MARINA PROJECTS

Warsash Slipway

Access to water

River Hamble Harbour Master

Commercial in Confidence

Slipway options analysis

14th May 2012

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Warsash Slipway Access to water

Slipway options analysis

Project Ref No:	MP188	
	Name	**Date**
Prepared by:	Alex Benfield	5th April 2012
Approved by:	Dan McKiernan	11th April 2012

Issue Record		
Status	**Description**	**Date**
Draft Issue	Client Issue for Comment	13th April 2012
Final Issue	Client	14th May 2012

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1. INTRODUCTION

Marina Projects Ltd have been commissioned by the River Hamble Harbour Authority to review the existing slipway arrangements at Warsash and provide three options for the enhancement of this highly utilised asset. The current slipway is the most accessible facility within the immediate locality. The nearest alternative on the eastern side of the River Hamble being located at Swanwick, some 2 nautical miles upstream of Warsash. With direct links to Southampton Water and the Solent, Warsash slipway is a popular launching site for a range of users, from the local fishing fleet and dinghy clubs to private leisure boat and PWC owners. Warsash Slipway, due primarily to its location has the ability to provide an exceptional facility for water users within Hampshire.

The existing facility is however compromised due to the following key restrictions:

- 1 in 63 camber from the bottom of the cobbled slipway to the 65m mark (approximately 50% of the total slipway length). Current design standards state 1:7 to 1:9 largely dictated by site limitations.
- Potholes, uneven surface, soft mud and no clear demarcation of the slipway or potential underwater hazards such as the north east edge of the inspection pile base.
- The continued flotsam and jetsam at the head of the slipway. This deposit and continued build up, makes access to the facility difficult and in some instances impassable.

This short paper outlines the existing condition of the slipway, a number of potential options to enhance the facility along with an order of costs and comment on the likelihood of securing the necessary licenses and consents relating to each scheme.

2. EXISTING SLIPWAY REVIEW

On the 15th March 2012 Marina Projects Ltd conducted a site visit to survey the existing slipway condition and gradient and establish a baseline from which to measure the proposed options. The results of the survey are discussed in the following sections.

2.1 SURFACE CONDITIONS

The hardcore and sediment surface of the existing intertidal slipway was found to be generally flat and firm. The underlying layer is compacted enough to support large vehicular access indeed transit vans were observed driving on the slipway down to the low water mark during the site visit. Whilst the majority of the slipway surface is in a good useable condition there are a number of areas that are starting to break up with large deep potholes forming. The first of these potholes is at 24m from the foot of the cobbled slipway and is approximately 3' by 3' in size. Its depth however was not yet sufficient to cause concern or create an access restriction. The most significant area suffering from substantial potholes is at 60m from the foot of the cobbled slipway. Here there is a number of relatively deep potholes, with the largest being around 8' by 6' in size and approximately 90mm deep. The location of these potholes coincides with the narrowing of the useable slipway by the concrete base of the inspection piles. The potholes are expected to further erode in time as vehicles continue to pass over them and as such may, in the not too distant future, create an access restriction as vehicles become unable to pass over or around them without the risk of damage.

At the foot of the existing cobbled slipway, there is a drop of approximately 17cm before the surface level of the sediment slipway is reached. This drop is hidden by a build up of seaweed and other flotsam that has been deposited by the tide. This drop suggests that there is a process of erosion that is slowly taking sediment from the foot of the cobbled slipway. Whether this removal of sediment is natural or is caused by the transit of vehicles would require further analysis; however the drop of 17cm should not be ignored as over time this will increase and vehicles will struggle to mount the cobbled slipway or may risk damage when "dropping off" the end.

2.2 SURFACE MAKE UP

The surface of the existing slipway is mainly compacted intertidal sediment, the top layer of which is very fine and in areas sandy based. This top layer is only really a thin coating of deposited sediment that over time may well end up being compressed into the firmer layer underneath as vehicles pass over it. On the whole the composition of the current intertidal slipway does not change throughout its profile but areas of compacted stone are present and to the south/south west and nearer the low water mark the top layer becomes a muddier composition.

The area lying to the South, next to the Warsash Sailing Club's Shore Hose Jetty is unusable due to the uneven surface and thick layer of mud, rendering it unsuitable for vehicles or access.

2.3 GRADIENT

The gradient of the current slipway is very shallow, with it taking approximately 65m to drop a mere 1.25m. This is an average gradient of 1 in 52. After the 65m point the gradient of the profile increases and becomes more suitable for use as a slipway/launching ramp. The average gradient of this lower section is 1 in 14.

