
PROJECT BRIEF

November 2022

Project

**West Bay and Lyme Regis
Harbour Dredging**

For

Tender Information

Responsible Authority



Dorset Council, County Hall, Colliton Park, Dorchester, DT1 1XJ



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The following appended documents form part of this Agreement:

- Appendix 1 - Proposed NEC4 Contract
- Appendix 2 - Indicative Programme of Works
- Appendix 3 - Bill of Quantities for Dredging

2. Document Status

Project Name	West Bay and Lyme Regis Harbour dredging		
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3. Background

The West Bay or Bridport Harbour and the Lyme Regis Harbour both provide safe mooring and launching facilities for small boats and are also important refuge harbours along the Dorset coast for any vessels at sea that may be in distress. The same Harbour Master has jurisdiction over both harbours.

At West Bay, the inner harbour provides intertidal safe mooring facilities and vessels must usually access or exit these facilities at high tide or be transferred from the inner harbour to the pontoons in the outer harbour at high tide, in preparation for planned use when tides may be too low for access or exit to and from the inner harbour.

The outer harbour therefore constitutes the important navigable channel that must be kept open to vessel access and exit, to and from the harbour, at all times.

Unfortunately, the outer harbour is subject to sediment settlement from coarser sand deposits and shingle originating from the East Beach as well as finer silt transported into the harbour by the Brit River.

There is consequently an obligation on Dorset Council (DC) and the Harbour Master's team to dredge the outer harbour floor at a frequency that will maintain adequate navigable water depths, even at low tides.

Experience indicates that to maintain adequate navigable depth at low tides, the outer harbour must be dredged on an annual basis.

The Lyme Regis Harbour is like the West Bay Harbour in that it consists of an intertidal inner harbour that can only be accessed or exited at high tides. To utilise moored vessels at low tides, they must be moved to the summer pontoons in the area just outside the harbour mouth but still within the refuge of the main breakwater, known as the Cobb. This area is also referred to as the outer harbour.

The Lyme Regis Harbour mouth tends to suffer from sediment deposit that is drawn down from the adjacent sandy beach to the East of the Harbour and to maintain the necessary water ways for the safe operation of the harbour, it also needs to be dredged regularly.

During the dredging process at Lyme Regis, a certain amount of low tide excavation is also undertaken to recycle the sand from the intertidal zone to the back of the beach. This helps to reinstate the preferred beach profile for summer tourism.

4. Purpose

This Project Brief describes the works and activities comprising the annual dredging operations at West Bay and Lyme Regis Harbours that are required to sustain safe navigation into and out of the harbour. The purpose is to provide information for tenderers to be able to understand how their activities will interact with the other contractors involved in the operation and thereby be able to compile tender proposals and pricing for their specific roles.

Should a tenderer wish to depart from the methods described herein, such alternatives must be clearly set out and motivated, but they must not interfere in any way with the overall objectives.

5. Project Overview

Because of the proximity of West Bay Harbour to Lyme Regis Harbour, because they are both managed by the same Harbour Master, and because they both require dredging of a similar scope at the same time of the year, the tenders



for the two harbours will be linked into one contract with the operations first being completed at one site before moving plant and equipment to the next site.

Generally, the works are done first at West Bay and then at Lyme Regis, but the order is to be reversed in 2023. It is planned to commence mid-March at Lyme Regis, after the normal storm season, but in time to complete the operation at Lyme Regis before Easter starts on 7 April 2023. The dredging will then move to West Bay where the work is not so disruptive to the public and can continue through the Easter weekend, if required.

The tender for the dredging operation at both harbours comprise four separate components that may each be executed by separate contractors and service providers.

1. Site establishment and beach control to be executed by the Principal Contractor.
2. Specialist service provider for bathymetric surveys before, during, and after the dredging
3. Dredging contractor for cutter-suction dredging operations
4. Beach recycling by an earthmoving contractor to re-profile of the beach and manage the discharge of the dredged material

The contracts that will be entered into with the Contractors will be NEC4 contracts in the form of the example attached as Appendix 1

5.1. Site Establishment and Beach Control

At this stage, it is anticipated that this aspect of the works will be carried out by the Earthmoving Contractor who will therefore be appointed as the Principal Contractor responsible for site establishment, beach control, and Health and Safety in accordance with the Construction (Design and Management) 2015. They will provide a welfare unit, the Heras fencing for cordoning off the site camp and work areas, and three beach marshals to erect and move fencing as necessary, as well as ensure that public are kept at a safe distance from any work operations.

