



22nd August 2017

Mr. Daniel Vick
Area Team Leader, Planning Services
Arun District Council
First Floor, Arun Civic Centre
Maltravers Road
Littlehampton
BN17 5LF

Our ref: 1200009/YG/18/08/2017
Your ref: Not Applicable

Dear Daniel

RE: Littlehampton East Bank Tidal Walls Reach 4 Flood Defence – Request for Formal Approval under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017

1 Introduction

Gutteridge Haskins & Davey Limited (GHD) is pleased to submit to Arun District Council a request for formal approval that an environmental assessment will not be required for the segment of the Littlehampton East Bank Tidal Walls Reach 4 Flood Defence (the Project) per the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017* (the Regulations). GHD has been commissioned by Mackley Construction, acting on behalf of the Environment Agency, to seek the approvals for the proposed works.

2 Project background

The main portion of the Reach 4 tidal wall had been completed as part of the works carried out by the Environment Agency at the East bank of the River Arun for a length of approximately 2.5km from the harbour mouth upstream. The original plan by the Environment Agency aimed to manage the risk of tidal flooding to the town of Littlehampton in West Sussex by proposing works to provide a flood defence to a consistent 1 in 300 year standard for the area covered by the scheme.

One section tidal wall, located along the river frontage of 47 River Road, was not completed as part of the previous works. This unprotected section of the river side remains as a flood risk, and reduces the effectiveness of the flood defence system built to date. As such, the Project aims to close this gap.

Based on previous discussion between the Environment Agency and the Arun District Council, it was agreed that although the project does not trigger Schedule 1 or Schedule 2, the project was originally part of the wider flood defence works along the 2.5km stretch of river and, accordingly, the proposed work is to be considered in light of the previous works and a formal notification outlining this and seeking approval under the Regulation is required (provided herein).

3 Proposed scope of work

The current proposed scope of the Project completes the East bank flood defence. The works will include a raised new vertical sheetpiled flood defence wall, approximately 26 meters in length, to be installed riverward of the existing timber retaining structure, with the use of a jackup barge. The wall will meet the

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alignment and height of the adjacent walls upstream and downstream of this site. Fill will then be placed behind the wall to infill the gap between the existing timber retaining structure and the new sheetpile wall. Concrete capping beams will be put into place and connected to the existing downstream capping beam to form a closed connection caps.

The duration of the Project will be approximately 8 weeks and is planned to complete between late October and April, in accordance with seasonal requirements. Details of the project are shown included in the enclosed Attachment A and drawings are enclosed in Attachment B.

4 Environmental setting

The location of the Project is shown in Figure 1 below.

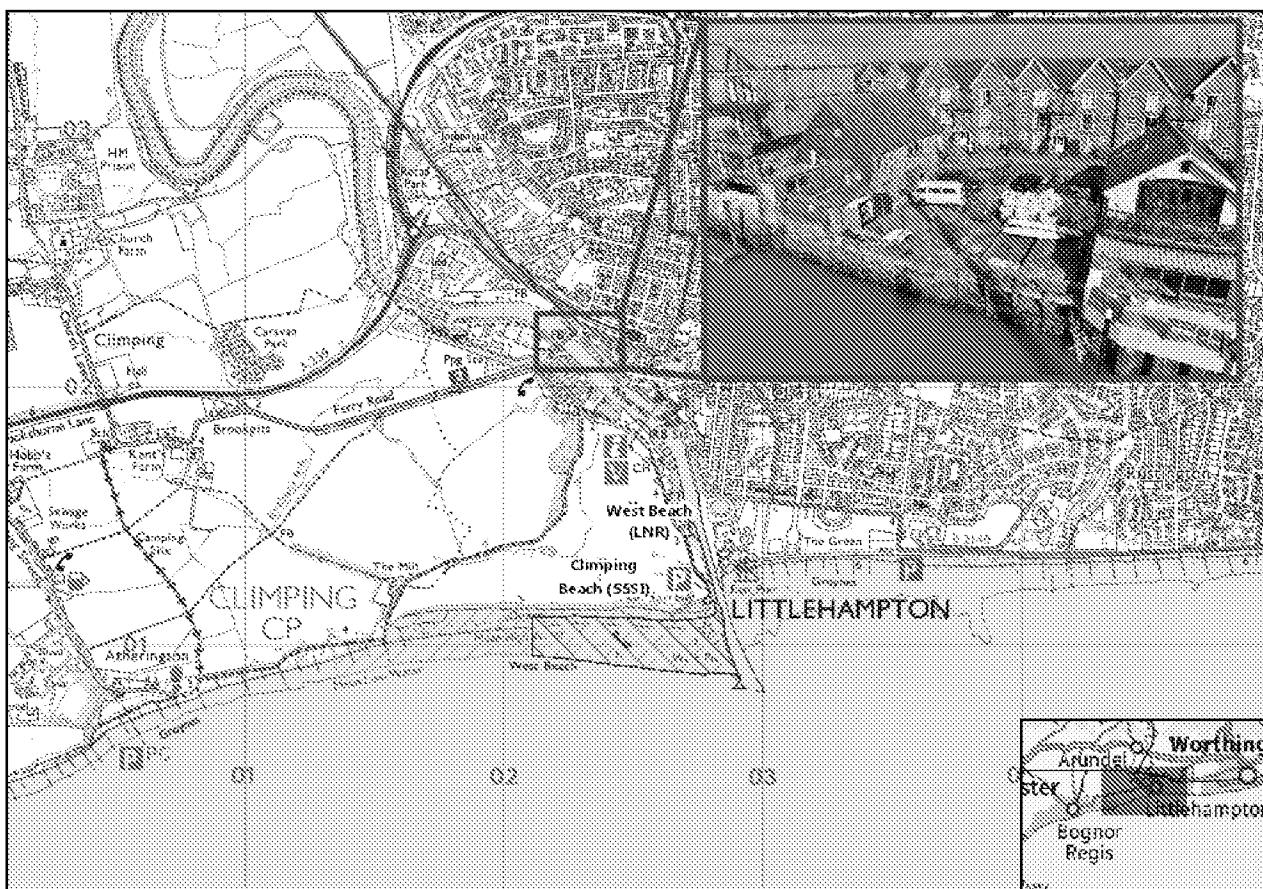


Figure 1 Project location

Source: <http://magic.defra.gov.uk/MagicMap.aspx>



Local Natural Reserve



Site of Special Scientific Interest

The site is located to the west of the Littlehampton town centre and is bounded by the Arun River to the west, an auto-mechanic shop to the north and residential properties to the immediate south and east.