2.4 TIDAL ACCESS & USEABLE WINDOW

Due to the gradient of the upper intertidal section the launch and recovery of vessels at anything other than Mean High Water Springs (MHWS) and Mean Low Water Neaps (MLWN) is difficult due to the depth of water between these times as illustrated in appendix 1 – Existing Slipway profile & tide heights. At Mean High Water Neaps (MHWN) there is less than 0.5m of water for 30m from the cobbled slipway. Even during a Highest Astronomic Tide (HAT) or a MHWS event where vessels can be launched from the cobbled slipway there is less than 1m of water for over 38m. This creates a situation whereby vehicles require a 'long line' between the trailer and vehicle to cover the shallow water area that is not deep enough to float the vessel, although too deep in which to drive a vehicle. This method of launching and recovery creates time delays and associated congestion both on the slipway and in the surrounding access roads.

2.5 USER GROUPS & VESSEL TYPES

The existing slipway is currently used by a range of vessels and user types. Fishermen use it at low tide for vehicular access to their vessels and the pontoon immediately to the north. The sailing club utilise the slipway at high tide for launch and recovery from the cobbled slipway and during lower tides for launch and recovery and the storage of dinghy trolleys whilst afloat. The low depth of water available to water users between MHWS and MLWN makes it difficult for any vessel or boat that requires the use of a daggerboard/centreboard or engine to launch between these times. A typical Laser sailing dinghy with its daggerboard down would require approximately 1m of useable water depth to enable the vessel to sail to windward from the slipway.

3. ENVIRONMENTAL DESIGNATIONS, LICENCES & CONSENTS REVIEW

The River Hamble is nationally and internationally recognised for its habitats which support significant numbers of important migratory and breeding bird species. The designations within the Hamble which enclose the site:

- The Solent Marine Special Area of Conservation (SAC)
- Solent and Southampton water Special Protection Area (SPA)
- Solent and Southampton Ramsar
- Lee-on-the Solent to Itchen Estuary SSSI

3.1 LICENCES AND CONSENTS REQUIRED

Under Part 4 of the Marine and Coastal Access Act construction, alteration or improvement of the slipway would require a marine construction licence.

Other requirements that may impact upon any proposals for construction, alteration or improvements on site are:

- Planning permission
- Harbour Works Licence
- Landowner Consents
- Flood Defence Consent
- Water Framework Directive Compliance

If the River Hamble Harbour Authority wished to simply fill the existing potholes and carry out the surface tidying operation they may not require a maritime construction licence. This is because the River Hamble Harbour Authority is classed as a competent authority under the Conservation (Habitats) Regulations and can issue conditional consents permitting Harbour Works under the Southampton Harbours Act. Exemptions from Marine Licence applications lie within the powers of the Harbour Authority for:

"...a deposit, removal activity or works activity or works activity carried on by or on behalf of a Harbour Authority for the purpose of maintaining any Harbour Works.....to the condition that the activity is carried on within the existing boundaries of the works being maintained."

(The Marine Licensing (Exempted Activities) Order 2011 No.409)

3.2 CONSENT RELATED ISSUES

Works taking place within designated sites are often subject to additional requirements and constraints. Works may be constrained by environmental safeguards to ensure that the integrity of the designated features and species are maintained, for example the time of year construction work can take place in relation to the overwintering wildfowl and migratory fish. The degree and nature of development will also have an impact upon the extent of environmental considerations.

As shown in Figure 1 & 2, the current Warsash slipway lies alongside an area of designated intertidal mudflat listed as unfavourable under the water framework unit condition status. This is an important consideration as this means the area is likely to be more sensitive to any impacts and consequently the potential consenting bodies are likely to be stricter. One other potential concern is with the previous and current use of the inspection piles on the sediment contaminant levels. This may affect conditions for the removal and disposal of any material if surveys conclude that there are significant contaminant levels within the sediment.

Due to the nature conservation objectives of the site there is a likelihood that an Appropriate Assessment will need to be completed to secure permissions. Consultation with environmental bodies and meetings will enable the extent of environmental considerations to be confirmed.