5.1.1. West Bay

At West Bay no beach establishment is required.

The earthworks contractor will provide a small, tracked excavator to assist with the laying of a 10"HDPE dredging discharge pipeline across West Beach to discharge onto West Cliff beach. During the laying of the pipeline the Jurassic Pier will be closed to the public by the placement of safety barriers supplied by the Harbour Master and West Beach will also be temporarily off-limits while the pipeline is buried with the assistance of the excavator. Where the pipeline crosses Jurassic Pier a footbridge will be placed over the line for pedestrian access when the pier is reopened for public access. The footbridge will be provided by the dredging contractor.

Once the pipeline is laid, West Beach and the Jurassic Pier will be re-opened to the public until they are once again closed for the removal of the pipeline when dredging is complete.

The outlet of dredging pipeline will be positioned in a relatively inaccessible point where it discharges above MHWS. At this point, it is not practicably possible to fence the area off and so a beach marshal will have to be on duty to keep the public away from the point of discharge.

During these operations only 1 beach marshal will be required to assist with control of the public. The marshal will be able to use welfare facilities in the Harbour Masters office.



5.1.2. Lyme Regis

At Lyme Regis the entire area of operation must be fenced off as indicated in Figure 6 and a welfare unit must be provided as well.

Once the Heras fencing has been erected, the Dredging and Earthmoving contractors will be able to establish and proceed with their work as indicated in 5.3 and 5.4 below.

The important Health and Safety function will then comprise the marshalling of the works area to make sure that the public do not circumvent the fencing at the Southern and Northern extremities as well as to keep the public clear of the excavating activities in the intertidal zone at low tide.



Figure 1 - General Arrangement

5.2. Bathymetric Surveys

A week before the Dredging operations commence, a DC appointed bathymetric survey specialist will conduct surveys of the dredge areas at both harbours in order to determine the level and profile of sediment build up and assess the extent of work to be done. During the dredging but towards the end of the operation in each harbour, a further survey will be done to assess the success of the works and provide details of any “high spots” that dredging may have left behind. This will inform the dredging team both of volumes dredged and any high spots inadvertently left and allow them to deal with such high spots before de-establishment of the dredging equipment.

At West Bay the dredge area to be surveyed is approximately 7000 m² and is located as shown in Figure 3 below.

At Lyme Regis, in addition to the dredged area it is also anticipated that a similar area will be excavated by the earthmoving contractor during low tide and transported to the back of the beach as part of the process of beach



recycling to restore the profile of the beach. The bathymetric surveys for Lyme Regis harbour must include for this area as well.

The survey area for Lyme Regis is shown as the CSD Dredging and the Excavated Dredging areas in Figure 6 below.

Further to the above, DC also require a before and after Lidar Survey of Front beach to establish the final results of the overall beach reprofiling process.

5.3. Dredging Works

It is envisaged that the dredger will comprise a small cutter suction dredger (CSD) that will position itself by means of anchor lines and that it will be equipped with an articulated swing ladder which allows recycling underneath shallow drafted pontoons and boats as shown in Figure 2 below.

The dredging equipment will be delivered to and offloaded into the harbour at West Bay.

Biosecurity management measures will be put in place to ensure that all vessels and equipment brought into the local area are free of invasive or non-native species of any nature whatsoever.

Once offloaded the CSD and equipment will be prepared for tow to Lyme Regis where the work is to commence. The services of the tow vessel will be secured by the Harbour Master and the dredging team will be required to co-ordinate with the Harbour Master for this operation.



