesting protection and provide guidelines on how to avoid disturbances. 	









Project H&S Risks

The table below highlights risks with the potential to impact on the construction programme. Our proposed mitigation to minimise the impact of these risks on the successful delivery of the project are also highlighted.

Activity	Restriction	Mitigation
		Develop site logistics management plan to confirm site deliveries and access routes. All deliveries will be via main security entrance and GE Nigg will be notified in advance of all deliveries.
	The site is located within an existing busy port. Offshore vessels docked at various times throughout the project. Dock operations will include plant / equipment movements from and to moored vessels, movement on site and personnel / goods transfers from and to offshore vessels.	Ensure all site staff, deliveries and plant operators are fully aware of site constraints, delivery routes and working areas.
		Appoint interface manager to develop interface management plan to manage co-ordination of deliveries and movements on access road.
		Interface meetings to be held weekly to review interface issues and plan for the upcoming period.
Working in a Live Port		McLH will hold a Pre-Construction collaborative interactive workshop to establish positive relationships between each project team, and to identify potential interface issues and risks to programme delivery which will allow them to be identified and mitigated Pre-Construction or at an early stage allowing some works items to be re-prioritised or re-programmed in the interests of the overall project.
Environment		Interface meetings to be held weekly to review interface issues and plan for the upcoming period. Specific detailed combined planning meetings to be held for key interfaces.
		McLH will establish joint site security plan with GE Nigg and fence off areas to demarcate site responsibilities.
		McLH will comply with GE Nigg Policies and procedures when working on the site which includes;
		 Port Safety Rules for Contractors, Visitors and Vessel Crew Electrical Safety Rules for Low Voltage and High Voltage Systems GE Nigg H&S policies
		The procedures will be enforced through implementation of site rules and briefed to site operatives via inductions and toolbox talks. Traffic and walking routes will be demarcated from other port operations with suitable signage erected on site.









Working within Water & Water Safety

Work requires working over / near deep water

Working Near Water

All personnel employed on the project will be suitably qualified and experienced in delivering this type of work in marine environments. McLH will plan, manage and coordinate work during the construction phase by taking account of the information contained within the Pre-Construction information. We will work with other port users to identify hazards and assess risks related to their work, including risks they may create for others.

All personnel will be inducted to provide all workers/visitors with project specific information about the risks associated with the site and the arrangements that have been put in place to control them. Staff/Visitors will be required to attend a site induction and sign the site induction register.

As well as Site Inductions, personnel will be made aware of the contents of all Risk Assessments and Method Statements by means of; Construction Phase Plan; Hand Books; Team Briefings; Regular Site Meetings; Plan Do Review Meetings, Hands on H&S Training, Ambush Hours and Tool Box Talks on site training.

Safe systems of work will be compiled and implemented for each and every work activity on site, with each activity furnished with a bespoke Method Statement accompanied by a series of Risk Assessments. Emergency procedures will be briefed to site personnel involved in the works and a copy presented to the Harbour Master for approval. Method Statements and Risk Assessments will be provided to GE Nigg for approval/review prior to works commencing. All works will be carried out in line with CITB site safety note 30 - Working Over Water

Diving Operations

Prior to works commencing a fully detailed pre-works dive survey will be carried out. Diving operations will comply in every respect with the current Diving Operations at Work Regulations, with dive teams consisting of 5-man squads, including a Supervisor and Watchman. McLH will comply fully with Port of Nigg Permit to Dive System and a notice to mariners will be issued in advance. McLH site team and dive team will present to the Project Manager notices to mariners on how we propose to safely complete the works. The McLH Site Manager will be responsible for obtaining Dive Permits from the Harbour Master for each day of diving operations.

Prior to any diver entering the water, evidence of training and competency will be provided and submitted to the Harbour Master for approval. When diving operations are









taking place a signal 'alpha' flag will be flown and placed on the quay side in clear visibility of all mariners. There will be constant liaison between the Harbour Master and Dive Supervisor throughout all diving operations, with a watchman located on the quayside who will look out for vessel movements and will contact skippers on VHF channel 12 and alert them of divers present in the water.

Safety Craft & Equipment

A motorised safety boat for rescue works, prepared and ready with a skilled crew with 2 persons will be available for instant use. Before the commencement of any works, we will submit proposed emergency procedures to Employers Representative for approval. McLH Site Manager will prepare a Site Emergency Response Plan giving a detailed explanation of our policy for organisation and maintaining emergency services on site throughout the construction phase.

The traffic interface on this project is an area of potential high risk and for serious accidents. In order to successfully deliver this project with minimal disruption to port services and traffic flow on existing routes, we will develop a phased traffic/pedestrian management plan in accordance with Chapter 8.

