

HAMMERSMITH BRIDGE TEMPORARY FERRY

ARCHAEOLOGY ASSESSMENT

**Prepared for Rolfe Judd Planning
On behalf of
Transport for London**

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Summary

The purpose of this report is to identify the archaeological potential of deposits on the application site and to consider the proposed scheme's effect on them. The report will outline the resulting mitigation measures that could be employed to off-set the effect (Fig. 1).

The proposed scheme involves the construction of two temporary ferry piers on floating pontoons secured in place in the river by piles. They are located downstream of Hammersmith Bridge. Access to the pontoons from the riverbanks via temporary walkways. One pier work site is located on the Hammersmith bank (TQ 23089 78003) and the other on the Barnes bank (TQ 22993 77985).

The research shows that the work sites do not contain any Scheduled Ancient Monuments and do not lie within a Designated Archaeological Area as defined in Schedule Ancient Monuments & Archaeological Areas Act 1979. The Hammersmith bank does, however, lie within the Hammersmith and Fulham 'Archaeological Priority Area' (APA) and the Winslow Road APA as defined by the London Borough of Hammersmith and Fulham. These APAs tier levels are currently under review. The Barnes riverbank and foreshore lie within the Thames Foreshore and Bank APA (Tier II).

Nonetheless, the baseline data indicates that there is a low potential for significant archaeology in the vicinity of the work sites. Further the design of the piers has only a limited impact on potential archaeology. Given these circumstances it is suggested that archaeological mitigation could be administered by a planning condition attached to any permission granted.

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ARCHAEOLOGY ASSESSMENT

1. INTRODUCTION

- 1.1 Mills Whipp Projects has been commissioned by Rolfe Judd Planning on behalf of Transport for London (TfL) to prepare an archaeology assessment for the proposed temporary ferry crossing on the River Thames at Hammersmith (Fig.1). It is intended that this assessment will accompany the planning application.
- 1.2 It is proposed to construct two temporary ferry piers on floating pontoons secured in the river by piles. The northern pier's work site is located on the Hammersmith bank (TQ 23089 78003) and is 0.52ha in area and the southern on the Barnes bank (TQ 22993 77985) and is 0.35ha in area. The piers are accessed via temporary walkways from the riverbanks. The subject site (hereafter 'the site') covers the work sites on both the north and south riverbanks and foreshores (Fig. 1). Proposed designs are shown on Figures 6 to 10. Tide levels on the figures are shown in 'Chart Datum' which is 1.68m below Ordnance Datum.
- 1.3 The temporary ferry crossing will enable pedestrians and cyclists to cross the River Thames safely during the restoration of the Hammersmith Bridge. The 'Department for Transport's Hammersmith Bridge Taskforce determined that a temporary ferry service would be the best means of restoring a river crossing for pedestrians and cyclists at this location in the short term'. TfL's previous plans for a temporary bridge were therefore put on hold. The plans had reached an advanced stage and so a significant amount of work associated with the temporary bridge has been used to inform these applications' (Rolfe Judd, 2021, 10). In the case of archaeology, baseline archaeological information has been repurposed from the previous Archaeological Statement (Pell Frischmann & AC Archaeology, 2020). The effects of the construction works on potential archaeology has been analysed and mitigation measures considered in order to off-set construction impact (harm).
- 1.4 Rolfe Judd, acting on TfL's behalf, have issued the Pell Frischmann / AC Archaeology report to Mills Whipp Projects to use as a database for an Archaeological Assessment examining the archaeological implications of that proposed scheme. The Gazetteer (Appendix 1) is based on the Appendix C Summary of Heritage Assets and the Planning Background (Appendix 3) is taken from their report (Pell Frischmann / AC Archaeology). The gazetteer's study area covers both the Hammersmith and Barnes bank of the Thames and the adjacent areas. Also, the results of Compass Archaeology's walkover survey in 2020 have been drawn on in order to assess the potential archaeological significance of the foreshore (Pell Frischmann, AC Archaeology, 2020, 17). We also acknowledge Uber Boat and Beckett Rankin for Figures 6 to 10 provided by TfL. On Figure 1 the Hammersmith bank work site is marked in red and the Barnes bank work site in green.

1.5 The chief cartographic sources have been used and some are included as figures. The site does not contain any Scheduled Ancient Monuments nor does it lie within a Designated Archaeological Area as defined in Schedule Ancient Monuments & Archaeological Areas Act 1979. It does, however, lie within the Thames Foreshore and Bank Archaeological Priority Area (APA) on the Barnes bank. This is a Tier II APA defined by Historic England as:

'Used for a local area within which the GLHER holds specific evidence indicating the presence or likely presence of heritage assets of archaeological interest. Planning decisions are expected to make a balanced judgement for non-designated assets considered of less than national importance considering the scale of any harm and the significance of the asset (NPPF 135). Tier 2 APA will typically cover a larger area than Tier 1 and may encompass a group of heritage assets (Historic England 2016 6).

1.6 On the Hammersmith bank there are two APAs within LB Hammersmith and Fulham: Area 4 (Hammersmith Creek, Queen Caroline Street) and area 5 (Winslow Road Area). These APA's are due to be reviewed this year and have as yet not been allocated a tier rating. They are located just beyond the foreshore on the Kempton Park gravel in an area considered to be of high archaeological significance with potential for prehistoric, Roman and mediaeval remains.

1.7 The archaeology assessment adheres to the advice set out in

- Greater London Archaeology Advisory Service, *Guidelines for Archaeological Projects in London, Part 1 Desk-based assessments* (Historic England 2015),
- English Heritage, 1991 - *Management of Archaeological Projects*
- Chartered Institute for Archaeologists 2017, *Standards and guidance for historic environment desk-based assessment*, Published December 2014, updated January 2017, Reading
- Chartered Institute for Archaeologists 2014a, *Standards and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment*, Published December 2014, Reading.

2. ARCHAEOLOGICAL BACKGROUND (Fig.2)

Geology and Topography

- 2.1 Basal geology is composed of London Clay. On the northern bank of the Thames the foreshore this is overlain by drift deposits of floodplain gravel and in places riverine alluvium. Inland of the foreshore drift deposits forming gravel terrace deposits are present (BGS Sheet 270). The gravels are formed of Pleistocene fluvial sediments deposited by the early River Thames arranged in flights or gravel terraces representing the remains of former floodplains. Those adjacent to the temporary piers' riverbanks are of Kempton Park Gravel which forms one of the youngest terraces. Within the main river channel the riverine alluvial deposits can shift under storm conditions as the current ebbs and flows. On the Barnes bank the British Geological Survey indicates that alluvial material is composed of sand, silt and clay overlying Kempton Park Gravel.
- 2.2 The foreshore and alluvial riverine deposits shift as tidal surges and storm conditions produce increased flow levels. This action can not only reveal new features previously buried but can move and rebury other features and chance finds dredged from the river could have been deposited some distance away from their find spot. In recent years the Thames' foreshore has been recognised as a high value heritage asset and the Thames Discovery Project and the Thames Archaeological Survey (TAS) have recently undertaken organised surveys of the foreshore using professional archaeologists alongside community volunteers...the Bank and foreshore on the south side of the river has been designated as the Thames Foreshore and Bank Archaeological Priority Area' (Pell Frischmann, AC Archaeology 2020, 13).
- 2.3 A walkover survey in 2020 recorded the foreshore at low tide. On both banks it was composed of shingle and gravel with areas of silt and sand (Pell Frischmann , AC Archaeology 2020 17).
- 2.4 On the northern bank the Hammersmith Creek drains into the Thames while a buried palaeochannel may lie in the vicinity of Winslow Road just downstream of the proposed works site. Palaeoenvironmental sampling was carried out at Crisp Road / Queen's Wharf immediately east of Queen Caroline Street. In all cases the boreholes recorded made ground sealing Kempton Park Gravels. The gravels were recorded at between 0.5m OD to 1.4m OD towards the river rising to 3.9m OD further away from the river. There was no evidence for organic alluvial horizons (Pell Frischmann, AC Archaeology, 2020, 23).
- 2.5 In order to accommodate the ferryboats the temporary piers are located beyond the foreshore at the edge of the main river channel offering access to deeper water beyond the tidal reach. The Hammersmith bank of the river just downstream of the bridge is relatively shallow for some distance while deep water lies closer in on the Barnes bank.

Prehistoric

- 2.6 No entries of Palaeolithic date are listed within the GLHER for the study area. After the early post-glacial period, the landscape was dominated by a Mesolithic woodland environment occupied by hunter-gatherers for whom the Thames margins would have provided ideal habitat for wild fowling and fishing.
- 2.7 Mesolithic (c. 10,000 – 4,000 BC) and Neolithic (c. 4,000 – 2,000 BC) flint tools have been recovered the marginal areas of the Thames but in the study area there is very little evidence for this period. A scatter of undated flint flakes is listed in the GLHER from the south foreshore c.300m downstream of Hammersmith Bridge (Gaz. ref. 15) and various prehistoric finds are listed in the study area including an undated antler hammer (Gaz. ref. 1), three handaxes and a cleaver from the river (Gaz. ref. 16). It is also noted that an undated trepanned skull and other human bones have been recovered from the river (Gaz. refs. 6 and 7).
- 2.8 During the Neolithic period (c. 4,000 – 2,000 BC) the hunter-gatherer culture was replaced by farming communities based around settlements in areas cleared of woodland for crops to be grown. For the first time communal monuments appeared along with ceramics. Later Neolithic finds tend to concentrate on the gravel terraces and brickearth areas e.g. the 'ritual landscape' on the west London gravel terraces (English Heritage 2000 65 & 70) while the Thames margins provided areas for wildfowling and fishing. The Kempton Park gravel would have been attractive for early settlement adjacent to but beyond the river's marginal ground, although there are no GLHER entries confirmed for this period listed within the study area.
- 2.9 Technological advances initiated in the Bronze Age (c. 2,000-750 BC) saw an increase in the use of bronze for tools and increasing social complexity reflected in the first indications of land tenure patterns in some parts of the country. An agricultural economy is likely to have developed within a landscape of small farms and settlements on the gravels and river valley locations are considered important. The Thames margins would have provided important resources including fuel, building materials and food for settlements located further inland on the gravel terraces.
- 2.10 During the Bronze Age the frequency of artifacts recovered from the River Thames indicates the possibility of ritual votive offerings associated with the river. A number of artefacts 'have been recorded within the vicinity of the proposed works, many of which are only loosely provenanced. Stag antlers and a Bronze Age rapier blade...were found during works associated with the construction of the original suspension bridge in 1825' (AC Archaeology 2020, 13) (Gaz. ref. 2). Just upstream of Hammersmith Bridge two Bronze Age spearheads were recovered from the river (Gaz. ref. 3) while approximately 300m further downstream a possible copper ingot was recovered (Gaz. ref 15). AC Archaeology list a 'Bronze Age phalerae (a disc used to decorate a

horse harness, Site 6) found on the south side of the river (AC Archaeology 2020 Appendix C, site 6).

- 2.11 Although population figures continued to grow during the Iron Age (c. 600 BC – AD 43) putting a strain on land tenure patterns, the river margins would have continued to provide significant resources for settlements further inland from fishing, wild fowling and pasture. Iron Age artefacts have been recovered from the river in the Hammersmith Bridge area including an Early Iron Age dagger with sheath and two groups of Iron Age coins from the southern end of Hammersmith Bridge (Gaz. ref. 4). An Early to Mid Iron Age sword is also listed from a find spot approximately 500m downstream of the Bridge (Gaz. re. 15).
- 2.12 A prehistoric settlement may lay approximately 150m downstream of Hammersmith bridge, now part of the Winslow Road Archaeology Priority Area (APA No. 5) on the Hammersmith bank. Further, the finds recorded by the Thames Discovery Programme and the human remains from this section of the Thames listed in the GLHER datasets indicate not only the ritual importance of the river but also supports the suggestion of nearby settlement.

Roman

- 2.13 The site is situated in the hinterland of the Roman town of *Londinium* which lay approximately 6km to the east of the Hammersmith Bridge. The main route west out of Londinium to Silchester ran approximately 1km north of Hammersmith following the modern Goldhawk Road. A more minor road may have run through Kensington and Hammersmith to join the main road further west at Chiswick but still running well north of the study area.
- 2.14 On both the Hammersmith and Barnes sides of the river there is no evidence for Roman land use and the GLHER for the study area has only one entry; Roman coins and pottery recovered from the foreshore in the vicinity of Queen Caroline Street contributing towards its APA status.

Saxon

- 2.15 Following the withdrawal of the Roman army in 410 AD the province experienced a period of socio-economic decline. Generally, Saxon material is sparse and large tracts of forest may have persisted while settlement patterns again generally favour the lighter soils on the gravels. A settlement may have been founded on the Kempton Park gravel terrace on the Hammersmith bank beyond the foreshore and the tidal reach. The GLHER suggests it may have been situated in the vicinity of Queen Caroline Street and Wilmslow Road (Gaz. ref. 8). This area lies within the Hammersmith Creek, Queen Caroline Street and Broadway Archaeological Priority Area and the Winslow Road Archaeology Priority Area (APA No.4 and 5).

Mediaeval

- 2.16 An Anglo-Scandinavian decorated plaque of unknown purpose is listed in the GLHER as found in the Thames as a chance find at Hammersmith (Gaz. ref. 5). On the Hammersmith bank of the Thames a mediaeval settlement lay in the vicinity of Queen Caroline Street and Wilmslow Road (Gaz. ref. 8) (APA No.4). A mediaeval house and gardens were built by the river 'on land granted to the Chancellor of St Paul's by Ralph de Ivanghoe...it was enlarged in the 17th century by the Slade family' (Pell Frischmann, AC Archaeology 2020 16) (Gaz. ref. 14). It lay just beyond the northern side of the work site. Mediaeval timbers on the foreshore have been recorded just upstream of Hammersmith Bridge on the Barnes bank (Gaz. ref. 9). Another timber structure of possible mediaeval date is recorded in this area (Gaz. ref. 16). It is composed of four posts and may possibly be a fish trap.
- 2.17 Such archaeological evidence indicates mediaeval occupation and landuse in the Hammersmith Bridge section of the Thames on both the Hammersmith and Barnes banks.

