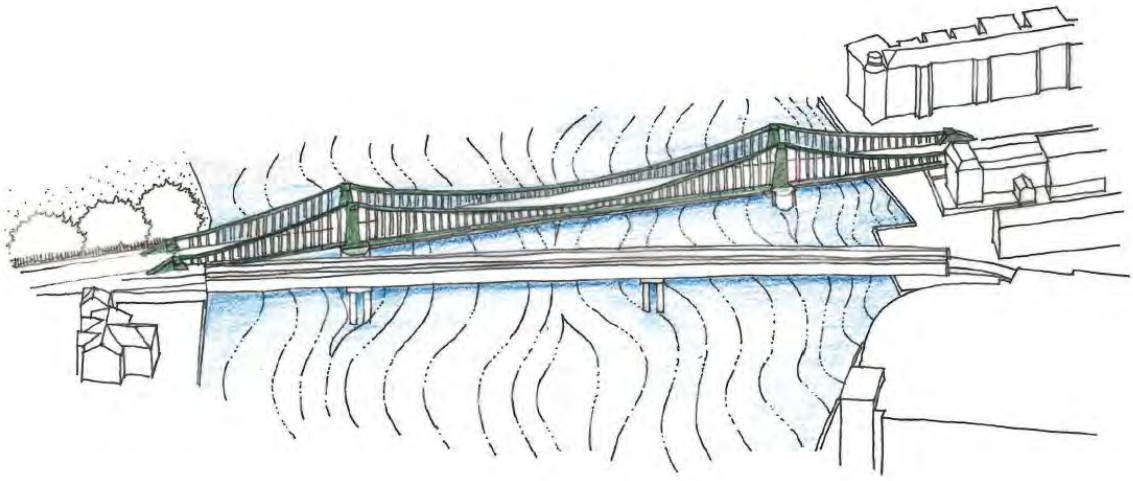
Transport for London

Temporary Pedestrian and Cycle Bridge

EIA Screening Report

Pell Frischmann



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List of Abbreviations

AOD – Above Ordnance Datum
APA – Archaeological Priority Areas
AQMA – Air Quality Management Area
BAP – Biodiversity Action Plan
BGS – British Geological Survey
BoCC – Birds of Conservation Concern
Cefas - Centre for Environment, Fisheries and Aquaculture Science
CEMP – Construction Environmental Management Plan
CIC – Community Interest Company
CoCP – Code of Construction Practice
CofE – Church of England
EA – Environment Agency
EIA – Environmental Impact Assessment
EQSD – Environmental Quality Standards Directive
ES – Environmental Statement
EU – European Union
FC – Football Club
FOCI – Feature of Conservation Importance
FRA – Flood Risk Assessment
GA – General Arrangement
GiGL – Greenspace information for Greater London
GLA – Greater London Authority
GLAAS – Greater London Archaeology Advisory Service
GPP – Guidance on Pollution Prevention
ha – hectares
IUCN – International Union for Conservation of Nature
JNCC – Joint Nature Conservation Committee
km - kilometres
LBHF – London Borough of Hammersmith & Fulham
LBRuT – London Borough of Richmond upon Thames
LISI – London Invasive Species Initiative
LNR – Local Nature Reserve
LPA – Local Planning Authority
m – metres
m^2 – metres squared
MAGIC – Multi-Agency Geographic Information for the Countryside
MARPOL – International Convention for the Prevention of Pollution from Ships
MCZ – Marine Conservation Zone
MHWS – Mean High Water Springs
MMO – Marine Management Organisation
MOL – Metropolitan Open Land
MW – Marine Works
NABSA – Normally Afloat but Safe Aground
NBN – National Biodiversity Network

NERC – Natural Environment Research Council
NO_2 – Nitrogen Dioxide
NPPF – National Planning Policy Framework
NRA – National Roads Authority
PAH – Polycyclic Aromatic Hydrocarbons
PEA – Preliminary Ecological Appraisal
PLA – Port of London Authority
PM_{10} – Particulate Matter (with a diameter of less than 10 microns)
RBMP – River Basin Management Plan
SPZ – Source Protection Zone
SSSI – Site of Specific Scientific Interest
SWMP – Site Waste Management Plan
TCP – Town and Country Planning
TfL – Transport for London
TPO – Tree Preservation Orders
TTD – Thames Tidal Defences
UXO – Unexploded Ordnance
WFD – Water Framework Directive
ZSL – Zoological Society of London

1 Introduction

1.1 Purpose of this report

Pell Frischmann was commissioned by Transport for London (TfL) to undertake the Environmental Impact Assessment (EIA) Screening Report for the Temporary Pedestrian and Cycle Bridge, that will be in use during the Hammersmith Bridge refurbishment works, and hereafter referred to as Temporary Bridge.

The aim of this report is to inform an EIA Screening Opinion under the following regulations:

- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017; whereby, the London Borough of Hammersmith and Fulham and London Borough of Richmond upon Thames are the relevant authorities in decision making; and
- The Marine Works (Environmental Impact Assessment) (Amendment) Regulations 2017; whereby, the Marine Management Organisation is the relevant authority in decision making.

This report accompanies a written request for an EIA Screening Opinion, and it will inform the relevant authorities about the potential for significant environmental effects arising from the proposed development, in accordance with requirements of the above referred regulations.

1.2 Purpose of the Scheme

Located in West London, the construction of the Temporary Bridge is required as a direct diversion route over the river Thames for pedestrians and cyclists whilst the existing Grade II* listed Hammersmith Bridge is being repaired. This Temporary Bridge will provide the safest access and most feasible way for pedestrians and cyclists to cross the river.

The Hammersmith Bridge provides a major link between Hammersmith and Richmond. There is a lack of cross river London Underground services at this location so the majority of the public living in Richmond usually take one of the four bus routes across Hammersmith Bridge to connect into the London Underground network at Hammersmith Station for onward travel into the city. Hammersmith Bridge was closed to all vehicular traffic in April 2019 as it was found to have critical faults which meant the live loading on the bridge had to be reduced significantly to prevent a potential catastrophic collapse.

This closure has resulted in major disruption to the local and wider area due to the absence of a close alternative crossing. Bus routes now terminate at either end of the bridge resulting in major flows of pedestrians and cyclists across the bridge, with an increase from 6,000 to 21,000 trips per day. These flows have to be accommodated in this locality as there is no feasible alternative; the closest crossings are either Putney Bridge, or Chiswick Bridge, both a 4km walk away, which would take approximately 50 minutes to complete the journey.

It is also noted that other planned closures of bridges near the area could worsen the effect upon the community; Wandsworth Bridge will have 10 months of maintenance works starting in February 2020 and other bridges (Kew, Vauxhall, London) are facing partial closures for a number of months in the near future.

The latest engineering monitoring reports for the Hammersmith Bridge have indicated that its condition is worse than previously foreseen and major safety-critical strengthening work is

required. On-going monitoring and inspections are in place to ensure that none of the existing faults are worsening. The bridge is currently under a bi-weekly safety review to ensure that Continued Case for Safe Operation, with the increased flows of pedestrians and cyclists, is still valid. This ensures that the bridge is able to remain open to the public in its current condition.

Further assessment has concluded that accommodating the high numbers of pedestrians and cyclists now using the bridge will have a major impact on the feasibility of safely undertaking the bridge repairs. It is envisaged that at least half of the space on the bridge would be required to safely accommodate these flows. There is also a serious concern as to whether it is safe for the bridge to remain open for public use during the bridge stabilisation works at all.

As a result, TfL has concluded that the safest way to undertake the works and guarantee the safety of pedestrians and cyclists would be to remove them from the bridge during the works and provide the proposed Temporary Bridge. This would mean the works to Hammersmith Bridge can take place safely and expeditiously. The Temporary Bridge would be required for up to five years and would be removed at the completion of the main bridge works. Other alternatives, such as a ferry, have been explored but, given the high pedestrian and cyclist flows, the physical constraints such as river depths at low tide, and other river users, these are not considered to be feasible.

Recognising the environmental and social sensitivity of the area, TfL has been working and engaging with the following stakeholders:

- London Borough of Hammersmith and Fulham (LBHF);
- London Borough of Richmond Upon Thames (LBRuT);
- Marine Management Organisation (MMO);
- Environment Agency (EA);
- Port of London Authority (PLA);
- Natural England;
- Historic England;
- Thames Water; and
- Greater London Authority (GLA).

1.3 Environmental Impact Assessment Regulations

The EU Directive 2011/92/EU and amended Directive 2014/52/EU, usually referred to as the Environmental Impact Assessment Directive, requires that certain types of project with the potential to significantly affect the environment have an Environmental Impact Assessment (EIA) before a consent decision is made.

The Marine Works (EIA) Regulations 2017 and Town and Country Planning (EIA) Regulations 2017 are the transposition of the EIA Directive, and therefore, the material within both regulations is coincident with requirements about the information to be presented, and criteria used, to determine if the project is likely to have significant effects on the environment, and whether it requires an EIA.

Schedule 1 development as defined by the Town and Country Planning (EIA) Regulations 2017, and Schedule A1 of the Marine Works (EIA) Regulations 2017, constitute major projects that have significant effects, for which EIA is mandatory. We consider that the proposed Temporary Bridge does not constitute EIA development according to these Schedules.

Bridge projects are not mentioned as a separate development type in the Schedules, as they are usually considered as part of other development types, such as roads, railways and inland waterways. Considering that the proposed bridge is a pedestrian and cycle highway, the project could be considered to fall under '10 Infrastructure projects (f) Construction of roads' of Schedule 2 of Town and Country Planning (EIA) Regulations or correspondent n.62 of Schedule A2 of Marine Works (EIA) Regulation. However, the total area of the project will be approximately 0.2794 ha, which is below the 1 ha threshold set in the schedules previously referred to (more details in Section 2.2.2).

Selection criteria also consider the sensitivity of the receiving environment. Recognising this, the project has been tested against the criteria as defined in Schedule 3 of the Town and Country Planning (EIA) Regulations 2017 and Schedule 1 of Marine Works (EIA) Regulations 2017, to determine whether the proposed project is likely to have significant effects on the environment.

1.4 Approach to EIA Screening

This report has been prepared in accordance with the Town and Country Planning (EIA) Regulations 2017 and Marine Works (EIA) (Amendment) Regulations 2017. Table 1 presents the information that must accompany a request for a Screening Opinion, linking them to the relevant section within this report.

Table 1 – Information that must accompany a request for a screening opinion

Town and Country Planning (EIA) Regulations 2017	Marine Works (EIA) (Amendment) Regulations 2017	Section of this Report
a) a plan sufficient to identify the land;	a) a chart or map (or both) sufficient to identify the location of the project and of the regulated activity;	Appendix A
b) a description of the development, in particular: (i) a description of the physical characteristics of the development, and where relevant, of demolition works; (ii) a description of the location of the development with particular regard to the environmental sensitivity of geographical areas likely to be affected;	b) a description of the project, including in particular: (i) a description of the physical characteristics of the whole project and, where relevant, of demolition works; and (ii) a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected;	Section 2
c) a description of the aspects of the environment likely to be significantly affected by the development;	c) a description of the aspects of the environment likely to be significantly affected by the project; and	Section 3
d) to the extent the information is available, a description of any likely significant effects of the proposed development on the environment resulting from: (i) the expected residues and emissions and the production of waste, where relevant; and (ii) the use of natural resources, in particular soil, land, water and biodiversity; and	d) a description of any likely significant effects of the project on the environment, to the extent of the information available on such effects resulting from – (i) the expected residues and emission and the production of waste, where relevant, (ii) the use of natural resources, in particular soil, land, water and biodiversity; and	Section 4

Town and Country Planning (EIA) Regulations 2017	Marine Works (EIA) (Amendment) Regulations 2017	Section of this Report
e) such other information or representations as the person making the request may wish to provide or make, including any features of the proposed development or any measures envisaged to avoid or prevent what might otherwise be significant impacts on the environment.	e) such further information or representations as the applicant may wish to provide or make, including a description of any features of the project or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment.	Section 5

Information presented within this report has been based on desktop studies of readily available data sources; and site walkover surveys undertaken by Pell Frischmann on the following occasions: 31st October 2019 and; 6th of January 2020.

The following data sources have been consulted:

- Multi-Agency Geographic Information for the Countryside (MAGIC);
- National Biodiversity Network (NBN);
- Greenspace information for Greater London (GiGL);
- EA Catchment data explorer;
- Thames River Basin Management Plan; and
- Available water sampling monitoring data from Environment Agency.

Where geographic information was available, it has been mapped and presented in order to give a better understanding of the potential interaction of environment features with the proposed Temporary Bridge.

In addition, the EIA Screening Report has been supplemented by the information within the following reports:

- Archaeology and Cultural Heritage Desktop Study (102963-PEF-BAS-ZZZ-REP-AC-00001);
- Preliminary Ecological Appraisal (102963-PEF-BAS-ZZZ-REP-EN-00004);
- Arboricultural Survey Report (102963-PEF-BAS-ZZZ-REP-EN-00002);
- Aquatic Ecology Desktop Study (102963-PEF-BAS-ZZZ-REP-EN-00005);
- Underwater Noise Assessment (DER6237-RT002-R02-00);
- Water Framework Directive Assessment Report (102963-PEF-BAS-ZZZ-REP-EN-00003);
- Hydrodynamic and Scour Assessment (DDR6237-RT001-R00-05); and
- Flood Risk Assessment (102963-PEF-BAS-ZZZ-REP-WR-00001).

2 Proposed Development

2.1 Location of the Scheme

The Temporary Bridge will land either side of the River Thames; into the LBHF on the north bank, and the LBRuT on the south bank.

The location is shown in Figure 1, which is centred at National Grid Reference TQ229780.

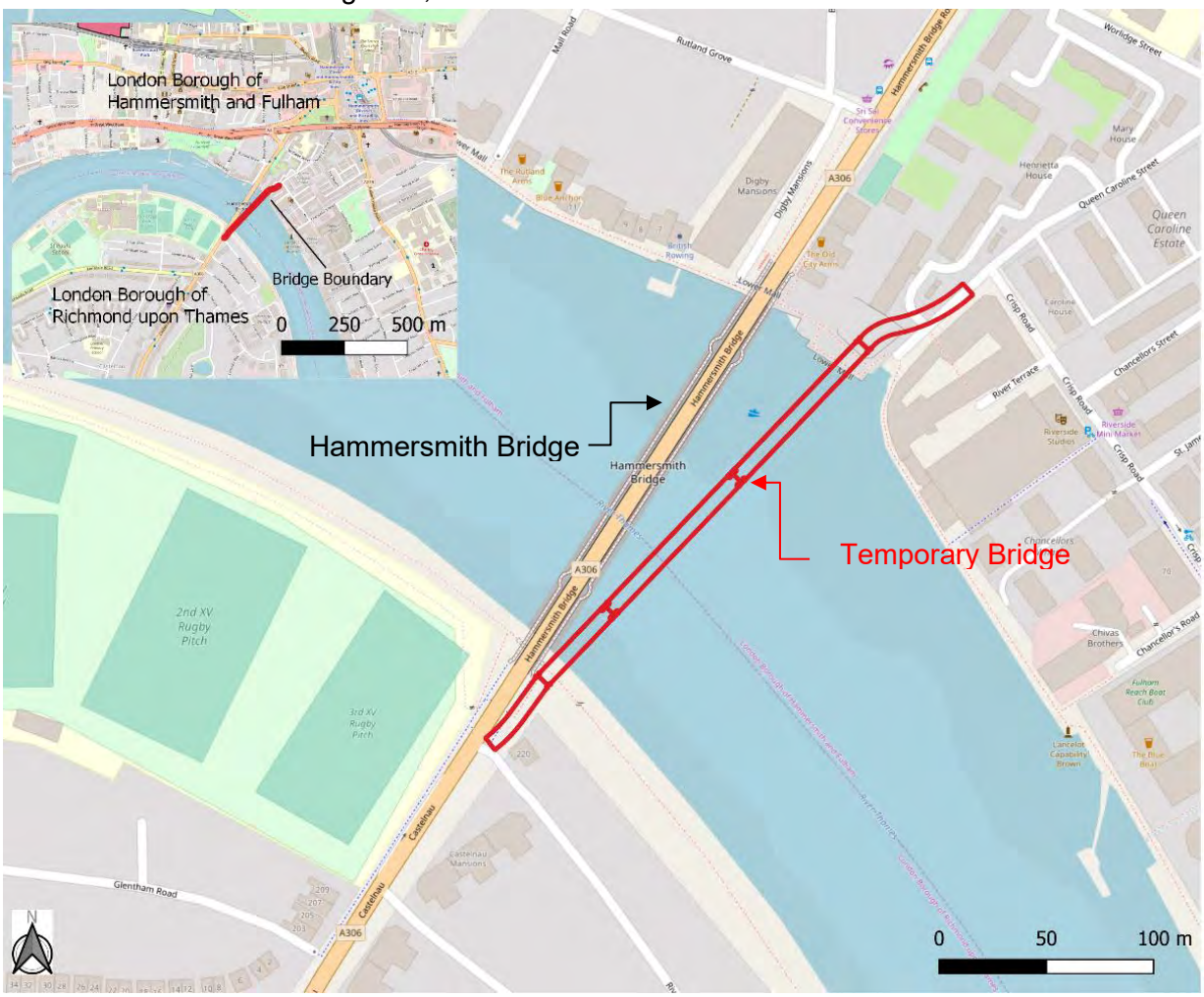

Figure 1 – Proposed Scheme Location

2.2 Characteristics of the proposed development

2.2.1 General description

The proposed Temporary Bridge is a three-span structure with two piers in the river, with a total length of approximately 216m. The north and centre spans are expected to be approximately 85.5m long and the south span is expected to be approximately 45m long (refer to GA Drawing A102963-PEF-BAS-ZZZ-DIA-C-00003, Appendix A).