Figure 2 - Example of cutter suction dredger

The overall dredging operation will include the following activities:

1. Receive Health and Safety Briefing from the Principal Contractor
2. Deliver equipment to West Bay Harbour and off load by crane, arranged by the dredging contractor.
3. Prepare for tow from West Bay to Lyme Regis in cooperation with the Harbour Master, who will provide a tow vessel, to transfer the dredger and all equipment to Lyme Regis.
4. Safely lay the discharge pipeline in the position indicated in the detailed description for the Lyme Regis dredging operation set out in 5.3.2 and Figure 5 below and giving attention to conformance with health and safety requirements.
5. Set up the dredger and associated equipment.
6. Execute the dredging operation in accordance with information gleaned from the Bathymetric survey.



7. Co-ordinate with the Bathymetric Survey team to run a survey immediately before completion of the dredging so that the extent of work done can be established and any necessary fall back to mop up high areas can be done before disestablishment.
8. On completion of the dredging at Lyme Regis, uplift the discharge pipeline and prepare all equipment for towing from Lyme Regis to West Bay.
9. In conjunction with the Harbour Master, tow the dredger with all equipment to West Bay Harbour
10. Set up the dredger and associated equipment at West Bay, giving attention to conformance with health and safety requirements.
11. In co-operation with the Harbour Master and the earthmoving contractor, safely lay the discharge pipelines in the position indicated in the detailed description for the West Bay dredging operation as set out below. Where the pipeline is to be buried, a small excavator, provided by the earthmoving contractor, will assist with trenching and backfilling as necessary.
12. Execute the dredging operation in accordance with information gleaned from the Bathymetric survey
13. Co-ordinate with the Bathymetric Survey team to run a survey immediately before completion of the dredging so that the extent of work done can be established and any necessary fall back to mop up high areas can be done before disestablishment
14. On completion of the dredging at west Bay, uplift the discharge pipeline and prepare all equipment for loading.
15. De-establish, load, and transport all equipment from the site.

5.3.1. West Bay

Bridport Harbour, also referred to now as the West Bay Harbour, is situated at the mouth of the river Brit with high cliffs to either side, fronted by shingle beaches. To the east of the harbour the base of the cliff is protected by the natural beach, however, the cliff is receding through relatively frequent episodic cliff falls, supplying further sediment (sand, gravel and finer material) to the marine environment. The average rate of cliff recession over the last 100 years is slow at about 0.14 m/year (Halcrow, 2002 and 2009b).

Fine sediment (silty, organic clay) is supplied from the river Brit through sluice gates to the inner harbour. Most of this fine material deposits upstream of the sluices but the smaller proportion of material which passes through the sluices tends to deposit within the protected inner harbour and within the sill that separates the inner from the outer harbour. Every four to five years the inner harbour is sluiced through to the outer harbour where it is predominantly washed out to sea. Any fine sediment that makes its way to the outer harbour is generally widely dispersed by the wave activity and does not settle in this area (Jacobs, 2019).

Sand and shingle from the above sources settle between the breakwaters of the outer harbour. It is thought that 80 - 90% of the material is derived from East Beach, transported in a westerly direction by the prevailing currents (Jacobs, 2019). The rest of the sediment is thought to come from the Brit River.

To maintain a safe refuge at West Bay, Bridport, the outer harbour requires annual maintenance dredging as permitted under the Bridport Harbours Order, 1921. Dorset Council is proposing to dredge the sediment from the dredged area and dispose of it on West Beach and West Cliff Beach to the west of the harbour entrance, as shown in Figure 3. This maintenance dredging operation will also assist in maintaining beach profiles to the West Cliff Beach, thereby mitigating cliff regression to some extent.