Post mediaeval

Hammersmith bank

- 2.18 Rocque's map of 1746 (Fig. 2) shows the study area before the natural topography and historic landscape was obscured by the modern suburb. On the Hammersmith bank, Queen Caroline Street and the upstream riverbank is shown lined with buildings being the antecedent to Lower Mall. A building is shown in the upper foreshore in the vicinity of the proposed works area is. To the south of Queen Caroline Street is an area of market gardens. On its south side the 17th century house (later Brandenburg House) is shown. This area is now part of the Winslow Road Archaeology Priority Area (APA No.5).
- 2.19 Foreshore features can include such structures as docks, hards, fish traps and jetties. On the Hammersmith bank a concrete slipway leads to the low water line. It was recorded by the Thames Archaeology Survey (TAS) and by Compass Archaeology in their walkover survey (Pell Frischmann, AC Archaeology, 2020, 17). It is also shown on the Ordnance Survey map of 1869 just upstream of the Hammersmith works site (Fig. 3). The settlement around Queen Caroline Street is now shown to be built up with terraced housing on either side. Chancellor Wharf is shown on the southern side of the proposed works site.
- 2.20 A brick culvert was 'observed in 2002 on the inside of the waterfront wall' just downstream of the Hammersmith work site (Gaz. ref. 12). The TAS also recorded an inlet just downstream of this point which led from Queen Caroline Street at Chancellor Wharf (Pell Frischmann / AC Archaeology 2020 16). A bargebed and brick riverside wall were also recorded on the foreshore just downstream of the works site while approximately 150m downstream of the

Hammersmith works site artefact scatters were recorded on the foreshore in 2007.

- 2.21 During the walkover survey in 2020 on the foreshore frequent 'pieces of stone and other ceramic building material, particularly near low tide level were observed' (Pell Frischmann, AC Archaeology, 2020, 17). Two structures were also observed - the modern slipway shown on the OS map of 1869 (Fig. 3) and a smaller modern structure at the southern end of the slipway.

Barnes bank

- 2.22 On the Barnes bank, approximately 100m upstream of the bridge, the GLHER dataset lists a group of timbers which may be the remains of a boat or fish trap (Gaz. ref. 9). Approximately 250m upstream of the Hammersmith bridge a number of features were recorded on the foreshore by the TAS which included timber jetty, fish trap, a scatter of building material and several timbers of uncertain function (Gaz. ref. 16). Approximately 300m downstream of the bridge the remains of structures associated with the Harrods Depository were recorded which included a wharf, crane and steps (Gaz. ref. 15).
- 2.23 Rocque's map of 1746 shows that the riverbank in the vicinity of the Barnes pier was undeveloped and there is no indication of riverside defensive structures, a towpath or riverside wall. (Fig. 2). By 1869 the Ordnance Survey map indicates that the riverbank has been developed with a towpath and tree planting on the landward side of the foreshore (Fig. 3). Hammersmith bridge is now shown. By 1896 the Ordnance Survey map (Fig. 4) shows a formalised towpath and possibly a wall at the landward side of the foreshore. A line of hatching also suggest an embankment behind the towpath which is enlarged at the Hammersmith Bridge. This may represent a cut for the construction of the bridge's foundations. The Ordnance Survey map also marks the 'Hammersmith Pier' on the downstream side of the bridge at the first pier base from the Richmond end, extending towards, but not reaching, the proposed works site. A similar situation is shown on the 1916 OS map (Fig. 5) but with the Riverview Gardens now built along the rear of the towpath. This general arrangement still persists. The towpath now lies on Castelnau and Metropolitan Open Land (MOL) (Rolfe Judd, 2021, 4).
- 2.24 During the walkover survey in 2020 on the southern foreshore the masonry footings for Hammersmith Bridge pier were observed. Fragments of stone and other ceramic building material were noted mainly upstream of the bridge. Of note is a 16th / 17th century pottery sherd from a redware bowl recovered from just below the low tide level (Pell Frischmann, AC Archaeology, 2020, 19).

3. ARCHAEOLOGICAL POTENTIAL

Archaeological Survival

Hammersmith bank

- 3.1 Archaeological survival is considered to be varied across the Hammersmith work site. It is likely that the construction of modern Queen Caroline Street and Riverside Studios and their associated services and pavements will have severely truncated the substrata in this part of the proposed works site (Fig. 1). Deposits on the foreshore, however, will not have been truncated by modern developments and the survival of 19th century structures indicates that large structures can also survive flood/storm conditions. Other less substantial deposits and material may, however, be moved, 'rolled' and the original context lost. Within the main river channel, deposits may also be subject to erosion and redeposition during flood conditions altering the topography and moving material around.

Barnes bank

- 3.2 On the Richmond work site the area has remained open undeveloped ground and truncation from modern developments would be limited to the development of the towpath and Hammersmith Bridge. Within the main river channel, deposits may be subject to erosion and redeposition altering the topography and moving material around.

Archaeological Potential

Palaeoenvironmental potential

- 3.3 The potential for significant palaeoenvironmental deposits on the proposed works sites is uncertain as little work has been carried out in the Hammersmith section of the Thames. This is because the lack of alluvial deposits and the narrowness of the floodplain means that the potential for palaeoenvironmental evidence is low (Pell Frischmann, AC Archaeology 2020 23).
- 3.4 At Crisp Road / Queen's Wharf east of Queen Caroline Street, geotechnical boreholes recorded made ground directly over Kempton Park gravels. No deposits suitable for palaeoenvironmental analysis were recorded. At Winslow Road a palaeo-channel was recorded although this is unpublished (ibid). The potential for post-glacial deposits containing environmental material in silted up channels is considered to be medium.

Hammersmith bank

- 3.5 The Archaeology Priority Area (No.4) is based on the possible Saxon and mediaeval settlement of Hammersmith around the creek mouth and along the river front and also based on the Roman coins and pottery from the foreshore. Further east at Winslow Road the APA (No.5) is based on a possible prehistoric and Saxon settlement and the 17th century mansion, subsequently Brandenburg House and the 18th century theatre. Although Roman pottery and coins are listed from the foreshore the Saxon and mediaeval settlements, the other heritage assets lie inland of the proposed work site and as such are considered to have a low significance.
- 3.6 Rocque's map of 1746 shows a large building at the southern end of Queen Caroline Street adjacent to the foreshore on the proposed work site. But, given the construction of Queen Caroline Street and the recently built Riverside Studio in this area, it is likely that any potential remains survive in a severely fragmented state. The potential for significant archaeology is considered to be low.
- 3.7 Further south on the foreshore the walkover survey recorded the 19th century slipway in the vicinity of the work site. Other archaeological features and finds from the foreshore are recorded further upstream of the Hammersmith Bridge (Gaz. refs. 9 & 16) and further downstream of the work site (Gaz. ref. 10).
- 3.8 From the evidence examined, the potential for significant archaeology on the proposed works site is considered generally low. The potential for Roman finds is medium although as they are likely to be unstratified their archaeological significance is low. Unstratified finds have also been recovered from the Thames during dredging many of which may have been votive artifacts. Such artefacts would have been directly placed in the water and have no associated archaeological context. As such their value is intrinsic and does not relate to any archaeological context and so their individual significance is considered to be moderate although collectively it is more significant.

Barnes bank

- 3.9 On the Barnes bank historic maps indicate there has been little development in this area with the exception of the 19th century Hammersmith pier which lay just upstream and outside the proposed work site. GLHER entries in the vicinity of the proposed works site (Gaz. refs 1, 3 & 5) are located within the main river channel with the exception of the Iron Age dagger which is from the foreshore (Gaz. ref. 4). Such finds are likely to be placed votive artefacts and their significance is considered to be moderate. The potential for significant archaeology on the proposed work site is considered to be low.

4. IMPACT ASSESSMENT

- 4.1 In order to minimise construction impact ‘the Temporary Ferry terminals are prefabricated structures leaving minimal construction to be completed on site. Once assembled the superstructure will be sailed down the River Thames to be installed from the river. The river supports will be constructed using a barge to install the piles, a second barge will be used to deliver materials’ (Rolfe Judd, 2021, 34).

Hammersmith bank (Figs. 6 & 7)

- 4.1 Hammersmith temporary pier is a pontoon approximately 30m long and 6m wide located at the edge of the main river channel beyond the foreshore to provides access to deeper water (Fig. 6). It is connected to the riverbank by a floating walkway which is to land on the concrete slipway at the end of Queen Caroline Street. An aluminium gangway connects the slipway, which is seldom used and is closed off with timber flood boards, to a lightweight steel ramp 17.5m long using a transition platform. This provides access from the slipway over the flood boards to Queen Caroline Street (Beckett Rankine, 2021, 22).
- 4.2 The floating walkway is 125m long and will span between the flood defensive wall and the pier (Fig. 7). It will be restrained by 12 tubular piles up to 0.50m in diameter to minimise disturbance to the river environment. Typically, they will be driven into the riverbed to a depth of 3m to 4m. Most will be installed via a jack-up barge, however, those on the upper foreshore will be inserted using ‘an excavator utilised as a piling gate’ (Under Boat, 2021, 6). An aluminium gangway will be attached at either end of the walkway to connect with the pier and the slipway. The pier is formed from a repurposed barge to be held in place by a pair of spud legs - ‘tubular piles dropped through the deck of the barge with a shallow embedment into the riverbed’ (Beckett Rankin, 2021, 5).
- 4.3 Construction impact on archaeology will be limited to:
- Pile probing via multi-cat and ploughing seabed where required
 - the twelve steel piles (0.50m diameter) retaining the walkway
 - two spud legs (0.50m diameter piles) retaining the pontoon.
- 4.4 The design is specifically arranged in order to be a temporary structure that may be dismantled and removed with ease. Most of these works are to ‘contained to marine operations for installation’ (Uber Boat, 2021, 4). Minor civil works will, however, be carried out on land at the Queen Caroline Street end of the pier for the installation of the ramp and transition platform on the existing concrete slipway. To facilitate this a small temporary compound for welfare, plant and equipment will be located on adjacent green space on the landward side of Lower Mall.

Barnes bank (Figs. 8 – 10)

- 4.5 Barnes temporary pier is a pontoon which reuses the existing Savoy pier which has been modified. It is approximately 40m long and 8m wide. It will be restrained with a pair of spud legs – piles 0.50 in diameter and 16m long (Fig. 9). It will be connected to the riverbank via a 35m long by 2.5m wide aluminium linkspan. This will be founded on a concrete ground beam bankseat on the tow path at the top of the embankment (Fig. 9). The bankseat will be 1.5m by 4.5m and 0.75m deep.
- 4.6 The linkspan connects with a lightweight raised walkway which will be located over the landside towpath as the towpath 'is located below flood defence level and floods on large tides'. The 45m long raised walkway is constructed from a lightweight steel frame installed over the towpath to allow dry access upstream from the pier's linkspan to the path (Hammersmith ramp) at the side of Hammersmith Bridge leading to Riverview Gardens and Hammersmith Bridge Road (Fig. 8) (Beckett Rankine, 2021, 24). It is to sit on the towpath using supporting legs with a timber retaining structure on the landward side (Fig. 10).
- 4.7 The Hammersmith ramp will be regraded to create a slope of 1:20 leading up the embankment to Riverview Gardens. This will require the ground at the lower section of the path to be built up by approximately 800mm and that at the upper section to be reduced by approximately 200mm (Fig. 10). The path will have a gravel surface.
- 4.8 Construction impact on archaeology will be limited to:
- the two spud legs (0.50m diameter piles) retaining the pontoon,
 - the linkspan's bankseat - 1.5m by 4.5m and 0.75m deep ,
 - the timber retaining structure for the lightweight walkway
 - the regrading for the footpath – reduced level at top third of path by approximately 200mm
- 4.9 The design is specifically arranged in order to be a temporary structure that may be dismantled and removed with ease as set out in the Planning Statement:

'The proposed piers have a temporary lifespan and have been designed so that once the Hammersmith Bridge has been repaired, they can be removed without intrusive and lasting impacts to the area. The piers and connections into the wider riverbed have been designed so that they are simply removed once they are no longer required. This will ensure no long-lasting impacts on the riverbed ecology.'

The landside works are minimal and once the necessary ramps and access points are removed, the landscaping for the site will be reinstated (Rolfe Judd, 2021, 12).

Upon conclusion of the ferry service the entire superstructure of the piers will be fully removed, including the brow, abutments, ramps and pier structures.

Most substructure works will be fully removed with only the river piles and abutment piled foundations terminated below ground level, protected and covered. (Rolfe Judd, 2021, 37)

Conclusion

- 4.10 Potential impact on the foreshore and main river channel from the construction of the proposed temporary pier scheme is considered to be low. Engineering impact is anticipated to result in a small change in our ability to understand and appreciate the asset and its historical context, character and setting. On the Hammersmith bank this is mainly limited to the piles while on the Barnes side it is limited to the two spud piles and the bankseat at the top of the embankment. The impact resulting from the regrading works for the path (Hammersmith ramp) and the timber posts retaining the raised walkway on the Barnes side of the river is considered to be negligible.
- 4.11 The piles will have a direct, permanent and adverse effect on any archaeological remains within their footprint. The baseline data indicates that the main river channel and foreshore may contain prehistoric votive artifacts. There are eight examples of such find spots listed in the study area (Gaz. refs. 1-7 and 15) over a 500m length by 200m wide section of the River Thames. In archaeological terms this assemblage is significant, however, the probability of a pile directly impacting on one is extremely low and potential impact/effect from piles is therefore considered to be negligible with regard to this heritage asset.
- 4.12 As the pontoons are located on the edge of the main river channel in order to access deep water, their retaining spud piles will not affect the foreshore. The remaining piles are mostly to be inserted using a jackup barge. This will be held in position using long support legs. 'The jackup is manoeuvred (self-propelled or by towing) into location with its legs up and the hull floating on the water. Upon arrival at the work location, the legs are jacked down onto the seafloor' (Beckett Rankine, 2021, 5). Impact from the jackup barge will be limited. Pile probing, piling and 'seabed ploughing', if necessary, would impact on any buried archaeological deposits on the riverbed and foreshore.
- 4.13 The walkover survey recorded two structures on the Hammersmith bank, but these were outside the work site, and none on the Barnes bank. These structures on the Hammersmith bank will not be affected by plant installing piles at the upper foreshore area.

5. MITIGATION MEASURES

- 5.1 As both the work areas lie within archaeology priority areas (APAs) local plan policy requires, where possible, a pre-determination evaluation of the site to be carried out. In some cases this is not possible for practical reasons, for example, where access is not possible or for Health and Safety reasons. .
- 5.2 In the case of the Hammersmith Bridge Temporary Ferry scheme there are no intrusive works within the APA on Queen Caroline Street although the pile for the transmission platform lies close to the APA's southern boundary. On the Barnes bank intrusive works within the APA involve the insertion of the two spud legs on the edge of the main river channel and the bankseat at the top of the embankment. It is, therefore, suggested that archaeological mitigation could be undertaken after the grant of planning permission to be administered through a planning condition.
- 5.3 It is suggested that mitigation measures could include:
- Barnes work site
- trial pit to evaluate with follow-up excavation as necessary for bankseat
 - possible watching brief during the excavations for the bankseat
 - watching brief during ground reduction for the regraded pathway
 - watching brief during insertion of spud legs and observation / analysis of available arisings
- Hammersmith work site
- trial pit to evaluate with follow-up excavation as necessary at site of highest pile pair above highwater level on foreshore
 - watching brief during pile probing and observation / analysis of available arisings
 - watching brief during insertion of piles and observation / analysis of available arisings
 - watching brief during insertion of spud legs and observation / analysis of available arisings
- 5.4 To ensure that the special interest of heritage assets is safeguarded in accordance with the requirements of the London Plan and local plan strategy, a written scheme of investigation (WSI) would be prepared for archaeological works which would be submitted to the local planning authority for approval. No development would take place other than in accordance with the agreed WSI until the archaeological mitigation was completed to the appropriate point.