The south abutment is located near the towpath on the south riverbank and the north abutment is in the green area on the north riverbank at the south west end of Queen Caroline Street. A ramp structure is to be installed at both ends of the Temporary Bridge connecting it to the existing highway network.

The structure type is to be a temporary modular steel bridge. The deck is to be demountable and of half through truss construction comprising structural elements put together to form the outer trusses, and transverse elements supporting a steel deck to carry the pedestrian and cycleway. The effective width of the segregated pedestrian and cycleway is to be a minimum of 5.50m, with an overall deck width of 7.1m, as shown on the GA Drawing (Appendix A). The total weight of the superstructure will not exceed 4.1 tonnes per metre span.

The Temporary Bridge foundations, substructure and superstructure are designed to accommodate potential flooding of the river and breach of flood defence system. The soffit levels of the centre and south span are to match the soffit level of the Hammersmith Bridge, as a minimum, and the soffit level of the north span is to be lowered, so that the ramp decline, connecting to the existing highway, is not too steep.

As the structure is to be temporary, all the substructure elements in the river (including foundations) are designed to be quickly installed and such that it can be decommissioned afterwards, once the Temporary Bridge is no longer needed.

The substructure and foundation within the River Thames (piers 1 and 2) are to comprise an arrangement of four tubular socketed steel piles installed in augured shafts and braced with steel sections as shown on the GA Drawing (Appendix A).

The abutments on land will be of reinforced concrete construction supported on augured reinforced concrete piles.

It should be noted that the whole structure, including foundation elements and ramps, is to be fully removed once Hammersmith Bridge is refurbished and opened for cyclists and pedestrians.

2.2.2 The size of the project

The proposed Temporary Bridge will have a total length of approximately 216m and an approximate width of 7.1m totalling an area approximately of 1,534 m^2. The deck will be supported by two piers within the river and one abutment at each end on land.

The abutments will be of reinforced concrete and will be located beyond the foreshore and within the built environment. The deck ends in a steel ramp that will connect to the existing highway network. It is estimated that the area occupied on land for each end of the Temporary Bridge (abutments and ramps) will be approximately 830m^2 on the north bank and 430m^2 on the south bank.

The two piers within the river will each be formed by four tubular socketed steel piles with 1.5m diameter, which has a total area occupied by the two piers of 14.1 m^2.

This type of pilling foundations has been designed to minimise the structure footprint, and therefore avoid major impacts and disturbance of the river environment. The other important design premise taken into consideration is that the Temporary Bridge will not affect the foreshore, as it will land within built up areas.

Considering the area of abutments and ramps and the area of the bridge, the total area of the project will be approximately 0.2794 ha (2,794 m^2).

3 The Site and its environmental sensitivity

3.1 Land Use

The Temporary Bridge will span across the River Thames, on the east side of the existing Hammersmith Bridge, with the northern side landing in LBHF and the southern side landing in LBRuT. A satellite image showing the location of the Temporary Bridge, hereafter after referred to as the Site, is presented in Figure 2.

The Site is surrounded by heavily urbanised areas on both sides of the River Thames. The land near the Site is a combination of residential properties, social infrastructure, commercial properties and open space.

The northern end of the Site, where the Temporary Bridge will abut, is characterised by the heavily built up river frontage, with new residential properties to the east side of Hammersmith Bridge. Here a new housing redevelopment is present: the Riverside Studios and Queens Wharf. According to the planning application of this new development, the building includes 165 residential units and the new Riverside Studios (previously an historic film studio formed in 1930), that includes a performing arts centre, a gallery, bars and restaurants. The precise area where the new Temporary Bridge will land (abutments and ramps) is a small green space at the south west end of Queen Caroline Street.

To the west side of Hammersmith Bridge at the Lower Mall, is a row of old Victorian buildings running along the river which provide residential use, commercial uses (pubs and restaurants) and social uses (three rowing clubs). Two areas of green space (Furnivall Gardens to the west and Frank Banfield Park to the east of Hammersmith Bridge) are found just over 250m from the proposed site.

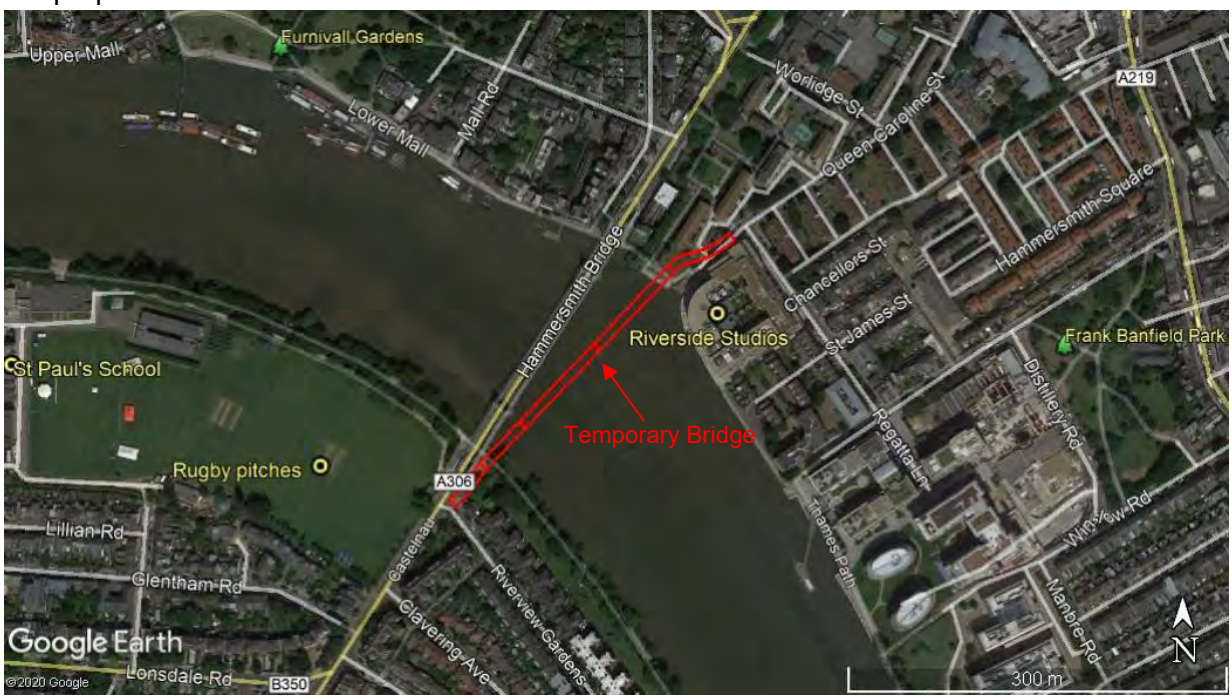

Figure 2 – Overview of the Site

The southern end of the proposed Temporary Bridge is located near the towpath on the south riverbank which leads to Castelnau, and Riverview Gardens.

Although the riverfront is much more naturalised, the towpath running along the river is bounded by a line of trees, the surrounding area running along Castelnau from Hammersmith Bridge, is dominated by buildings with mixed use (residential and commercial). To the east section of the Site, at Riverview Gardens, the area is mainly residential properties. To the west section, the vast rugby pitches of St Paul's School is a demarked green space near the Site.

3.2 Socio-economic, Community and Transport

3.2.1 Boroughs' Socio-economic profile

The LBHF is an inner London borough in a strategic location on the transport routes between the City and Heathrow. The borough has a very successful and diverse economy and it makes a significant contribution to the economies of London and the UK, with its concentration of businesses, retail and tourism uses[1]. The population of Hammersmith and Fulham has risen by over 10 per cent from 165,242 in 2001 to 182,500 in 2011. The GLA's 2015 projections estimated the population to be 186,800. Projections point to a rising trend of population for the upcoming years.

The LBRuT is in southwest London and forms part of Outer London and is the only borough of the city spanning both sides of the River Thames (with about 21 miles of river frontage). More than a third of the borough land is open space (including Richmond Park, Bushy Park and Kew Gardens). The other predominant land use is residential. Most businesses within the borough consist of services, retail and property development. According to the 2011 Census the resident population of the borough was 187,000 representing an increase of 8.5 per cent in relation to 2001 (172,311 residents in this year). It is estimated that the population in 2018 was approximately 199,419: that is an increase of 6.6 per cent compared with 2011[2].

3.2.2 Local community and social infrastructures

As previously discussed, the land surrounding the Site is a combination of residential properties, social infrastructure, commercial properties, and open space.

Along the northern riverside, sports clubs and a leisure venue are found. Furnivall Sculling Club, Auriol Kensington Rowing Club and British Rowing are found within 200m west of the proposed Site, and Fulham Reach Boat Club is found within 250m east of the Site (Figure 11). These sports clubs utilise the river as part of their activities and thus have the potential to be affected by the proposed works, particularly during construction. Riverside Studios, an arts centre which also contains a bar and restaurant, is situated adjacent to the proposed northern landing point.

Furnivall Gardens located in the riverfront at Lower Mall is the closest green space to the Site on the north bank, having environmental and social importance for the local community.

The riverside is also home to pubs and restaurants; The Old City Arms is located at Hammersmith Bridge Road and The Blue Anchor and Rutland Arms are located at Lower Mall.

To the south of the Site, several local businesses, including pubs and restaurants, guesthouses, supermarkets, and a pharmacy are located at Castelnau.

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[1] Hammersmith and Fulham Local Plan 2018
[2] DataRich, available on www.datarich.info/population/report/ , accessed in January 2020

Metropolitan Open Land (MOL) is found along the riverside to the rear of Riverview Gardens and St Pauls Playing Field. This is a green space for community leisure.

Regarding core social infrastructure, the following schools and medical care can be found near the Site:

- St Paul's CofE Primary School is located within 250m to the north of the Site;
- St Vincent's House Care Home is located within 250m to the north of the Site;
- Bright Horizons Barnes Day Nursery and Pre-School is located within 250m south of the Site; and
- St Paul's School and its rugby pitches is located within 50m of the proposed southern landing.

Charing Cross Hospital is the nearest hospital to the Site, but its distance means it is unlikely to be negatively impacted upon by the proposed works.

Furthermore, several events are programmed near the Site or in the River during 2020. A list of events has been compiled in Appendix B. Some of these are likely to be affected by the construction of the proposed Temporary Bridge.

3.2.3 Transport and Connectivity at the Site and its surroundings

The Hammersmith Bridge is an important link between both sides of the River Thames, and between the LBHF and the LBRuT. The Temporary Bridge connects the A306 north and south of the river. The A306 Castelnau leads into the A205 Upper Richmond Road on the south bank, while the A306 Hammersmith Bridge Road leads into the Hammersmith Gyratory on the north bank. Hammersmith Gyratory is a complex junction that connects the strategic network route A4 (Great West Road), and also other London Distributor Roads, as A406, King Street, Beadon Road, Shepherd's Bush Road, and Fulham Palace Road: some of the busiest roads of London.

The north bank is well served by London Underground connections with the Hammersmith London Underground Station located 600m from the Site, providing a good access to all central London. In contrast, the south bank of Richmond is lacking in cross river London Underground services; and the closest underground station is only found in Putney (approximately 4 km to the east). Therefore, commuters living in Richmond used to travel on one of the four bus routes across the Hammersmith Bridge before it was closed in April 2019.

Before the Hammersmith Bridge closure, it was estimated that 20,000 vehicles and 1.800 buses crossed the bridge every day. As discussed in Section 1.2, the closure of the bridge resulted in an increase in flows of pedestrians and cyclists across the bridge, as bus routes now terminate at either end of the bridge.

In order to estimate the population affected by the closure of Hammersmith Bridge, baseline pedestrian and cyclist traffic surveys crossing the bridge were carried out by TfL, between July 20th and August 8th in 2019. Results demonstrate that over the duration of the survey, Hammersmith Bridge was used by 167,157 walkers and 47,554 cyclists. During one day, the maximum number of walkers and cyclists recorded was 13,260 and 4,587 respectively. Additionally, on average the bridge was used by 11,114 walkers and 3,170 cyclists. These results show the high level of usage of the bridge for pedestrians and cyclists. Latest figures from TfL estimate that currently the flow of people across the bridge is approximately 21,000 trips per day.

It is noted that the next closest pedestrian and cyclist river crossing points are located at Chiswick Bridge approximately 3.8km to the west, and Putney Bridge approximately 3km to the east of the Hammersmith Bridge.

The surrounding area also offers cycle and walking routes, with the Thames Path National Trail running parallel to either side of the River Thames. The path is a Public Rights of Way and an important recreational route of London.

In line with the London Plan, both London Boroughs have considered policies within their Local Plans highlighting the importance of improving walking and cycling opportunities, as part of a strategy to improve air quality, accessibility and health of the local community. This is evident in Hammersmith and Fulham Local Plan: Policy CF1 – Supporting Community Facilities and Services; Policy T1 – Transport; and Policy T3 - Increasing and promoting opportunities for cycling and walking. The same strategy is within the following policies of Richmond Upon Thames Local Plan: Policy LP 30 - Health and Wellbeing; Policy LP 31 - Public Open Space, Play Space, Sport and Recreation; and Policy LP 44 - Sustainable Travel Choices. Likewise, the Thames Path has been considered of high importance within the policies related to the River Corridor (Policy LP 18 of Richmond Upon Thames and Policy RTC1 – River Thames of Hammersmith and Fulham Local Plan.

3.2.4 River Navigation

The River Thames is an historical navigation route of national and international importance. The PLA is the custodian of the tidal Thames and works to ensure navigational safety and protect the river's environment.

The existing Hammersmith Bridge has a clearance of 3.5m at Mean High Water Springs (MHWS) which is the lowest bridge clearance on the tidal portion of the River Thames. Due to this low clearance, navigation is generally restricted to being through the southern half of the central span of the bridge. The PLA has required that the south span of the Temporary Bridge must have, as a minimum, the same headroom to match the towpath headroom of the Hammersmith Bridge, and this has been attended to within the design.

A navigational risk assessment was required by the PLA and is currently being undertaken by Nash Maritime on behalf of TfL.

3.3 Geology and Hydrogeology

The Phase 1 Geotechnical and Geo-environmental Desktop Study of Hammersmith Bridge Refurbishment (Pell Frischmann, October 2019) and The British Geological Survey's (BGS) Geology of Britain Viewer have been reviewed to collate information on the local geology. The 1:50,000 scale British Geological Survey's (BGS) map indicates that the north and south abutments are underlain by bedrock geology of London Clay formation and superficial deposits of Kempton Park Gravel Member. It is also likely that the southern abutment is underlain by made ground. The River Thames channel is underlain by bedrock geology of London Clay formation and superficial deposits of alluvium formed of Clay, Silt, Sand and Peat. It is noted that the Site is not designated for any geological interest or importance.

The bedrock geology of London Clay is classified as an Unproductive Aquifer. The superficial Kempton Park Gravel deposits are classified as a Secondary (A) Aquifer and the superficial River Channel Alluvium deposits are classified as a Secondary Undifferentiated Aquifer. There

are no groundwater abstraction licenses within 1,000m of the site and the site is not located within a Source Protection Zone (SPZ).

3.4 Surface Water and Flooding

3.4.1 River Thames water body

The proposed Temporary Bridge crosses the River Thames, which flows from the west in the Cotswolds to the east, where it reaches the coast in Kent, and the marine waters of the English Channel. It is the main water body of the Thames River Basin District. No other inland rivers of note have been identified closer to the Site.

The Site falls within the Thames River Basin Management Plan, which describes the Water Framework Directive (WFD) requirements for water bodies in the area. The Site specifically falls within the Thames Upper Water Body that is classified as heavily modified, due to the construction of fluvial defences for flood and coastal protection, and management of the waterbody for navigation: both of which have modified its natural course.

3.4.2 Water quality

Although the River Thames has had a history of pollution and was declared as biologically dead in the 1950s and 60s, it is now classed as one of the cleanest metropolitan rivers in the world. However, it is still frequently exposed to pollution in the form of litter, and industrial and sewage discharge incidents.

There are two discharge consents granted close to the site (within 20m of the Temporary Bridge). These are related to stormwater and sewerage overflows into the River Thames.

Water quality is monitored by the Environment Agency (EA) at several locations along the course of the river. The closest sampling site to the proposed Temporary Bridge is at Dove Pier, approximately 385m west of the Site. The latest results for this site (taken in October 2019) suggest that dissolved oxygen, temperature and pH are at an acceptable level and can support river life. The river is turbid, but this is partly expected as the Tidal Thames is highly turbid due to mud, silt and underlying clay geology.

The EA has also recorded the presence of priority substances and other polluting chemicals listed as part of the Environmental Quality Standards Directive (EQSD), and the Cefas Action Level 1, such as heavy metals, organics and organo-metallic compounds, at this Site.

In accordance with the WFD, all water bodies are to achieve ‘good’ status (or ‘good’ ecological potential and chemical status for heavily modified water bodies). In 2016, the status condition of the Thames Upper Water Body was Moderate for Overall WFD Status and Ecological Status and Fail for Chemical Status.

A full WFD assessment has been carried out for the proposed Temporary Bridge (102963-PEF-BAS-ZZZ-REP-EN-00003). Further details about water quality can be found in that report.

3.4.3 Flood risk

A Flood Risk Assessment (FRA) has been undertaken for the proposed Temporary Bridge (102963-PEF-BAS-ZZZ-REP-WR-00001).

The Site is situated within Flood Zone 3a, meaning it is an area characterised by a high probability of flooding from fluvial and/or tidal sources, however this designation does not consider the presence of flood defences and the Site is in an area that benefits from flood defences.

The Thames Tidal Defences, which are situated on both banks of the River Thames, are designed to defend against 1 in 1000-year events. Although there is a risk of the defences being overtopped, the breach hazard rating for the site is considered low.

Figure 3 shows the north abutment is located in an area of medium to high risk of flooding from surface waters and at the south abutment no risk of flooding from surface water is present.

Figure 3 – Environment Agency's Risk of Flooding from Surface Water (RoFSW)

3.5 Ecology

3.5.1 Designated Sites

Statutory Sites

No international designated Sites (marine or terrestrial) have been identified within 5 km of the Site.