The management of the traffic/pedestrian interface on site will be primarily by means of a segregated system in conjunction with a 10mph speed limit. To reduce the risk further all pedestrians will be prohibited from walking on roads, utilise site mini bus and must walk in the designated fully segregated footpaths to the welfare facility and work site.

McLH have identified the interface with shipping traffic as having a high-risk factor. Prior to the commencement of any marine works we propose a pre-start meeting to be attended by, marine operatives, Site Manager, Site Agent and Port Manager / Harbour Master.

These meetings will be critical to the safe and effective running of our marine operations, where we can give a detailed plan of our movements in the water. The aim of this meeting will be to take advantage of all advice and thoughts from stakeholders and adjust our marine movements so that they pose no threat or injury to vessel movements.

Traffic Management & Safety







Working
adjacent to a
live berth with
ongoing
Operational
Traffic

McLH acknowledge the works is located within an operational port, with the west berth remaining live during the works including vessel loading and discharging operations. McLH are aware of the constraints and best methods to mitigate the risks associated with the works having previously delivered many projects working adjacent to live berths. During the construction phase we will put the following in place to maintain efficient and safe interfaces with GE Nigg and their Tenants operations;

- McLH will appoint a site-based interface manager to act as an interface between our works and GE Nigg Tenants.
- To reduce disturbances to services and traffic flow, we will develop a Traffic / Pedestrian Management Plan to define vehicle and walking routes around working areas.
- McLH will hold a pre-construction workshop to establish positive relationships between stakeholders, and to identify potential interface issues and risks to programme delivery which will allow them to be identified and mitigated pre-construction allowing some works items to be re-prioritised or reprogrammed in the interests of the overall project.
- GE Nigg and McLH Project Manager to discuss the proposed works and vehicular movements within and around the port.
- Port of Nigg Operations Team will have the opportunity to highlight any potential concerns they may have with our planned routes, sequence or methodology.
- McLH Project Manager will liaise with port management on a regular basis to discuss work patterns and location of Equipment.
- Interface meetings to be held weekly to review interface issues and plan for the upcoming period. As part of this a 3 week look ahead programme will be appended to the main construction programme with a detailed week ahead programme tabled and an outline programme for the following 2 weeks. Formal meetings to be backed up by daily briefings and reporting each morning on any interfaces that day
- All site safety processes to be followed and addressed through detailed task RAMS

Interface with Existing Boundaries

Adjacent to the site are several stakeholders and various working environments

- Interfaces with port traffic will require careful management will be managed via a Waterborne Management Plan and continual communication with the Harbour Master.
- McLH will appoint our Project Manager as a dedicated Construction Marine Co-ordinator (CMC). The primary function of this role is to maintain a complete overview of current and planned marine construction activities,











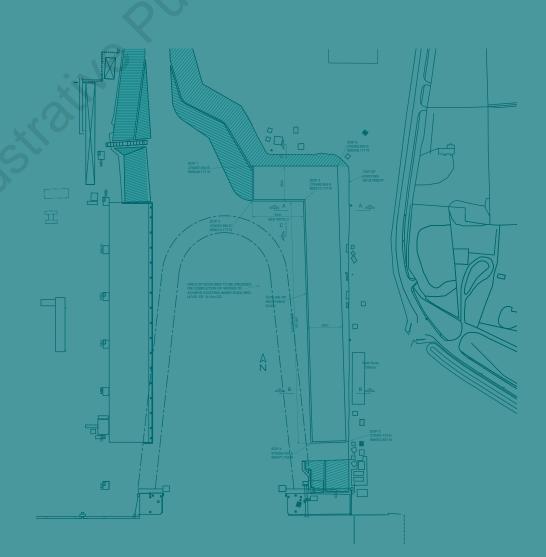
to liaise daily with the Harbour Master regarding the
construction plans and ensure compliance by
construction works vessels.

- Local Notice to Mariners will be issued in advance of any activity associated with the works which may impact upon navigational safety. The Notice to Mariners will be concise, detailing navigational safety information which GE Nigg will then advertise to inform all users of the anticipated vessel movements within the area.
- Site logistic plan issued to suppliers prior to the delivery of materials