6. CONCLUSIONS AND RECOMMENDATION

- 6.1 From the evidence examined during the preparation of this document, there is no indication that archaeological deposits are present on the work sites which merit preservation in situ. The results of the archaeological investigations in the vicinity of the work sites also suggest there is a low/medium potential for significant archaeology.
- 6.2 Impact on the foreshore and main river channel from the pre-construction, construction and operational phases of the proposed temporary pier scheme is considered to be low. Engineering impact is anticipated to result in a small change in our ability to understand and appreciate the asset and its historical context, character and setting.
- 6.3 A programme of archaeological investigation works involving trial pit evaluation /follow-up excavation and watching brief is proposed to off-set (mitigate) the harm to potential archaeological assets. This could be undertaken following the grant of planning permission and administer through a planning condition. The mitigation measures would result in a negligible / minor adverse residual impact and accord with the planning legislation set out in Rolfe Judd's planning statement (Rolfe Judd, 2021, 26).

APPENDIX 1: GAZETTEER

This Gazetteer, as noted in the Introduction, is based on the report prepared by Pell Frischmann / AC Archaeology provided to MWP by TfL.

Gaz.ref: 1
NGR: TQ 2300 7310
HER: MLO22244
Description: Antler hammer from river

Gaz.ref: 2
NGR: TQ 2300 7811
HER: MLO26794
Description: Stag antlers and Bronze Age rapier found in river

Gaz.ref: 3
NGR: TQ 2290 7805
HER: MLO109315
Description: Two Bronze Age spear heads, one with shaft, from river

Gaz.ref: 4
NGR: TQ 22841 7790
HER: MLO109310
Description: Early Iron Age dagger and sheath from river

Gaz.ref: 5
NGR: TQ 2300 7310
HER: MLO26797
Description: Anglo-Scandinavian decorated plaque from river

Gaz.ref: 6
NGR: TQ 2295 7810
HER: MLO26014
Description: Trepanned skull from river

Gaz.ref: 7
NGR: TQ 2292 7819
HER: MLO109008,9
Description: Human bones from river

Gaz.ref: 8
NGR: TQ 23110 7830
HER: DLO35696, 7
Description: Saxon / med settlement of Hammersmith between Queen Caroline St and Wilmslow Rd

Gaz.ref: 9
NGR: TQ 2282 7809
HER: MLO69856
Description: Post med timbers on foreshore

Gaz.ref: 10
NGR: TQ 2321 7795
HER: MLO99357
Description: Post med structures on foreshore

Gaz.ref: 11
NGR: TQ 2307 7804
HER: A103
Description: Post med bargebed

Gaz.ref: 12
NGR: TQ 2305 7815
HER: HEA1360726
Description: Brick culvert

Gaz.ref: 13
NGR: TQ 2312 7802
HER: A104
Description: River front defence

Gaz.ref: 14
NGR: TQ 2307 7815
HER: MLO68752 ELO13770
Description: Large med and post med house

Gaz.ref: 15 – group indicator

NGR: TQ 2320 7770
HER: MLO109345
Description: Early Mid Iron Age sword from river

NGR: TQ 2315 7770
HER: MLO69879
Description: Scatter of artefacts inc flint flakes

NGR: TQ 2315 7770
HER: MLO69880
Description: Scatter of artefacts inc poss copper ingot

NGR: TQ 2315 7770
HER: MLO69881
Description: Scatter of artefacts inc black burnished ware

NGR: TQ 2315 7770
HER: MLO69882-4, 66279, 69866
Description: remains of structures associated with the Harrods Depository were recorded which included a wharf, crane and steps

Gaz.ref:16 – group indicator

NGR: TQ 2272 7815

HER: MLO69853

Description: Timber jetty

NGR: TQ 2268 7816

HER: MLO69852

Description: Timber structure, poss fishtrap

NGR: TQ 2250 7820

HER: MLO26789

Description: Three handaxes, one cleaver found in river

APPENDIX 2: Sources Consulted

Beckett Rankine / Uber Boat / Anthony Carlile Architects, 2021, Hammersmith Temporary Ferry, Design and Access Statement

British Geological Survey, sheet 270

English Heritage, MoLAS, 2000 The Archaeology of Greater London, An assessment of archaeological evidence for human presence in the area now covered by Greater London

Historic England, 2016, Greater London Archaeology Priority Area Guidelines

Mills, P., and Whipp, D., (undated), The Archaeology of Hammersmith and Fulham Pell Frischmann / AC Archaeology, 2020, Hammersmith Temporary Pedestrian and Cycle Bridge, Planning Application, Archaeological Statement, report ref: 102963-PEF-BAS-ZZZ-REP-AC-00002, for Transport for London

Rolfe Judd, 2021, Hammersmith Bridge Temporary Ferry, Planning Statement, RJP:P08106

Uber Boat, 2021, Hammersmith Temporary River Crossing, Construction Environmental Management Plan (CEMP)

APPENDIX 3: PLANNING BACKGROUND

This planning background, as noted in the Introduction, is taken from the report prepared by Pell Frischmann / AC Archaeology provided to MWP by TfL. Further planning background is provided by Rolfe Judd in their Planning Statement (Rolfe Judd, 2021)

The National Planning Policy Framework

3.1.1 General policy and guidance for the conservation of the historic environment are contained in Chapter 16: Conserving and Enhancing the Historic Environment (Paragraphs 184 - 202 and associated footnotes) of the National Planning Policy Framework (NPPF; Ministry of Housing, Communities and Local Government 2019). It includes designated heritage assets and assets identified by the local planning authority (including local listing). Designated heritage assets are defined as ‘a World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation’ (ibid).

3.1.2 Policies relevant to this scheme are listed below:

Paragraph 184

Heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value. These assets are an irreplaceable resource and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations.

Paragraph 189

In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

Paragraph 190

Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

Paragraph 192

In determining applications, local planning authorities should take account of:

a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;

- b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
- c) the desirability of new development making a positive contribution to local character and distinctiveness.

Paragraph 193

When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Paragraph 194

Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

grade II listed buildings, or grade II registered parks or gardens, should be exceptional;

assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.

Paragraph 195

Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

the nature of the heritage asset prevents all reasonable uses of the site; and

no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and

conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and

the harm or loss is outweighed by the benefit of bringing the site back into use.

Paragraph 196

Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.

Paragraph 197

The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

Paragraph 198

Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

Paragraph 199

Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

Paragraph 201

Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 195 or less than substantial harm under paragraph 196, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

Local Policy

The London Plan

3.2.1 The London Plan 2016 comprises a strategic plan for the economic, environmental, transport and social framework of the city the responsibility for which is shared between the Mayor of London, the London boroughs and the Corporation of the City of London. Relevant policy for the protection of the historic environment is contained in Policy 7.8, as follows;

POLICY 7.8 HERITAGE ASSETS AND ARCHAEOLOGY

Strategic

- A. London's heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.
- B. Development should incorporate measures that identify, record, interpret, protect and, where appropriate, present the site's archaeology.

Planning decisions

- C. Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.
- D. Development affecting heritage assets and their settings should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail.
- E. New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological asset or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that asset.

3.2.2 An ‘Intend to Publish’ update to the London Plan was published by the Mayor of London in 2019. This strengthens the policy held in the previous and the relevant policy contained in this document is as follows;

POLICY HC1 HERITAGE CONSERVATION AND GROWTH

- A. Boroughs should, in consultation with Historic England, local communities and other statutory and relevant organisations, develop evidence that demonstrates a clear understanding of London’s historic environment. This evidence should be used for identifying, understanding, conserving, and enhancing the historic environment and heritage assets, and improving access to, and interpretation of, the heritage assets, landscapes and archaeology within their area.
- B. Development Plans and strategies should demonstrate a clear understanding of the historic environment and the heritage values of sites or areas and their relationship with their surroundings. This knowledge should be used to inform the effective integration of London’s heritage in regenerative change by: 1) setting out a clear vision that recognises and embeds the role of heritage in place-making 2) utilising the heritage significance of a site or area in the planning and design process 3) integrating the conservation and enhancement of heritage assets and their settings with innovative and creative contextual architectural responses that contribute to their significance and sense of place 4) delivering positive benefits that conserve and enhance the historic environment, as well as contributing to the economic viability, accessibility and environmental quality of a place, and to social wellbeing.
- C. Development proposals affecting heritage assets, and their settings, should conserve their significance, by being sympathetic to the assets’ significance and appreciation within their surroundings. The cumulative impacts of incremental change from development on heritage assets and their settings should also be actively managed. Development proposals should avoid harm and identify enhancement opportunities by integrating heritage considerations early on in the design process.
- D. Development proposals should identify assets of archaeological significance and use this information to avoid harm or minimise it through design and appropriate mitigation. Where applicable, development should make provision for the protection of significant archaeological assets and landscapes. The protection of undesignated heritage assets of archaeological interest equivalent to a scheduled monument should be given equivalent weight to designated heritage assets.
- E. Where heritage assets have been identified as being At Risk, boroughs should identify specific opportunities for them to contribute to regeneration and place-making, and they should set out strategies for their repair and re-use.

The Hammersmith and Fulham Local Plan 2018

3.2.3 The Hammersmith and Fulham Local Plan was adopted in February 2018 and is used in conjunction with the London Plan for making planning decisions within the borough. Relevant policy within it is as follows;

POLICY DC8 HERITAGE AND CONSERVATION

The council will conserve the significance of the borough’s historic environment by protecting, restoring and enhancing its heritage assets. These assets include: listed buildings, conservation areas historic parks and gardens, the scheduled monument of Fulham Palace Moated site, unscheduled archaeological remains and buildings and features of local interest. When determining applications affecting heritage assets, the council will apply the following principles:

- a. the presumption will be in favour of the conservation, restoration and enhancement of heritage assets, and proposals should secure the long term future of heritage assets. The more significant the designated heritage asset, the greater the presumption should be in favour of its conservation;

- b. applications affecting designated heritage assets, including alterations and extensions to buildings will only be permitted if the significance of the heritage asset is conserved or enhanced;
- c. applications should conserve the setting of, make a positive contribution to, or reveal the significance of the heritage asset. The presence of heritage assets should inform high quality design within their setting;
- d. applications affecting non-designated heritage assets (buildings and artefacts of local importance and interest) will be determined having regard to the scale and impact of any harm or loss and the significance of the heritage asset in accordance with paragraph 135 of the National Planning Policy Framework;
- e. particular regard will be given to matters of scale, height, massing, alignment, materials and use;
- f. where changes of use are proposed for heritage assets, the proposed use, and any alterations that are required resulting from the proposed use should be consistent with the aims of conservation of the asset's significance, including securing its optimum viable use;
- g. applications should include a description of the significance of the asset concerned and an assessment of the impact of the proposal upon it or its setting which should be carried out with the assistance of a suitably qualified person. The extent of the requirement should be proportionate to the nature and level of the asset's significance. Where archaeological remains of national significance may be affected applications should also be supported by an archaeological field evaluation;
- h. proposals which involve substantial harm, or less than substantial harm to the significance of a heritage asset will be refused unless it can be demonstrated that they meet the criteria specified in paragraph 133 and 134 of the National Planning Policy Framework;
- i. where a heritage asset cannot be retained in its entirety or when a change of use is proposed, the developer should ensure that a suitably qualified person carries out an analysis (including photographic surveys) of its design and significance, in order to record and advance the understanding of heritage in the borough. The extent of the requirement should be proportionate to the nature and level of the asset's significance;
- j. the proposal respects the principles of accessible and inclusive design;
- k. where measures to mitigate the effects of climate change are proposed, the applicants will be required to demonstrate how they have considered the significance of the heritage asset and tailored their proposals accordingly;
- l. expert advice will be required to address the need to evaluate and conserve archaeological remains, and to advise on the appropriate mitigation measures in cases where excavation is justified; and
- m. securing the future of heritage assets at risk identified on Historic England's national register, as part of a positive strategy for the historic environment.

The London Borough of Richmond upon Thames Local Plan

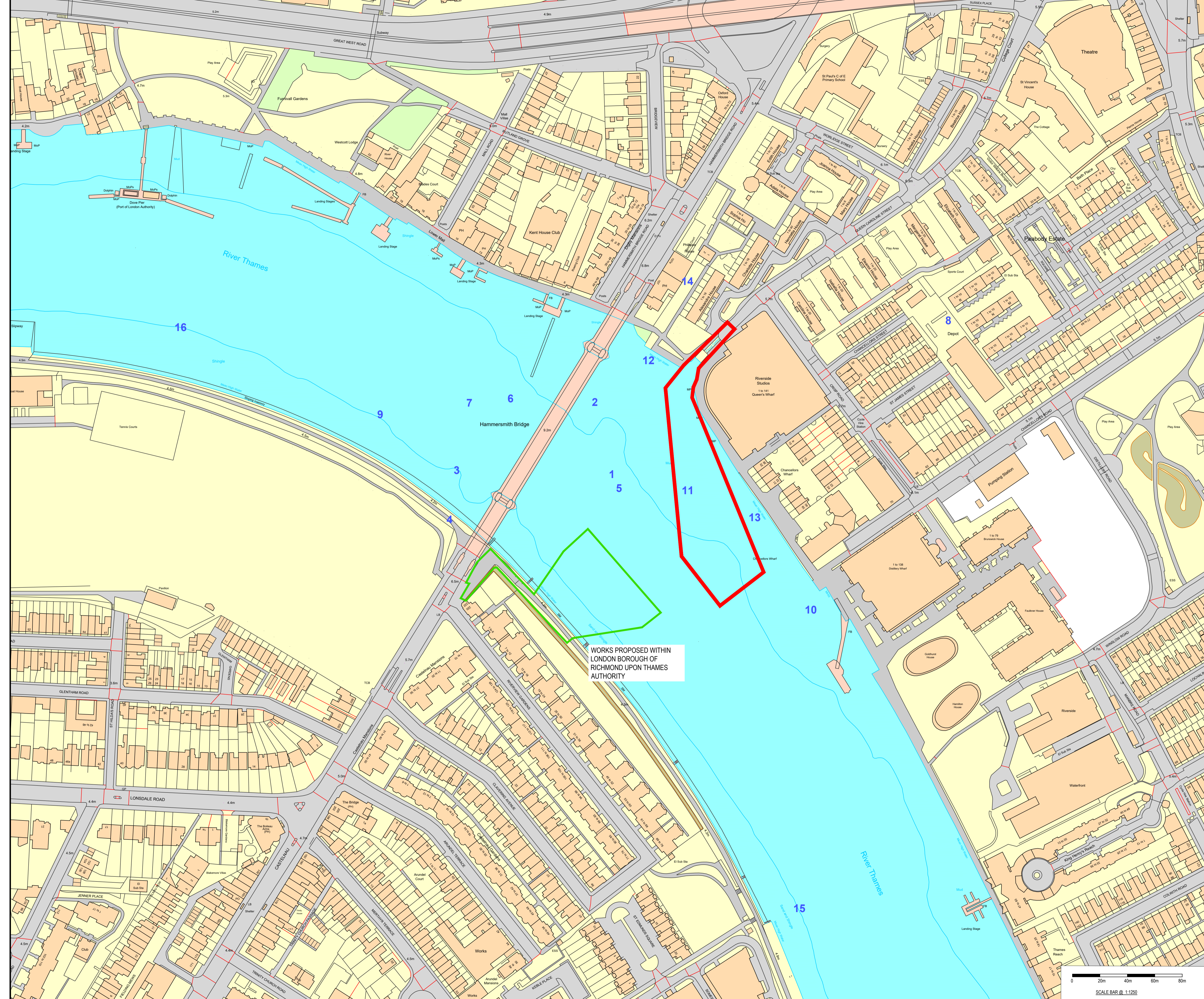
3.2.4 The London Borough of Richmond upon Thames Local Plan, adopted July 2018, contains the following relevant policy;

POLICY LP4 NON-DESIGNATED HERITAGE ASSETS

The Council will seek to preserve, and where possible enhance, the significance, character and setting of non-designated heritage assets, including Buildings of Townscape Merit, memorials, particularly war memorials, and other local historic features.