No marine statutory designated sites have been identified within 5 km of the Site.

The following land-based statutory designated sites of importance for nature conservation have been identified within 1km of the Site:

- Barn Elms Wetland Centre Site of Specific Scientific Interest (SSSI), located approximately 650m south of the proposed Site;
- Chiswick Eyot Local Nature Reserve (LNR), located approximately 940m west of the Site; and
- Leg of Mutton Reservoir Local Nature Reserve (LNR), located approximately 1km south-west of the Site.

The Site is also situated within a SSSI Impact Risk Zone for Barn Elms Wetland Centre SSSI.

Non-statutory Sites

The following non-statutory designated sites of importance for nature conservation (SINCs) have been identified within 1 km of the proposed Temporary Bridge site:

- River Thames and Tidal Tributaries (M031), located within the Site and classified as a Site of Metropolitan Grade Importance;
- Furnivall Gardens, located approximately 285m north-west of the Site and classified as a Site of Local Importance;
- Disused track bed west of Hammersmith station, located approximately 600m to the north-west of the Site and classified as a Site of Borough Grade Importance (Grade I);
- Ravenscourt Park, located approximately 895m north-west of the Site and classified as a Site of Borough Grade Importance (Grade II); and
- Margravine Cemetery, located approximately 780m east of the Site and classified as a Site of Local Importance.

A map with ecological designations is shown in Figure 4.

In addition, Metropolitan Open Land (MOL) has been identified on the southern side of the Temporary Bridge, formed of a strip of land along the riverside to the rear of Riverview Gardens and St Pauls Playing Field. This is a designation within the London Plan, and it is intended to protect areas of landscape, recreation, nature conservation and scientific interest.

Tree Preservation Orders and Conservation Areas

No Tree Preservation Orders (TPO) are found near the Site. However, there are three Conservation Areas within the Site and immediately adjacent; the Mall Conservation Area, Fulham Reach Conservation Area and Castelnau Conservation Area; therefore, trees within those conservation areas are under protection.

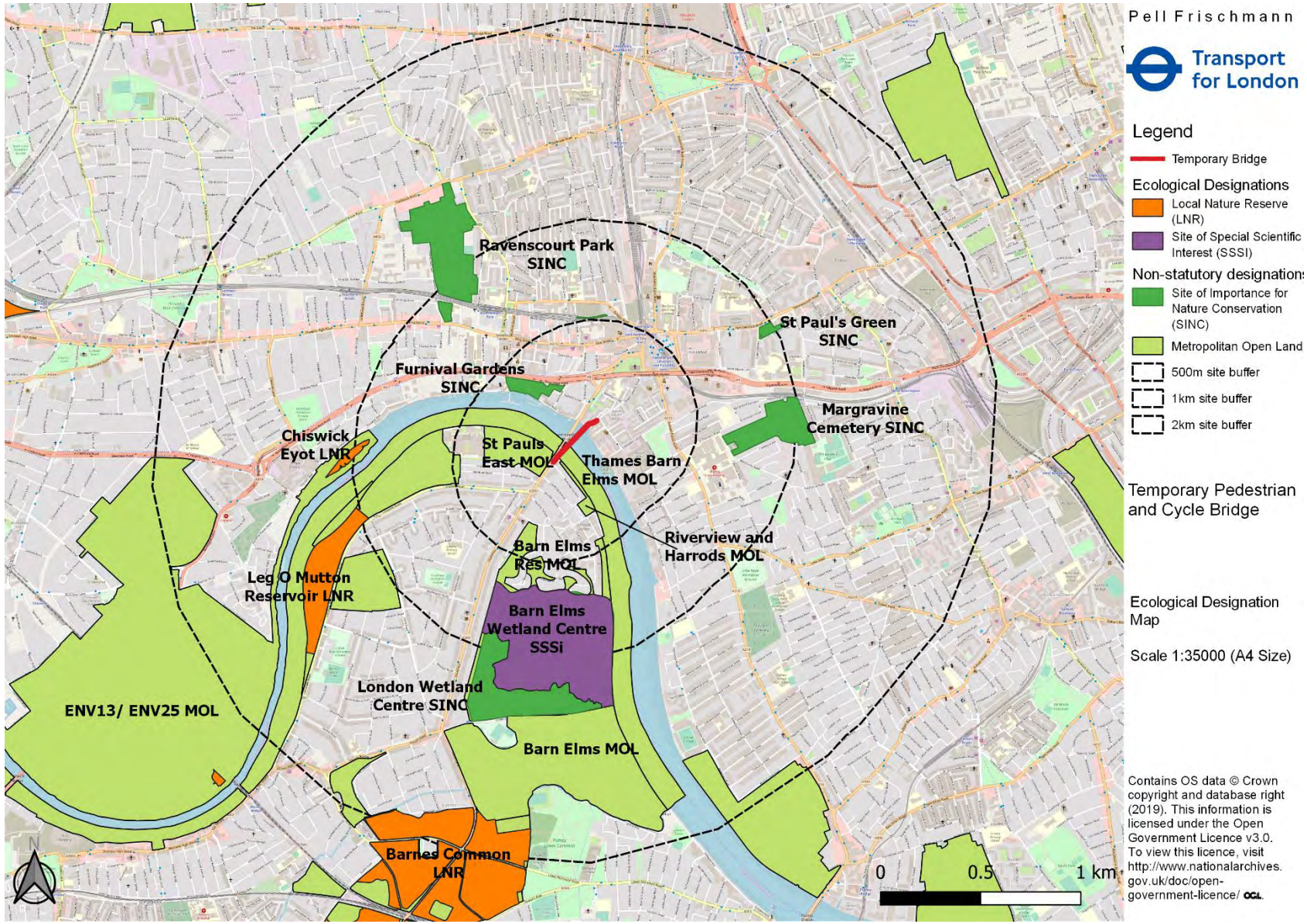


Figure 4 – Ecological designations

3.5.2 Terrestrial Ecology

A Preliminary Ecological Appraisal (PEA) has been undertaken for the proposed Temporary Bridge (102963-PEF-BAS-ZZZ-REP-EN-00004). The PEA aims to record the key habitat types at the Site, assess the potential for these habitats to support protected or notable species, and determine key ecological constraints relating to the proposed development. The UK legislation to protect wildlife and habitats, EU Directives (including Habitats Directive and Wild Birds Directive) and planning policies in relation to ecology and biodiversity were considered within the PEA. The PEA was based on a desktop study and a site walkover survey. This section includes a brief description of terrestrial ecology based on the PEA, and a more detailed account can be found within that report.

Habitats

Habitats recorded during the PEA site survey have been categorised in line with Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Classification. The distribution of habitats across the Site is shown on the Phase 1 Habitat Plans attached in Appendix C. Habitats present at the Site include the following:

- Hardstanding and Structure (JNCC Code J4);
- Scattered Broadleaf Trees (JNCC Code A3.1);
- Intertidal mudflats (JNCC Code H1.1) and shingle (H1.2);
- Running water (JNCC Code G2) that corresponds to the River Thames; and
- Ephemeral vegetation (JNCC Code J1.3) and Scattered scrub (JNCC Code A2.2).

It is noted that the Intertidal Mudflats are a UK Priority Habitat due to their high productivity and ability to support predatory bird and fish species. Intertidal mudflats were observed at low tide along the northern and southern banks of the River Thames. This habitat is considered to be of value to feeding birds. Mudflats are also of importance to wintering birds and migrant species. However, given the location within this particular Site, it is considered that the mudflats would support less biodiversity than areas of less recreational disturbance and pollution. No vegetation was observed within the mudflats during the PEA survey.

Scattered Broadleaf Trees (JNCC Code A3.1) are present to the north and south of the Hammersmith Bridge. Tree species include ash (*Fraxinus excelsior*), common lime (*Tilia × europaea*), elder (*Sambucus nigra*), London plane (*Platanus x hispanica*), Black poplar (*Populus nigra*) and Willow (*Salix spp sp*).

Protected and Notable Species

As part of the PEA desktop study, records from the National Biodiversity Network (NBN) and Greenspace Information for Greater London CIC (GiGL) were consulted. Within a 2km radius of the site, European protected species records were returned for eight bat species. Other protected species records found within 2km of the site include four species of amphibian, 181 species of bird (with 85 notable bird species either found on the BoCC Red List or Schedule 1 Part 1 of the Wildlife and Countryside Act), two species of fish (one UK Biodiversity Action Plan priority fish species), three species of mammal and three species of reptile.

Bat species records were returned within the PEA desk study, with seven species being identified present within the Barn Elms Wetland Centre to the south-east of the Site. Tree lines and the linear feature of the River Thames are considered to provide commuting and foraging grounds for bat species. Mature trees to the south of the Hammersmith Bridge could also have

concealed bat roosting features behind ivy where it is present. No potential roosting features were identified within any of the trees to the north of the Hammersmith Bridge. Hammersmith Bridge itself is considered to have low suitability roosting habitat for bats.

Regarding birds: the mudflats are identified as important for foraging, wading and wintering birds as they are exposed at low tides. During the survey 17 species of bird were recorded.

Due to the urban setting of the Site, and its isolation from suitable habitats (such as the Barn Elms Wetland Centre), it is considered unlikely that reptile species, badgers (*Meles meles*), otters (*Lutra lutra*), water voles (*Arvicola amphibious*), great crested newt (*Triturus cristatus*) or dormice (*Muscardinus avellanarius*) would be present. No signs of these species were identified during ecological surveys.

Invasive Species

The NBN search has returned records for invasive non-native species Chinese mitten crab (*Eriocheir sinensis*), zebra mussel (*Dreissena polymorpha*), to the west of the Site, and marsh frog (*Pelophylax ridibundus*).

During the PEA survey, no scheduled invasive species, such as Japanese knotweed or giant hogweed were identified, but it should be noted that the survey was completed outside of the optimal flowering season for these species. Buddleia, which is locally invasive and listed on the London Invasive Species Initiative (LISI) was identified.

Ring-necked parakeet (*Psittacula krameri*), Canada goose (*Branta canadensis*) and Egyptian goose (*Alopochen aegyptiaca*) were identified during the survey.

3.5.3 Aquatic Ecology

An Aquatic Ecology desktop study (102963-PEF-BAS-ZZZ-REP-EN-00005) was undertaken by HR Wallingford, on behalf of Pell Frischmann for the Temporary bridge in January 2020. Available aquatic data was collected for groups of fish, marine mammal and benthos. Findings related to aquatic species are summarised in the sections below. Further details can be found in the Aquatic Ecology Desktop Study (102963-PEF-BAS-ZZZ-REP-EN-00005).

Fish Species

Fish species that are likely to be found within the vicinity of the Site include Atlantic salmon (*Salmo salar*), Barbel (*Barbus barbus*), brown/sea trout (*Salmo trutta*), bullhead (*Cottus gobio*), common Dace (*Leuciscus leuciscus*), common goby (*Pomatoschistus microps*), European eel (*Anguilla anguilla*), European seabass (*Dicentrarchus labrax*), European smelt (*Osmerus eperlanus*), Flounder (*Platichthys flesus*), river lamprey (*Lampetra fluviatilis*) and roach (*Rutilus rutilus*). These species have been recorded as present between Teddington Lock and Wandsworth Bridge by the Zoological Society of London (ZSL).

These species are split into different fish types with the common goby spending its entire life in the Tidal Thames, some species being found in the freshwater-dominated Tidal Thames, some using the Tidal Thames to spawn or grow whilst juveniles, and some migrating through the Tidal Thames to freshwater or saltwater. The species can be present at different times of year near the Site.

Several of the fish species mentioned are protected, including Atlantic salmon, barbel, brown / sea trout, bullhead, common goby, European eel, European smelt and river lamprey.

European eel and smelt are protected under NERC Species of Principle Importance, MCZ FOCI (Feature of Conservation Importance), London BAP Species and UK BAP Priority Species.

The Thames smelt population are known to spawn close to the project area. European smelt are sensitive to pollution and thus can be an indicator of good water quality. Data from previous reports suggests that the likely dates for smelt spawning and hatching are between March and April. Following spawning, juvenile smelt drift with the currents until they can swim independently, and they remain in the Tidal Thames throughout summer. A report by HR Wallingford for ZSL (2016) recorded that past spawning has occurred at Wandsworth Bridge, but the potential extension of the spawning ground includes upstream at Hammersmith Bridge.

European eel are known to pass Hammersmith Bridge during upstream and downstream migration. This species has been listed as 'Critically Endangered' on the International Union for Conservation of Nature (IUCN) Red List since 2008. Eel have been recorded at a monitoring site 7km upstream of Hammersmith Bridge. They have also been recorded 1.5km downstream alongside Craven Cottage (Fulham Football Club Stadium) as part of an Environmental Statement (ES) submitted by Fulham FC. This survey also recorded common goby, bass, flounder, common bream (*Abramis brama*), three-spined stickleback (*Gasterosteus aculeatus*), smelt, dace and roach.

The EA undertake freshwater monitoring at Beverley Brook (2km downstream of the Hammersmith Bridge). Other fish species recorded (that have not been previously mentioned) include gudgeon (*Gobio gobio*), chub (*Leuciscus cephalus*), stone loach (*Barbatula barbatula*), rudd (*Scardinius erythrophthalmus*) and tench (*Tinca tinca*).

A data search on the NBN Atlas revealed aquatic species results for European eel, sea bass, smelt and Jenkin's spire snail / New Zealand mud snail (*Potamopyrgus antipodarum*). No records for algae were recorded.

Therefore, it is considered that a number of protected and common fish species are likely to be present at the Site, across a variety of times throughout the year. This includes likely spawning areas for smelt, and the upstream migration of a number species, including eels, and a typical fish assemblage for a river of this type.

Marine Mammals

Marine mammals are present throughout the Thames Estuary during all months of the year, according to ZSL. Sightings of seals, harbour porpoises (*Phocoena phocoena*) and bottlenose dolphins (*Tursiops truncatus*) have been recorded much further upstream than Hammersmith Bridge.

Marine mammals likely to be found around the Site (based on past public sightings) include the grey seal (*Halichoerus grypus*), harbour seal (*Phoca vitulina*) and the harbour porpoise.

ZSL has also recorded some public sightings of grey seals and harbour seals in the Fulham and Putney area in 2020.

Therefore, it is considered that grey and harbour seals and harbour porpoise may be occasionally present, in low or single numbers at the Site.

Benthic Ecology Species

A number of invertebrate species were recorded during past benthic surveys, including for the Fulham FC ES, and a survey at Wandle Half Tide Weir (4km downstream of the proposed Temporary Bridge site). It was concluded that there were no species or assemblages of conservation importance, with only common species being recorded.

The Fulham ES (conducted in 2017) reported that swollen spire snail (*Mercuria confuse*), duck mussel (*Anodonta anatine*), swollen river mussel (*Unio tumidus*) and crustacean shrimp (*Corophium lacustre*), which are all IUCN Red Data List species, have been recorded in the upper Tidal Thames. The Tidal Thames is also thought to support populations of the tentacled lagoon worm (*Alkmaria romijni*), protected under the Wildlife and Countryside Act. However, none of these species were present during the survey.

The Wandle Half Tide Weir survey also recorded non-native species, such as the New Zealand mud snail and Asian clam (*Corbicula fluminea*). No species of conservation importance were recorded.

3.6 Archaeology and Heritage

An Archaeology and Cultural Heritage Desktop Study was undertaken for the proposed Temporary Bridge (102963-PEF-BAS-ZZZ-REP-AC-00001) by AC Archaeology on behalf of Pell Frischmann (January 2020). The results have found 34 designated heritage assets within, or partly within the 500m study area which comprise six Grade II* Listed Buildings, 24 Grade II Listed Buildings and six Conservation Areas. Three of those Conservation Areas are found adjacent to the proposed Temporary Bridge (Figure 5):

- Fulham Reach Conservation Area is situated to the north east of the Site;
- The Mall Conservation Area is situated to the north west of the Site; and
- Castelnau Conservation Area is situated to the south west of the Site.

All three of these conservation areas are considered of medium historic and architectural significance, the exception is The Mall Conservation Area, which is considered to be of high significance. The Mall Conservation Area has been designated for its surviving elements of 17th century and later waterfront buildings and the relationship of the area with the River Thames. Its growth and development can be traced through the varying architectural styles within it, which give the asset its character. The Conservation Area has been divided into Character Areas, the closest of which is Lower Mall, an area with a number of surviving post-medieval town houses and waterfront buildings, representing a fairly prosperous but primarily mercantile period of its history, as the city expanded. The asset as a whole contains a number of Listed Buildings. The setting of the asset comprises its position on the river. It can be best appreciated from within: where the architectural development of the area and its relationship with the river can be understood. The asset derives much of its significance from its architectural and historic interest.

The Hammersmith Bridge (Site 1) is a Grade II* Listed Building, which stands adjacent to the proposed Temporary Bridge. This is an asset of High Significance that has been designated due to its high architectural qualities and its ornamentation, which makes it one of the most distinctive bridges on the Thames. The bridge was designed by Sir Joseph Bazalgette and constructed in 1884 and succeeded an earlier suspension bridge built in 1824. The setting of the Hammersmith Bridge comprises its position across the River Thames and its functional relationship with the river and the settlements on either side. Visually, the bridge is very

striking, and it can be appreciated from some distance along the river. It principally derives its significance from its architectural and historic interest and its setting makes a moderate contribution to that significance.