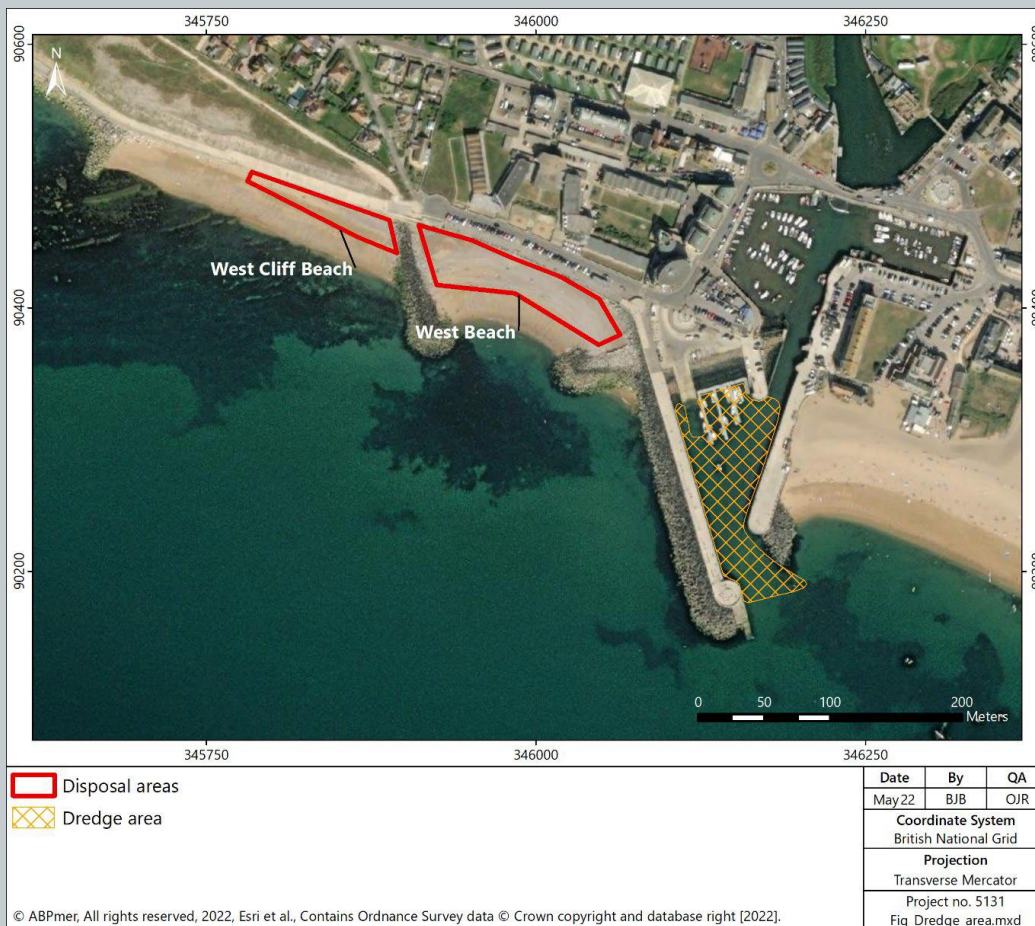


Figure 3 – West Bay Disposal Areas

As stated in the Dredging Procedure above, the material will be dredged using a small CSD. The CSD will pump the material through a discharge pipe directly onto the beach deposit areas between approximately 100 – 500 m from the dredge area. It is anticipated that approximately 1,5 m of sediment over an area of about 7 000 m² will be dredged from the dredge area to reduce the harbour floor level to the required 2 m below Chart Datum.

The proposal is therefore to dredge approximately 10,500 m³ of sediment from the dredge area to the disposal site per year between 2023 and 2025.

The sediment will be transported through a 10” High Density Polyethylene (HDPE) pipeline from the CSD to the discharge location (A & B respectively in Figure 4). Within the harbour area, the pipeline will operate as a sinker line to ensure safe passage in and out of the harbour. The discharge pipe will then be routed out of the harbour onto land where it will be set up to dispose of the material onto the beach below MHWS at times when the beach is dry. To ensure safe passage over the pipeline by harbour visitors, a temporary pedestrian bridge must be provided where it crosses the start of the Jurassic Pier. Where it crosses West Beach to discharge onto West Cliff Beach, the pipeline will be buried to avoid harm or interference with any public using the beach.

A small-scale excavator will be used at the beach, along with occasional movement of the pipeline over the disposal area, to ensure the even distribution of dredge material over the area. A typical example of the discharge arrangements is shown in Figure 5.