There will be a presumption against the demolition of Buildings of Townscape Merit

FIG.1 SUBJECT SITE and ARCHAEOLOGICAL BACKGROUND



TIDE LEVELS

HAT	+4.72mOD = +6.40mCD
MHWS	+4.12mOD = +5.80mCD
MHWN	+3.02mOD = +4.70mCD
MLWN	-0.98mOD = +0.70mCD
MLWS	-1.38mOD = +0.30mCD
LAT	-1.68mOD = 0.00mCD

- TIDE LEVELS IN CHART DATUM WHICH IS 1.68m BELOW ORDNANCE DATUM.
- TIDE DATA TAKEN FROM PLA T106 TABLES.
- DEPTHS ARE IN METRES BELOW CHART DATUM, WHICH IS APPROXIMATELY THE LEVEL OF THE LOWEST ASTRONOMICAL TIDE.
- PIER POSITION ARE APPROXIMATE AND TO BE CONFIRMED FOLLOWING A NAVIGATION RISK ASSESSMENT.

REFERENCE DRAWINGS:

2048-BRL-02-XX-DR-C-3001	KEY PLAN
2048-BRL-02-XX-DR-C-3012	HAMMERSMITH PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3013	HAMMERSMITH PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3022	BARNES PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3023	BARNES PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3101	HAMMERSMITH PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3102	HAMMERSMITH PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3103	HAMMERSMITH PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3104	HAMMERSMITH PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3105	HAMMERSMITH PIER - PROPOSED RIVER SECTION - MHWS
2048-BRL-02-XX-DR-C-3106	HAMMERSMITH PIER - PROPOSED RIVER SECTION - MLWS
2048-BRL-02-XX-DR-C-3107	HAMMERSMITH PIER - PROPOSED LANDSIDE SECTION
2048-BRL-02-XX-DR-C-3120	HAMMERSMITH PIER - PONTOON LAYOUT
2048-BRL-02-XX-DR-C-3131	HAMMERSMITH PIER - PROPOSED BED LEVELLING PLAN
2048-BRL-02-XX-DR-C-3200	BARNES PIER - EXISTING GA
2048-BRL-02-XX-DR-C-3201	BARNES PIER - PROPOSED GA
2048-BRL-02-XX-DR-C-3202	BARNES PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3203	BARNES PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3204	BARNES PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3205	BARNES PIER - PROPOSED RIVER SECTION
2048-BRL-02-XX-DR-C-3207	BARNES PIER - LANDWARD HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3208	BARNES PIER - EXISTING HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3209	BARNES PIER - PROPOSED HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3220	BARNES PIER - PONTOON LAYOUT

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CLIENT
Uber Boat
 by **thames clippers**

REV	DATE	DRN	DocChk	EngChk	APP	REVISION	DESCRIPTION
P02	17.05.21	MS	NS	TKHB	TKHB		ISSUED FOR APPROVAL
P01	14.05.21	MS	OM	HP	TKHB		ISSUED FOR APPROVAL