4.1 Protected areas

The nearest sensitive area is the Climping Beach Site of Special Scientific Interest (SSSI), with West Beach local natural reserve within the SSSI, located approximately one kilometre to the south of the site. The intertidal zone of the SSSI supports important population of wintering birds and a number of wintering sanderling. Due to nature, scale, duration and timing, no negative effects are anticipated.

4.2 Cultural heritage and conservation

The River Road Conservation Area is also located adjacent to the site. The River Road area was developed in the first half of the 19th century and contains a number of listed buildings, none of which are within the area of the proposed Project. The objective of the conservation area is to improve the appearance, visual quality and access to the area and stimulate public interest in the area.

4.3 Ecological setting

The habitats at the site include bare ground, ephemeral short perennial, hard standing, intertidal mud/sand/brown algal beds and running water (brackish), as shown in Figure 2.

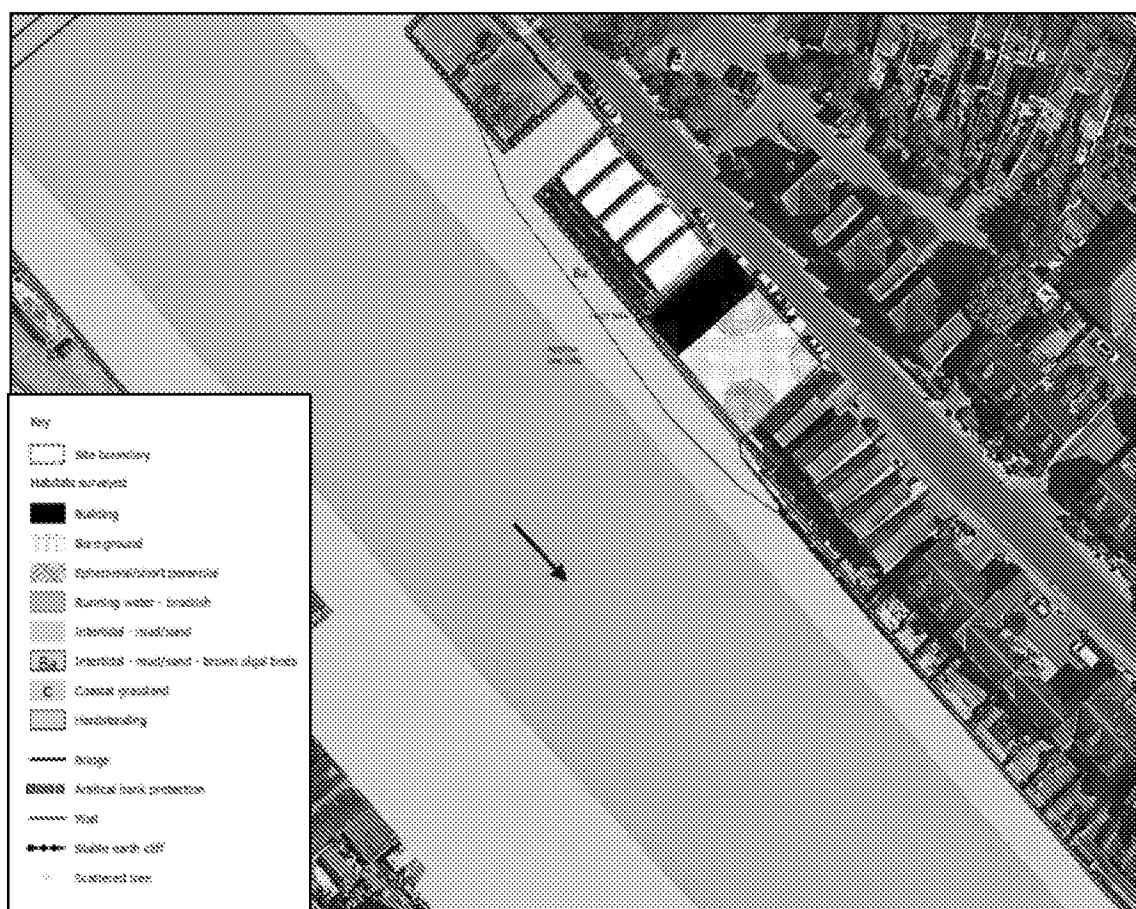


Figure 2 Habitat details map

Source: Keystone Ecology Preliminary Ecological Appraisal, August 2017.

Recent ecological survey completed at the site did not identify any constraints with respect to protected species in and around the Project site. Seasonal presence of salmon fish and eel are noted, based on each species migration season.

5 Potential environmental impact and mitigation measures

The key issues of concerns with the proposed Project include:

- noise and vibration



- biodiversity (wildlife)
- landscape, townscape and visual issues
- traffic and transportation

The proposed work herein will be undertaken in accordance with the mitigation measures identified in the Environmental Statement for the Littlehampton Arun East Bank Tidal Walls Flood Defence Scheme (2013) prepared by the Environment Agency and submitted in support of the planning application LU/152/13/. In addition, the work for this section of the Arun River is 26 metres in length which, of the 2.5 km stretch from the original project, presents a small footprint of work. The duration of construction activities will be short and the anticipated environmental impact will mainly be temporary in nature. The permanent features of the development will be the sheetpile flood defence wall which will result in the loss of mudflats area. This loss is considered minimal in size; additionally, the area of mudflats that will be lost was incorporated into calculations of compensation in the original scheme.

Accordingly, the impact of the work is anticipated to be short-term and localised, and therefore minimal.

6 Town and Country Planning (Environmental Impact Assessment) Regulations 2017

The Regulation states that an Environmental Statement is required for Schedule 1 activities and an Environmental Screening Note is required for Schedule 2 activities. If the activities conducted fall outside of two schedules, an environmental assessment is not required, subject to Secretary of State's power to make directions.

As previously mentioned, the activities that will be carried out as part of the construction of this segment of the Reach 4 flood defence wall will involve installation of sheet piles along approximately 26 metres of the Arun River with the use of a jack-up barge, as well as placement of filling material and concrete caps. As such, the Project activities do not fall within the description of any of the Schedule 1 listed activities.