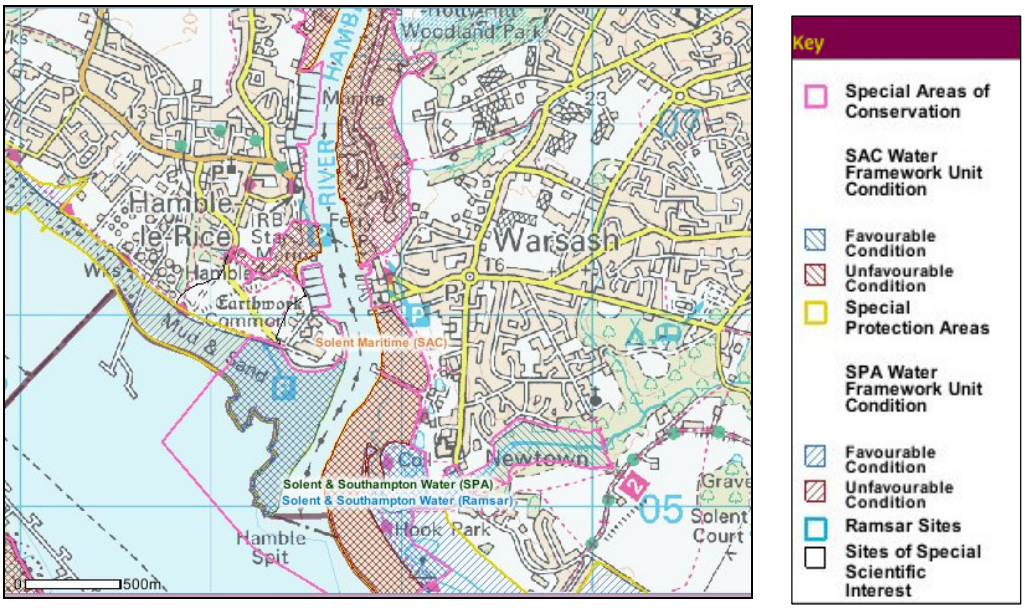


Figure 1 Designations map

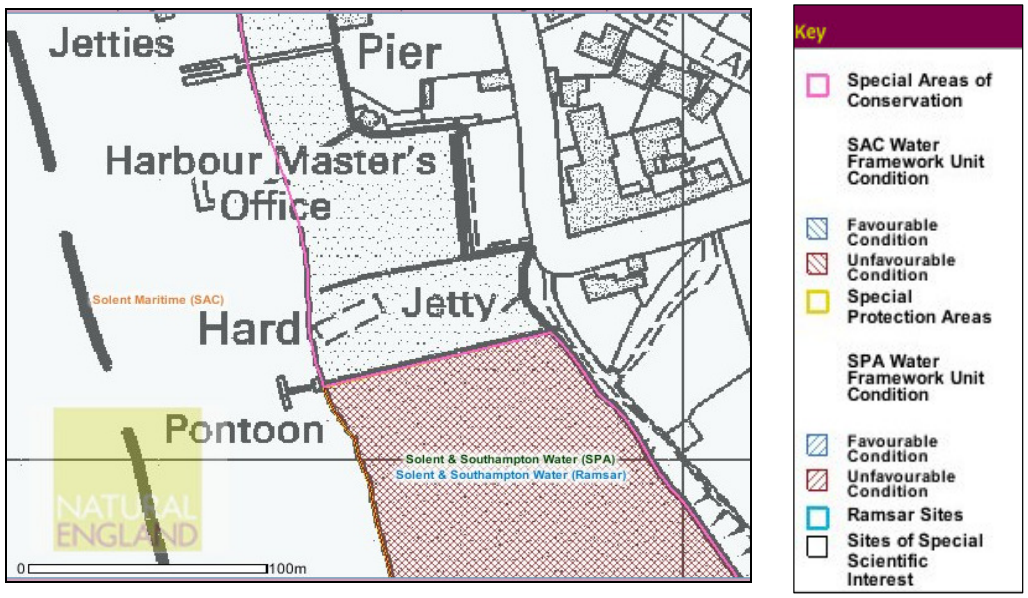


Figure 2 Slipway zone Designations

4. DEVELOPMENT OPTIONS

A number of options have been reviewed and the three optimum solutions are discussed further in this section. It is to be noted however that there is a very short term solution to improve the slipway in the immediate future that may not require a full license application due to the Harbour Authority powers as noted in section 3.2.

The improvement would be achieved through the provision of some modest surfacing works to the potholed areas and the un-even surface at the foot of the slipway. In addition a number of marker buoys would be included to demark the extremities of the slipway. Whilst not creating a greater the tidal access window these works would improve access to the water during low water conditions and create a more efficient launch and recovery facility.