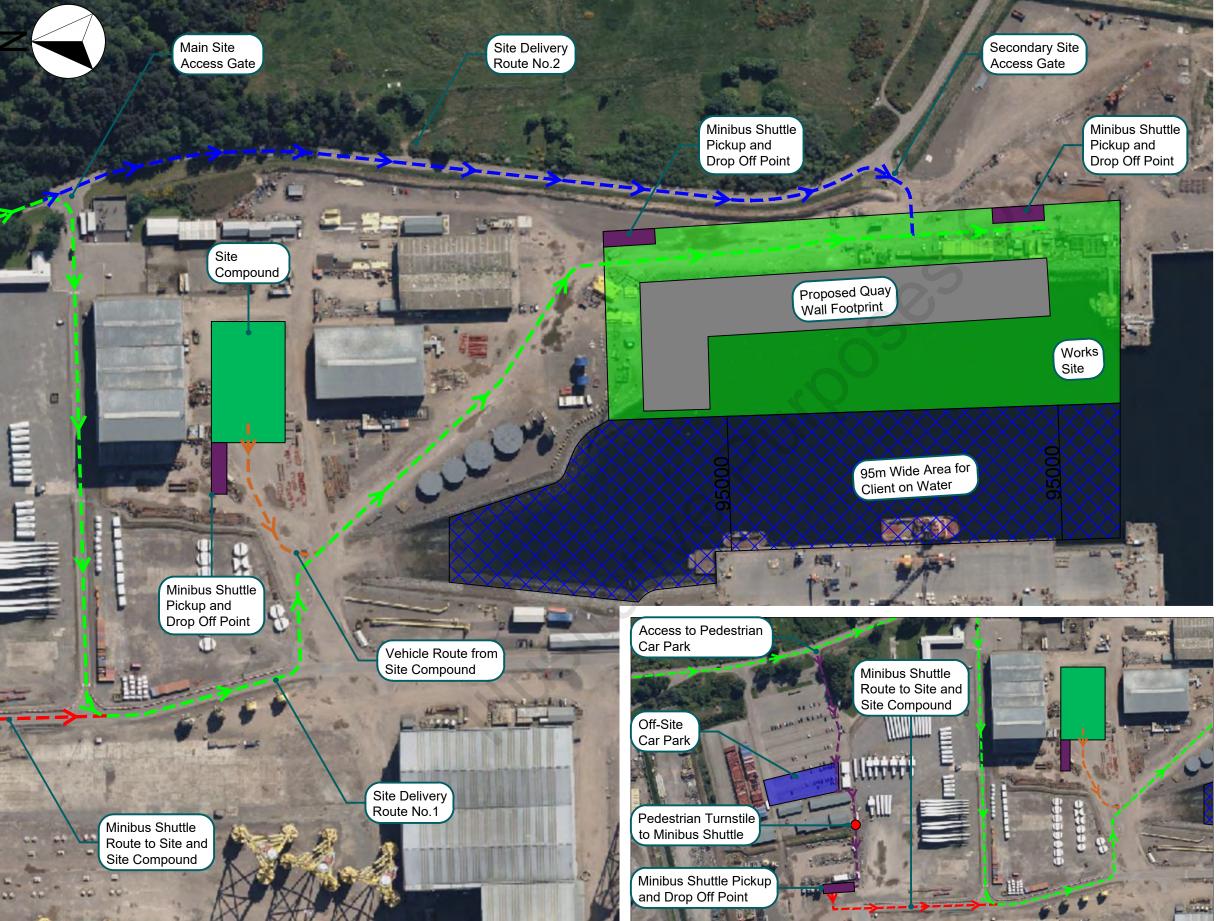
Appendix A Sequence Drawings















95m Wide Area for Client on Water

Proposed Quay Wall Footprint

Site Compound

Vehicle Route from Site Compound

Site Delivery Route No.1

Site Delivery Route No.2

Access to Pedestrian Car Park

Off-Site Car Park