In regards to Schedule 2 listed activities, Activity 10 (h) in Schedule 2 is defined as "Inland-waterway construction not included in Schedule 1, canalisation and flood-relief works" (Column 1 of the Schedule), with a threshold set at "area of work exceeding 1 hectare" (Column 2 of the Schedule). The proposed works are considered "flood-relief works"; however, the estimated area of works for the proposed project activities is approximately 1,500 square metre, including the area that the jack-up barge will occupy during the sheetpiling activities. Accordingly, this Clause does not apply to the proposed works.

Based on the descriptions of development in Schedule 1 and Schedule 2, it is understood that the proposed activities for the Project fall outside of both Schedules 1 and 2. As proposed works are not within a sensitive area. Accordingly, an environmental impact assessment will not be required.

7 Project Timing and Final Comments

The project is under a tight delivery deadline, in order to fit into the ecological timeframes of salmon and eel migration, which is dictated by the water temperature, and avoid/minimise any associated ecological effects. The proposed works are anticipated to start in October 2017. Accordingly, GHD requests the formal approval of the Arun District Council to be issued as soon as practically possible.



GHD looks forward to further progressing this project with you. Please do not hesitate to the undersigned should you have any questions or require clarification of the above.

Yours faithfully
Gutteridge Haskins & Davey Limited

[REDACTED]
Yasaman (Jasmine) Ghorashi
Operations Director
[REDACTED]

Attachments

Attachment A – Buildability Statement



Buildability Statement

1. Introduction

The works include the provision of flood protection along the River Arun, located near the water edge of 47 River Road.

Recently, the Environment Agency (EA) has completed flood protection works along the River Arun as part of the Littlehampton East Bank Flood Protection works. During this phase of works, a segment of the flood protection was not constructed at 47 River Road as these works were to be completed by the landowner. Due to a change in circumstances for the landowner, they are no longer able to complete the flood protection works at the site and as such the EA has elected to continue a similar solution to the downstream configuration. Previous works by the EA and landowner, and the site are identified in Figure 1.

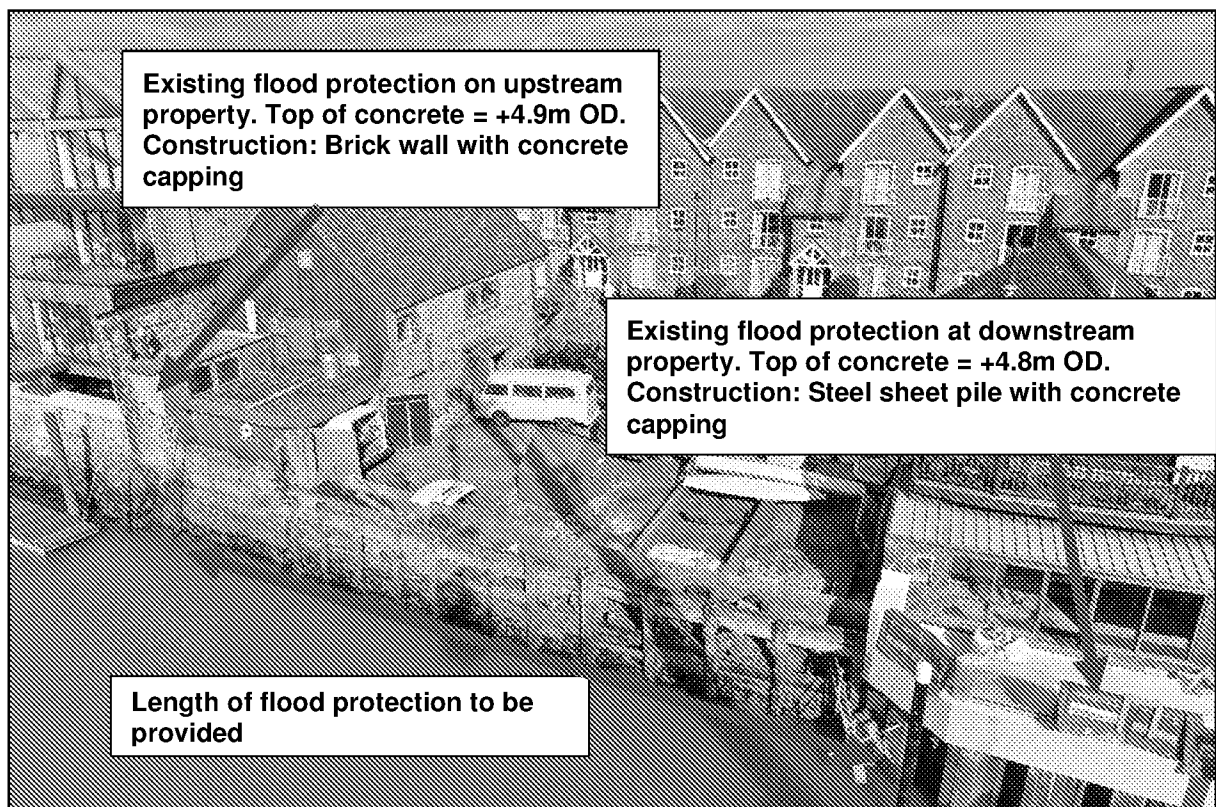


Figure 1 Area of Works

The current concept considers the use of steel sheetpiles, embedded into the sub strata, with a concrete capping beam. Fill will then be placed behind the wall to infill the gap between the existing timber retaining structure and the new sheetpile wall.

The capping beam will also be connected to the existing downstream capping beam, and form a closed connection (i.e. the new structure will butt up against the existing structure, some bricks may be required to be removed) with the upstream brick wall and concrete capping beam

1200009-Buildability Statement

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The existing timber wall may be removed to improve the integrity of the fill placed between the existing ground and sheetpiles.

2. Construction Method

2.1 Process

Works are envisaged to occur with the following process:

- Sheetpiles will be driven to required toe level utilising a vibratory hammer from a jack up barge;
- The existing timber wall will then be removed by mobile equipment located on land (TBC);
- Drainage layer installed within pans of sheetpiles;
- Initial stage of fill provided between the existing reclamation slope and sheetpile walls;
- Capping Beam constructed utilising framing off the initial fill, or scaffolding;
- Fill to ground level (+3.5m OD) and compaction.