The three options reviewed are noted in the following sections.

4.1 OPTION 1

The proposal for option 1 is to keep the existing cobbled slipway from the road and then grade the existing intertidal slipway from the foot of the cobbles down to 94m. The design width of the graded area would be 16m to match the width of the existing cobbled slipway as illustrated in Appendix 2. This would create a much more useable middle section of slipway that could be used across a greater range of tidal

conditions as the gradient is constant and not undulating. This option would require the removal of up to 555m^3 of sediment with a slight infill near the foot of the cobbled section. The existing and proposed profile for this option can be seen in Appendix 3. Investigations would have to be carried out prior to grading to ensure that a firm sediment level that could support vehicles can be reached when digging down, although our high level cost assessment does allow for a nominal 100mm deep type-one hardcore surface.

Option 1 also involves moving the inspection piles to the South to open up the full width of the slipway for use, an option for the enhancement of this facility would be to incorporate a set of concrete keel blocks on one side of the piles of circa 700mm, in order that motor boats can usefully utilise this facility. In addition it is proposed that a line of buoys are incorporated into the design of the new slipway to mark the south edge of the slipway.

The existing dwarf wall to the south of the cobbled slipway is extended parallel to the graded area by 35m to reduce the build up of seaweed and flotsam/jetsam at the foot of the cobbled slipway, although further modelling would be advised to ensure that this will have the desired effect of deflecting/stopping the flotsam. A vertical marker will be placed at the end of the wall to denote its existence during the high water tidal cycle.

The area at the foot of the proposed grading slope is of a suitable gradient so would not need further grading, however we have identified this area as requiring a surface tidy as there are a number of large rocks and boulders that may cause issues to vessels/vehicles using the slipway at low tide.

Based on a nominal vessel draft of 700mm with a 300mm under keel clearance, the works proposed in Option 1 would create the following improvements on access to the water and vice versa;

- + 2 hours either side of MHWS
- + 1 hour 20 minutes either side of MHWN
- + 1 hour either side of MLWN

Total budget cost for Option 1 works - £76,500

4.1.1 OPTION 1A

Due to the configuration of the graded area Option 1 does not lend itself to development into other designs in the future. Option 1A would be based on Option 1 but would start grading at the 50m mark instead of the 0m mark to closely mimic the graded area proposed in Option 2 and 3, without the additional associated developments. The reconfiguration of the inspection piles and the use of buoyage as shown in Option 1 are included and would remain consistent with both options.

Again based on the requirement to have 1m water depth, the grading as proposed in Option 1A would have the following improvements on tidal access to the water;

- + 1 hour either side of MHWN
- + 1 hour either side of MLWN
- It will also marginally improve the mid cycle access to water during Spring tides

This would still improve the useable time window on the slipway and reduce the distance needed to travel through shallower water to reach the 1m depth.

Total budget cost for Option 1a works - £70,000

4.2 OPTION 2

The proposal for option 2 is to build up a 16m wide timber decked structure starting at the top of the existing cobbled slipway and extending seaward at the same level as the existing car park decking. At the south west edge of the current car park (approx 30m) the decked structure becomes a 20m long 1 in 10 slipway dropping from its 2m height at this point to the existing bed level. By raising the structure to the existing height of the car park it gives the benefit of a greater gradient for the new decked slipway and takes users out over the worst of a currently flat surface. At the height of the existing car park the structure would be above Highest Astronomical Tide events.

Along the southern edge of the horizontal section of decking an extra area would be built for dry waiting/trailer storage. The exact dimensions of this area would be open for discussion and ultimately subject to a cost benefit assessment, although for clarity an area is highlighted in Appendix 4.

The area from the foot of the proposed slipway would then be graded down to the 94m mark as shown in Appendix 5 to remove up to 300m^3 of sediment from the profiles midsection. Investigations would have to be carried out prior to grading to ensure that a firm sediment level that could support vehicles can be reached when digging down. This option using the decked structure and grading creates a much more useable depth of water at all times whilst reducing the change of flotsam and jetsam building up on the slipway.