Pedestrian Turnstile to Minibus Shuttle

Minibus Shuttle Pickup and Drop Off Point

Minibus Shuttle Route to Site and Site Compound



















3D Construction Sequence

Scene 0 - Existing Site







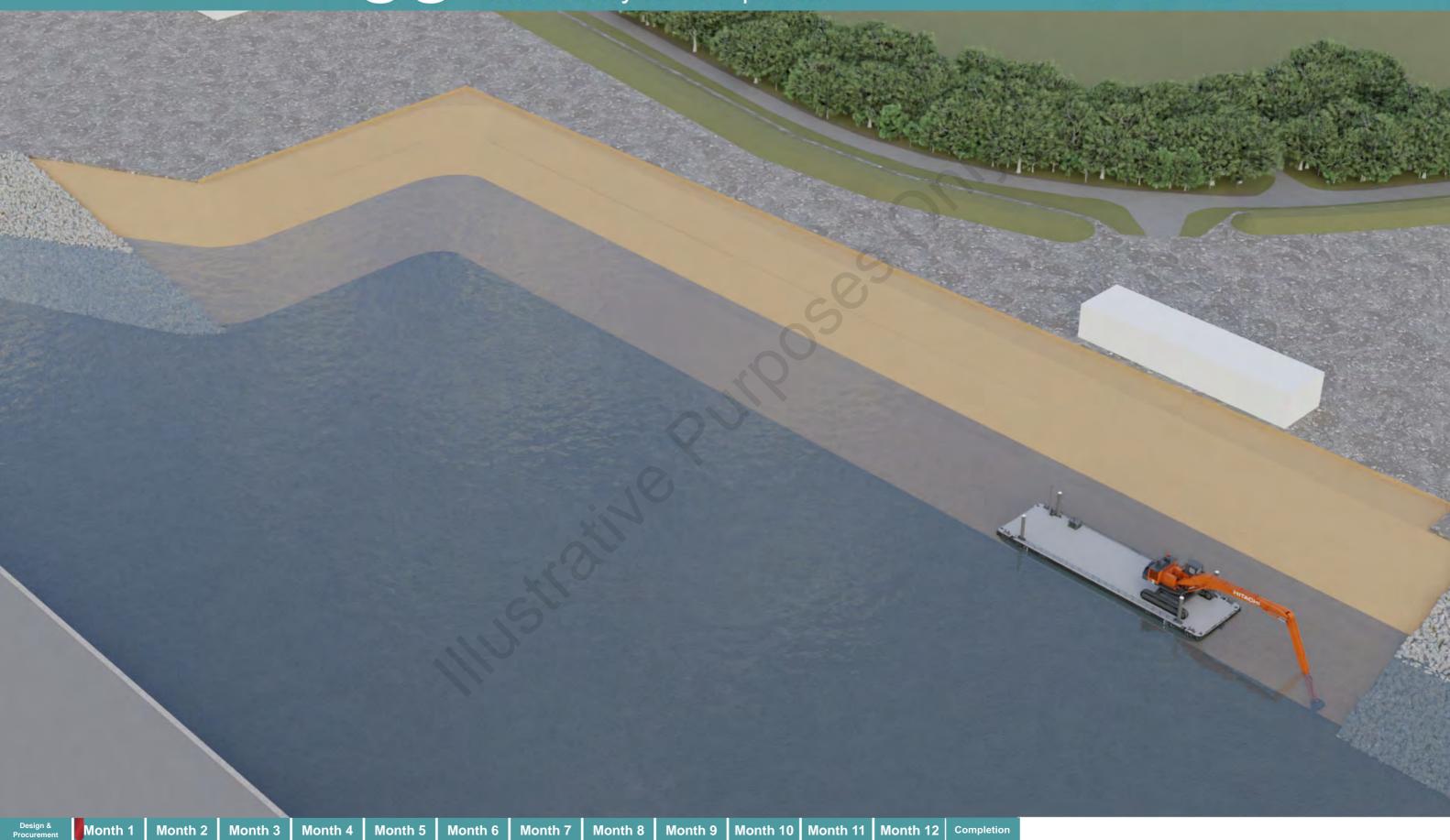




3D Construction Sequence

Scene 1 - Rock Armour Removal