2.2 Driving of Sheetpiles

The sheetpiles are proposed to be driven from floating or jack up barge, utilising a crane attached vibratory hammer and temporary frames. Driving of the sheetpiles is anticipated to start at the downstream end, and progressively work upstream utilising the panel driving technique.

A temporary guide frame will be constructed to control the straightness of the wall. The guide will consist of two I-beams laid along the length of the wall, one on the seaward face of the sheetpiles, the other on the landward face. This will be constructed by temporary connection to the existing downstream structure (nominally the capping beam) and the use of temporary spuds at intervals to vertically support the frame. The panel driving technique shall follow the nominal process identified by ArcelorMittal and described within Figure 2.

Prior to driving the piles the follow preparation works are required to be undertaken:

- Water pressure relief holes will be included in the design of the piles. A series of drainage holes will be cut into the sheetpile in the area of the drainage column;
- Clutches will be cut at the base and head of each connecting sheetpile to aid in the ease of clutching the sheetpiles together. Clutch grease will also be applied to minimise friction during the driving process;
- A corner will need to be developed at the upstream end. A corner section (or connector) will be utilised to allow the change in direction of the piles.

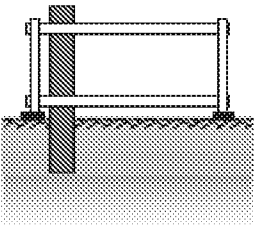
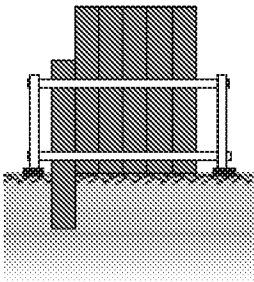
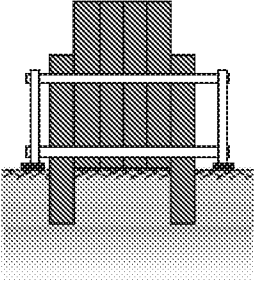
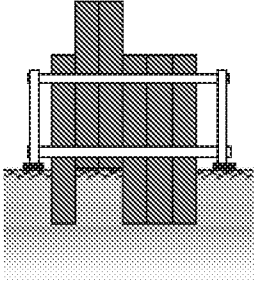
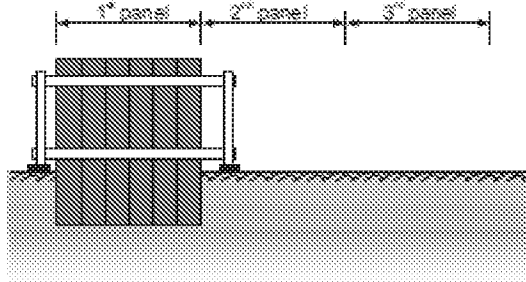
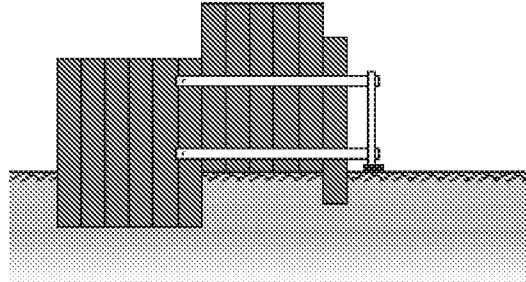
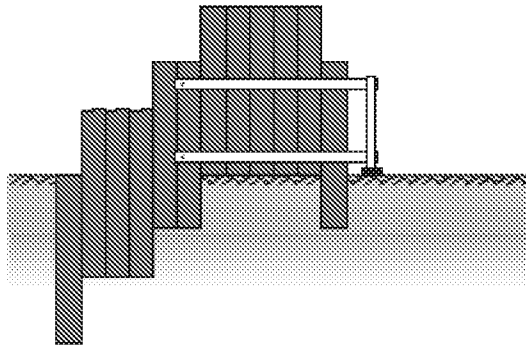
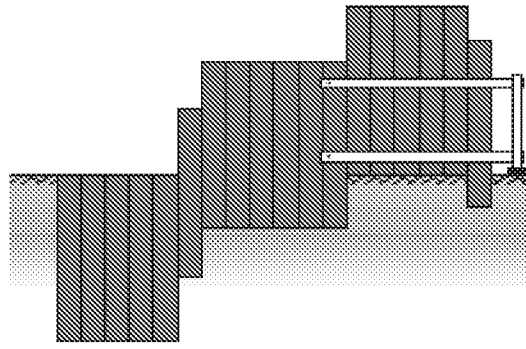
	
1. Pitch, align and plumb 1st pair.	2. Drive 1st pair carefully & accurately pitch rest of panel.
	
3. Ensure last pair are accurately positioned & plumb, drive last pair.	4. Drive remainder of panel - working back towards 1st pair.
	
5. 1st panel part driven.	6. 2nd panel pitched. Last pair of 1st panel become 1st pair of 2nd panel. Wales supported by through bolting to last driven pair.
	
7. 1st panel driven to final level in stages. Last pair of 2nd panel plumb & driven accurately. The lower frame is usually left in position after removal of the upper frame until driving is sufficiently progressed for it to be removed.	8. 1st panel completed. 2nd panel part driven. 3rd panel pitched. Last pair of 2nd panel becomes 1st pair of 3rd panel.

Figure 2 - Panel Driving (Source ArcelorMittal)



2.3 Drainage Layer

The design considers that drainage system will be provided to prevent the build-up of groundwater behind the piles.

To facilitate this, each of the sheetpiles shall have a series of holes predrilled prior to installation. These holes will approximately align as per the below figure, as the piles are laterally loaded and the toe of the pile is defined during design, the location of these holes is readily known, therefore enabling prefabrication. This is beneficial as the steel does not need to be cut in or above water.

The sheetpile pans will then be filled with gravel material (nominal grading) and sealed with geotextile. The gravel will allow the flow of water, and the geotextile will prevent the loss of fines. A geotextile bag will be prefabricated and filled with gravel. Once the piles are installed, the bags will be lowered into the appropriate pans to form the drainage layer. Fill will then be added behind to support the bags. Volume of gravel will be slightly greater than the pan to allow the material to fill the void.

In some locations, more than one bag may be required per each pan depending on the height and weight of the bags. In this instance, another layer of geotextile shall be provided over the full height of the pile between the geobags and fill material so that fines do not migrate through the point where the bags meet.