A timber decked storage area and slipway designed for vehicular access is not a new concept and has been installed in a number of intertidal locations. The structure offers all the benefits of a solid concrete mass without the visual, environmental or cost implications. Maintenance of the timber structure is a consideration, however a heavy duty grade certified FSC Hardwood species would be utilised throughout that has a long life expectancy. The gradient of the slipway would be kept free from the build up of marine growth through the following factors:

- The use of a non slip surface treatment to the slipway surface
- The high level of vehicles utilising the slipway year round
- The slipway will only be submerged during the high tide cycles
- Timbers located with a 10mm spacing to allow water and sediment flow
- Horizontal timber decked areas will require a periodic high pressure water clean to prevent the build up of algae

As with Option 1 (section 4.1) the Inspection piles are moved to open up the full useable width of the slipway and the area at the foot of the proposed graded section is treated as a surface tidying area. It is expected that no buoys would be required to mark the area due to the approach to the slipway being shorter than that in option 1.

The grading as proposed in Option 2 would have the following improvements in access times to water on the slipway;

- + 2 hours either side of MHWS
- + 1 hour either side of MHWN and improved access to the water for vehicles and trailers that would not otherwise be provided in Option 1/1A.
- + 1 hour either side of MLWN

Total budget cost for option 2 works - £149,000

4.3 OPTION 3

The proposal for option 3 is to develop what has been built up in option 2 by adding an additional decked area to the south for open public space and seating (pedestrian access only). A benefit of the additional structure is that it would afford a greater degree of protection to vessels using the slipway whilst helping to prevent a build up of flotsam and jetsam.

The possibility would also exist for an area of the new decking to be leased to the nearby public house for the provision of outside seating/eating. This has been illustrated at Appendix 6 in a different colour but the vision is that the whole area is of one decked finish. Appendix 6 also shows an indicative side elevation of the proposed layout when viewed from the North. The key CH-6 in the side elevation represents the edge of the current road where it turns into the existing cobbled slipway. Further detail on the graded slope indicated on the side elevation is shown in Appendix 4.

As with Option 1 and 2 (section 4.1 and 4.2) the Inspection piles are moved to open up the full useable width of the slipway and the area at the foot of the proposed graded section is treated as a surface tidying area. It is expected that no buoys would be required to mark the area due to the approach to the slipway being shorter than that in option 1.

The grading as proposed in Option 2 would have the following improvements in access times to water on the slipway;

- + 2 hours either side of MHWS
- + 1 hour either side of MHWN and improved access to the water for vehicles and trailers that would not otherwise be provided in Option 1/1A.
- + 1 hour either side of MLWN

Total budget cost for Option 3 works - £178,000

5. COST ASSESSMENT

A high level review of the likely capital costs associated with each of the work streams has been carried out to assess the cost benefit of each proposal.

The following assumptions have been made:

- A 20% contingency has been added to total works costs at this early stage, this figure may be reduced to 12 – 15% post formal works quotations
- There is an inclusion for all licenses and consents required to progress each option and associated applications, with the exception of the immediate scope of works that it is assumed requires only notification to the MMO under the existing Powers of the Harbour Authority.
- Professional fees, method related charges and general items are all included
- No allowance is made for the removal of any contaminated material.

6. SUMMARY & RECOMMENDATIONS

Warsash slipway is a highly utilised facility in spite of its inability to provide an efficient launch and recovery provision throughout the tidal cycle. This being due primarily to the shallow gradient over such a length. Due to the location of the facility, the lack of public slipways available and the existing critical mass of the sailing clubs, fishing fleet and local users, there is an opportunity to enhance the facility and increase the access to water for the greater good of a sizeable number of users.

It is recommended that an initial scope of 'immediate' works to make good the existing finish is carried out to include the following key items:

- Grade the lower 8m of slipway to remove large navigational obstructions
- Infill the pothole areas with type-one hardcore and compact to an even finish
- Install nominal 6 No. marker buoys along the southern edge of the slipway to mark the existence of the hard surface and the North West edge of the inspection piles

The above works will immediately improve access to the water and demarcation of the slipway for a total works cost of £2,800.

It is our recommendation that ultimately option 2 or 3 is progressed through to delivery; however for phasing purposes option 1a is adopted to increase access to the water in the short term. This will allow RHHA to improve access to the water and increase the tidal access window. In addition RHHA will be well placed to further enhance the facility over time and subject to demand and economic conditions. The improvement of the slipway at Warsash to a purpose built facility with a greater tidal access window will both improve conditions for existing users and attract additional visitors to the facility.