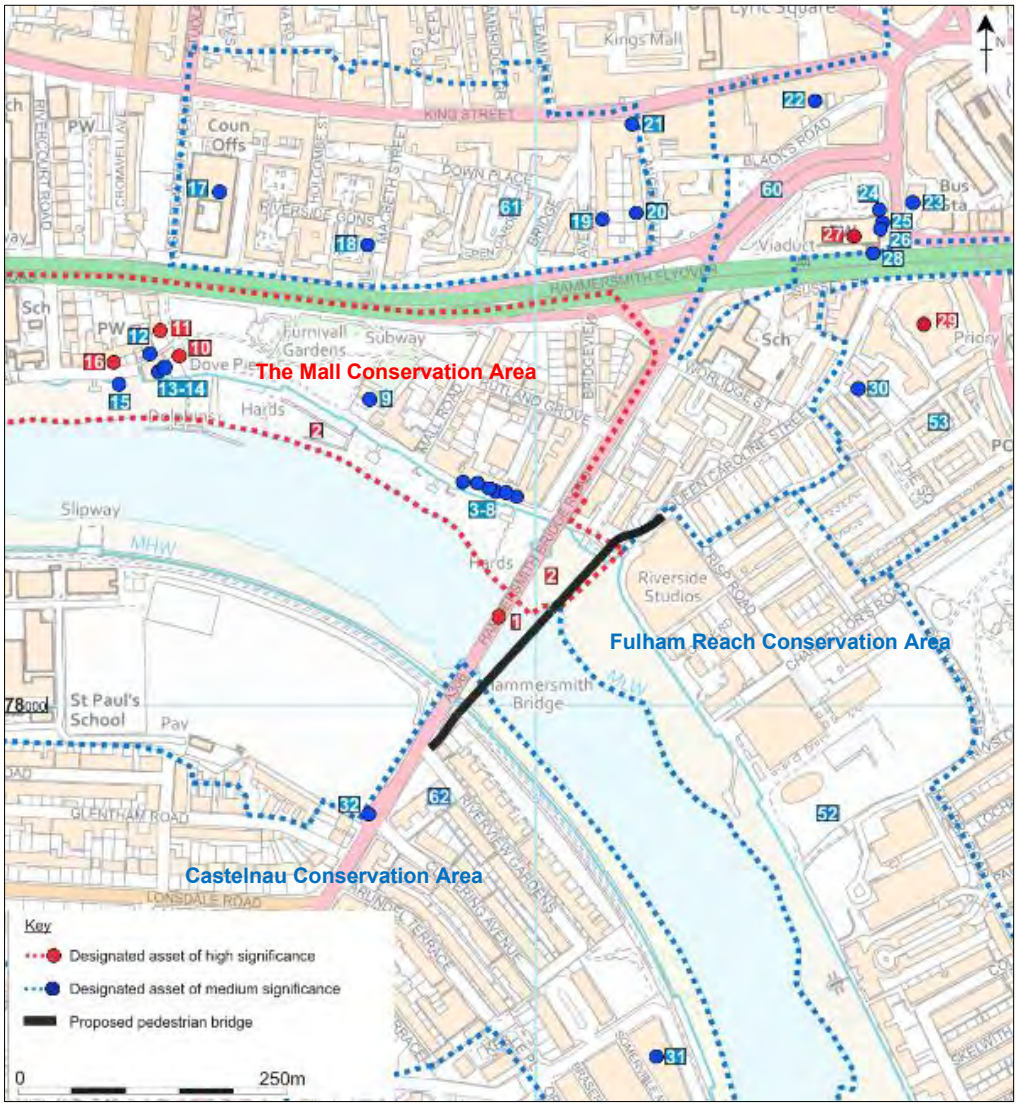


Figure 5 – Location of designated assets within Conservation Areas

The desktop study also highlights that there are three Archaeological Priory Areas (APA) within the study area namely (Figure 6):

- Hammersmith Creek, Queen Caroline Street and Broadway APA – which is situated to the north/north-west of the Site;
- Winslow Road APA – which is situated to the south east of the Site; and
- Thames Foreshore and Bank APA – which is situated to the south of the Site.

The results demonstrate that there are also 21 non-designated heritage assets within, or partly within the 500m study area. The majority of these fall into the three APA's mentioned above. These non-designated heritage assets are typically formed of artefacts from a range of different periods and building / structure remains.

Further details about the archaeological and heritage assets can be found in the Archaeology and Cultural Heritage Desktop Study of the proposed Temporary Bridge (102963-PEF-BAS-ZZZ-REP-AC-00001).

Recent engineering surveys have indicated that there are freestanding railings on the south side of the existing bridge that were installed a few decades after it was built. They will need to be removed to enable the construction of the Temporary Bridge. Recommendations concerning these have been outlined in Section 5.1.5.

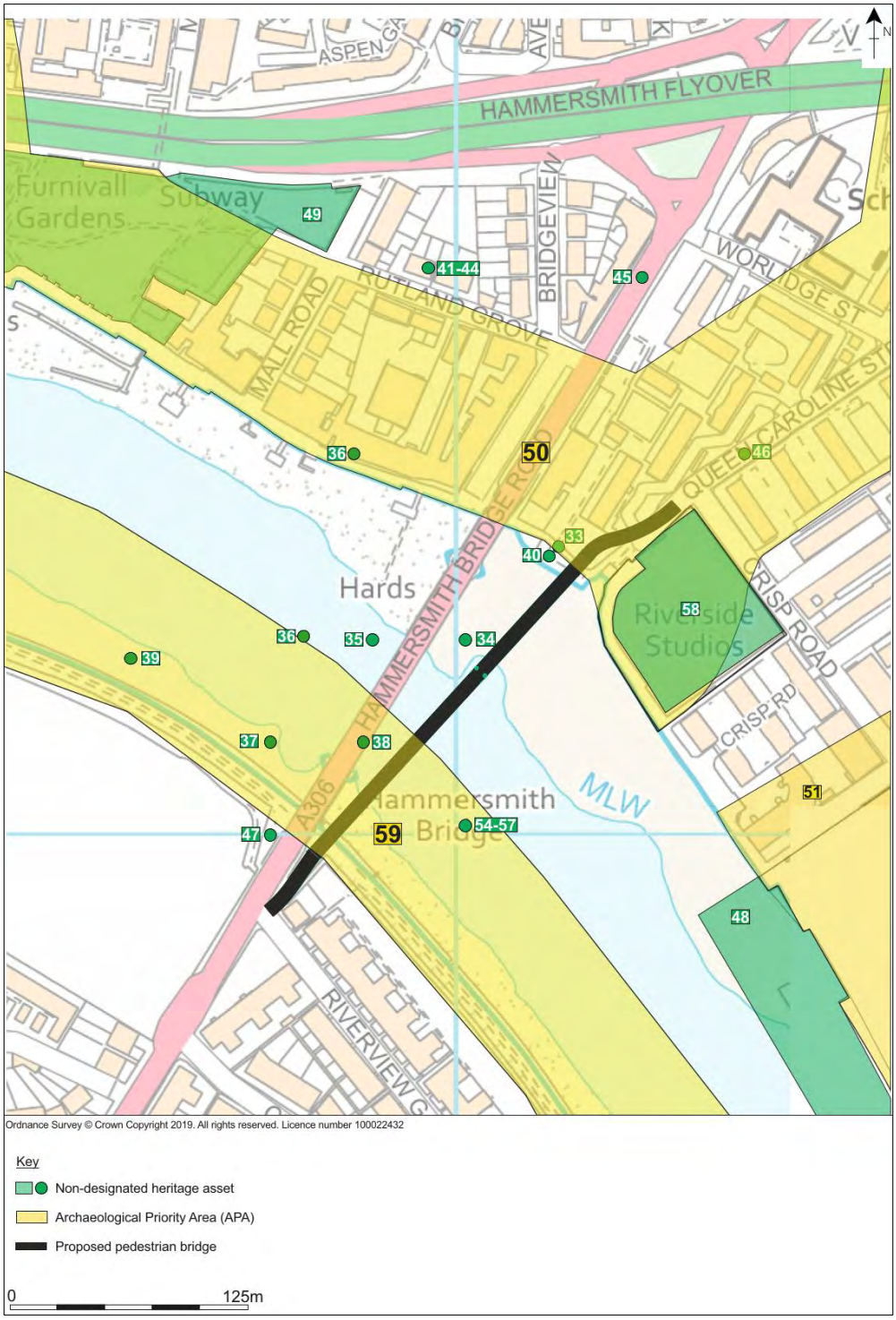


Figure 6 – Location of non-designated heritage assets and APA

3.7 Townscape and Landscape

Hammersmith Bridge lies within the Inner London National Character Area. This landscaped designation is dominated by a built environment and scattered with parks, and numerous heritage assets of national and international importance. It is noted that no Areas of Natural Outstanding Beauty are present in this character area.

The River Thames is the most immediately visible natural feature of the London Landscape Character Area, having vital functions for the balance of the urban ecosystem: as the principal draining feature; a wildlife habitat; and supporting human activities from transport to leisure. The River Thames has long been a cultural inspiration, demarking the townscape and urban settlement, and the proposed project Site and its surroundings are no exception to this.

The Site lies within The Thames Policy Area. This designation, and associated policies, protects the features of the riverside and of the river, including townscape and views. At the Site, it is noted that the riverfront of the River Thames provides an imperative open view including notable local landmarks, of which the historic Hammersmith Bridge is the most iconic.

As described in Section 3.6, the Site lands on both sides of River Thames in Conservation Areas that were designated due to the historic and architectural significance of its buildings and its special townscape character.

On the northern riverbank, the Thames Path National Trail follows the river with a strong built frontage, offering extensive walking and cycling opportunities with open views for users. To the northeast of Hammersmith Bridge, the townscape character of the riverfront is enriched by the Victorian houses of The Mall Conservation Area (Figure 7), from Hammersmith Bridge Road to the west along the river. The Conservation Area has been divided into several Character Areas, the closest of which is Lower Mall, which has buildings varying in interesting architectural styles. Pubs, such as the Blue Anchor for example, and rowing clubs are part of the identity of this place. Two residential moorings give a special charm to the riverfront. To the west, the Furnival Gardens, classified as a Site of Local Importance, is the most significant green space in the transition to the west to the Upper Mall (other Character Area of the main Conservation Area, The Mall).

Figure 7 – View to The Mall Conservation Area from Hammersmith Bridge.

Protected views and landmarks have been identified within the Local Plan of Hammersmith and Fulham Policies Map, as shown in Figure 9. Policy DC7 Views and Landmarks states:

'*The council will protect the strategic view of St Paul's Cathedral and important local views shown on the Policies Map*'. N.1 of Policy DC7 also states that applications within the Thames Policy Area will not be permitted if they would cause unacceptable harm to the view ' *from Hammersmith Bridge, the view along the river, foreshore, and riverside development and landscape between Hammersmith Terrace to the west and Fulham Football Ground to the south*.'

Furthermore, N.2. of Policy DC7 notes that applications will also not be permitted if it would cause unacceptable harm to the view '*from within the Thames Policy Area of any important local landmarks, or their settings, including the Upper and Lower Mall, and Hammersmith Bridge'*.

The northern end of the proposed Temporary Bridge will be positioned on the boundary of the Fulham Reach Conservation Area. This area is primarily designated for its waterfront, the river and the views along it from Hammersmith Bridge down to Fulham and back (Figure 8). Many of the historic waterfront buildings have been lost and the character and significance of the Conservation Area are now largely derived from the river and the current views along it. A new high-quality residential redevelopment (completed in 2019) is adjacent to the river walk, which also includes the public space of The Riverside Studios. Although this is a heavily built up environment, some trees and a small area of green space are found at the area where the Temporary Bridge is proposed to land.

Figure 8 – View to north bank where the proposed bridge will land.

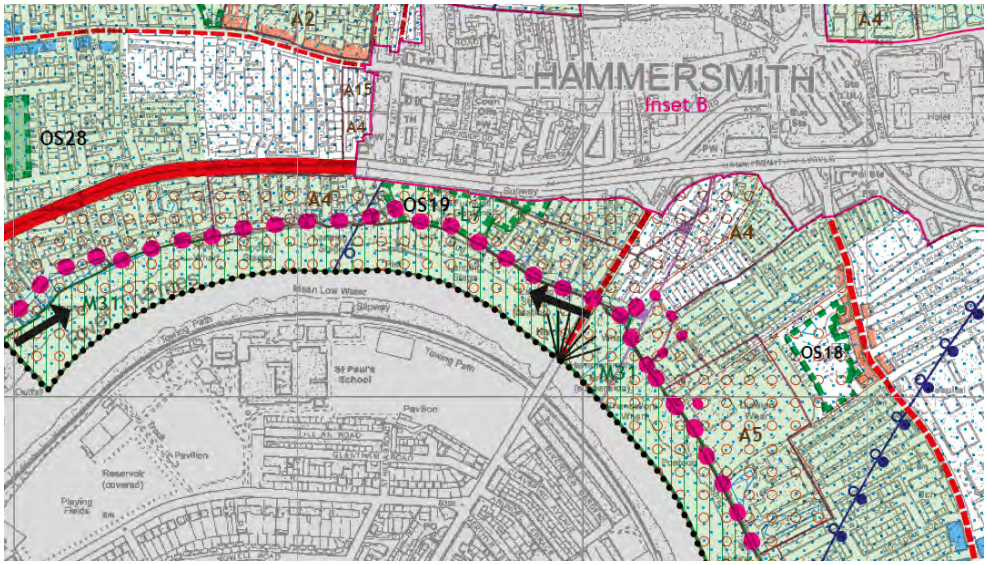
On the southern riverbank, a towpath runs along the riverside followed by a dense line of mature trees. To the southeast side of Hammersmith Bridge, there is an open green space used as St. Paul's School rugby pitches. The southwestern section of Hammersmith Bridge, where the Temporary Bridge will abut, is within the Castelnau Conservation Area: an area characterised by mainly residential brick buildings along Riverview Gardens.

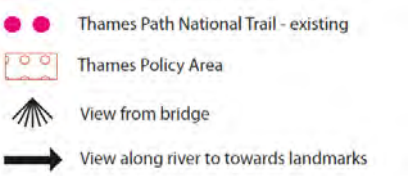
Metropolitan Open Land (MOL) has been identified on the southern side of the Temporary Bridge, formed of a strip of land along the riverside to the rear of Riverview Gardens and St Pauls Playing Field. This is a designation within the London Plan, and it is intended to protect areas of landscape, recreation, nature conservation and scientific interest.

The LBRuT has included protected views within the Policies Map of the Local Plan (Figure 9). Under Policy LP5 '*The Council will protect the quality of the views, vistas, gaps and the*

skyline, all of which contribute significantly to the character, distinctiveness and quality of the local and wider area'.

a) Excerpt from the Hammersmith and Fulham Local Plan Policies Map





b) Excerpt from the Richmond upon Thames Plan Policies Map

Source: www.cartogold.co.uk/richmond_2015/richmond.htm)

Figure 9 – Excerpts of local plans policies maps

3.8 Air Quality and Climate Change

The northern extent of the proposed Temporary Bridge falls within the Hammersmith and Fulham Air Quality Management Area (AQMA) and the southern end falls within the LBRuT AQMA. These AQMA were declared by London boroughs due to exceedances of NO_2 and PM_{10}. The key sources of such pollutants are attributable to road traffic associated emissions. These are shown in Figure 10.

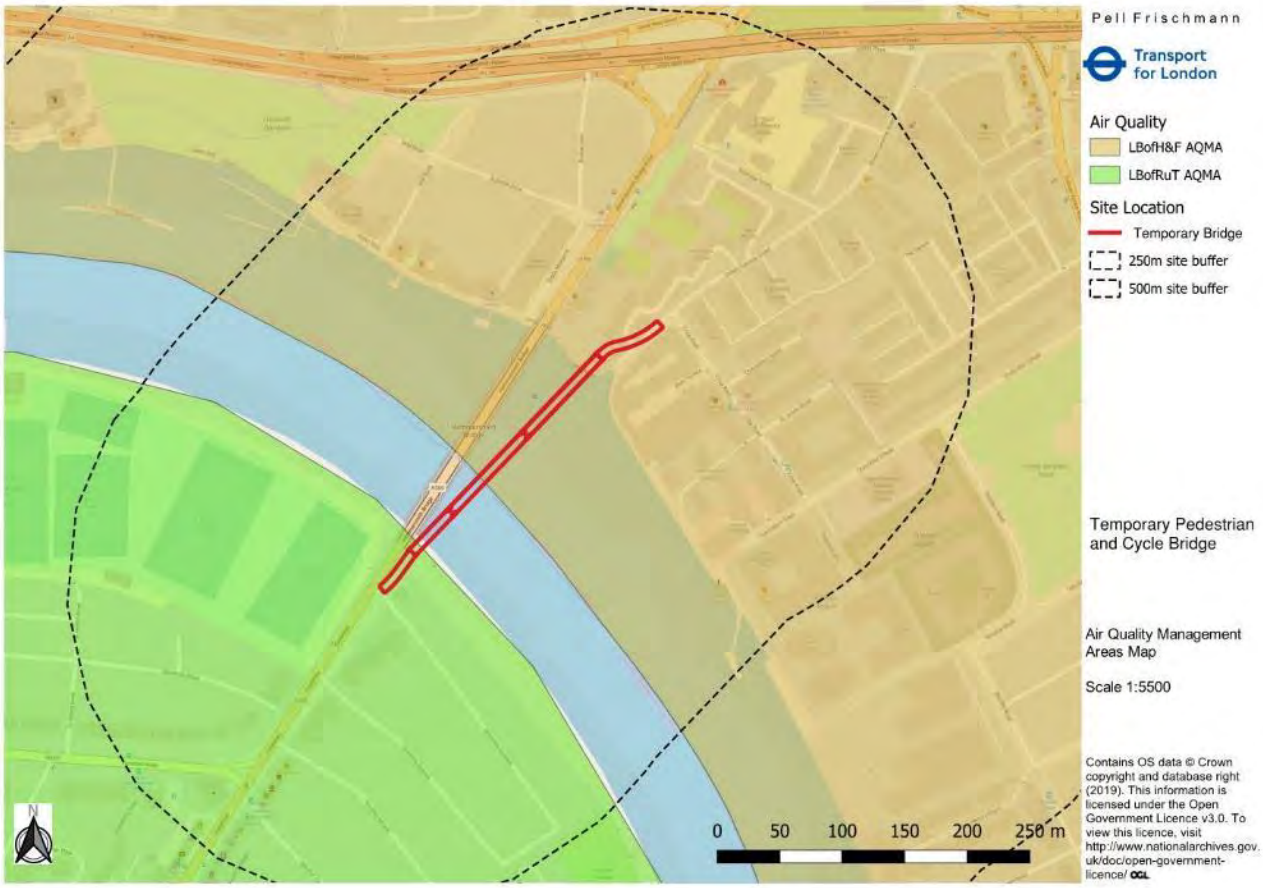


Figure 10 – Air Quality Management Areas

Key sensitive receptors of potential adverse effects on local air quality have been identified in Figure 11.