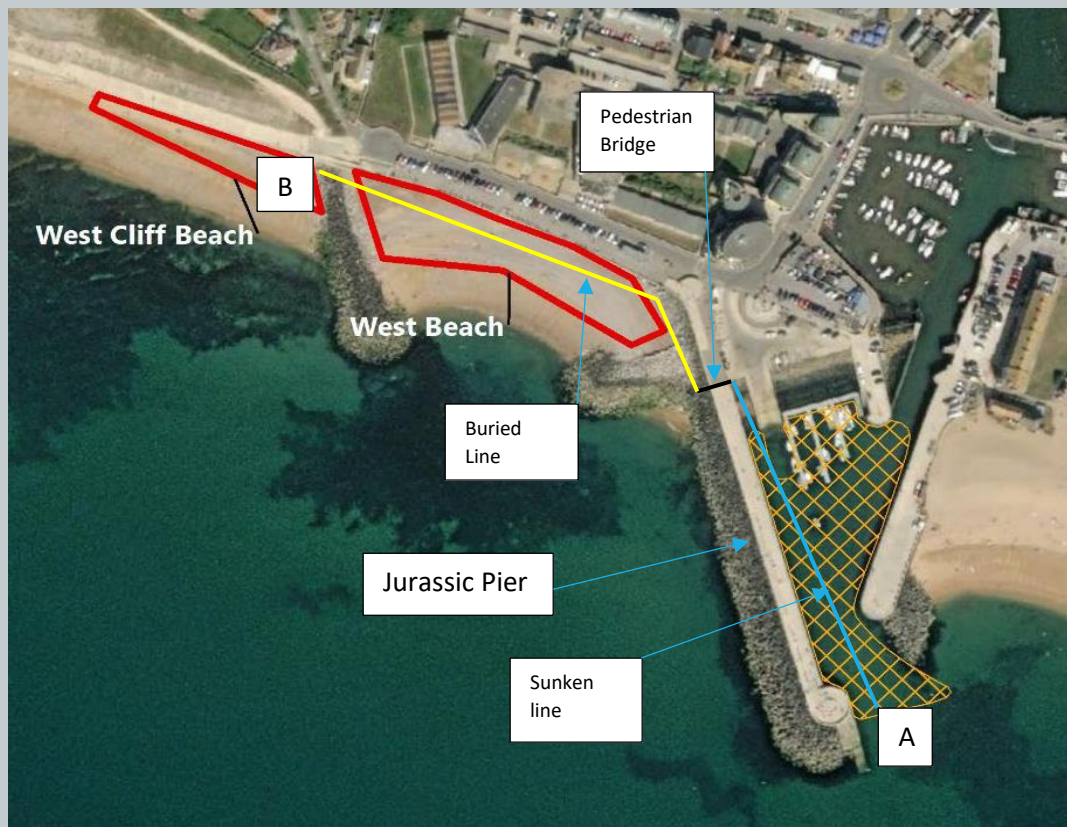


Figure 4 - 10" HDPE Dredged Material Transport Pipeline



Figure 5 - Example of typical discharge arrangement

A site supervisor will ensure the discharge pipe remains in the optimum position throughout the works in order to minimise any risk of material being disposed of directly into the sea and maximise the retention of material on the beach. In addition, a deflector plate will be attached to the discharge pipe to help reduce the scour potential by spreading the material evenly across a wider area of beach.

Subject to weather and delays due to mobilisation, the disposal activity will typically occur within March and April of each year. It is anticipated the works will take 10 – 12 days depending on the volume of material to be dredged but



the discharging activity will not usually occur continuously over this period. The dredge and disposal activity will be carried out during the hours of 0700 – 1900 and subject to tidal considerations.

During the works, some of West Cliff Beach will remain open to the public and there are other popular beaches to the east and west that will remain open for the duration. If disposal is to occur on West Beach, the beach will be closed.

5.3.2. Lyme Regis

The Lyme Regis Harbour is situated within the refuge area of the Cobb and is flanked by Monmouth Beach to the West and Front Beach to the Northeast. The Cobb and its associated breakwater effectively shield the harbour, and the water ways between the harbour mouth and the open sea, from any sediment deposit from Monmouth beach. However, high tides and wave action draw down beach sand from Front Beach and this sandy material ends up as sediment in the water between the beach and the harbour mouth as well as the area where the summer pontoons are set up.

The purpose of the dredging works is to enable Lyme Regis Harbour to continue to function safely by maintaining a safe navigable channel and creating a deep berth in the location of the summer pontoons.