7. APPENDICES

Appendix 1 ~ Existing Slipway profile

Appendix 2 ~ Option 1 Proposed Layout drawing MP188-P-100.1

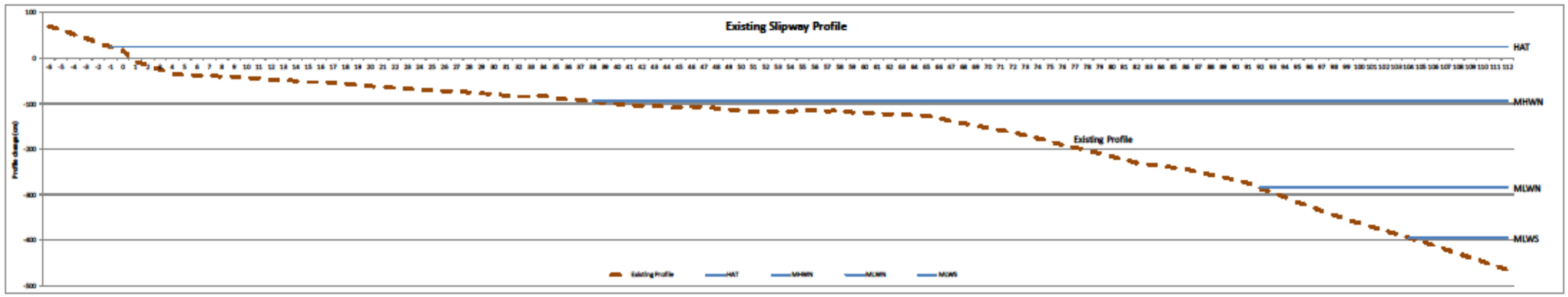
Appendix 3 ~ Option 1 proposed grading of Profile

Appendix 4 ~ Option 2 Proposed Layout drawing MP188-P-100.2

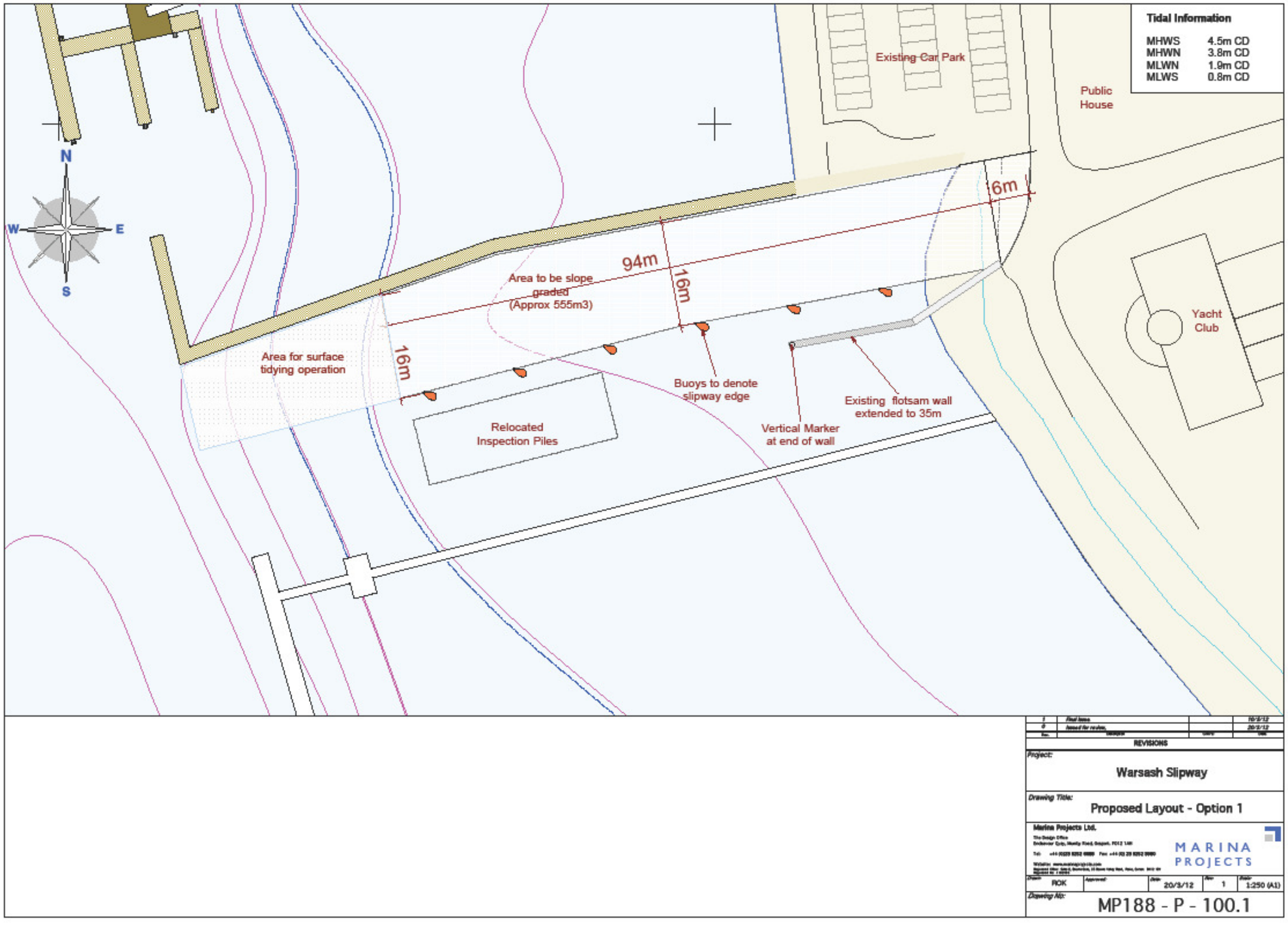
Appendix 5 ~ Option 2 & 3 proposed grading of Profile