TITLE
HAMMERSMITH TEMPORARY FERRY
HAMMERSMITH PIER
SITE LOCATION PLAN

PROJECT DRAWING NO.	SCALE	S CODE	REV
2048-BRL-02-XX-DR-C-3012	1:1250	S4	P02

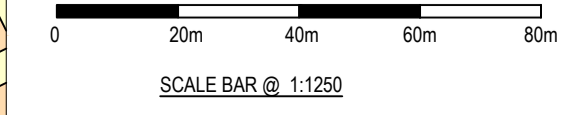


FIG.2 ROCQUE 1746

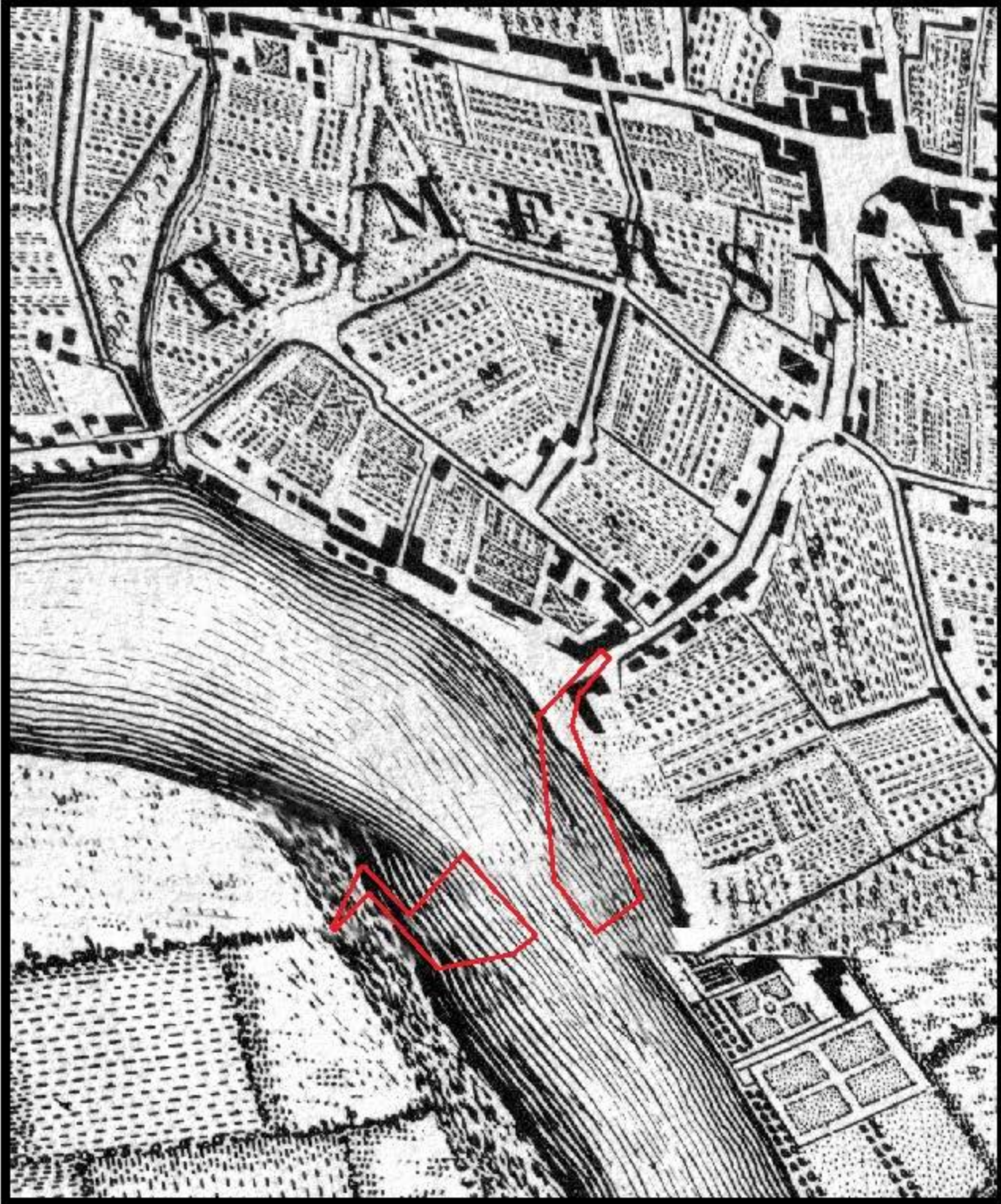


FIG.3 ORDNANCE SURVEY 1869

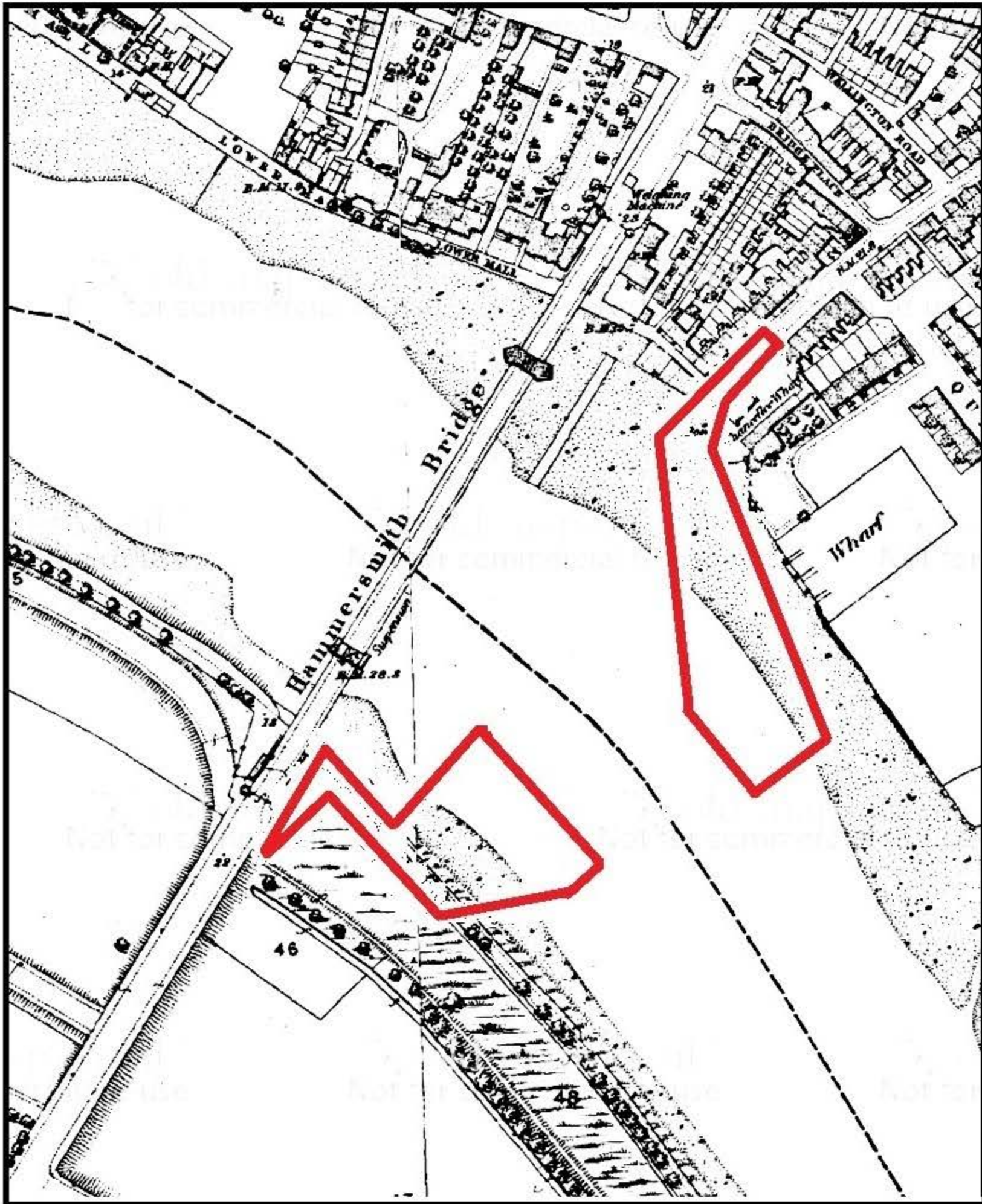


FIG.4 ORDNANCE SURVEY 1896

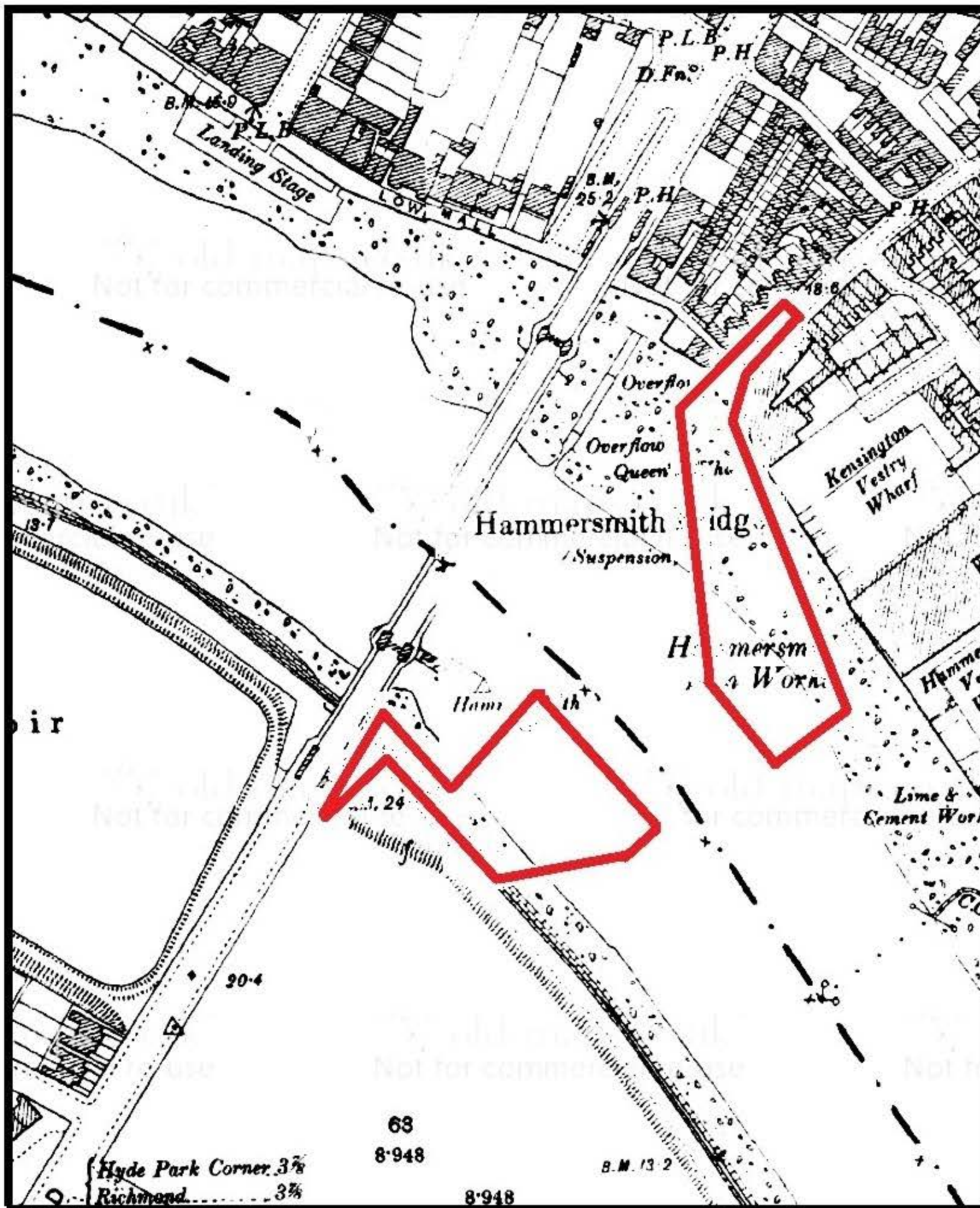
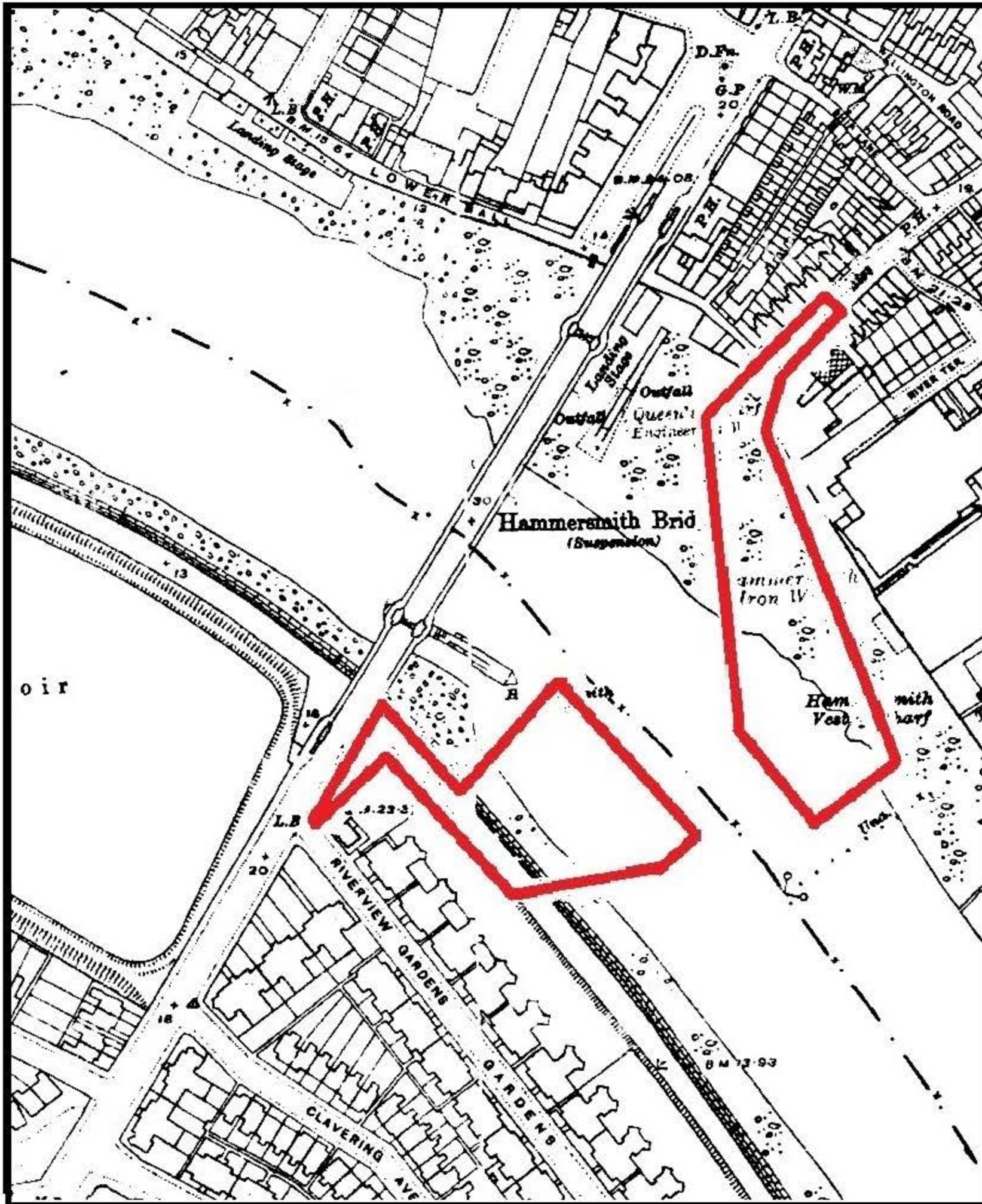
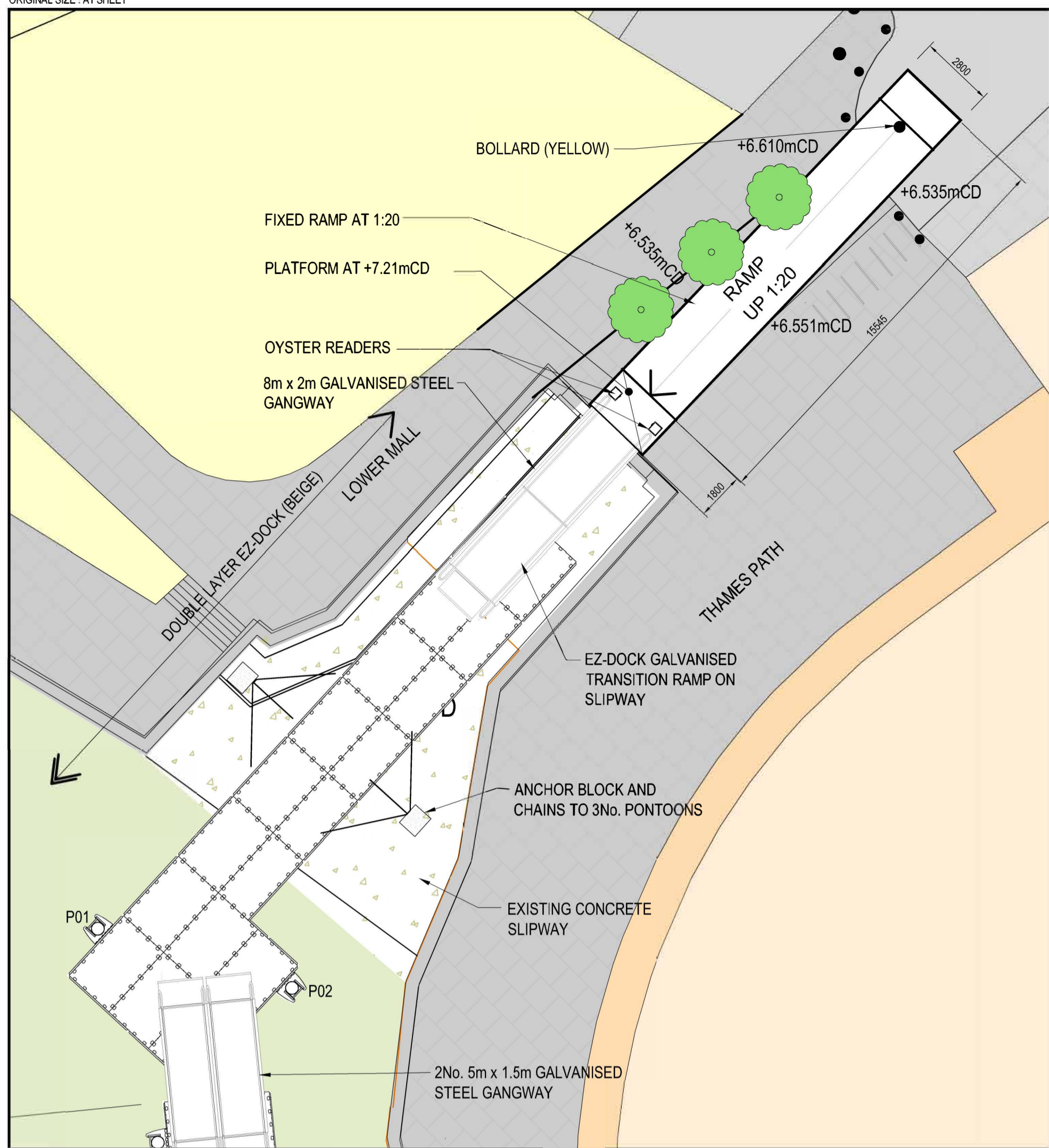
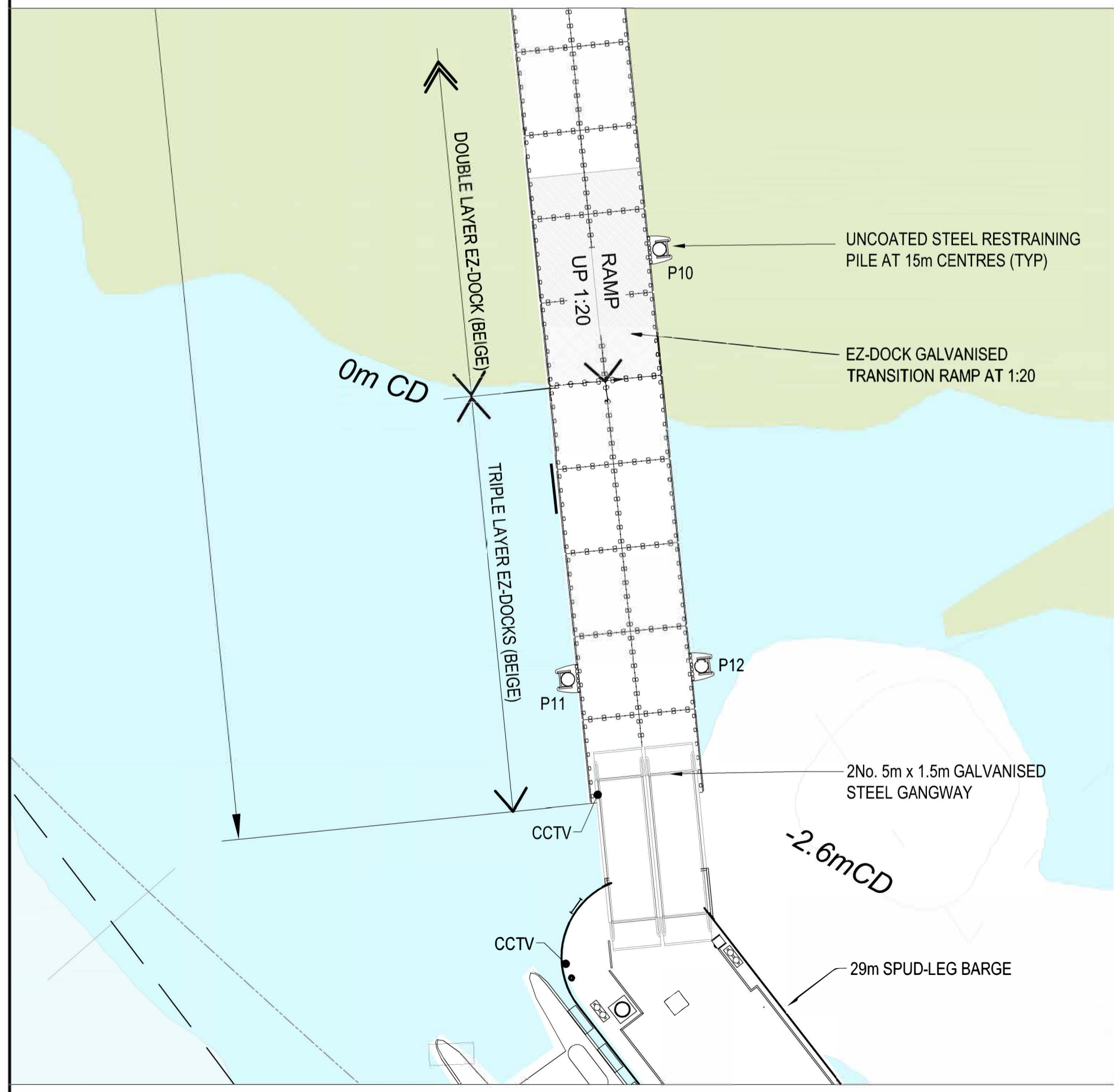


FIG.5 ORDNANCE SURVEY 1916





DETAIL 1
(SCALE 1:150)



DETAIL 2
(SCALE 1:150)