In relation to climate change, in line with National Planning Policy Framework (2019) and the Climate Change Act (2008)[3] as amended in 2019, the local planning authorities have included objectives within their planning policiesto reduce carbon emissions. Improved cycling and walking opportunities are encouraged within the local plan policies of the LBHF and the LBRuT as measures to address climate change.

[3] The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (S.I. 2019/1056), also known as the Net Zero Carbon Emissions Law.

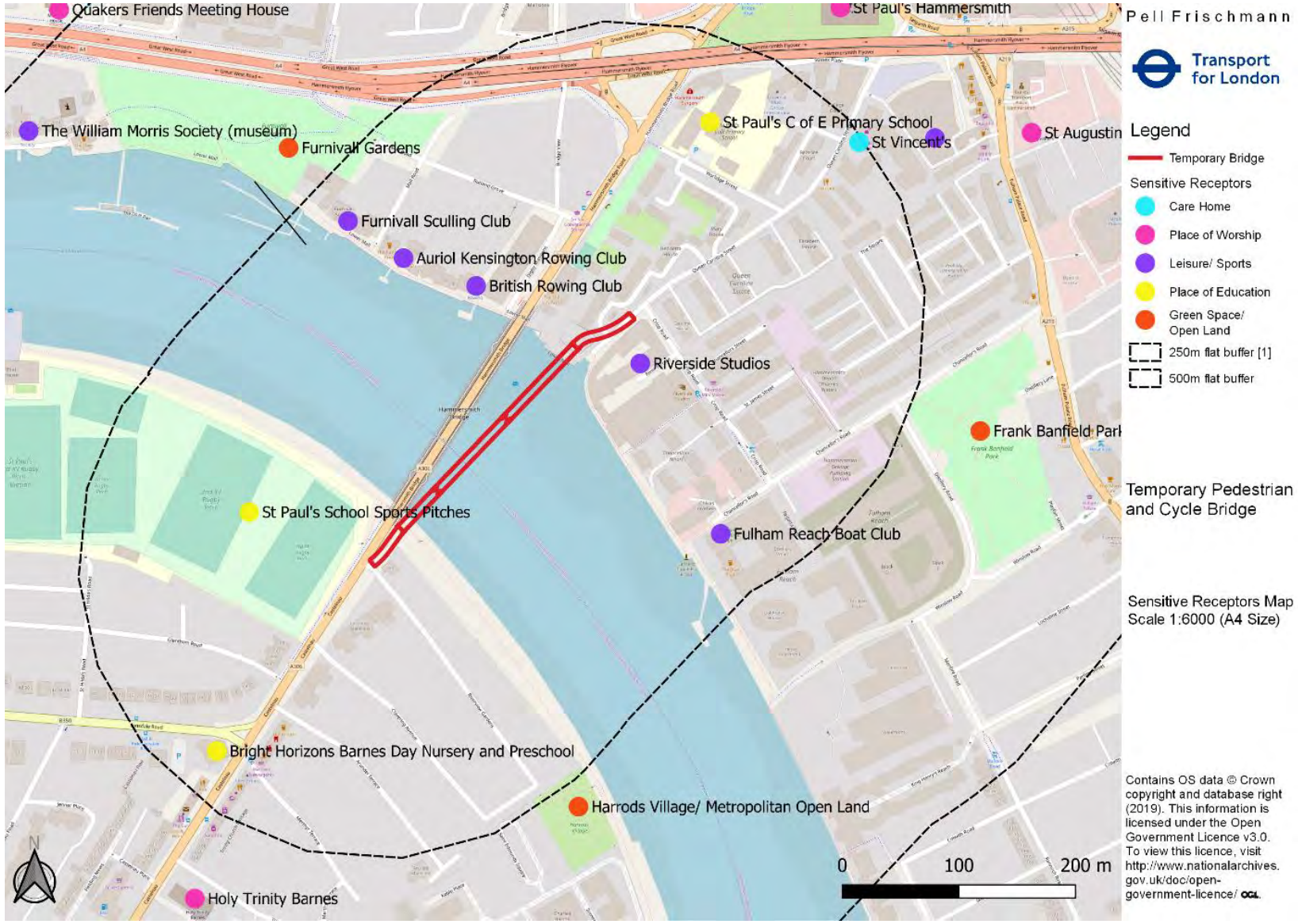
3.9 Noise and Vibration

The main sources of noise at the Site are likely to arise from road traffic, servicing of commercial areas and noise from air traffic associated with Heathrow Airport. No vibration sources of importance have been identified at the Site and its surroundings.

Sensitive receptors have been identified near the Site. Residential receptors are located on the north of the River Thames to the west and to the east of the existing Hammersmith Bridge and Temporary Bridge. The Riverside Studios and residential blocks along Queen Caroline Street are residential receptors located adjacent to the Temporary Bridge. On the west side of the proposed bridge, at Lower Mall, several buildings with homes and restaurants and pubs are found.

On the south of the River Thames, the closest residential receptors are found near the proposed Temporary Bridge along Riverview Gardens to the east and along Castelnau. St. Paul's School is located approximately 350m to the west of the proposed Temporary Bridge, with its rugby pitches located adjacent to the west side of Hammersmith Bridge.

Key sensitive receptors related to public spaces are indicated in Figure 11.



Pell Frischmann

Transport for London

Legend

Temporary Bridge

Sensitive Receptors

Care Home

Place of Worship

Leisure/ Sports

Place of Education

Green Space/ Open Land

250m flat buffer [1]

500m flat buffer

Temporary Pedestrian and Cycle Bridge

Sensitive Receptors Map
Scale 1:6000 (A4 Size)

Figure 11 – Sensitive receptors near the Site

3.10 Land Contamination

The potential risks for land contamination within the Site are based on a Phase 1 Geotechnical and Geo-environmental Desktop study of Hammersmith Bridge Refurbishment (102963-PEF-BAS-ZZZ-REP-GE-00001-P03).

No registered radioactive substances, mining activities, natural activities or historic landfills were found, however the following land use types were identified:

- One licensed waste treatment/disposal site (within 500m);
- Two fuel stations (within 500m);
- Four manufacturing/production sites (within 250m); and
- 67 industrial land use sites (within 500m).

Three licensed discharge consents are in place within 250m of the Site in relation to sewer and storm water overflows. Additionally, six pollution incidents to controlled waters have been recorded within 250m of the Site.

From the identified potential risks within and nearby the Site, the following potential contaminants of concern have been identified:

- Pollution discharges: metals, metal compounds, organic compounds, inorganic compounds and micro-organisms;
- Industrial/commercial sites: metals, metalloids, sulphates, cyanides, petrol, diesel and solvents;
- Fuel stations: hydrocarbons and organic compounds; and
- Made ground: metal metalloids, asbestos, polycyclic aromatic hydrocarbons (PAHs), organic compounds and ground gases.

These potential contaminants are likely to cause contamination in the River Thames, downstream users, ecosystems, the superficial secondary aquifer, and construction workers.

4 Description of Likely Environmental Effects

4.1 Land Use

The required area for abutments and ramps of the Temporary Bridge is estimated to be approximately 830m^2 on the north bank and 430m^2 on the south bank, a total of 1260m^2. On the north bank the area affected is within the green space and existing highway at the end of Queen Caroline Street. On the south bank, the area affected corresponds to the towpath and existing highway. No private land-take will be required on either side of the river. Considering the size of area affected (less than one hectare) and land use, the impact is considered to be minor.

It is noted, that once the Temporary Bridge is no longer required, the structure will be fully removed, and all areas temporarily affected will be restored. Therefore, no significant effects on land use due to construction, operation and decommissioning are likely.

4.2 Socio-economic, Community and Transport

4.2.1 Effects on community, transport and connectivity

The construction phase could affect members of the community using the river and Thames Path for recreational purposes due to route diversions and interruption of activities in the river. This impact is temporary, as it is limited to the time of construction works. Suitable measures related to route diversion and communication with local community will be included within the Construction Environmental Management Plan (CEMP).

Users of the Riverside Studios and pubs and restaurants closer to the works on the north bank could also expect to experience nuisance due to route diversions, dust and noise caused by the works. Some local businesses on the south bank might also experience the same effects. Nevertheless, it is considered that these effects can be mitigated through suitable measures within the CEMP.

In addition, several programmed events near the Site, or in the River during 2020 (listed in Appendix B) could also be affected by the construction. Nevertheless, the construction programme should avoid special events, where possible, and if any event is to be affected, it should be discussed with interested parties and relevant authorities. Once agreement with interested parties and relevant authorities is in place the potential for significant adverse effects are unlikely.

Taking into account all of the above, and with mitigation in place (refer to Section 5), no significant adverse effects upon the local community during the construction phase are likely to occur.

During the operation phase, the community will benefit from the existence of the Temporary Bridge. As discussed in sections 1.2 and 3.2, TfL has estimated that the closure of Hammersmith Bridge to road traffic has increased flows of pedestrians and cyclists on the bridge, from 6,000 to 21,000 crossings per day. The expected increase in population over the next few years means that even more pedestrians and cyclists could be wanting to cross the river at this location. Although the increase in pedestrians and cyclists coming off the Temporary Bridge and into the landing points could cause a nuisance to the community in these areas, this will be a temporary effect limited to the operation phase. If the Temporary Bridge is not provided, thousands of pedestrians and cyclists would be affected by longer

journeys on buses following alternative routes or they might choose to take private transport which could cause a concomitant increase in road traffic and related issues upon air quality and noise.

The proposed Temporary Bridge is aligned with the local plan policies of the LBHF and LBRuT encouraging cycling and walking opportunities as ways to benefit the health and wellbeing of the community.

The Temporary Bridge will have a beneficial effect on the community of both London boroughs, benefitting people's health and wellbeing, through the cycling and walking opportunity created by the new Temporary Bridge, and the significant time saved in river crossing.

During the decommissioning phase, the pedestrians and cyclists will return to the existing Hammersmith Bridge, as its refurbishment works will be complete.

4.2.2 Effects on Navigation

The river navigation will be temporarily affected to allow the construction of the Temporary Bridge. TfL and the design team have been engaging with the PLA since the early stages of the project to consider all aspects related to safety and river traffic navigation within the design and the construction. A Navigation Risk Assessment (NRA) has been undertaken to ensure that the design and all works within the river will not impact on safe navigation, and that there will be minor constraints to river traffic.

All requirements set out by the PLA related to navigation will be adhered to during the construction phase. Therefore, any likely effect on navigation resulting from construction works is considered to be minor.

During the operation phase, no effects are expected on the navigation, as the Temporary Bridge has been designed, through engagement with the PLA, to meet the clearance level, river depth and pile alignment, to allow the safe movement of vessels.

Similar effects of the construction phase can arise during decommissioning of the Temporary Bridge; however, any likely effect will be of minor to negligible significance with the adherence of the requirements set out by the PLA.

4.3 Geology and Hydrogeology

As noted in Section 3.3, the Site is not designated for any geological interest or importance and does not yield any significant geological resource. The expected small volume of excavation soil is of low significance. Accordingly, the construction of the Temporary Bridge is not considered to give rise to any significant effect upon geology or hydrogeology.

There will be no effects to geological resources during the operation of the Temporary Bridge.

Decommission of the Temporary Bridge can give rise to similar effects as those identified for the construction phase, however it is unlikely that there shall be any significant effects upon geology or hydrogeology.

4.4 Surface Water and Flooding

4.4.1 River Thames water body

It is noted that the River Thames is a heavily modified river. A Hydrodynamic Modelling and Scour Assessment was carried out by HR Wallingford (DDR6237-RT001-R00-05) to oversee impacts within the river channel and its hydromorphology due to the presence of the proposed Temporary Bridge.

The results of the Hydrodynamic Modelling and Scour Assessment show that changes to the sediment regime are anticipated to be minimal, and changes predicted in the main navigation channel and at river walls are negligible. Scour is expected to occur around the proposed piles, potentially up to a depth of 3.1m however the overall conclusion is that changes from the proposed Temporary Bridge are expected to be localised and are unlikely to result in any significant effect on river flows.

4.4.2 Water Quality

A WFD Assessment (102963-PEF-BAS-ZZZ-REP-EN-00003) was undertaken for the proposed Temporary Bridge to ensure that the structure will not jeopardise objectives of achieving 'good' status as set in the River Thames Basin Management Plan during construction, operation and decommissioning phases. Key notes from the WFD Assessment are presented below. The good status is related not only to chemical status but also to ecological status.

Construction activities of the Temporary Bridge can give rise to adverse effects in water quality due to potential contamination, from inland activities and activities within the river. As such, construction of piers (piling) has the potential for sediment disturbance, which could potentially contain contaminants that would be released into the water affecting its quality. The piling method that is being proposed, compared with other options, is the one that is likely to give rise to the least disturbance of riverbed sediments. This piling method will require a jack-up barge, which will be bedded into the sediments on a number of jack-up piles, which is likely to cause some minor, localised disturbance to the sediment. Additionally, the initial driving of the outer pile casing into the sediment is likely to cause some minor, localised disturbance to the sediment. The remainder of the piling activity is proposed to be conducted via drilling into the outer casing, which is unlikely to significantly disturb the sediments. Nevertheless, there is the potential that a minor amount of disturbance is possible. Although there is typically some degree of chemical contamination in most Tidal Thames sediments, it is unlikely that the minor levels of disturbance to the sediments could cause significant effects to water quality (that could lead to adverse effects on ecological receptors).

In addition, as is the case for most construction works taking place in and near the river environment, there is the potential for accidental spillages or leakages of substances (e.g. fuels, oils, etc.) to occur from machinery, which has the potential to contaminate water through direct input to the estuary or via runoff. To minimise the risk of spillage or leakages from occurring, best practice techniques within the CEMP will be implemented throughout all construction and decommissioning activities. Moreover, all working practices will adhere to Guidance on Pollution Prevention (GPP) for works and maintenance in or near water (NetRegs, 2020) and all vessels would adhere to the requirements of the MARPOL Convention Regulations. Once these measures are on place, significant effects on water quality due to construction are unlikely.

During operation, the assessment of scour due to the placement of the eight piles in the Thames channel shows only minor disturbance of sediments. As such this is unlikely to significantly effects on water quality. No other effects on water quality are expected during the time that the Temporary Bridge will be in use.

The decommissioning of the Temporary Bridge could give rise to changes in water quality when structures are being removed through sediment disturbance, or potential risk of spillage or leakages. Details of removal of piles from the riverbed are still under discussion, to choose the techniques with the least disturbance, however no significant effects to the water body from the decommissioning works are likely.

The conclusion from the overall WFD Assessment is that the proposed Temporary Bridge is unlikely to give rise to significant adverse effects on the water quality of Thames Upper Water Body and will not jeopardise the water body status from improving.

4.4.3 Flood Risk

The FRA undertaken for the Temporary Bridge (102963-PEF-BAS-ZZZ-REP-WR-00001) concludes that the Site is situated within an area with a high probability of flooding from fluvial and/or tidal sources (Flood Zone 3a). However, the Site benefits from flood defences (Thames Tidal Defences). The FRA notes that the north abutment is at a medium to high risk of flooding from surface waters, however a Surface Water Drainage Strategy is being produced to mitigate the risk of flooding, and therefore, the likely impact of the proposed bridge is considered to be of minor to negligible significance. The bridge foundations, substructure and superstructure were designed to accommodate potential flooding of the river and breach of flood defence system.

The design criteria set by the Environment Agency have been adhered to as follows:

- The soffit levels of the Temporary Bridge will be above 6.52m AOD and the underside will be no lower than the existing Hammersmith Bridge; The soffit levels of the centre and south span match this requirement, although the soffit level of the north span is to be lowered to softly connect with the existing highway on the land. Nevertheless, the FRA that was carried out has not identified an increase of flood risk to the area;
- Design flows were assessed via the hydromorphology assessment by HR Wallingford and scour levels around the piles can reach 3.1m at worst-case but are more likely to reach 1m. It is recommended to update the scour predictions when site specific geotechnical data is available; and
- Load calculations will be submitted to demonstrate that the Temporary Bridge and its supporting piers will not impact the stability of the flood defences or prevent access for inspection where works are carried out within 16m of flood defences. A flood gate on the northern landing point is in poor condition and a fixed replacement could be required, if the construction of the Temporary Bridge requires its use or removal. An application for an Environmental Permit (formerly known as a Flood Defence consent) will be undertaken.

In accordance with the requirements of the NPPF, the FRA has demonstrated the proposed Temporary Bridge could proceed without being subject to significant flood risk. Furthermore, the Temporary Bridge will not result in increased flood risk to third parties as a result of suitable management of surface water runoff. The development accords with the flood risk policies of the relevant local plan policies. Therefore, the proposed Temporary Bridge will not give rise to significant adverse effects on flood risk.

4.5 Ecology

4.5.1 Designated Sites

As described in Section 3.5.1, no land-based or marine Statutory Sites have been identified near the Site, therefore there will be no effects on any Statutory Sites.

A land-based designation, the Barn Elms Wetland Centre SSSI, is located approximately 650m to the south of the proposed Temporary Bridge. No effects on this SSSI are likely, but consultation with Natural England will be required because the Site is within its Impact Risk Zone.