Appendix 6 ~ Option 3 Proposed Layout drawing MP188-P-100.3

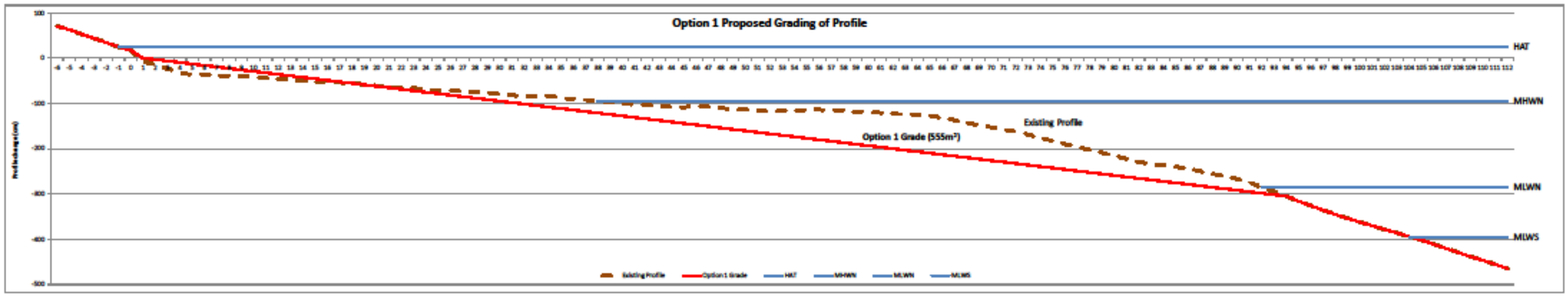
Appendix 1 ~ Existing Slipway profile



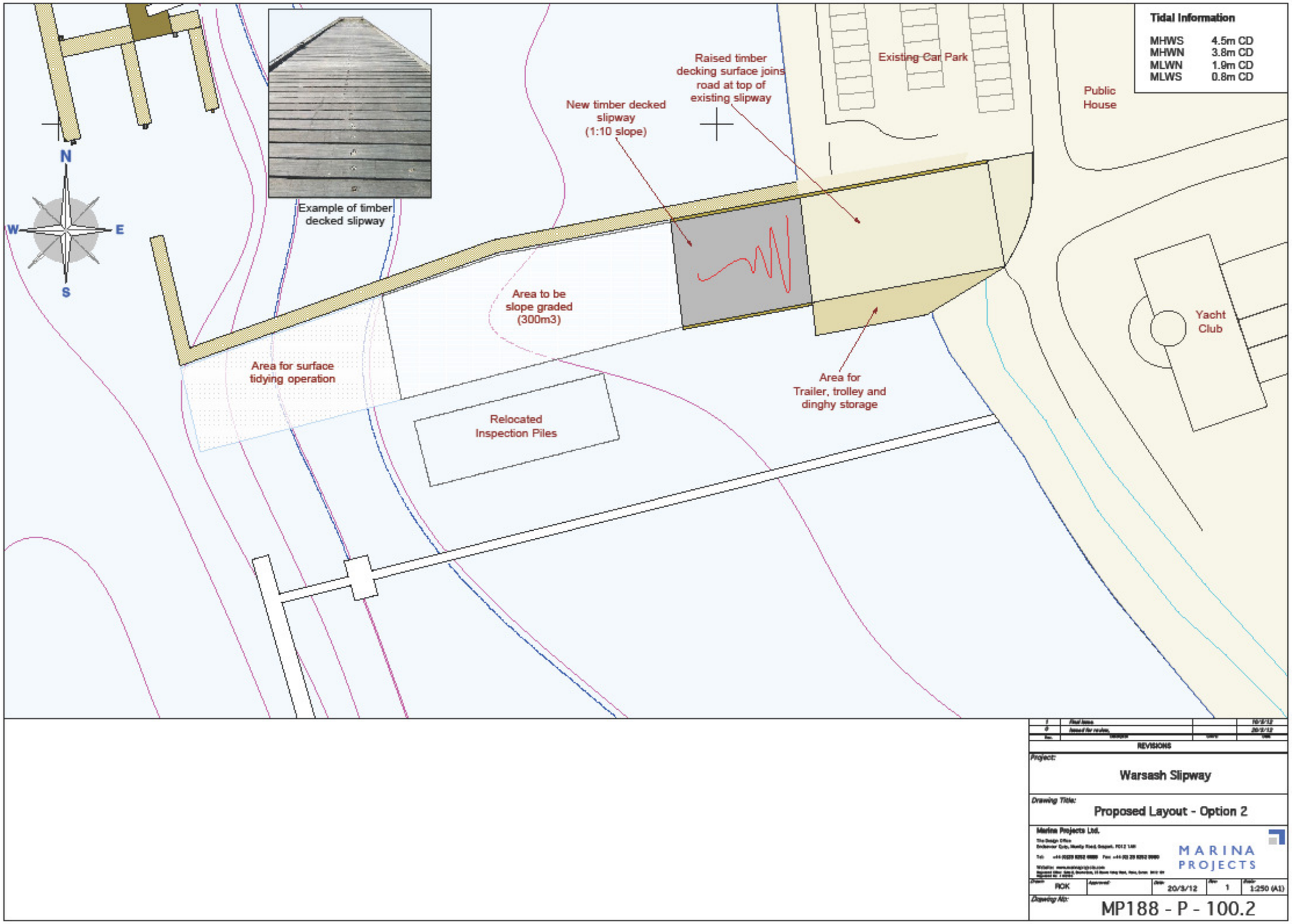
Appendix 2 ~ Option 1 Proposed Layout drawing MP188-P-100.1