The dredging operation will be carried out by the same CSD to be used at West Bay Harbour and the sediment will be taken from the mouth of the harbour and the area around the pontoons to the south of the harbour entrance and pumped through a 10” HDPE pipeline from the CSD to be deposited in the spoil area prepared by the earthmoving contractor at the back of Front Beach as shown in Figure 6. At the discharge end of the pipe, an excavator will ensure that the material is properly distributed over the spoil area up to the first groyne, which separates the sandy Front Beach from the adjacent Cobb Gate shingle beach to the Northeast.

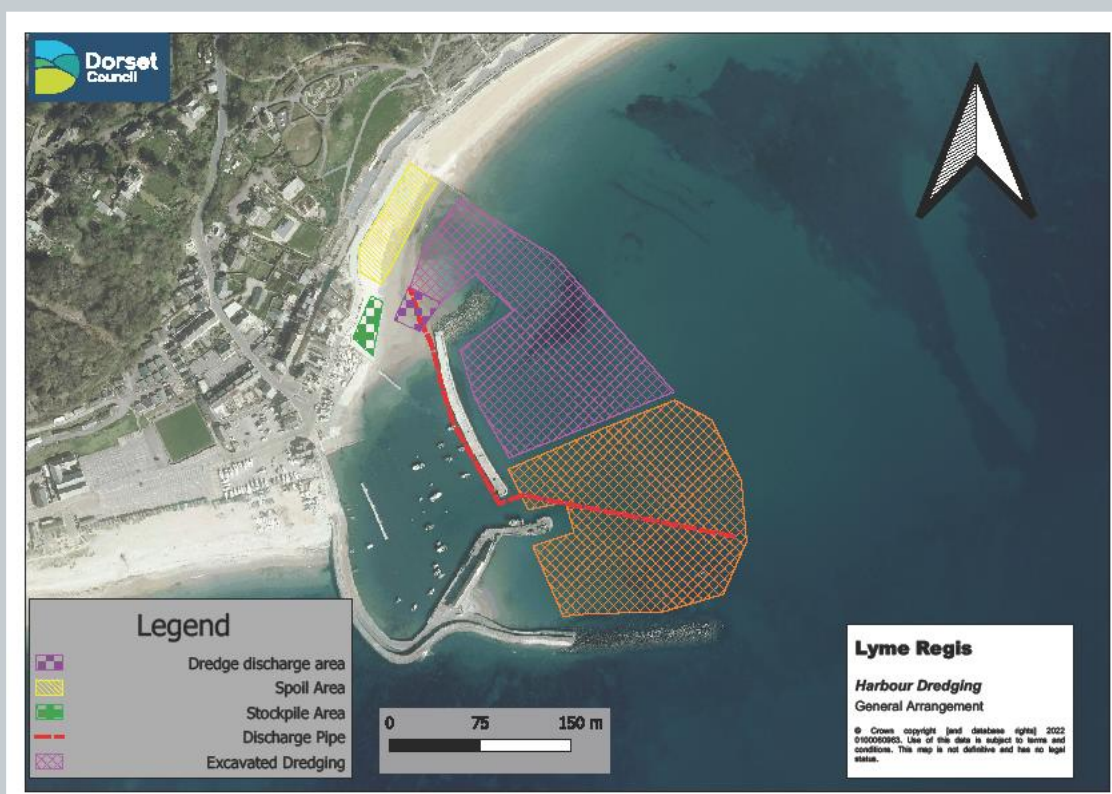


Figure 5 - Lyme Regis Harbour Dredging Layout



The recycling of the dredged material of approximately 5 625 m³, will be supplemented by a similar volume of excavated material, by others, from the intertidal area closer to Front Beach.

The dredged / excavated area may extend up to approximately 100m east of the mouth of the harbour to ensure that as much sandy sediment as possible is removed and recycled to restore the profile of the beach. As indicated, this material will be discharged / spoiled to the northern upper zones of Front Beach after the top sand layers have been moved aside for re-covering of the beach after all the discharged / spoiled material has been deposited. The preparation of the beach for the deposit of the dredged material and the covering over of the spoil afterwards, is described in more detail in section 5.4 below.