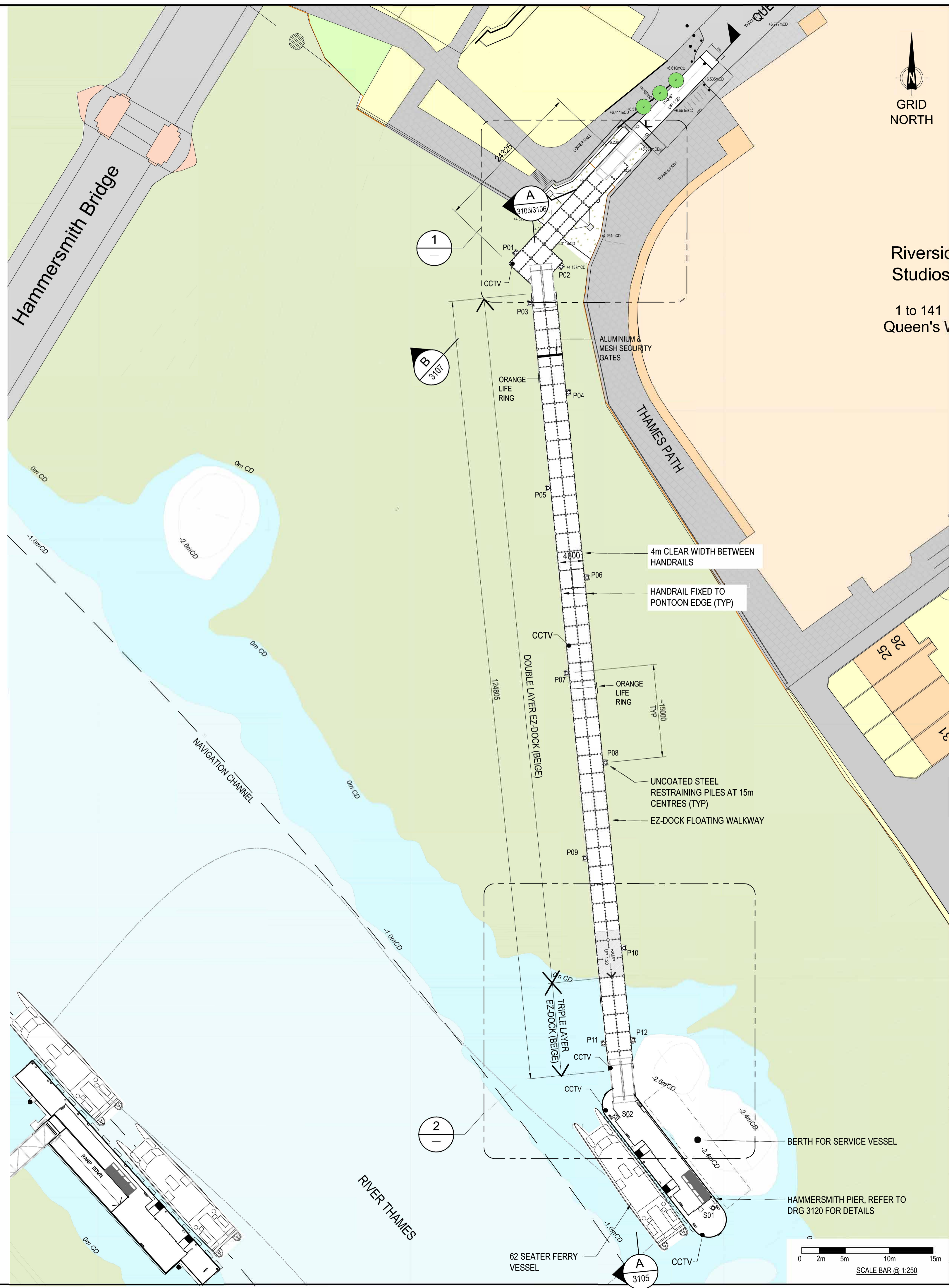


FIG.6 PROPOSED HAMMERSMITH PIER - PLAN



5 TIDE LEVELS

HAT	+4.72mOD = +6.40mCD
MHWS	+4.12mOD = +5.80mCD
MHWN	+3.02mOD = +4.70mCD
MLWN	-0.98mOD = +0.70mCD
MLWS	-1.38mOD = +0.30mCD
LAT	-1.68mOD = 0.00mCD

- 6 TIDE LEVELS IN CHART DATUM WHICH IS 1.68m BELOW ORDINANCE DATUM.
7. TIDE DATA TAKEN FROM PLA T106 TABLES.
8. DEPTHS ARE IN METRES BELOW CHART DATUM, WHICH IS APPROXIMATELY THE LEVEL OF THE LOWEST ASTRONOMICAL TIDE.
9. THE FOLLOWING MATERIALS CAN BE ASSUMED THROUGHOUT. WHERE A COLOUR IS NOT PROVIDED, TYPICAL UNCOATED MATERIAL COLOUR MAY BE ASSUMED.

- PONTOONS**
- STRUCTURE: PAINTED BLACK STEEL U.N.O
 - PONTOON DECK: GREY RESIN BOUND SURFACE
 - HANDRAILS: GALVANISED STEEL
 - SHELTER: GREY COATED STEEL WITH PERFORATED BLACK STEEL PANNELLING AND GLASS ROOF
 - PILES AND GUIDES: UNTREATED STEEL
 - SAFETY LADDERS AND CHAINS: GALVANISED STEEL
 - MOORING BOLLARDS: PAINTED YELLOW STEEL
 - GANGWAYS: ALUMINIUM

- FLOATING WALKWAY**
- HANDRAILS: GALVANISED STEEL
 - GANGWAYS: ALUMINIUM
 - PONTOONS: BUFF POLYETHYLENE
 - PILES AND GUIDES: UNTREATED STEEL
 - ANCHOR BLOCK: PRE-CAST CONCRETE

- RAISED WALKWAY / RAMPING**
- HANDRAILS: GALVANISED STEEL
 - DECK: GREY RESIN BOUND SURFACE

REFERENCE DRAWINGS:

2048-BRL-02-XX-DR-C-3001	KEY PLAN
2048-BRL-02-XX-DR-C-3012	HAMMERSMITH PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3013	HAMMERSMITH PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3101	HAMMERSMITH PIER - PROPOSED GA
2048-BRL-02-XX-DR-C-3102	HAMMERSMITH PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3103	HAMMERSMITH PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3104	HAMMERSMITH PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3105	HAMMERSMITH PIER - PROPOSED RIVER SECTION - MHWS
2048-BRL-02-XX-DR-C-3106	HAMMERSMITH PIER - PROPOSED RIVER SECTION - MLWS
2048-BRL-02-XX-DR-C-3107	HAMMERSMITH PIER - PROPOSED LANDSIDE SECTION
2048-BRL-02-XX-DR-C-3120	HAMMERSMITH PIER - PONTOON LAYOUT
2048-BRL-02-XX-DR-C-3131	HAMMERSMITH PIER - PROPOSED BED LEVELLING PLAN

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Uber Boat
by **thames clippers**

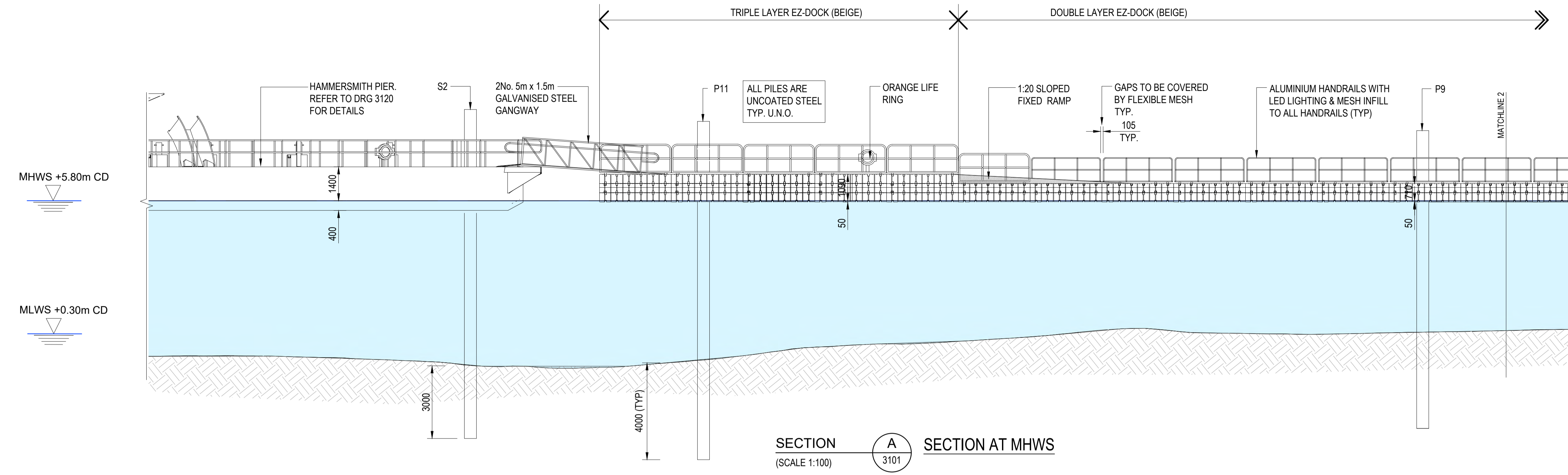
REV	DATE	DRN	DocChk	EngChk	APP	DESCRIPTION
P02	14.05.21	MS	OM	HP	TKHB	ISSUED FOR APPROVAL
P01	10.05.21	MS	OM	HP	TKHB	ISSUED FOR APPROVAL



TITLE
HAMMERSMITH TEMPORARY FERRY
HAMMERSMITH PIER
PROPOSED GA

PROJECT DRAWING No.	2048-BRL-02-XX-DR-C-3101	SCALE	1:250	S. CODE	S4	REV	P02
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FIG.7 PROPOSED HAMMERSMITH PIER - RIVER SECTION



- 5 TIDE LEVELS
- | | |
|------|---------------------|
| HAT | +4.72mOD = +6.40mCD |
| MHWS | +4.12mOD = +5.80mCD |
| MHWN | +3.02mOD = +4.70mCD |
| MLWN | -0.98mOD = +0.70mCD |
| MLWS | -1.38mOD = +0.30mCD |
| LAT | -1.68mOD = 0.00mCD |
- 6 TIDE LEVELS IN CHART DATUM WHICH IS 1.68m BELOW ORDINANCE DATUM.
7. TIDE DATA TAKEN FROM PLA T106 TABLES.
8. DEPTHS ARE IN METRES BELOW CHART DATUM, WHICH IS APPROXIMATELY THE LEVEL OF THE LOWEST ASTRONOMICAL TIDE.
9. THE FOLLOWING MATERIALS CAN BE ASSUMED THROUGHOUT. WHERE A COLOUR IS NOT PROVIDED, TYPICAL UNCOATED MATERIAL COLOUR MAY BE ASSUMED.

- PONTOONS**
- STRUCTURE: PAINTED BLACK STEEL U.N.O
 - PONTOON DECK: GREY RESIN BOUND SURFACE
 - HANDRAILS: GALVANISED STEEL
 - SHELTER: GREY COATED STEEL WITH PERFORATED BLACK STEEL PANNELLING AND GLASS ROOF
 - PILES AND GUIDES: UNTREATED STEEL
 - SAFETY LADDERS AND CHAINS: GALVANISED STEEL
 - MOORING BOLLARDS: PAINTED YELLOW STEEL
 - GANGWAYS: ALUMINIUM

- FLOATING WALKWAY**
- HANDRAILS: GALVANISED STEEL
 - GANGWAYS: ALUMINIUM
 - PONTOONS: BUFF POLYETHYLENE
 - PILES AND GUIDES: UNTREATED STEEL
 - ANCHOR BLOCK: PRE-CAST CONCRETE

- RAISED WALKWAY / RAMPING**
- HANDRAILS: GALVANISED STEEL
 - DECK: GREY RESIN BOUND SURFACE

REFERENCE DRAWINGS:

2048-BRL-02-XX-DR-C-3001	KEY PLAN
2048-BRL-02-XX-DR-C-3012	HAMMERSMITH PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3013	HAMMERSMITH PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3101	HAMMERSMITH PIER - PROPOSED GA
2048-BRL-02-XX-DR-C-3102	HAMMERSMITH PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3103	HAMMERSMITH PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3104	HAMMERSMITH PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3105	HAMMERSMITH PIER - PROPOSED RIVER SECTION - MHWS
2048-BRL-02-XX-DR-C-3106	HAMMERSMITH PIER - PROPOSED RIVER SECTION - MLWS
2048-BRL-02-XX-DR-C-3107	HAMMERSMITH PIER - PROPOSED LANDSIDE SECTION
2048-BRL-02-XX-DR-C-3120	HAMMERSMITH PIER - PONTOON LAYOUT
2048-BRL-02-XX-DR-C-3131	HAMMERSMITH PIER - PROPOSED BED LEVELLING PLAN

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CLIENT

Uber Boat
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P03	17.05.21	MS	NS	TKHB	TKHB	ISSUED FOR APPROVAL
P02	11.05.21	MS	OM	HP	TKHB	ISSUED FOR APPROVAL
P01	10.05.21	MS	OM	HP	HP	ISSUED FOR APPROVAL
REV	DATE	DRN	DocChk	EngChk	APP	DESCRIPTION