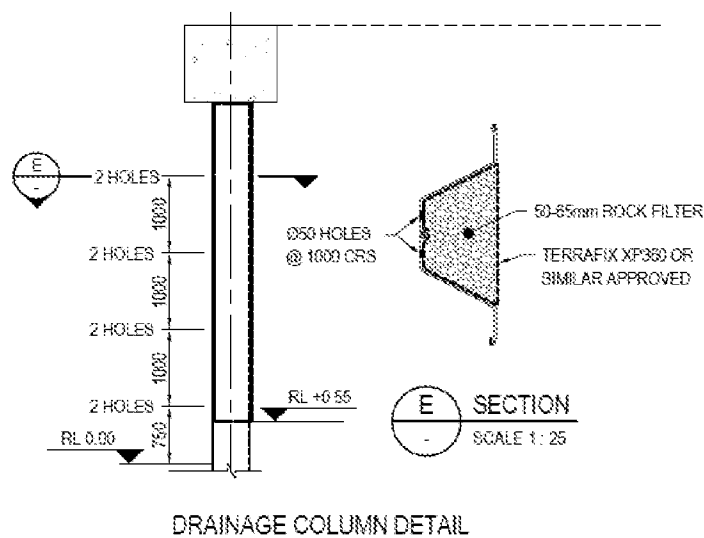


Figure 3 - Example Drainage Column Detail

2.4 Capping Beam

Once the piles have been driven and trimmed to their final level, a reinforced cast insitu concrete capping beam will need to be installed. Casting of the capping beam will occur in two stages:

1. Capping beam; and
2. Flood protection upstand.

It is intended that the formwork for the capping beam will be constructed over temporary scaffolding or structure to reduce the fill volume, and therefore lateral load, on the unsupported sheetpiles. The formwork will be constructed out of ply wood and supported on top of temporary spuds which were



utilised to guide the piles, or from a small scaffolding structure constructed over a portion of the fill material.

Reinforcement cages will be prefabricated on ground and lifted into the formwork, with continuity bars located as required. Once placement of the reinforcement bars has completed, the concrete will be poured from land utilising a tub lifted by a small crane.

The design locates the soffit of the capping beam above MHWS, and therefore the formwork should not be inundated by water, however it may be exposed to wave actions. In the event water seeps through the formwork at high tide prior to the concrete pour, the water shall be drained and the reinforcement bars cleaned with potable water to remove any chlorides.

2.5 Fill

The capping beam shall be formed, poured and cured (7 days) prior to undertaking placement of fill behind. This is to prevent deformation of the sheetpiles as the capping beam will provide some lateral restraint once tied into the existing downstream and upstream walls.

Once the capping beam and sheetpiles have been constructed, the existing timber wall shall be removed. Any voids identified during the removal of the wall shall be filled with the fill material. Depending on the geometry of the void, it may be necessary to utilise geobags so that the void is entirely filled.

Fill material will be placed in layers of no more than 1m. The first layer of material shall be placed at low tide to allow sufficient compaction of the material to be achieved. The remaining layers shall be placed in line with the rising tide, with each layer being compacted as required by the specification.

Special attention will need to be paid to compaction of the fill under the capping beam (Figure 4). In this area, access to the fill will be constrained by the overhang of the capping beam. As such, the depth of layers may need to be reduced to allow sufficient compaction to be achieved. Fill will be placed upto +3.5m OD.