3D Construction Sequence

Scene 2 - Clear Pile Line







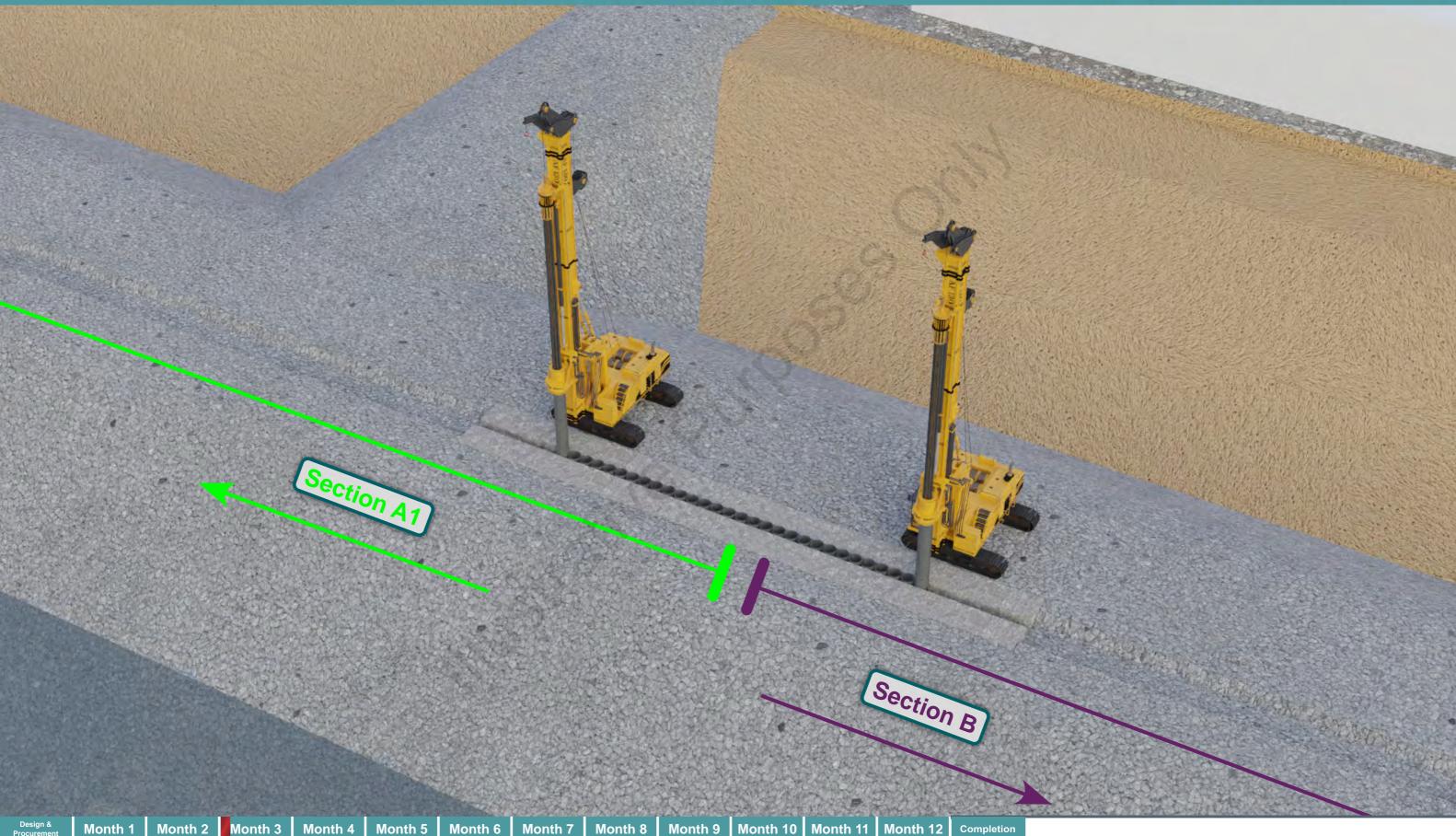




3D Construction Sequence

Scene 3 - Formation of Tempoary Piling Platform







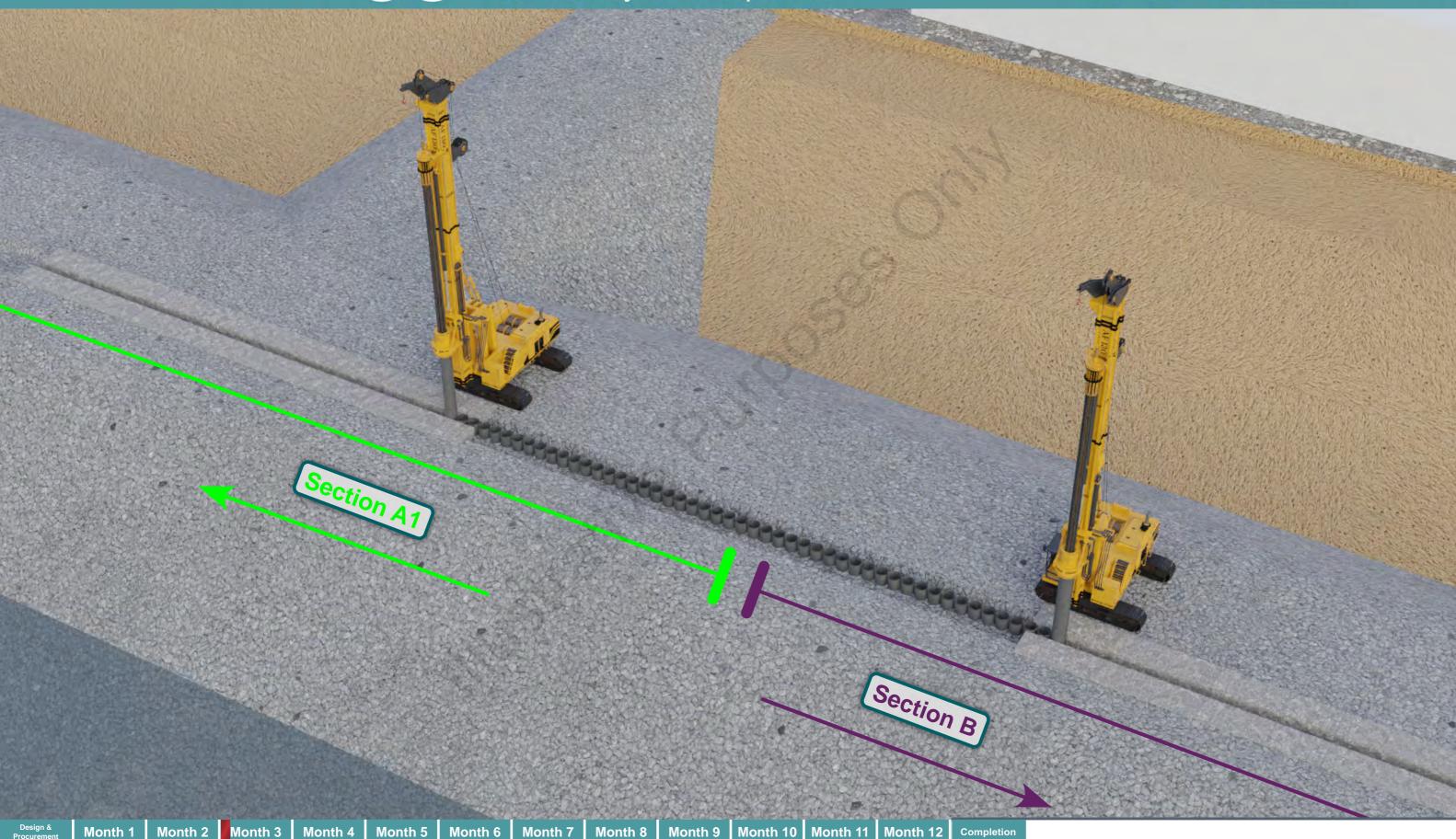




3D Construction Sequence

Scene 4 - Installation of RD Piles