TITLE

HAMMERSMITH TEMPORARY FERRY

HAMMERSMITH PIER
PROPOSED RIVER SECTIONS - MHWS

PROJECT DRAWING No.	SCALE	S CODE	REV
2048-BRL-02-XX-DR-C-3105	1:100	S4	P03

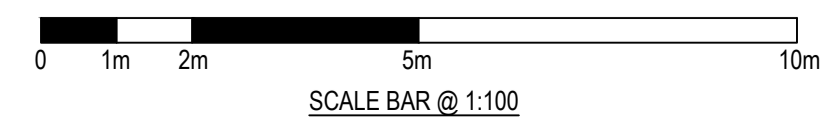
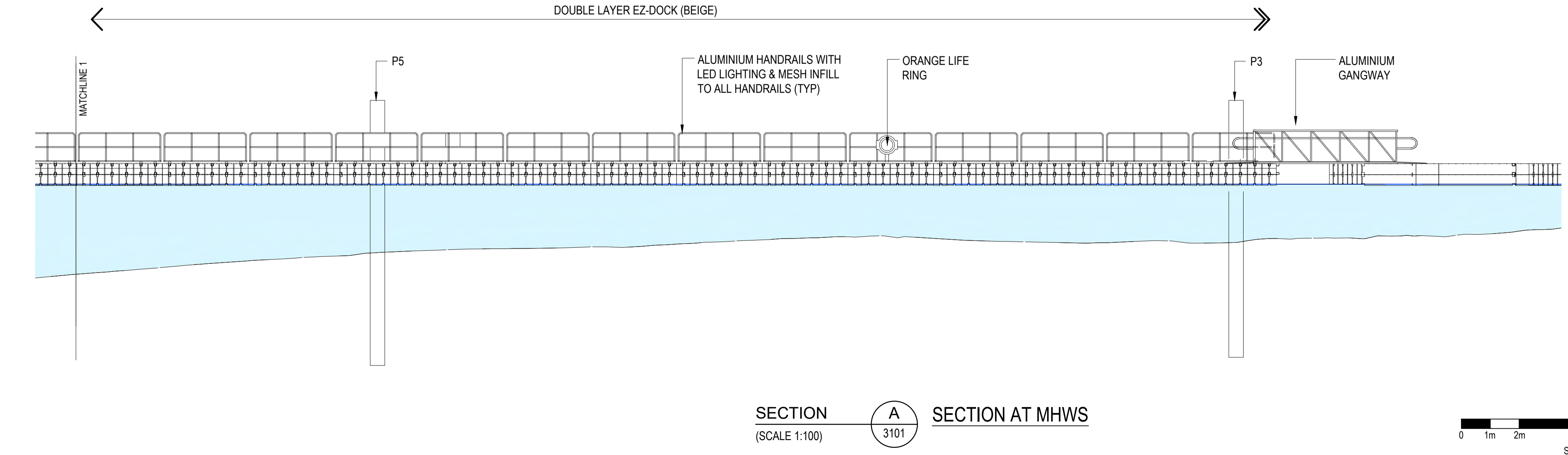
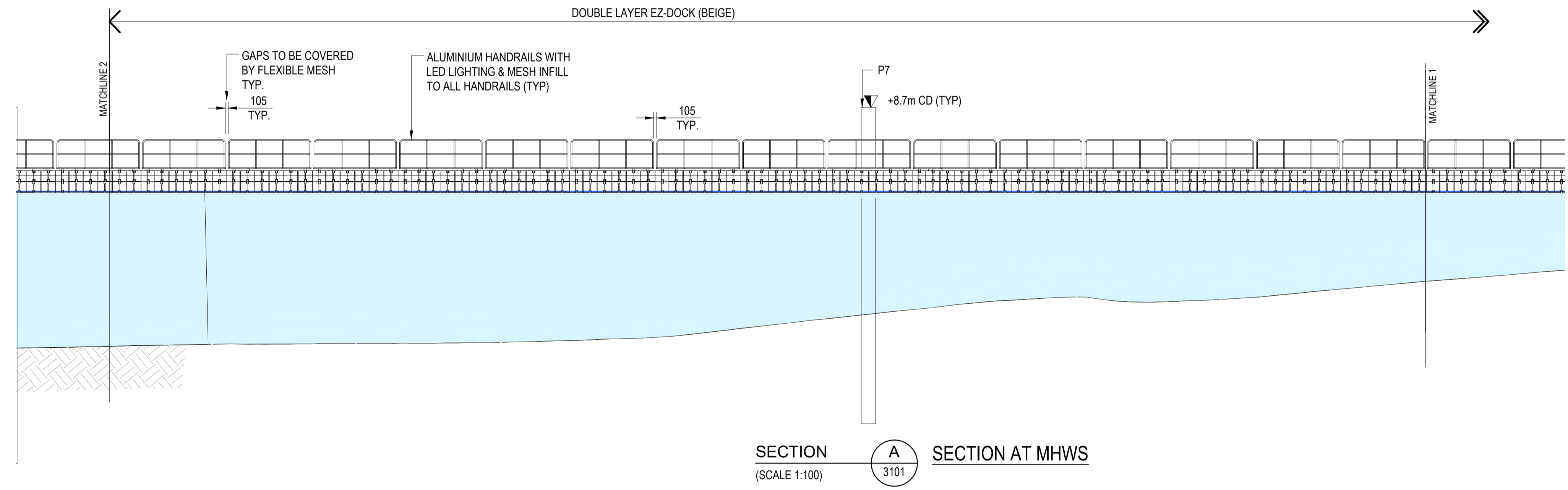
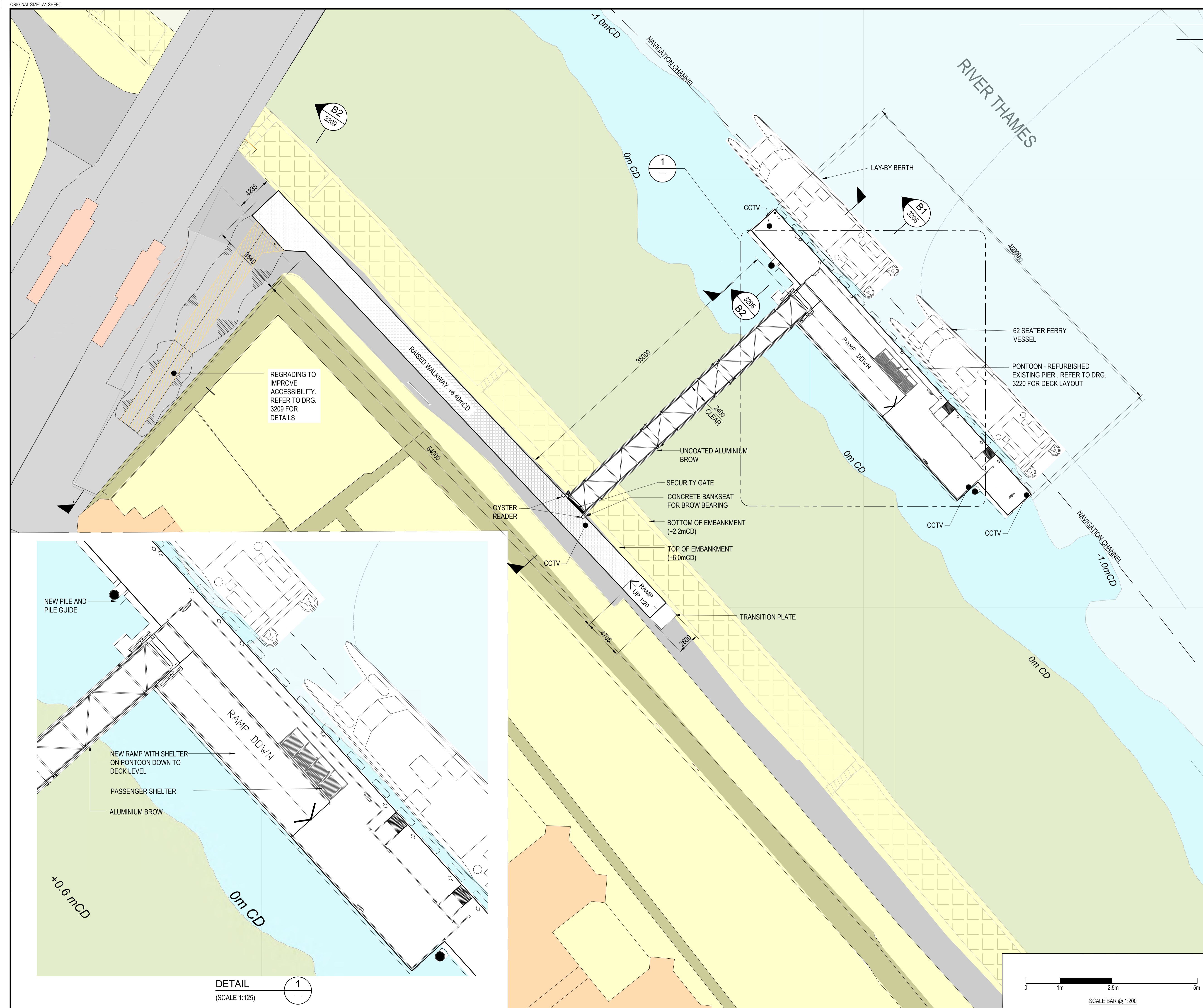


FIG.8 PROPOSED BARNES PIER - PLAN :



REGRAIDING TO IMPROVE ACCESSIBILITY. REFER TO DRG. 3209 FOR DETAILS

DETAIL 1 (SCALE 1:125)

HAT	+4.72mOD = +6.40mCD
MHWS	+4.12mOD = +5.80mCD
MHWN	+3.02mOD = +4.70mCD
MLWN	-0.98mOD = +0.70mCD
MLWS	-1.38mOD = +0.30mCD
LAT	-1.68mOD = 0.00mCD

- TIDE LEVELS IN CHART DATUM WHICH IS 1.68m BELOW ORDNANCE DATUM.
- TIDE DATA TAKEN FROM PLA T106 TABLES.
- DEPTHS ARE IN METRES BELOW CHART DATUM, WHICH IS APPROXIMATELY THE LEVEL OF THE LOWEST ASTRONOMICAL TIDE.
- THE FOLLOWING MATERIALS CAN BE ASSUMED THROUGHOUT. WHERE A COLOUR IS NOT PROVIDED, TYPICAL UNCOATED MATERIAL COLOUR MAY BE ASSUMED.

- PONTOONS**
- STRUCTURE: PAINTED BLACK STEEL U.N.O.
 - PONTOON DECK: GREY RESIN BOUND SURFACE.
 - HANDRAILS: GALVANISED STEEL.
 - SHELTER: GREY COATED STEEL WITH PERFORATED BLACK STEEL PANNELLING AND GLASS ROOF.
 - PILES AND GUIDES: UNTREATED STEEL.
 - SAFETY LADDERS AND CHAINS: GALVANISED STEEL.
 - MOORING BOLLARDS: PAINTED YELLOW STEEL.
 - GANGWAYS: ALUMINIUM.

- CANTING BROW**
- STRUCTURE: ALUMINIUM.
 - DECKING: GREY RESIN BOUND SURFACE.
 - BANKSEAT: IN-SITU CONCRETE.

- RAISED WALKWAY / RAMPING**
- HANDRAILS: GALVANISED STEEL.
 - DECK: GREY RESIN BOUND SURFACE.

- REGRAIDING**
- MOT TYPE 1 GRANULAR FILL WITH TIMBER RETAINING STRUCTURE

REFERENCE DRAWINGS:

2048-BRL-02-XX-DR-C-3001	KEY PLAN
2048-BRL-02-XX-DR-C-3022	BARNES PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3023	BARNES PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3200	BARNES PIER - EXISTING GA
2048-BRL-02-XX-DR-C-3201	BARNES PIER - PROPOSED GA
2048-BRL-02-XX-DR-C-3202	BARNES PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3203	BARNES PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3204	BARNES PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3205	BARNES PIER - PROPOSED RIVER SECTION
2048-BRL-02-XX-DR-C-3207	BARNES PIER - LANDWARD WALKWAY LAYOUT
2048-BRL-02-XX-DR-C-3208	BARNES PIER - EXISTING HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3209	BARNES PIER - PROPOSED HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3220	BARNES PIER - PONTOON LAYOUT

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Uber Boat
by thames clippers

REV	DATE	DRN	DocChk	EngChk	APP	REVISION	DESCRIPTION
P03	17.05.21	MS	NS	TKHB	TKHB		ISSUED FOR APPROVAL
P02	14.05.21	MS	OM	HP	TKHB		ISSUED FOR APPROVAL
P01	10.05.21	MS	OM	HP	TKHB		ISSUED FOR APPROVAL



TITLE
HAMMERSMITH TEMPORARY FERRY
BARNES PIER
PROPOSED GA

PROJECT DRAWING No.	SCALE	S CODE	REV
2048-BRL-02-XX-DR-C-3201	1:200	S4	P03

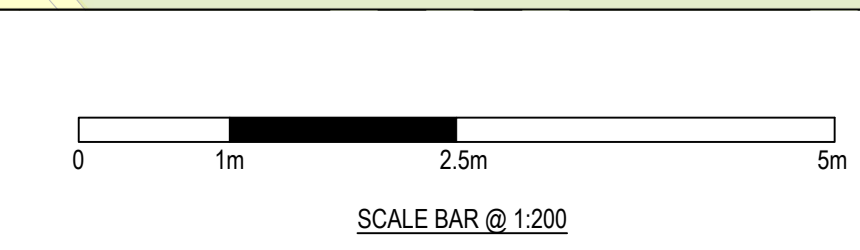
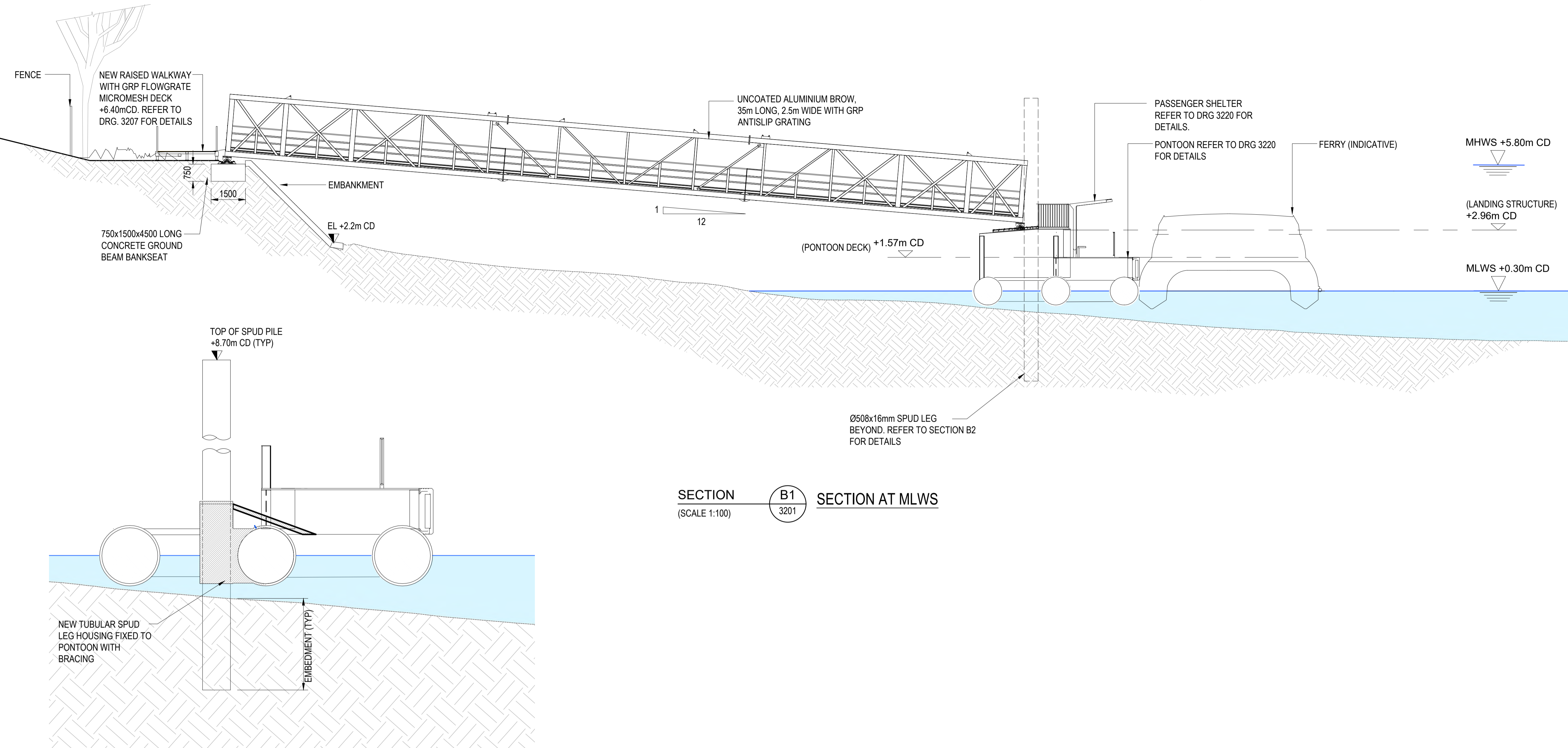
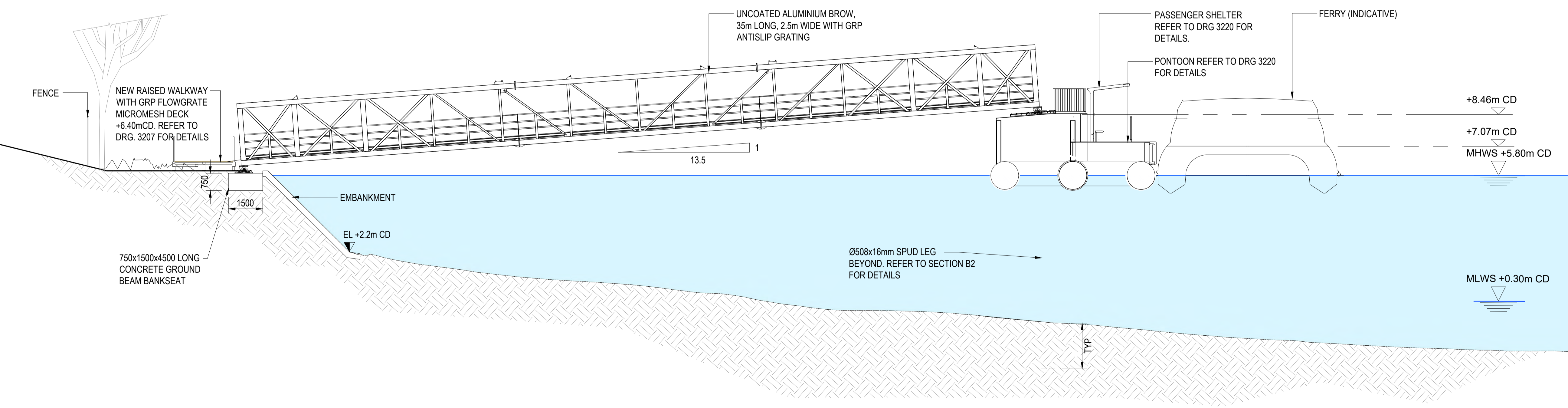