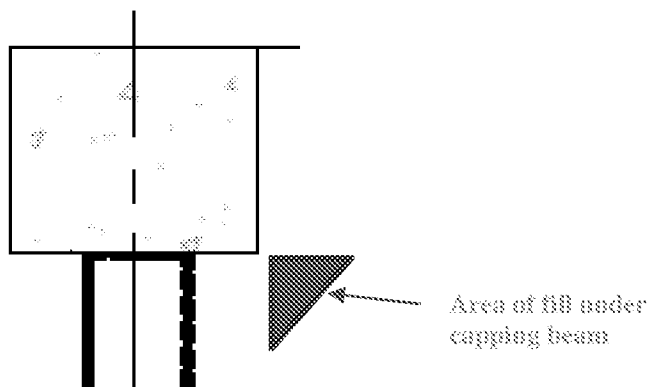
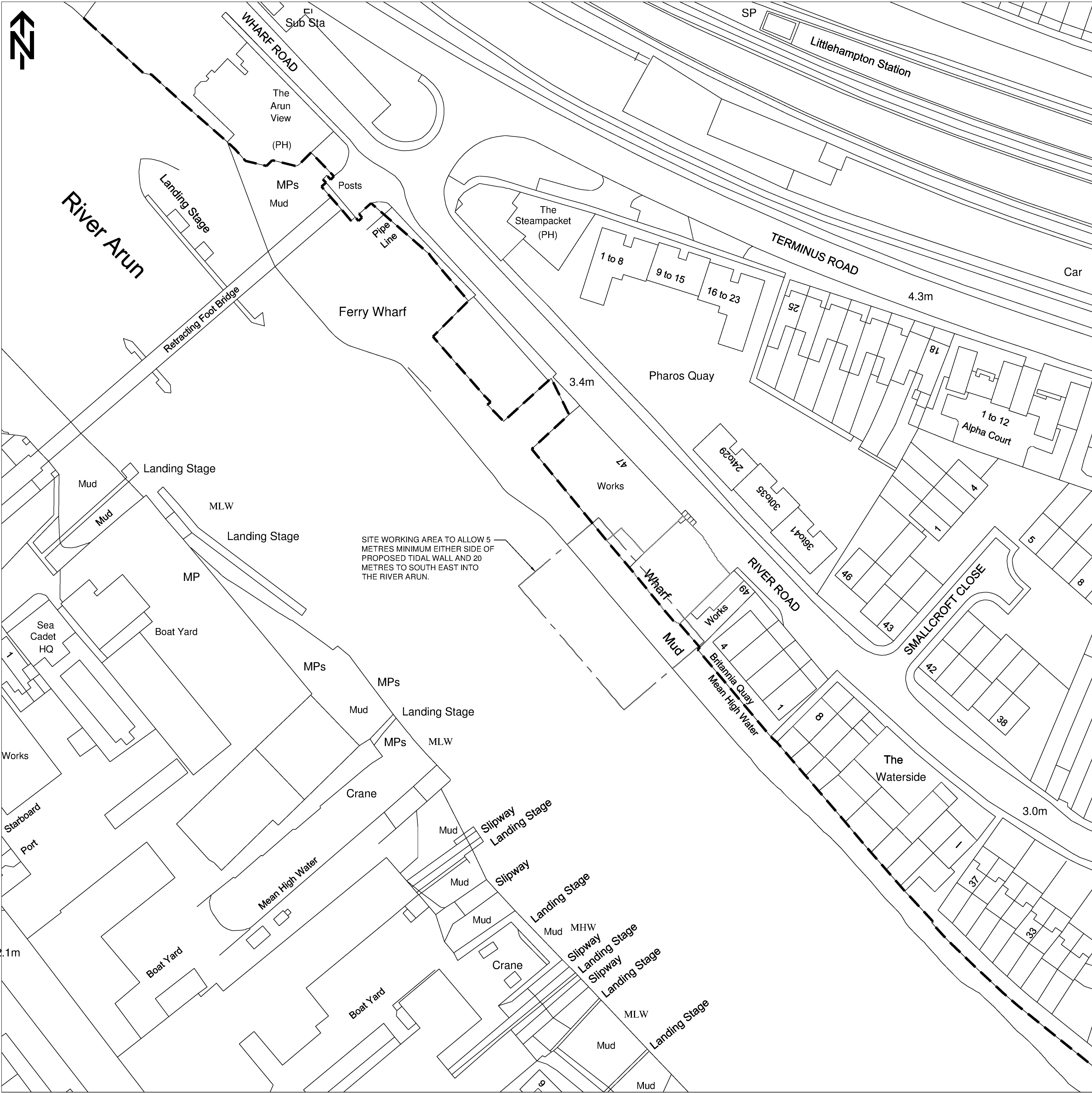
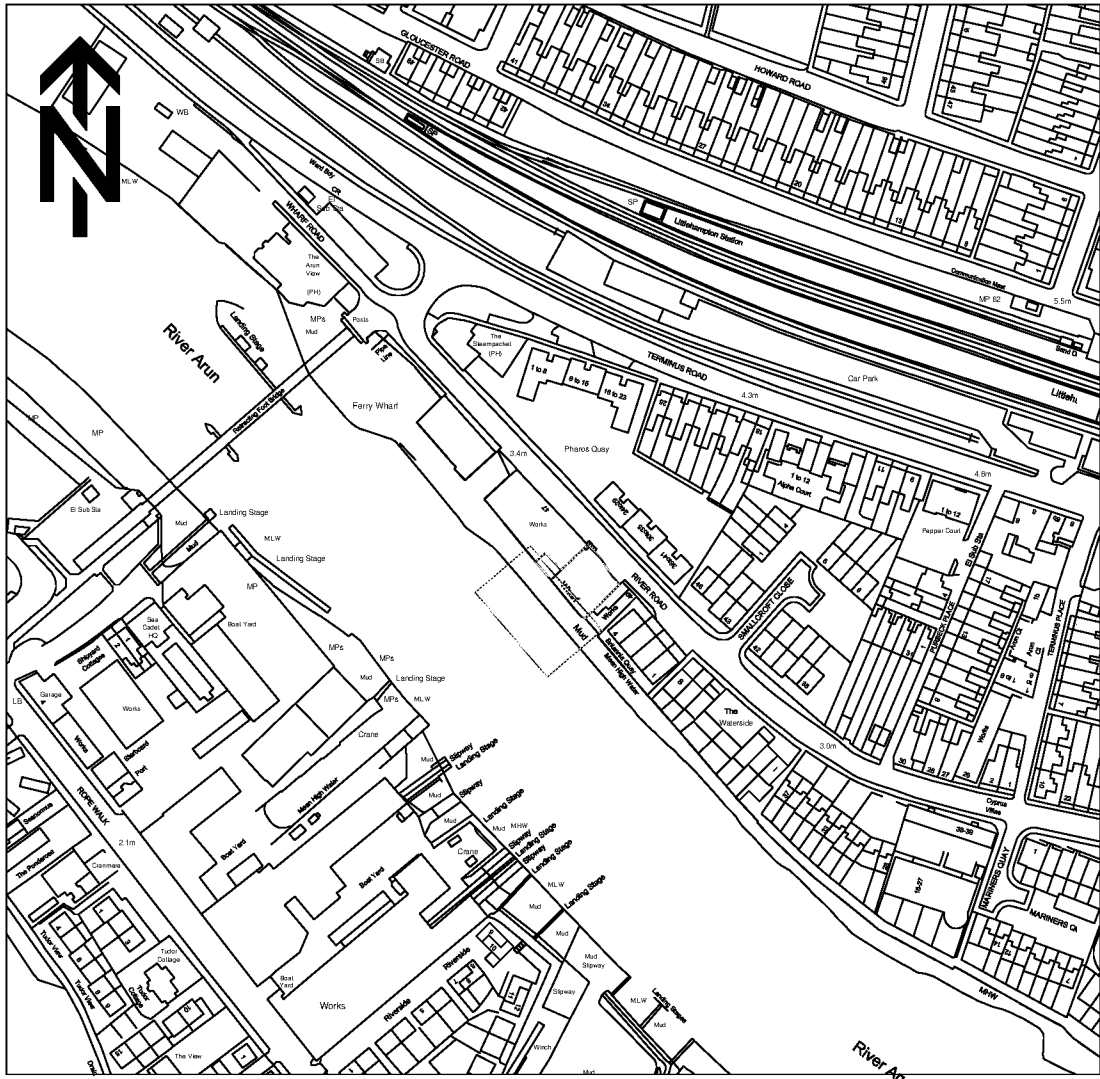


Figure 4 - Area of Fill Beneath Capping AreaRegards

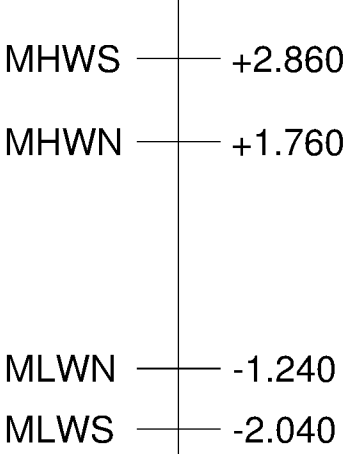
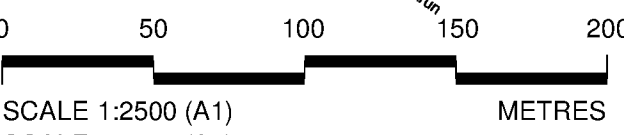
Attachment B – Drawings



BLOCK PLAN
SCALE 1:500



LOCATION PLAN
SCALE 1:2500



TIDAL PLANE
(m AOD)

NOTES

- GENERAL:
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 - THIS DOCUMENT IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT PROJECT STANDARDS AND SPECIFICATIONS.