Regarding non-statutory sites, the River Thames and Tidal Tributaries, there is the potential for effects upon this designation, as the proposed Temporary Bridge will be constructed within the River Thames. The likely significance of effects is considered for the ecological features of the River Thames and is included in the terrestrial and aquatic ecology sections (4.5.2 and 4.5.3).

Furnivall Gardens is another non-statutory site near the Site. However, based on the works required for the Temporary Bridge and distance from the Site, it is unlikely the project would cause any significant adverse effect on this designation.

No other designated sites are likely to have significant adverse effects during construction, operation or decommissioning of the bridge.

4.5.2 Terrestrial Ecology

Habitats

The new Temporary Bridge abutments will be located within the concrete built riverside walk and the towpath connecting to existing highways. As such, the intertidal foreshore was avoided on both banks and therefore no significant adverse effects from construction (and decommissioning) are likely to occur upon the protected Intertidal Mudflats and Shingle habitat.

The only potential impacts on intertidal mudflats are due to construction water runoff potentially contributing to contamination. Nevertheless, mitigation measures within the CEMP and a Drainage Construction Runoff Strategy will ensure that no significant adverse effects should arise due to works.

With regards to Running Water habitat, the construction phase has the potential to cause water contamination and disturbance that can affect ecological receptors living in this habitat. Impacts on ecological receptors within the River Thames have been assessed in detail under a WFD Assessment (102963-PEF-BAS-ZZZ-REP-EN-00003) and within the Aquatic Ecology Desktop Study (refer to Section 3.5.3 for more details).

Scattered Trees adjacent to works will be potentially removed. Some young trees may require removal along the southern section of Queen Caroline Street and within the green space at the northern end of the bridge. Potentially a tree located in the south bank closer to the towpath will be removed. An Arboricultural Survey Report (102963-PEF-BAS-ZZZ-REP-EN-00002) has been completed for the proposed Temporary Bridge, in order to inform the design and outline recommendations to protect and retain trees as much as possible. Although, the

impact on trees will only be known with the detailed design, no significant adverse effects are likely to occur from removal of trees. In addition, a Biodiversity Net Gain Report will be produced in line with Local Plans and Mayor's Policies, and any impact due to tree removal will be compensated through tree and planting measures.

Protected and Notable Species

A Wintering Birds Survey is being undertaken during the current winter season, with the aim to obtain reliable information about species potentially present at the Site. Impacts to wintering birds will be fully determined following the completion of the Wintering Bird Surveys in February 2020. However, significant adverse effects are unlikely, and if mitigation (such as time of works) is required that will be detailed within the surveys final report.

As described in the PEA, trees near the Site are likely to support breeding birds. To avoid adverse effects on breeding birds any clearance works affecting trees should be completed outside of the bird breeding season (March-September). Nevertheless, if this is not possible then the works will require an ecological brief to ensure that trees and vegetation are clear of nests. Further mitigation should be included within the CEMP. Once mitigation measures are in place no adverse significant effects are likely to occur due to the construction of the Temporary Bridge.

Regarding bat species, it is not considered that the mature trees along the southern section of the site will require removal, however in the event they do require removal, there is a potential for adverse effects on roosting bats. A Bat Survey during spring is recommended within the PEA. This will ensure that suitable mitigation measures will be proposed and applied and that no significant adverse effects on bats could be likely due to the construction of the Temporary Bridge. In addition, to ensure that bats continue to use the commuting and foraging features being retained, the PEA has strongly recommended that any lighting used during construction is kept to an absolute minimum, and is carefully designed to prevent light spilling onto features including the river and tree lines to the south of the Site.

During operation the lighting used on the Temporary Bridge should be carefully designed to ensure that light will not cause adverse effects on birds or bats. Once this measure is in place, no significant effects are likely to occur due to the operation of the Temporary Bridge.

The decommissioning of the Temporary Bridge may give rise to similar effects on wintering birds, breeding birds and bats. However, if similar mitigation measures from construction are applied during the decommissioning phase, adverse significant effects are unlikely.

Invasive Species

Chinese mitten crab and zebra mussel are known to be present within the River Thames and a number of data records returned during the desk study have recorded their presence within 2km of the site. Construction works within the river have the potential to cause the spread of these invasive species to other parts of the river or other locations in the UK through contaminated aquatic construction equipment or boats.

The CEMP should outline specific methods to avoid the spread of any invasive species during construction (and also during decommissioning), and once they are implemented no significant effects in relation to invasive species are likely to occur.

4.5.3 Aquatic Ecology

The Aquatic Ecology Desktop Study (102963-PEF-BAS-ZZZ-REP-EN-00005) followed the potential pathway of effects upon aquatic ecology, including groupings of fish, marine mammal and benthos, and for the three stages of the project (construction, operation and decommissioning).

During construction, effects on aquatic receptors such as fish, marine mammals and benthos can occur through the following impacts:

- Changes in water quality due to piling activity (construction) or due to scour that can affect ecological receptors;
- Physical loss and disturbance of habitats/species or due to piles (including the construction and scour after installed);
- Underwater noise and vibration due to piling activity (construction);
- Use of artificial lighting; and
- Introduction of invasive non-native species.

As explained in Section 4.4.2, the construction of the Temporary Bridge is unlikely to give rise to significant effects on the water quality of the River Thames, and therefore, no significant effects on ecological receptors are likely due to changes in water quality.

Regarding the physical loss and disturbance of habitats/species or due to piles (including the construction and scour after installed), the conclusion of the Aquatic Ecology Desktop Study is that due to the very small area of riverbed physically disturbed, any likely impact is considered to be of negligible significance for all groups (fish, mammals and benthos).

An Underwater Noise Assessment was also undertaken by HR Wallingford for the Temporary Bridge (February 2020) in order to understand impacts of construction activities, such as pilling. The results of that detailed assessment shows that the methodology chosen to install the piles reduces the amount of percussive noise to a minimum. Therefore, impacts on benthos are unlikely, and impacts on mammals are of negligible significance. The only likely impact of minor significance is on fish groups, specifically smelt spawning fish that can be disturbed by noise and vibration. As such it is recommended that construction and decommissioning of the piles avoids the smelt spawning period of March and April inclusive, and the activity is restricted to daylight hours (refer to section 5.1.3).

The Aquatic Ecology Desktop Study also concludes that due to the short duration of the works and the likelihood that light on the water can be kept to a minimum, use of artificial lighting is likely to be of negligible significance for fish receptors and no impact for mammals and benthos are likely. The desktop study also concludes that the impact of the introduction of non-native species is likely to be of negligible significance for benthos and no impact for fish and mammals are expected, but measures to avoid spread of non-native species should be put in place during works within the river.

From the above, during construction phase no significant effects are likely upon aquatic ecological receptors.

During operation, the main effects likely to be noted are upon fish due to changes to water movement/scour from the structure in the river, use of artificial lighting, and increased shading. The conclusion is that no significant effects are likely, however mitigation related to lighting has been recommended (section 5.1.3).

The decommission phase can give rise to similar effects as the construction phase (due to the disturbance in water environment to remove the structures), however no significant effects are likely and standard mitigation measures have been recommended (section 5.1.3).

For more details about likely impacts upon aquatic ecological receptors refer to report Aquatic Ecology Desktop Study (102963-PEF-BAS-ZZZ-REP-EN-00005) and Underwater Noise Assessment (ref. DER6237-RT002-R01-00).

4.6 Archaeology and Heritage

The Archaeology and Cultural Heritage Desktop Study (102963-PEF-BAS-ZZZ-REP-AC-00001) includes a high-level assessment of potential impacts and effects of the proposed Temporary Bridge on relevant heritage assets identified. In general, a development can impact on the significance of heritage assets indirectly (principally through changes to their settings) or directly (through physical changes to the asset itself).

The desktop study concluded that there are no direct impacts on designated heritage assets such as listed buildings. However, there is a potential for an indirect impact upon Conservation Areas due to the visual effect on the settings of the Mall Conservation Area, the Fulham Reach Conservation Area and Hammersmith Bridge. These effects are considered to be negligible to minor and would be temporary. The removal of the Temporary Bridge at the conclusion of the works would reverse these effects.

Due to the presence of Archaeological Priority Areas, any ground disturbance on either of the foreshores, the riverbed or in the immediate areas of the north and south abutments of the Temporary Bridge could have an adverse effect on unrecorded finds or features which may be present. The importance of potential findings is unknown; however the scale of works will be highly localised; so unlikely to result in significant effects. The Archaeology and Cultural Heritage Desktop Study recommends that consultation with the LPA / GLAAS should be undertaken to ensure that any potential impact on previously unrecorded buried archaeological features or deposits is either defined in more detail by evaluation, or mitigated by archaeological monitoring during construction and the use of protective measures during enabling works, as may be required as part of a planning condition.

4.7 Townscape and Landscape

Visual effects due to construction

Removal of trees due to construction works have the potential to give rise to visual impacts. An Arboricultural Survey Report (102963-PEF-BAS-ZZZ-REP-EN-00002) has been completed for the proposed Temporary Bridge, in order to inform the design and outline recommendations to protect and retain as many trees as possible. It was identified that some young street trees may require removal at the northern end of the bridge, along the end of Queen Caroline Street and within the green space. Potentially a tree located on the south bank closer to the towpath will be removed. The specific number of trees affected will be only determined with the detailed design, however, the visual effect of this is unlikely to be significant, as most of them are young trees. The final impact on trees will be determined for the Planning Application with detailed design of the Temporary Bridge.

In addition, the implementation of a Landscaping Design Strategy, where new tree planting will be proposed, can mitigate adverse effects and potentially produce enhancements. The physical presence of construction works will give rise to the visual appearance of construction plant and machinery, movement of heavy vehicles and boats used for the works, and other

activities associated with the works. However, any townscape and visual effects associated with the works are anticipated to be limited, localised, and temporary.

The CEMP for the Temporary Bridge will set out a range of measures and good practices with the aim of reducing townscape and visual effects. This has been considered within Section 5. The implementation and monitoring of the CEMP will ensure any temporary townscape and visual effects are unlikely to be significant during the construction phase.

On completion of construction a Landscape Design Strategy should also be implemented to ensure that all areas affected will be reinstated. The landscape design should also address ecological recommendations and opportunities for biodiversity enhancement and net gain and improvement in line with LBHF and LBRUP local plans and the new London Plan.

From the above, it is considered that once proposed mitigation are in place no significant effects are likely to arise due to construction.

Visual effects upon protected views during operation

During operation, the physical presence of the Temporary Bridge may affect the protected views to the historic Hammersmith Bridge (views along the river from east). However, this will be temporary and only occurring for one year before Hammersmith Bridge is covered for its refurbishment works.

Moreover, on the west side of Hammersmith Bridge, as most of the soffit level of the proposed Temporary Bridge will be aligned with the existing bridge, the view of the Temporary Bridge will be blocked, and therefore visual effects along the riverfront on that section are unlikely.

With regard to views along the river from the east, it is considered that the presence of the Temporary Bridge will be dissipated with distance due to the light design and scale of its structure.

It is highlighted, that any potential visual effect due to the presence of the proposed bridge will be temporary and reversible.

Considering all the above it is not expected that the presence of structure will cause any harm to protected views and it is not likely to give rise to significant visual effects.

Visual effects with decommissioning of the Temporary Bridge

It is noted that once the refurbishment works to Hammersmith Bridge are completed, and the proposed Temporary Bridge is no longer needed, it will be fully removed, and effects of its presence will be reversible. The decommissioning phase will be very limited in time, as the bridge was designed to be quickly removed, and as such, it is considered that the decommissioning phase is unlikely to give rise to significant adverse effects on landscape and townscape.

Mitigation measures through the Landscaping Design Strategy will be considered to ensure that landscape and townscape character within the landing points will be restored and enhanced after the removal of the Temporary Bridge.

4.8 Air Quality and Climate Change

The construction phase has the potential to give rise to air quality effects due to dust emissions and associated nuisance generated by the works, construction plant and machinery and additional emissions to the atmosphere from the construction traffic.

Construction works on site have been reduced though the design, as most of the components of the Temporary Bridge will be premanufactured, for quick installation. Major works that can generate dust emission, for example excavations, are also very limited in the area (largely confined to abutments).

Regarding air emissions arising from construction traffic, the temporary increase in traffic associated with the construction of the Temporary Bridge is not envisaged to be significant. Mitigation measures included within the CEMP, as outlined in Section 5, will ensure that no significant effects on local air quality, climate change or nuisance are likely to give rise from the construction of the Temporary Bridge.

Operation of the Temporary Bridge will not result in any adverse effects on air quality, and a beneficial effect is expected as it will avoid people having to make much longer trips by vehicle.

In addition, there is potentially a beneficial effect on local air quality, as well as tackling climate change, through improving cycling and walking opportunities.

The decommissioning of the proposed Temporary Bridge may give rise to similar effects as the construction phase, however the significance of these effects are also considered not to be significant, and mitigation measures can be also be applied to avoid any adverse significant effects related to dust emissions and nuisance.

As the Temporary Bridge is a mostly pre-fabricated structure, there is the potential for it to be reused, which will increase the lifecycle of materials, and avoid carbon emissions associated with embedded carbon. In general, it is considered that the use of concrete has been reduced through the design, using materials with less embodied carbon, and as previously stated, reusable.

4.9 Noise and Vibration

During the construction of the Temporary Bridge, a temporary increase in noise and vibration has the potential to arise in the surrounding area of the Site due to the use of machinery, construction plant and traffic.

The temporary increase in traffic generation associated with the construction of the Temporary Bridge is not envisaged to be significant. Standard construction management measures related to noise will be put in place to reduce the potential effects of construction noise at sensitive receptors near the Site. These measures have been included in Section 5.

Considering the above, the construction of the Temporary Bridge is not likely to give rise to significant noise and vibration effects on sensitive receptors near the works.

No adverse significant effects are likely due to the operation of the Temporary Pedestrian and Cycle Bridge.

The decommissioning stage can be expected to give rise to similar effects as the construction phase. These can also be expected to be addressed through suitable management measures.

4.10 Land Contamination

The potential risks for land contamination within the Site have been based on a Phase 1 Geotechnical and Geo-environmental Desktop study of Hammersmith Bridge Refurbishment (102963-PEF-BAS-ZZZ-REP-GE-00001-P03). The potential contamination has been assessed separately for the banks of the river where the abutments will be founded and within the river channel where piling works for the proposed Temporary Bridge will take place.

On the banks, the main conclusions of the assessment are the following:

- The construction of the Temporary Bridge has the potential to encourage the release of metal, metalloids and other inorganic/organic compounds into shallow site soils and groundwater from surface run off. The likelihood of ground contamination is considered likely and presents a moderate risk; and
- The works have the potential to release asbestos from Made Ground. The likelihood of this is considered to be low but presents a moderate to high risk.

Further investigations are recommended.

In relation to the works within the riverbed, due to the very low permeability of the London Clay the risk of contaminants, such as heavy metals and organic contaminants permeating into the riverbed strata, is considered to be low. The risks to the release of potential contamination will be managed through the adoption of appropriate construction techniques. As such, pile casings installed prior to boring at each pile location will minimise the disturbance of sediments in the riverbed. Therefore, it was concluded that likely adverse effects of contamination due to the pilling works within riverbed is considered not to be significant.

4.11 Waste

The Temporary Bridge has the potential to generate waste during the construction phase. Although, the design chosen for the Temporary Bridge has avoided the potential for a large amount of waste to be produced onsite, due to major components being pre-manufactured off site (piles, deck, etc.), waste such as scraps of steel and wood, and surplus of concrete are likely to arise from works. Plastic wrapping or wooden pallets are also common construction waste types. The pilling within the river and excavations for abutments will also give rise to an exceedance of soil material.

A Site Waste Management Plan (SWMP) for the construction is being prepared to ensure an efficient use of resources, and to minimise waste through design. The SWMP will also outlined good practice and management measures for the waste generated during construction, addressing opportunities for recycling and reuse.

Measures will be taken to avoid any kind of contamination of surface water due to disposal of excavation soils (from land or from the riverbed) and temporary storage near the water course will be forbidden. The soil will be removed from the Site to a suitable waste treatment facility.

In view of the above, the construction of the proposed Temporary Bridge is unlikely to give rise to significant impacts related to waste.

It is noted that the Temporary Bridge is mostly a pre-fabricated structure, and that, once removed it can be reused, which significantly increases the material lifecycle, with high benefit to the use of natural resources and carbon emissions related to embedded carbon. Therefore, it is considered that the decommissioning of the bridge is unlikely to give rise to significant adverse effects due to waste.

4.12 The risk of major accidents and/ or disaster

The following risks of major accidents and/ or disaster have been considered in the construction of the Temporary Bridge:

- Risk of flooding: a FRA was undertaken for the Temporary Bridge. The bridge foundations, substructure and superstructure are designed to accommodate potential flooding of the river and breach of the flood defence system.
- Extreme weather conditions: these events were considered in the design to make structures resilient to extreme weather conditions;
- Risk of Unexploded Ordnance (UXO): a detailed UXO desktop study was carried out by Safelane Global for the Site and included within the Phase 1 Geotechnical and Geo-environmental Desktop study of Hammersmith Bridge Refurbishment (102963-PEF-BAS-ZZZ-REP-GE-00001-P03). The Site has a low to medium risk for the presence of UXO: the north and south of the River Thames, in which the Temporary Bridge abutments will be located, present a low risk however the river itself presents a medium risk. Recommendations from the UXO desktop study will need to be adhered to for all works;
- Risk of navigation accidents: a Navigation Risk Assessment has been undertaken to ensure safety navigation during the works and or due to the presence of the Temporary Bridge; and
- Risk of marine pollution disaster: it is not possible to assess the significance of a particular pollution incident as this is dependent on the nature of the incident (e.g. location, scale, type of pollutant). However, the risk associated with the impact of accidental pollution events is considered low. All vessels would adhere to the requirements of the MARPOL Convention Regulations.

4.13 Risks to human health and safety

During the construction phase, the risks associated with works are those that are commonly associated with working with machinery, hazardous substances (paintings, oils), and working at height. Assuming standard health and safety procedures will be adopted, implemented and complied with the risk of accidents is low.