FIG.9 PROPOSED BARNES PIER - RIVER SECTION:



SECTION B1 SECTION AT MLWS (SCALE 1:100)

SECTION B2 TYPICAL SPUD LEG HOUSING DETAIL (SCALE 1:50)



SECTION B1 SECTION AT MHWS (SCALE 1:100)

1. TIDE LEVELS

HAT	+4.72mOD = +6.40mCD
MHWS	+4.12mOD = +5.80mCD
MHWN	+3.02mOD = +4.70mCD
MLWN	-0.98mOD = +0.70mCD
MLWS	-1.38mOD = +0.30mCD
LAT	-1.68mOD = 0.00mCD

6. TIDE LEVELS IN CHART DATUM WHICH IS 1.68m BELOW ORDINANCE DATUM.
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 - PONTOON DECK: GREY RESIN BOUND SURFACE.
 - HANDRAILS: GALVANISED STEEL.
 - SHELTER: GREY COATED STEEL WITH PERFORATED BLACK STEEL PANNELLING AND GLASS ROOF.
 - PILES AND GUIDES: UNTREATED STEEL.
 - SAFETY LADDERS AND CHAINS: GALVANISED STEEL.
 - MOORING BOLLARDS: PAINTED YELLOW STEEL.
 - GANGWAYS: ALUMINIUM.

- CANTING BROW**
- STRUCTURE: ALUMINIUM.
 - DECKING: GREY RESIN BOUND SURFACE.
 - BANKSEAT: IN-SITU CONCRETE.

- RAISED WALKWAY / RAMPING**
- HANDRAILS: GALVANISED STEEL.
 - DECK: GREY RESIN BOUND SURFACE.

- REGRAIDING**
- MOT TYPE 1 GRANULAR FILL WITH TIMBER RETAINING STRUCTURE

REFERENCE DRAWINGS:

2048-BRL-02-XX-DR-C-3001	KEY PLAN
2048-BRL-02-XX-DR-C-3022	BARNES PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3023	BARNES PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3200	BARNES PIER - EXISTING GA
2048-BRL-02-XX-DR-C-3201	BARNES PIER - PROPOSED GA
2048-BRL-02-XX-DR-C-3202	BARNES PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3203	BARNES PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3204	BARNES PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3205	BARNES PIER - PROPOSED RIVER SECTION
2048-BRL-02-XX-DR-C-3207	BARNES PIER - LANDWARD WALKWAY LAYOUT
2048-BRL-02-XX-DR-C-3208	BARNES PIER - EXISTING HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3209	BARNES PIER - PROPOSED HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3220	BARNES PIER - PONTOON LAYOUT

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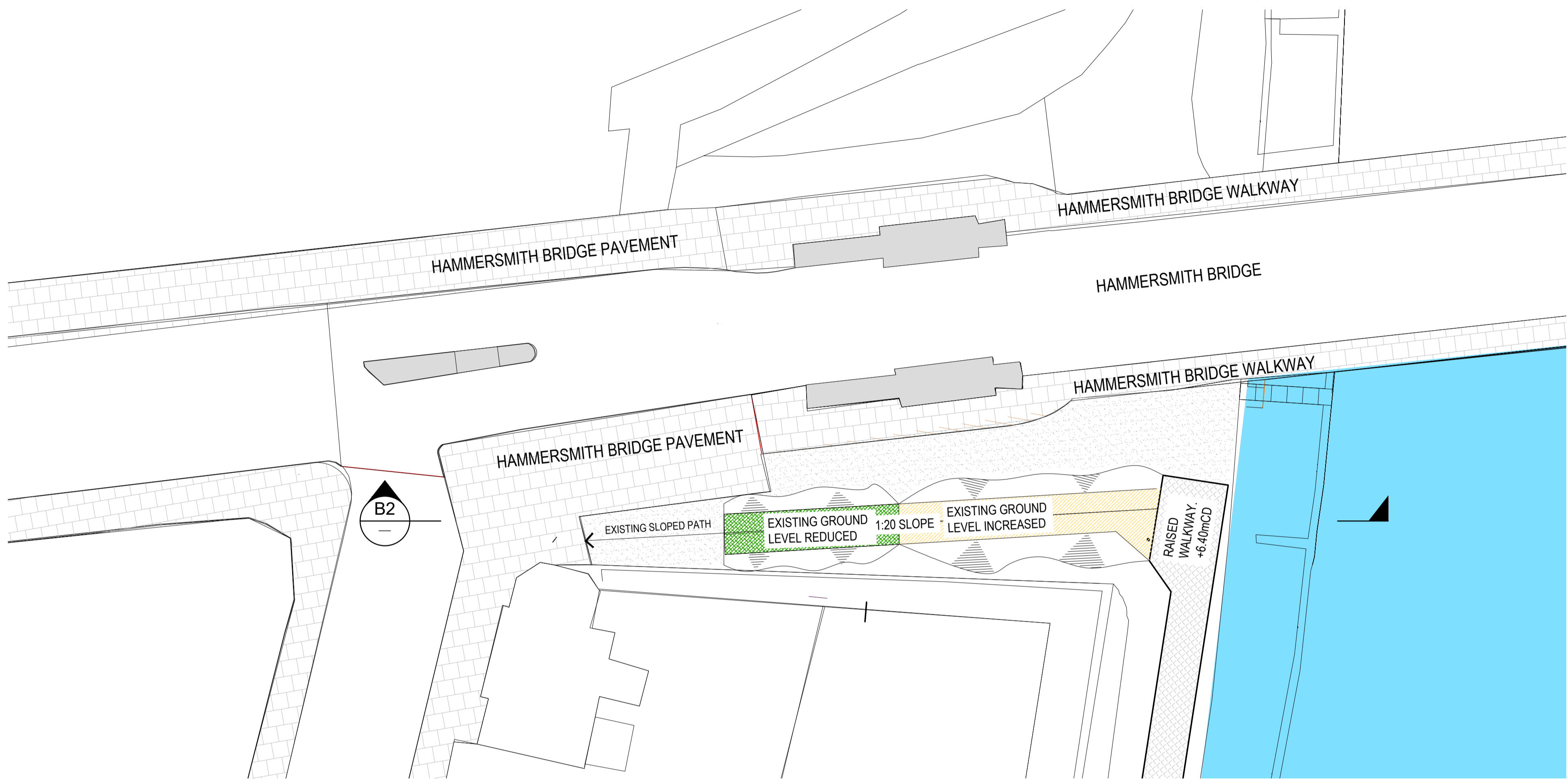
REV	DATE	DRN	DocChk	EngChk	APP	DESCRIPTION
P03	17.05.21	MS	NS	TKHB	TKHB	ISSUED FOR APPROVAL
P02	14.05.21	MS	OM	HP	TKHB	ISSUED FOR APPROVAL
P01	10.05.21	MS	OM	HP	TKHB	ISSUED FOR APPROVAL



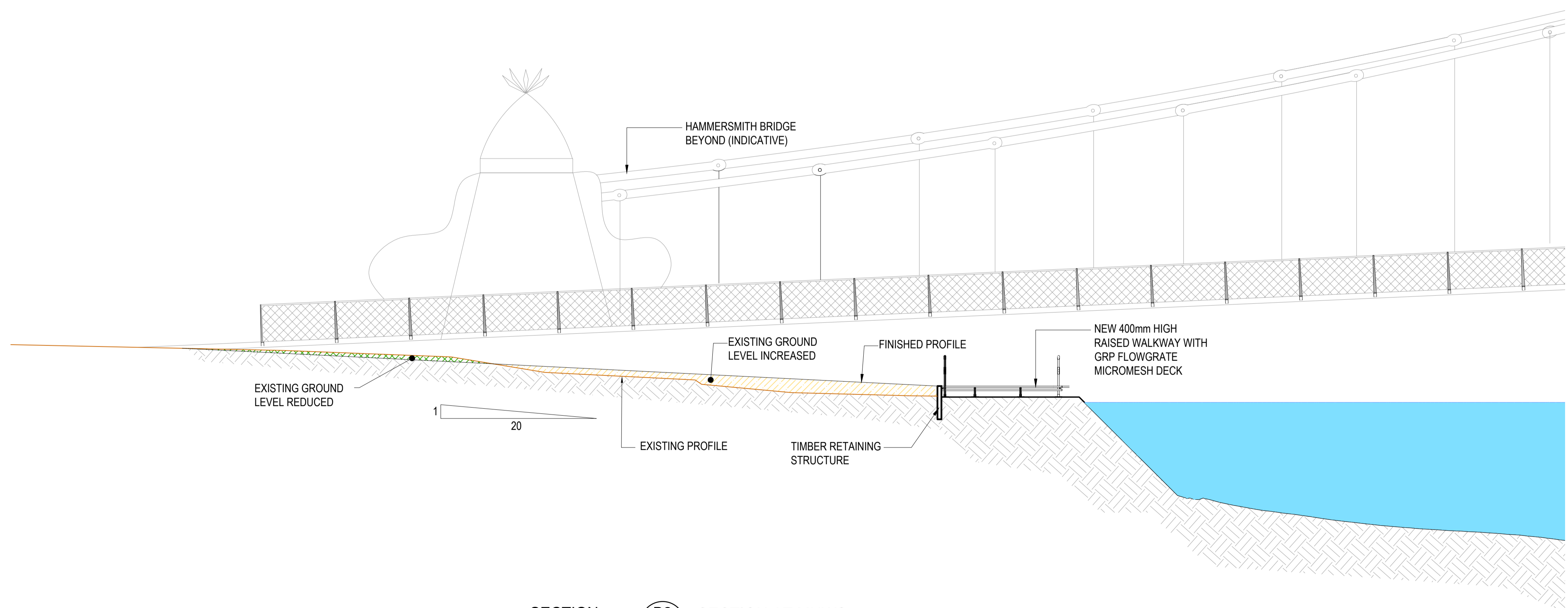
TITLE
HAMMERSMITH TEMPORARY FERRY
BARNES PIER
RIVER SECTIONS

PROJECT DRAWING No.	SCALE	S. CODE	REV
2048-BRL-02-XX-DR-C-3205	1:100	S4	P03

FIG.10 PROPOSED BARNES PIER - ACCESS SECTION:



PART PLAN - BARNES PIER - PROPOSED TOW PATH
SCALE 1:200



SECTION B2 SECTION AT MHWS
(SCALE 1:100)



1. TIDE LEVELS

HAT	+4.72mOD = +6.40mCD
MHWS	+4.12mOD = +5.80mCD
MHWN	+3.02mOD = +4.70mCD
MLWN	-0.98mOD = +0.70mCD
MLWS	-1.38mOD = +0.30mCD
LAT	-1.68mOD = 0.00mCD

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 - PILES AND GUIDES: UNTREATED STEEL.
 - SAFETY LADDERS AND CHAINS: GALVANISED STEEL.
 - MOORING BOLLARDS: PAINTED YELLOW STEEL.
 - GANGWAYS: ALUMINIUM.

- CANTING BROW**
- STRUCTURE: ALUMINIUM.
 - DECKING: GREY RESIN BOUND SURFACE.
 - BANKSEAT: IN-SITU CONCRETE.

- RAISED WALKWAY / RAMPING**
- HANDRAILS: GALVANISED STEEL.
 - DECK: GREY RESIN BOUND SURFACE.

- REGRAIDING**
- MOT TYPE 1 GRANULAR FILL WITH TIMBER RETAINING STRUCTURE

REFERENCE DRAWINGS:

2048-BRL-02-XX-DR-C-3001	KEY PLAN
2048-BRL-02-XX-DR-C-3022	BARNES PIER - LOCATION SITE PLAN
2048-BRL-02-XX-DR-C-3023	BARNES PIER - PROPOSED BLOCK PLAN
2048-BRL-02-XX-DR-C-3200	BARNES PIER - EXISTING GA
2048-BRL-02-XX-DR-C-3201	BARNES PIER - PROPOSED GA
2048-BRL-02-XX-DR-C-3202	BARNES PIER - EXISTING ELEVATION
2048-BRL-02-XX-DR-C-3203	BARNES PIER - PROPOSED ELEVATION
2048-BRL-02-XX-DR-C-3204	BARNES PIER - EXISTING RIVER SECTION
2048-BRL-02-XX-DR-C-3205	BARNES PIER - PROPOSED RIVER SECTION
2048-BRL-02-XX-DR-C-3207	BARNES PIER - LANDWARD WALKWAY LAYOUT
2048-BRL-02-XX-DR-C-3208	BARNES PIER - EXISTING HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3209	BARNES PIER - PROPOSED HIGHWAY ACCESS SECTION
2048-BRL-02-XX-DR-C-3220	BARNES PIER - PONTOON LAYOUT

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P02	17.05.21	MS	NS	TKHB	TKHB	ISSUED FOR APPROVAL
P01	14.05.21	MS	OM	HP	TKHB	ISSUED FOR APPROVAL



TITLE
HAMMERSMITH TEMPORARY FERRY
BARNES PIER
PROPOSED HIGHWAY ACCESS SECTION

PROJECT DRAWING No.	SCALE	S. CODE	REV
2048-BRL-02-XX-DR-C-3209	1:100	S4	P02