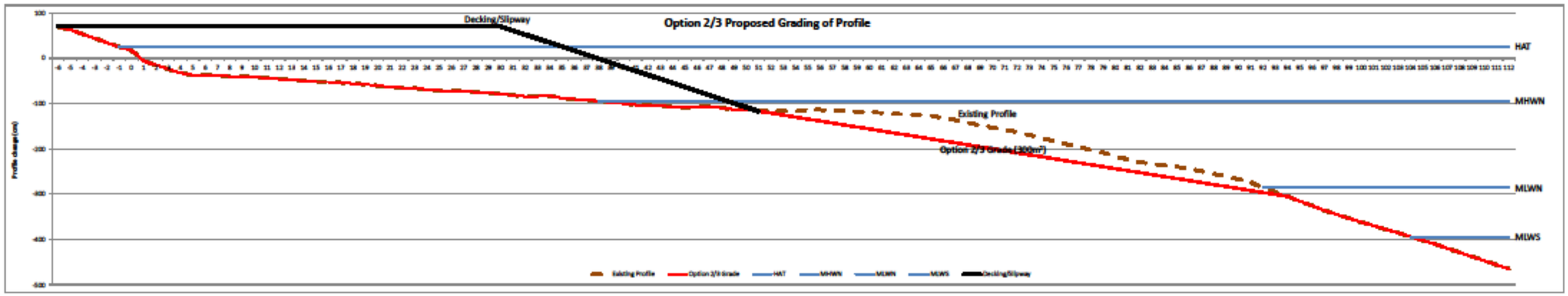
Appendix 3 ~ Option 1 proposed grading of Profile



Appendix 4 ~ Option 2 Proposed Layout drawing MP188-P-100.2



Appendix 5 ~ Option 2 & 3 proposed grading of Profile



Appendix 6 ~ Option 3 Proposed Layout drawing MP188-P-100.3