Potential risks to human health due to air pollution and increase in noise arising from construction works are considered negligible, considering the assessment within Sections 4.8 and 4.9.

During operation safety concerns regarding suicide from the Temporary Bridge have been adhered to in the design, and protection structures options to prevent jumps from the Temporary Bridge will be defined within the detailed design of the deck.

The Temporary Bridge will include suitable lighting to ensure safe conditions for its users at night.

No other risks to human health and safety have been identified.

4.14 Cumulative impact with other proposed development

The local planning portals were accessed for information on other proposed or permitted developments that could act in-combination with the proposed Temporary Bridge. The Riverside Studios and Queens Wharf (2013) has been the only urban development found in the immediate vicinity of the Site. The development finished in 2018, therefore cumulative inter-project effects with the proposed Temporary Bridge are unlikely.

In addition, major infrastructure works were also searched for in the Planning Inspectorate Portal. The Thames Tideway Tunnel project involves constructing a 25km tunnel under the River Thames to expand London's sewer network. Two sites of this project are near the Site:

- Hammersmith Pumping Station, which is an existing Thames Water pumping station situated approximately 350m to the east of the Site. The Hammersmith Pumping Station works are planned to be completed by 2020 and construction of the connection tunnel was completed in April 2019; and
- Barn Elms Site located approximately 1.5km south of the proposed Temporary Bridge. Construction works began in 2019 and are ongoing, with the tunnelling of the connection tunnel to be completed by 2022.

The majority of work to be completed for Thames Tideway Tunnel is taking place below ground (about 30m depth) and, considering the scale of works for the Temporary Bridge, including the small scale of piling and time duration of works, it is unlikely that these works could give rise to any significant cumulative environmental effects within the area of the Thames Tideway project.

The Hammersmith Bridge refurbishment was also considered regarding cumulative impacts. It is noted that the refurbishment works are envisaged to commence in 2021, and only after the proposed Temporary Bridge works are finished. Cumulative effects of noise, air quality and water quality are unlikely considering that both works will be occurring at different times and as previously noted, the Temporary Bridge will not give rise to any significant effects on those environmental factors.

With regards to the potential for any combined intra-project effects, it is considered that no significant effects are likely due to the implementation of the CEMP during construction and decommission. In addition, from the information presented above, no significant combined intra-project effects are anticipated during operation of the Temporary Bridge.

5 Recommendations

5.1 Construction phase

A Code of Construction Practice (CoCP) will be produced setting a framework to control potential impacts arising from the construction of the Temporary Bridge and ensure that no significant adverse effects on the environment will arise during this phase. The Contractor will have to adhere to the CoCP. The overarching construction principles within the CoCP will be covered in more detail within a Construction Environment Management Plan (CEMP).

The CEMP will include best practice environment management control during the works and measures to reduce noise, dust emissions, light emissions, and avoid the incident of contaminated run-off and risk of potential river water contamination due to accidental spills and leakages.

Specific measures for some environmental factors have been included in the sections below and will be incorporated within the CoCP and CEMP.

5.1.1 Socio-economic, Community and Transport

Prior notice of the works should be given to the local community, including any groups who use the River Thames as a recreational resource, for example, rowing clubs.

The construction programme should avoid special events, where possible, and if any event could be affected, it should be discussed with interested parties and relevant authorities.

PLA recommendations that should be considered for the construction works include the following:

- Works can be undertaken day and night, however at high tide the centre of the Temporary Bridge is used by river traffic as this is the highest point of the deck. Therefore, the PLA has asked to keep the channel open from mid-span to the south pier although the exact extent of the channel still needs to be defined;
- A PLA traffic control boat would be required at all times when working in the south half of the main arch to ensure the safety of passing marine traffic;
- There is no issue with closing either of the side arches for the duration of the works, however, it would be preferable if they could still be used by rowers. Appropriate safety measures such as signs and buoys are to be installed prior to the works;
- The location of crane barges during the works will need to be decided with the PLA and warning boards will need to be placed on both sides of Hammersmith Bridge. A NABSA (Normally Afloat But Safe Aground) berth will have to be provided as the river bed is exposed during low tide;
- Several PLA mooring facilities have been identified which could be used by the contractor during the project. These could include the PLA mooring facility at Chiswick, Driftwood, Putney Barge Road, Tea Rose Jetty and Nassau Road; and
- Certain activities may need to be carried out during the winter months when there is less river traffic, particularly activities over the navigable channel.

5.1.2 Surface Water and Flooding

The following measures will be implemented:

- A Drainage Strategy for the design of the Temporary Bridge;

- An application to the EA for an Environmental Permit (formerly Flood Defence Consent); and
- The CEMP will include surface water drainage management measures.

5.1.3 Ecology

Protected species surveys are required (as recommended within the PEA):

- Wintering birds' surveys are currently ongoing and will inform the mitigation for the construction of Temporary Bridge if required; and
- Roosting bats surveys will be undertaken prior to the works (Details can be found within the PEA report).

The CEMP will be produced to ensure considerations regarding protected species, habitats and wildlife conservation are taken into account during construction works to minimise impacts. In addition, specific mitigation measures have been outlined in the PEA for bats, breeding birds and priority habitats. These measures must be considered and included within the CEMP. This includes the following:

- Mitigation related to breeding birds;
- Root protection of trees, where identified by the Arboricultural Survey Report;
- Methods that avoid noise and vibration;
- Limit additional lighting and night-time working where possible. Where lighting is required for night working, light spill should be kept to a minimum; and
- Specific methods to avoid the spread of invasive species.

In order to prevent significant pollution events and resulting adverse effects to aquatic receptors, the CEMP should also incorporate working precautions and procedures in accordance with published Guidance on Pollution Prevention.

Specific recommendations to aquatic species will be adhered to (as outlined in the Aquatic Ecology Desktop Study (102963-PEF-BAS-ZZZ-REP-EN-00005):

- Wherever possible, construction and decommissioning should be carefully planned to avoid key ecological events such as fish spawning, fish aggregation and fish migration;

- A Low-level Construction Lighting Strategy will be implemented in order to minimise the risk of disturbance to fish (although negligible impacts upon fish are anticipated). Lighting used for construction will be switched-off when not in use and positioned so as not to spill on to the water wherever possible;

- Other than the selection of low-noise/vibration piling techniques, due to the potential to have a moderate adverse effect upon smelt during times of spawning, mitigation measures will be applied to avoid in-river works during smelt spawning times (March to April inclusive). As smelt spawn during a short period (typically one week), it is highly likely that that this period will encompass both spawning and the development and hatching of eggs; and

- Eel migration generally occurs at night-time. Mitigation will include limiting piling during night-time hours, for example no activity between 19:00 and 06:00 so the risk of noise impacts upon this activity will be further reduced.

5.1.4 Ecological Enhancement and Biodiversity Net Gain

In line with National Planning Policy Framework (2019), London Biodiversity Action Plan, London Plan, TfL Mayor's Transport Strategy and Local Plan Policies, a Biodiversity Net Gain report will be produced in order to inform and further enhance the ecological value of the Site as compensation for the local communities affected. Further ecological enhancement could include:

- Incorporating wildflower planting alongside the footpaths into a Landscape Scheme to enhance the Site for pollinating insects such as bumble bees and butterflies; and
- Tree planting for mitigation.

5.1.5 Archaeology and Heritage

The Cultural Heritage Desktop Study has recommended that consultation with the LPA / GLAAS should be undertaken to ensure that any impact on previously unrecorded buried archaeological features or deposits is either defined in more detail by evaluation or mitigated by archaeological monitoring during construction and the use of protective measures during the works.

With regard to the freestanding railings on the southern end of the proposed Temporary Bridge, consultation with the LBRuT should be undertaken.

5.1.6 Townscape and Landscape

A Landscaping Design Strategy should be adopted, and should consider the different stages of the proposed scheme (construction, operation and decommissioning). This Landscaping Design Strategy will ensure that any visual effect caused by the Temporary Bridge will be minimised.

In addition, the CEMP will set out measures and good practices with the aim of reducing townscape and visual effects. These will include, but are not limited to:

- Tree protection measures and site clearance measures, as defined by the Arboricultural Survey Report (102963-PEF-BAS-ZZZ-REP-EN-00002);
- The orderly segregation of particular construction site activities, for example, the clear delineation of construction site offices and staff facilities, material storage areas, plant and machinery storage areas; and
- The maintenance of adequate construction site hoarding (if required).

5.1.7 Air Quality and Climate Change

Dust emissions and carbon emissions will be managed by standard construction environmental management measures. These will include but are not limited to:

- Adherence to reasonable construction site working hours which will avoid early mornings, night-time and weekend working (unless required for an emergency situation);
- Damping down of dusty surfaces and processes where dust may be generated;
- Appropriate covering of potentially dust generating stockpiled materials on the construction site;

- Avoiding the occurrence of dust generating activities during dry and windy weather conditions;
- Dust monitoring to assess the effectiveness of dust management controls and to indicate if any when additional measures may be required; and
- Use of modern, low emission plant and machinery and turning plant and machinery off when not in use.

5.1.8 Noise and Vibration

Standard construction management measures related to noise will be detailed in the CEMP and will include the following, but are not limited to:

- Adherence to reasonable construction site working hours which will avoid early mornings, night-time and weekend working (unless required for an emergency situation);
- The use of construction techniques known to reduce the incidence of noise and vibration;
- The use of modern, low noise emission plant and machinery;
- Switching off plant and machinery when not in use; and
- Noise and vibration monitoring to assess the effectiveness of the management controls and to indicate if any when additional measures may be required.

5.1.9 Land Contamination

Further ground contamination investigation will be undertaken for the banks of the river where abutments will be located, as recommended in the Geotechnical and Geo-environmental Desktop study (102963-PEF-BAS-ZZZ-REP-GE-00001-P03).

5.2 Operation phase

The lighting strategy of the Temporary Bridge will ensure the following:

- Minimal risk of disturbance to fish; and
- Incorporation of the best practices in relation to safety and security of users.

The implementation of a landscape design strategy (including planting and Biodiversity Net Gain) will start during this stage to recover the areas affected by decommissioning.

5.3 Decommissioning phase

The environmental effects during the decommissioning of the Temporary Bridge (e.g. noise, nuisance, dust emissions, run-off water) are likely to be similar to those of the construction phase, thus a similar CEMP (or a development of the initial CEMP) should be produced for decommissioning.

The implementation of a landscape design strategy (including planting and Biodiversity Net Gain) will finish during this stage to recover the affected areas of decommissioning.

6 Conclusions

This report provides a brief description of the proposed Temporary Pedestrian and Cycle Bridge and potential for likely significant effects on the environment in line with the requirements of EIA Regulations. The proposed Temporary Bridge will be located to the east side of Hammersmith Bridge and it is required as a direct diversion route over the River Thames for pedestrians and cyclists whilst the existing Grade II* listed Hammersmith Bridge is refurbished.

The proposed Temporary Bridge is considered to have a light design and modest scale. As the bridge is to be temporary, it has been designed to be constructed and removed quickly, and thus, the type of piling and a pre-fabricated deck structure, have been specifically chosen with minimal impact within the river and on the land.

Therefore, considering the environmental sensitivity of the Site and its surroundings and based on the screening review findings and information available at this time, it is concluded that with the implementation of proposed mitigation measures and recommendations presented in this report, the proposed Temporary Bridge is not likely to result in significant effects on the environment by virtue of factors such as its nature, size or location. As such, the proposed Temporary Bridge is not considered to constitute an EIA development.

Most of the likely effects will be temporary and reversible, and once the Temporary Bridge is removed there will be opportunities for improvements to be made regarding townscape and landscape (including biodiversity enhancements).

Mitigation measures required to avoid significant effects and ensure opportunities to enhance the environment and beneficial effects from the proposed bridge will be defined in more detail through the production of a Landscaped Design Strategy and the CEMP for example.

The implementation of the Temporary Bridge will benefit the local community of Hammersmith and Fulham and Richmond, as it will provide safe and suitable access to the thousands of pedestrians and cyclists that travel every day between both sides of the River Thames. There are no feasible alternatives available to pedestrians and cyclists to cross the river at this location. Without the proposed Temporary Bridge, the closure of Hammersmith Bridge would cause adverse effects upon community, transport and connectivity, and adverse effects upon air quality, climate change, and noise as people would become more dependent on vehicular traffic.

7 References

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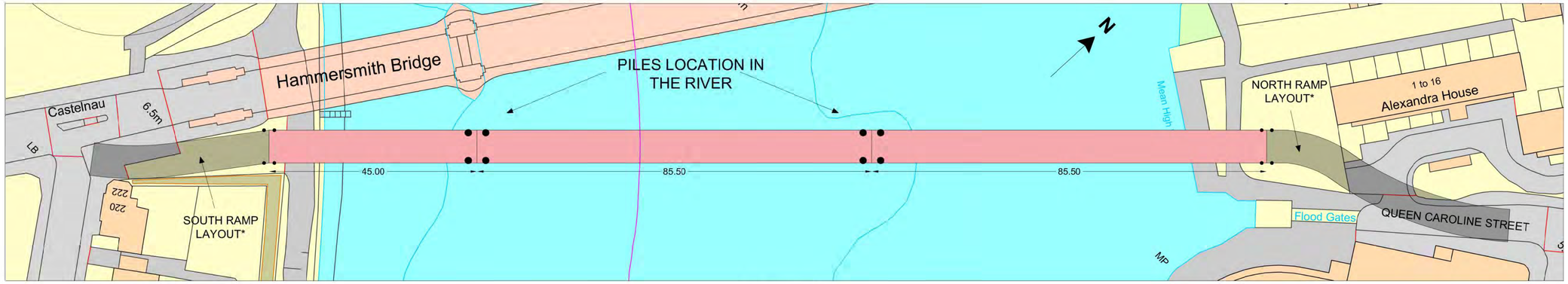
NBN Atlas https://nbnatlas.org/

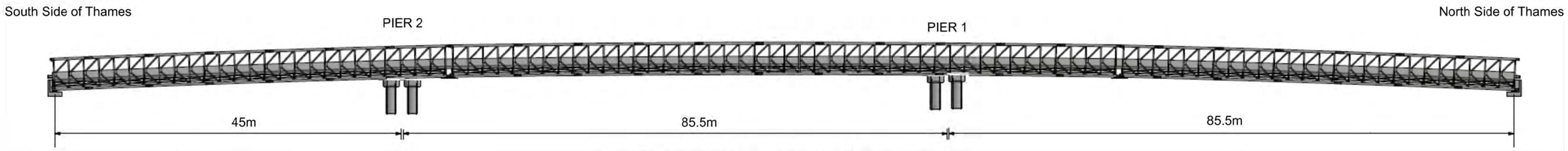
Appendix A – General Arrangement

[Drawing number A102963-PEF-BAS-ZZZ-DIA-C-00003]

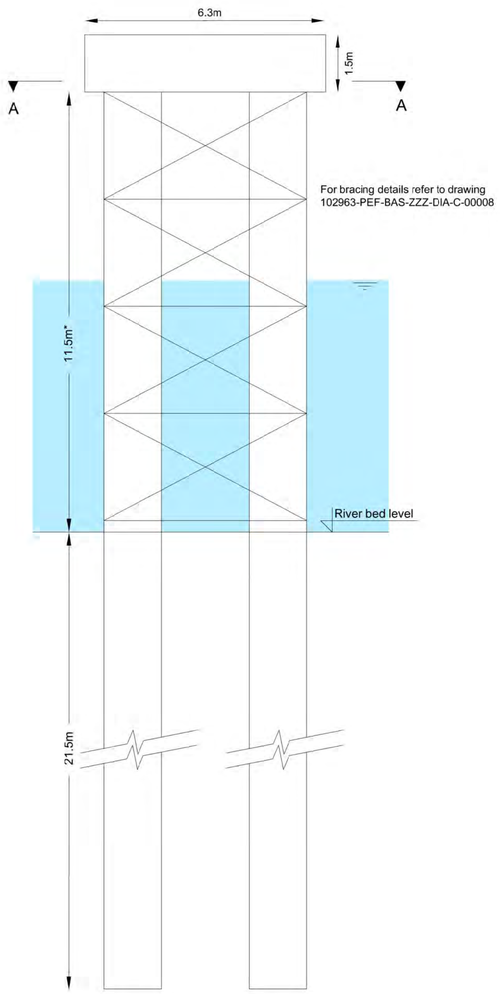
[Drawing number A102963-PEF-BAS-ZZZ-DIA-C-00002]



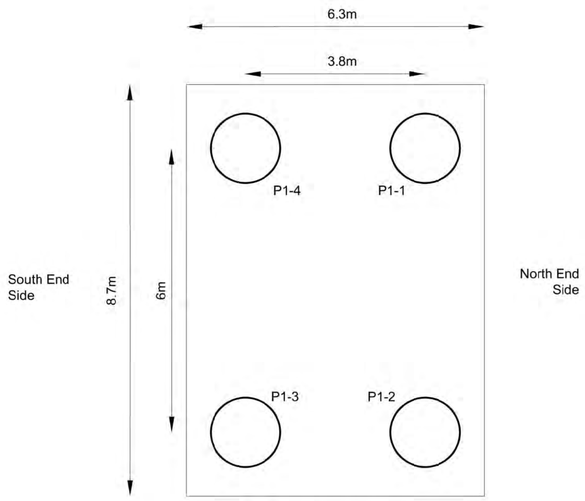
PLAN VIEW



INDICATIVE ELEVATION LOOKING NORTHWEST



PIER 1 / PIER 2
CROSS SECTION LOOKING NORTHWEST

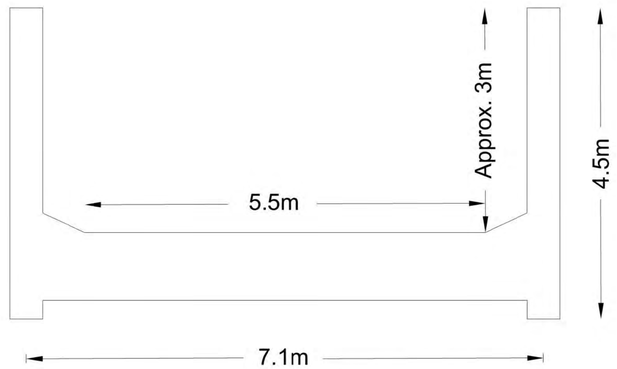


SECTION AA
PIER 1 / PIER 2 - PILES ARRANGEMENT

PILE NO.	Easting	Northing
1-1	523011.5559	178090.2721
1-2	523015.9842	178086.2237
1-3	523013.4202	178083.4191
1-4	523008.9919	178087.4675

PIER 1 - APPROXIMATE PILE COORDINATES

LOCATION PLAN



DECK CROSS-SECTION
GEOMETRICAL REQUIREMENTS

GENERAL NOTES

1. DO NOT SCALE THIS DRAWING.
2. PILES DIMENSIONS:
   - SOCKETED STEEL PILES IN THE RIVER TO BE CIRCA 1.5m DIAMETER.
   - AUGURED RC PILES AT THE ABUTMENTS LOCATION TO BE CIRCA 0.75m DIAMETER.
3. ALL DIMENSIONS ARE APPROXIMATE AND MAY CHANGE DEPENDING ON THE DETAILED TOPOGRAPHICAL SURVEY AND GEOTECHNICAL INVESTIGATIONS.
4. PIERS LOCATION SUBJECT TO CONCLUSION OF NAVIGATION RISK ASSESSMENT.
5. THE EXACT LOCATION OF PILES AND ABUTMENTS TO BE CONFIRMED FOLLOWING DETAILED TOPOGRAPHICAL SURVEY AND GEOTECHNICAL INVESTIGATIONS.
6. *METALLIC RAMP LAYOUT AND EXACT LOCATION ARE INDICATIVE AND MAY CHANGE DEPENDING ON THE DETAILED TOPOGRAPHICAL SURVEY.
7. RAMPS TO BE OF METALLIC STRUCTURE. DETAILS TO BE DEVELOPED.
8. THERE ARE UTILITIES LOCATED ON EACH RIVER BANK WHERE THE ABUTMENTS AND RAMPS ARE TO BE CONSTRUCTED. THE LOCATIONS OF THESE UTILITIES WILL BE CONFIRMED AFTER THE INVESTIGATIONS ARE COMPLETE.