3D Construction Sequence

Scene 5 - Installation of RD Piles











3D Construction **Sequence**

Scene 6 - Backfilling Behind Quay Wall







Month 5

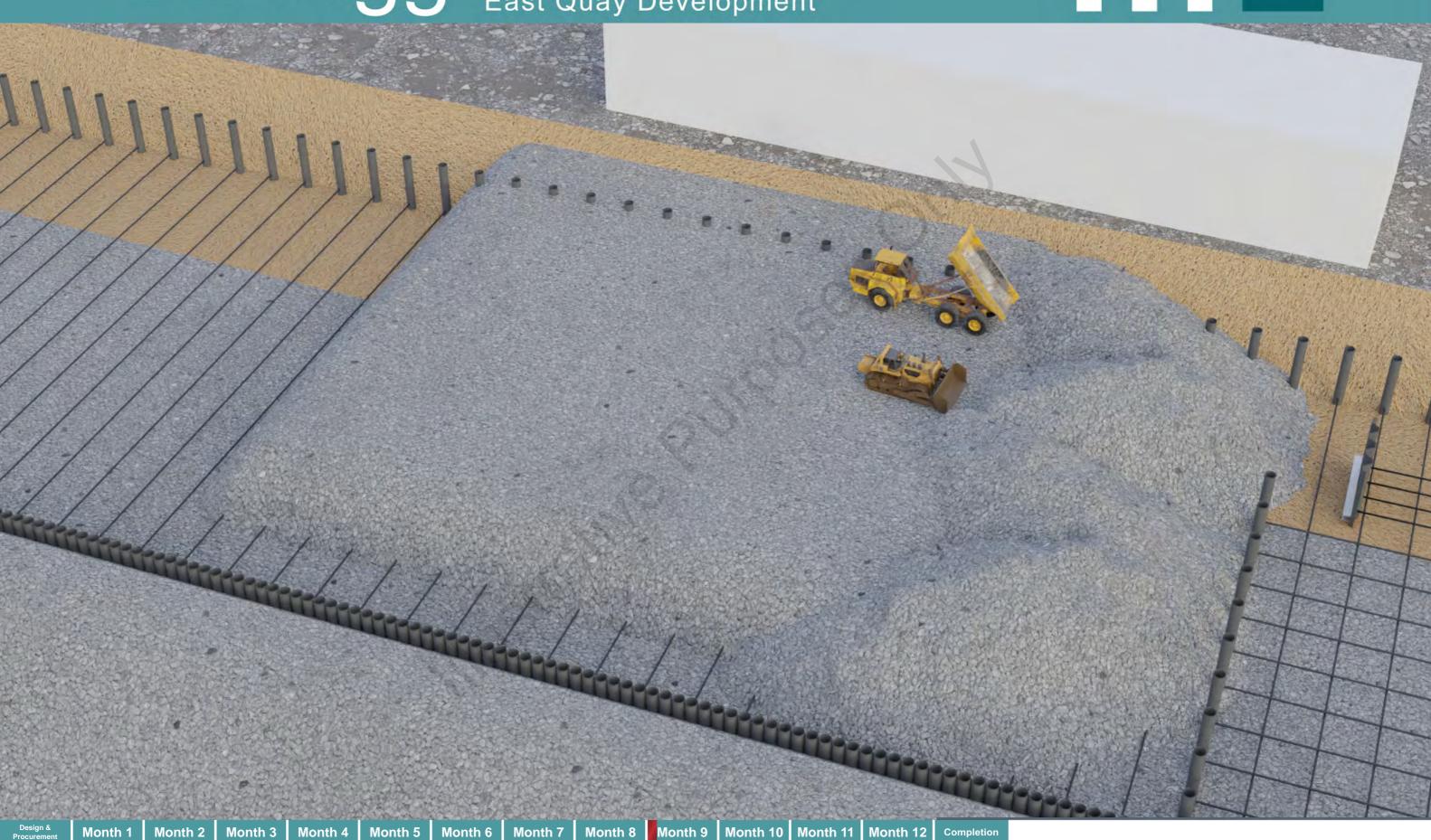
3D Construction Sequence

Month 7

Month 8 Month 9

Month 10 | Month 11 | Month 12





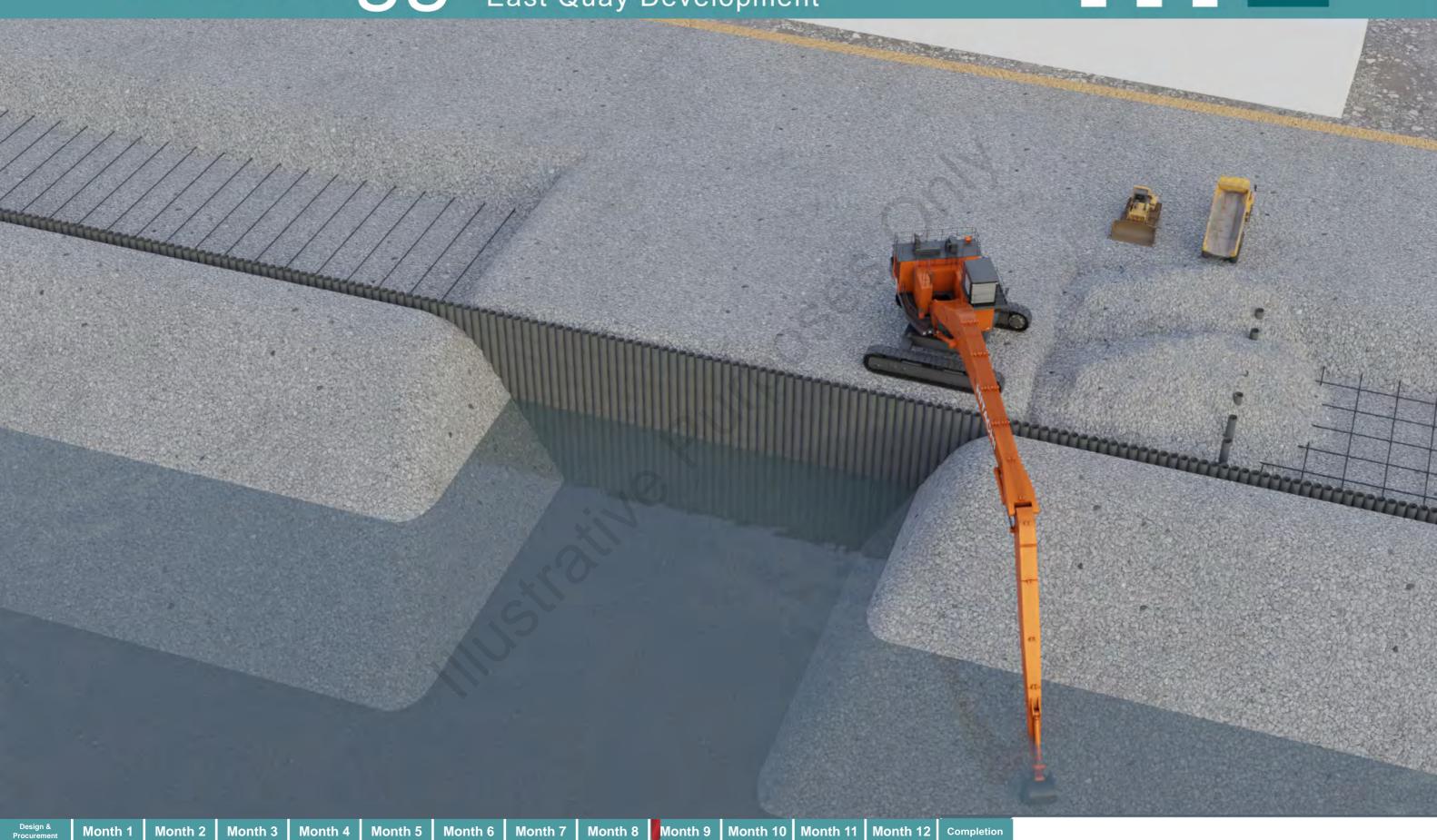