- LEGEND:
- SITE BOUNDARY
 - - - - - SITE WORKING AREA
 - MHWS

SAFETY, HEALTH & ENVIRONMENTAL (SHE) INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH TCONSTRUCTION WORK OR RELATED WORKS.

- WORKING ON OR NEAR WATER - ALL OPERATIVES TO WEAR LIFEJACKETS AT ALL TIMES WHEN AFLOAT OR IN THE VICINITY OF THE RIVER.
- FLOODING AND EXCESSIVE FLOWS - SITE SUPERVISORS TO MONITOR WETAHER AND RIVER FLOWS AND ENSURE THAT NO OPERATIVES ARE PUT AT RISK BY BEING ASKED TO WORK ADJACENT TO FAST FLOWING WATER UNLESS MEASURES ARE PUT IN PLACE TO ENSURE THEIR SAFETY.
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IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR AND TO AN APPROPRIATE AND SITE SPECIFIC METHOD STATEMENT.

A	ISSUED FOR COMMENTS	CC	ME	GB	01.08.17
No.	Revision	Drawn	Job Manager	Project Director	Date

Drawing Revisions
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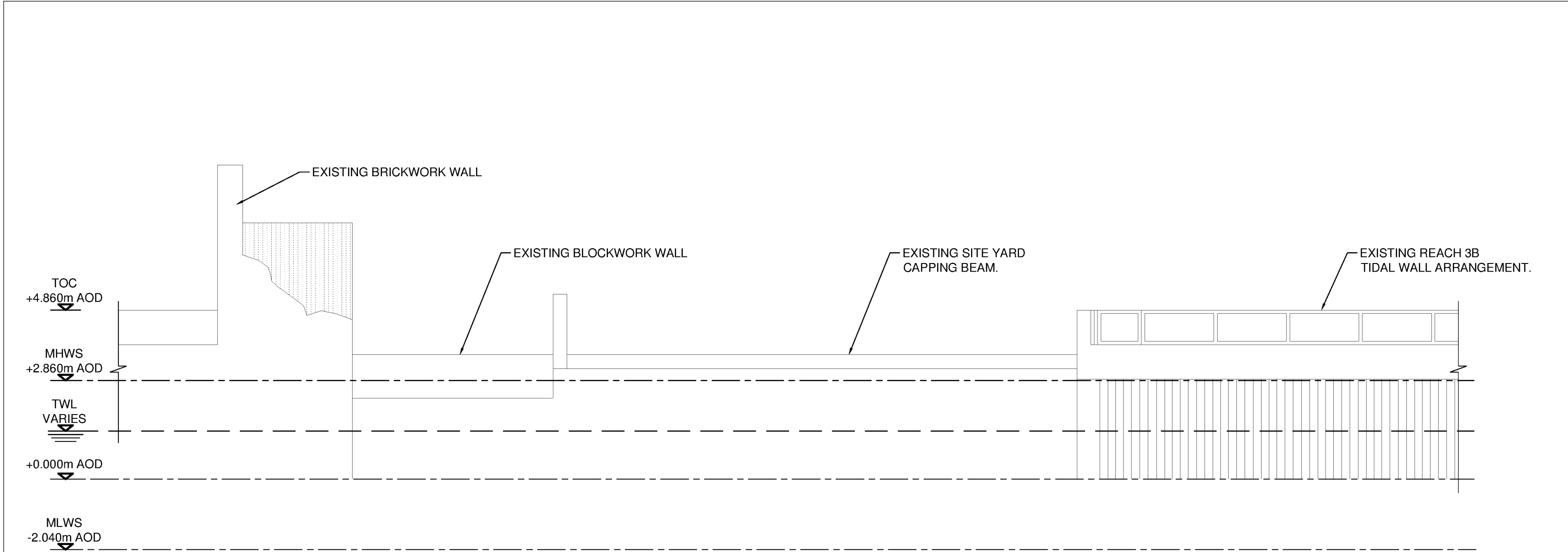
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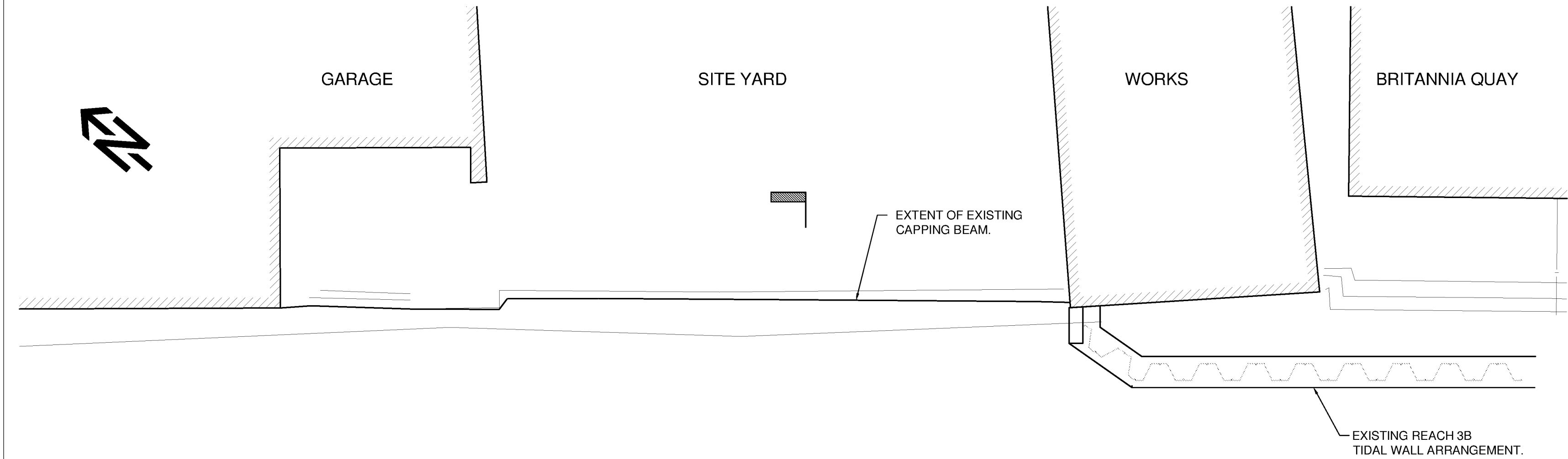
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Project	LITTLEHAMPTON FLOOD DEFENCE			
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Drawn	CC	Designer	DS	
Drafting Check	AS	Design Check	ME	
Approved (Project Director) GB				
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PRELIMINARY