The works will involve the dredging about 0,25 m over an area of about 22 500 m², thereby making up approximately 5625 m³ of dredged sediment, to reduce the floor area towards about 1,5 m below Chart Datum. The dredging will effectively reduce the floor level back to existing rock so the final sea floor level will vary but should not be higher than 0,5 m below Chart Datum.

The dredged sediment will comprise predominantly sand particles that have been washed from Front Beach, with a small amount of gravel or shingle also present, that may possibly have been transported from Cobb Gate Beach and deposited in the vicinity of the harbour entrance, by more severe storms.

Note that if dredging commences late, the summer pontoons may have been set up in the outer harbour. In this event there will be clump weights that will have to be lifted before dredging can take place in the area. They are one tonne in weight and have chains which can be used for lifting. The weights are then to be re-positioned at the end of the works, in locations that will be instructed by the harbourmaster or one of his assistants.

5.4. Earthmoving Operation

The earthmoving operation will take place predominantly in Lyme Regis and the function at West Bay will be limited to the provision of a small, tracked excavator to assist by excavating a shallow trench and backfilling, to bury the HDPE pipeline where it crosses West Beach as referred to in 5.3.1 above. It may also be deployed for any control or distribution of dredged material as may be required at the disposal end of the HDPE pipeline. The excavator will also assist in the recovery of the buried HDPE line when the dredging operation at West Beach is concluded.

In Lyme Regis, the following works will be required:

The top layer of sand will be stripped from the upper part of Front Beach to an approximate depth of 1 m from the promenade level. This material will constitute about 1750 m³ and will be stockpiled in a safe manner on the southwestern area of the beach, as shown in Figure 5, for re-use later in the project. During the cut to stockpile process the floor of the stripped area should slope slightly downwards to the back of the beach to obviate free run-off of dredged sediment from the beach while the water percolates into the substrata.

When the tide has receded sufficiently, a 30t excavator will be deployed to the seaward side of the North Wall and begin loading dump trucks with sand/gravel that will be transported to and spread on the upper part of the beach that has been cleared as described above. The work will continue until the tide level rises to a point where work must be stopped. A constant visual check on the tide levels should be maintained to ensure that plant is removed from the work area in good time as the water levels rise. When the tide recedes, the excavating and earthmoving to spoil will resume until the operation is complete.

The dual operations of stripping the beach and excavating to spoil in the stripped area, can be continued in tandem. When the machines cannot carry out the main excavation from the area North of the Harbour then the beach stripping can resume. During this operation all sediment discharged by the dredger in the Dredge discharge area shown in Figure 5, must also be loaded, and moved to the Spoil area.



Once the main dredging and excavate and spoil operation have been completed, the beach will be covered with the previously stockpiled beach and the beach is to be finished off to the desired profile.

The earthmoving operation described above can be concluded within a week or so while the dredging may take up to 2 weeks. Consequently, the earthmoving will commence about 5 working days after the dredging has commenced so that the two operations can be completed simultaneously. This will obviate plant standing time while waiting for the dredging operation to complete before the spoil material is covered over with the stockpiled sand.

The excavators must riddle any rocks and stones from main beach area, and these can be disposed of as directed, outside of the beach area or off site.

Working times will be approximately four hours depending on the tidal height and wind conditions, working either side of the low tides published by the UK Hydrographic Office.

All the plant will be washed and removed from site in a timely manner

6. Programme

An indicative programme for the works is attached as Appendix 2.

The programme assumes an anticipated start date of 6 March 2023, but this may vary dependent upon prevailing weather conditions and final agreed mobilization dates.

The programme also anticipates that the dredger and equipment are delivered to West Bay and towed immediately to Lyme Regis where the work commences. After completion of the dredging and beach recycling process at Lyme Regis, which must be completed before the end of March, the dredger is towed back to West Bay to continue with the operation. Ideally the whole of the works should be completed by 6 April 2023 but, if not, at West Bay it will be much less problematic running through Easter than at Lyme Regis where it is imperative to be complete before Easter.

7. Tender Proposal

The tender proposal should consider the information, follow the instructions, and respond comprehensively to the questions contained in the Council's eTS tender bulletin.