3D Construction Sequence







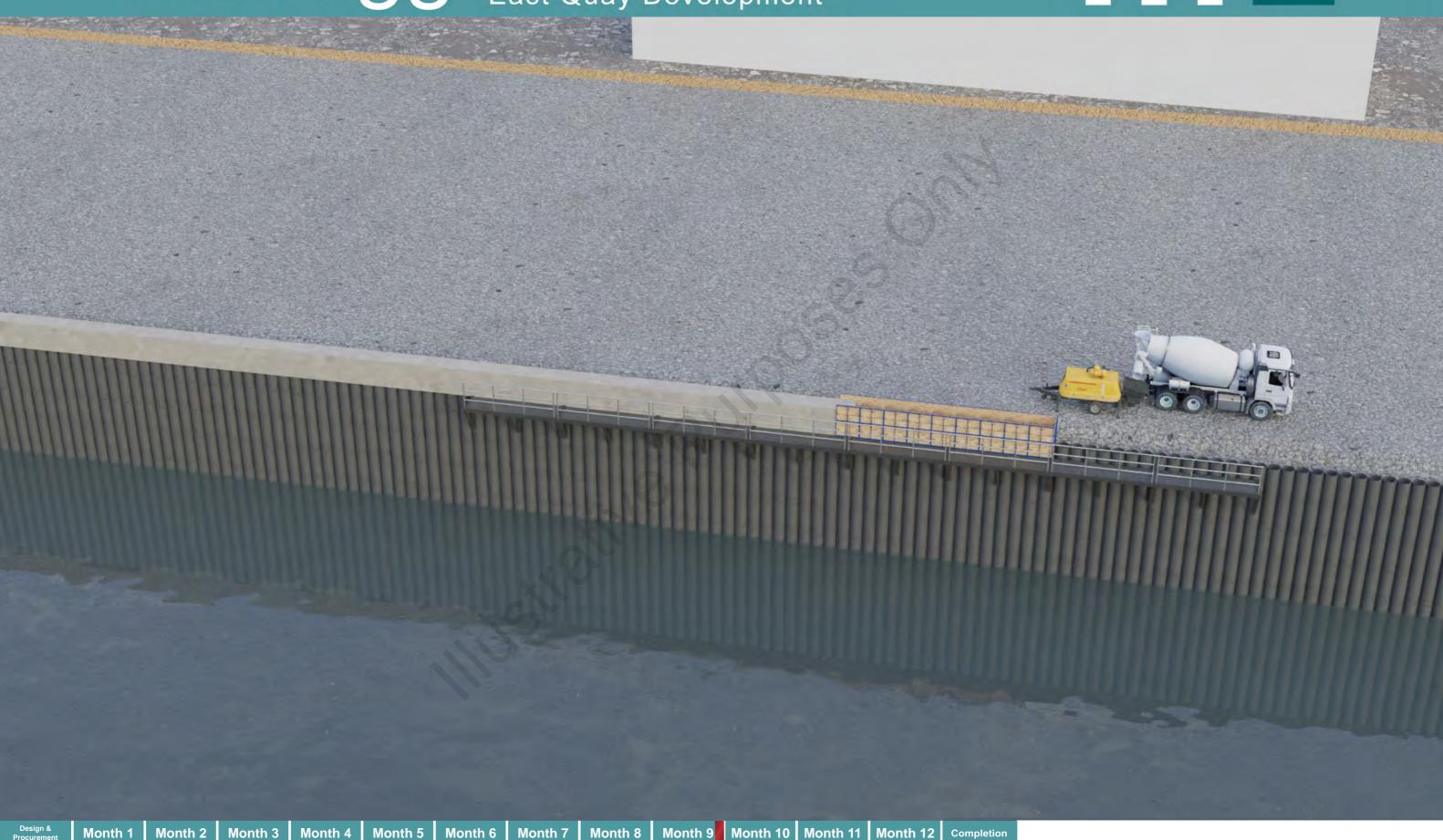




3D Construction Sequence

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3D Construction Sequence

Scene 10 - Construction of Cope Beam

GE Nigg Inner Dock East Quay Development Month 5 Month 8 | Month 9 | Month 10 | Month 11 | Month 12 Month 3 Month 6







3D Construction Sequence

Scene 11 - Leveling of Granular Material

GE Nigg Inner Dock East Quay Development Month 9 Month 10 Month 11 Month 8







3D Construction Sequence











3D Construction Sequence

Scene 13 - Works Complete Including Concrete Slab