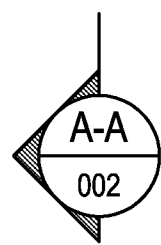
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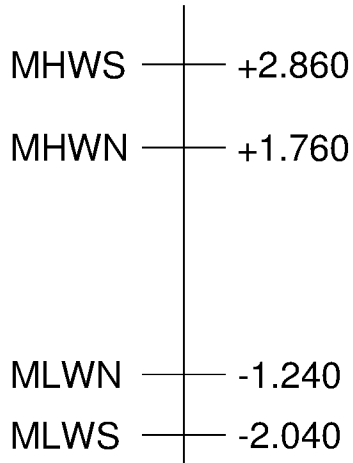
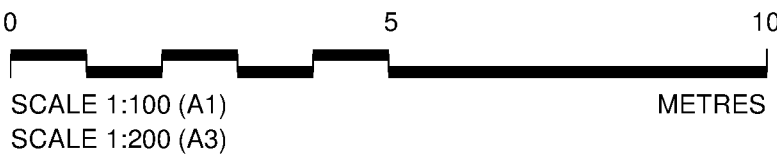
SOUTH WEST ELEVATION
SCALE 1:100



RIVER ARUN



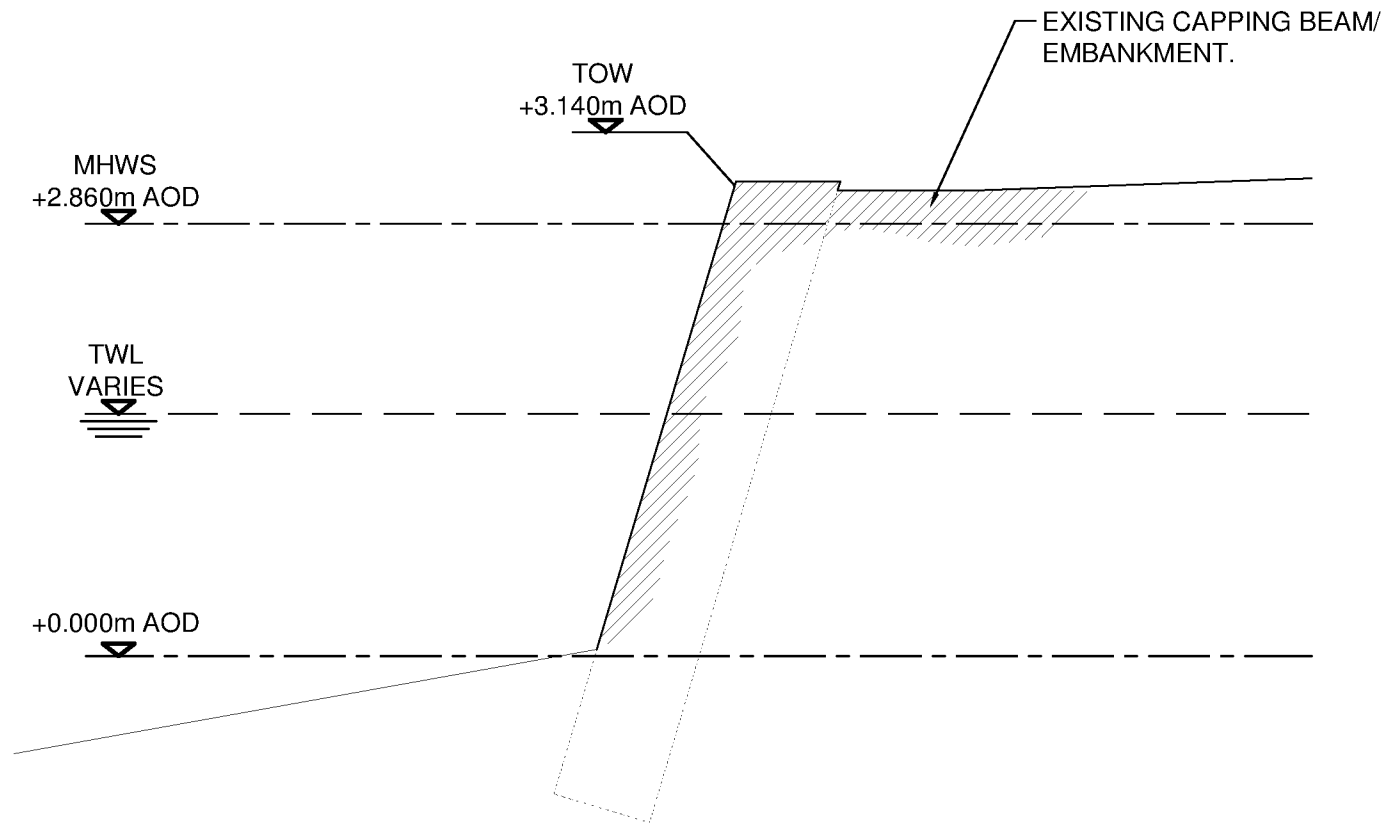
PLAN
SCALE 1:100



TIDAL PLANE
(m AOD)

RIVERWARD

LANDWARD



SECTION A-A
SCALE 1:50

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Client	JT MACKLEY & CO LTD				
Project	LITTLEHAMPTON FLOOD DEFENCE				
Title	EAST BANK REACH 4 PLANS AND ELEVATIONS AS EXISTING				
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PRELIMINARY

66-000009-K-004