DRAFT

REV	DESCRIPTION	DRN / DSN	CHK / APP	DATE
P03	Minor changes	IR / IR	AW / SM	21/02/20
P02	Changes to span arrangement	IR / IR	AW / SM	28/11/19
P01	Draft	IR / DK/ER/IR	AW / SM	15/11/19

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TRANSPORT FOR LONDON

Project

TEMPORARY PEDESTRIAN AND CYCLE BRIDGE

Drawing Title

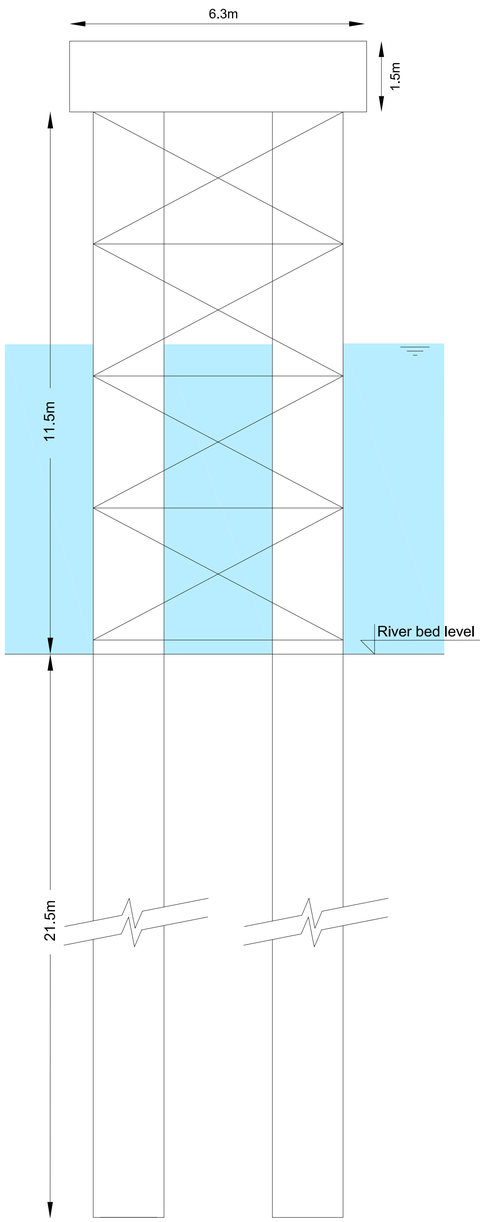
TEMPORARY BRIDGE
GENERAL ARRANGEMENT

	Name	Date
Drawn	IR	28/11/2019
Designed	DK / ER / IR	28/11/2019
Checked	AW	28/11/2019
Approved	SM	28/11/2019

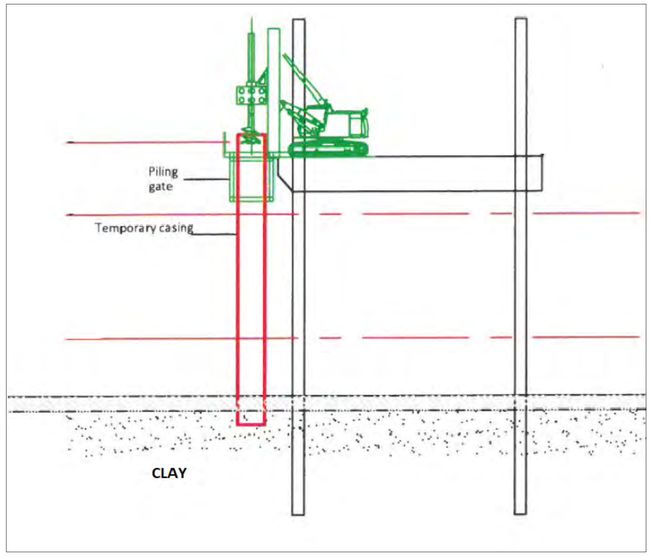
Scale: NTS
Drawing Status: FOR PRICING
Revision: P03

Drawing No.
102963 - PEF - BAS - ZZZ - DIA - C - 00003

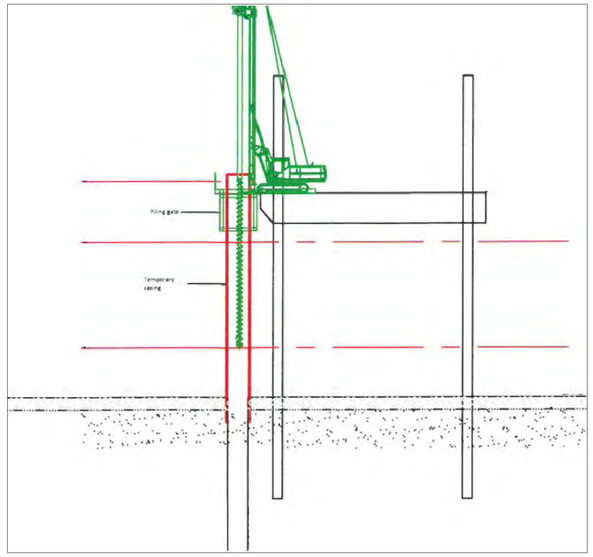
CONSTRUCTION METHODS - SOCKETED STEEL PILES (PLACED WITHIN AUGERED SHAFT)



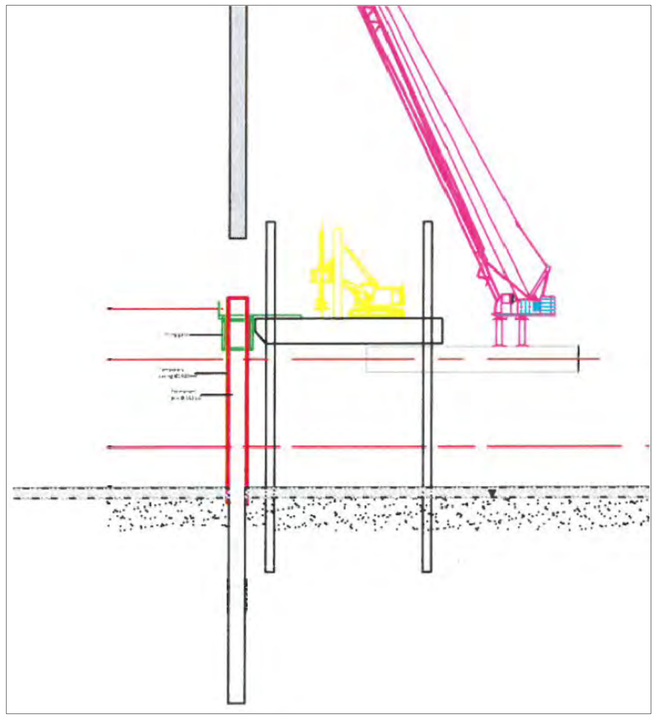
PIER 1 / PIER 2
CROSS-SECTION



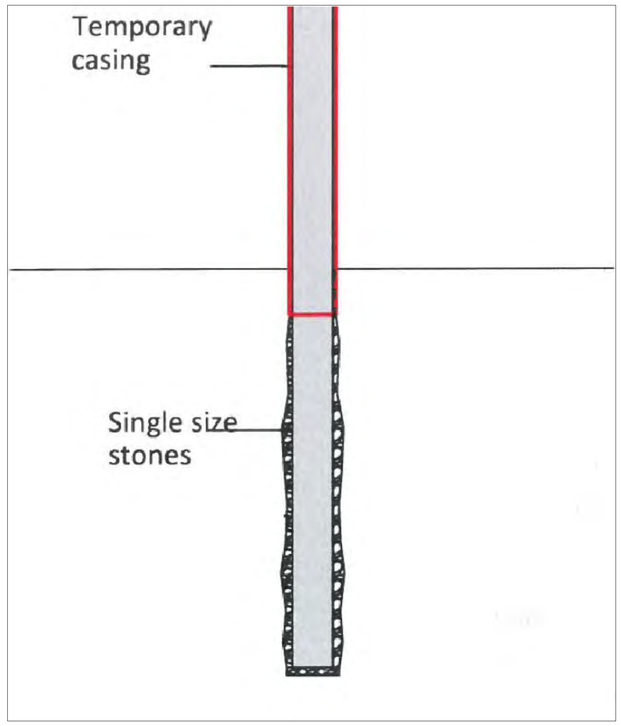
1. TEMPORARY CASING IS DRIVEN SLIGHTLY INTO THE RIVER BED (UP TO 1m)



2. AUGER TO DIG INTO GROUND AND REMOVE SPOILS



3. TUBULAR PILE IS LOWERED DOWN INTO ITS POSITION



4. GRANULAR FILL PLACED AROUND THE STEEL PILE (AROUND 200mm)

GENERAL NOTES

1. DO NOT SCALE THIS DRAWING.

2. DISTANCES BETWEEN PILES MAY CHANGE SLIGHTLY DEPENDING ON THE DETAILED TOPOGRAPHICAL SURVEY..

- PILES IN THE RIVER TO BE CIRCA 1.5m DIAMETER. TUBULAR SOCKETED AUGERED PILES.
- PILES AT THE ABUTMENTS LOCATION TO BE CIRCA 0.75m DIAMETER . ARRANGEMENT OF 4 AUGERED PILES.

3. THE DIMENSIONS IN THIS DRAWING MAY CHANGE SLIGHTLY DEPENDING ON THE DETAILED TOPOGRAPHICAL SURVEY.

4. PIERS LOCATION SUBJECT TO CONCLUSION OF NAVIGATION RISK ASSESSMENT.

DRAFT

REV	DESCRIPTION	DRN	C.CHK	DATE
P01	-	JB	JB	88.88.88
	-	JB	JB	JB
		DSN	E.CHK	APP

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TRANSPORT FOR LONDON

Project

TEMPORARY PEDESTRIAN AND CYCLE BRIDGE

Drawing Title

TEMPORARY BRIDGE CONSTRUCTION METHODOLOGY SOCKETED PILES

	Name	Date
Drawn		
CAD Chk		
Designed		
Eng Chk		
Approved		

Scale: NTS

Drawing Status: WORK IN PROGRESS

Revision: P02

Drawing No.

102963 - PEF - BAS - ZZZ - DIA - C - 00002

Appendix B– List of Events

List of annual events held in the vicinity of Hammersmith Bridge:

Name	Date	Location	Affected Area
Casey Trophy[4]	8th February 2020	Chiswick Bridge to Putney Bridge	Chiswick Bridge to Putney Bridge
Boustead Cup[4]	9th February 2020	Putney Bridge to Chiswick Bridge	Putney Bridge to Chiswick Bridge
Hammersmith Head of the River Race[4]	16th February 2020	Kew Railway Bridge to Barn Elms Boathouse	Kew Railway Bridge to Barn Elms Boathouse. Involves a river closure.
Dewar Shield[4]	22nd February 2020	Hammersmith Bridge to Chiswick Bridge	Hammersmith Bridge to Chiswick Bridge
Women's Head of the River Race[4]	7th March 2020 TBC	Kew Railway Bridge to Fulham Railway Bridge	Kew Railway Bridge to Fulham Railway Bridge. Involves a river closure.
Lightweight University Boat Races[4]	15th March 2020	Putney Bridge to Chiswick Bridge	Putney Bridge to Chiswick Bridge
Schools' Head of the River Race[4]	18th March 2020 TBC	Kew Railway Bridge to Fulham Railway Bridge	Kew Railway Bridge to Fulham Railway Bridge. Involves a river closure.
Head of the River Race[4]	21st March 2020 TBC	Kew Railway Bridge to Fulham Railway Bridge	Kew Railway Bridge to Fulham Railway Bridge. Involves a river closure.
Vesta Veterans Head of the River Race[4]	22nd March 2020 TBC	Kew Railway Bridge to Fulham Railway Bridge	Kew Railway Bridge to Fulham Railway Bridge. Involves a river closure.
The Boat Race (Oxford vs Cambridge)[4]	29th March 2020 TBC	Putney Bridge to Chiswick Bridge	Putney Bridge to Chiswick Bridge
Putney & Fulham Half Marathon[5]	5th April 2020	Barn Elms Sport Centre	Rolling closures – Putney to Hammersmith Bridge[6]
Royal Tudor Pull[4]	19th April 2020 TBC	Teddington Lock to St Katherine's Pier	Teddington Lock to St Katherine's Pier
Hammersmith Amateur Regatta[4]	25th April 2020 TBC	Mile Post to Chiswick Steps	Mile Post to Chiswick Steps
Thames Bike Ride[6]	May	Along the River Thames	Carnwath Road to Putney Bridge
Banham Marsden March[7]	3rd May 2020	Dovehouse Green, Chelsea to Sutton	Stamford Bridge to Putney Bridge
SOTG Club Race[4]	17th May 2020	Kew Bridge to Hammersmith Bridge	Kew Bridge to Hammersmith Bridge
Polo in the Park[6]	5-7th June 2020	Hurlingham Park	Hurlingham Road and Broomhouse Lane
Outrigger Canoe Race[4]	13th June 2020	Hammersmith Bridge to Lambeth Bridge	Hammersmith Bridge to Lambeth Bridge
SOTG Club Race[4]	14th June 2020	Kew Bridge to Hammersmith Bridge	Kew Bridge to Hammersmith Bridge

[4] http://www.pla.co.uk/Events/Annual-Events-Calendar
[5] https://www.runuk.co.uk/putney-and-fulham-half-marathon/
[6] https://www.lbhf.gov.uk/transport-and-roads/roads-bridges-and-pavements/traffic-management
[7] https://www.royalmarsden.org/support-us/marsden-march/essential-info

Name	Date	Location	Affected Area
Fever-Tree Tennis Championships[6]	15-21st June 2020	Queens Club, Barons Court	Palliser Road, Comeragh Road and Barons Court Road
SOTG Club Race[4]	26th July 2020	Kew Bridge to Hammersmith Bridge	Kew Bridge to Hammersmith Bridge
RideLondon[6]	16th August 2020[8]	London wide	All roads south of A4
Great River Race[4]	5th September 2020 TBC	Greenwich to Twickenham	West Ferry Road to Ham House. Involves a river closure
London Bridges Challenge[9]	12th September 2020	Starts at Putney Bridge, covering 16 bridges and finishing in Southwark	Starts at Putney Bridge, covering 16 bridges and finishing in Southwark
Regatta London[4]	4th October 2020 TBC	Hammersmith Bridge to West India Docks[10]	Hammersmith Bridge to West India Docks
Pairs Head of the River Race[4]	11th October 2020 TBC	Kew Railway Bridge to Barn Elms Boathouse	Kew Railway Bridge to Barn Elms Boathouse
Remembrance Sunday Parades[6]	8th November 2020	Shepherd's Bush Green and Parsons Green	Sulgrave Road, Shepherd's Bush Green, Uxbridge Road, Minford Gardens, Church Gate, New Kings Road and Fulham High Street
Fulham 10K[6]	17th November 2020[11]	Fulham Broadway area	Fulham Road, Fulham Broadway, Harwood Road, New King's Road, Fulham High Street, Fulham Palace Road, Lillie Road and Dawes Road
Veterans' Fours Head of the River Race[4]	21st November 2020 TBC	Fulham Railway Bridge to Kew Railway Bridge	Fulham Railway Bridge to Kew Railway Bridge. Involves a river closure.
Remenham Challenge[4]	12th December 2020 TBC	Barnes Bridge to Putney Bridge	Barnes Bridge to Putney Bridge. Involves a river closure.
Women's Head of the River Race[4]	6th March 2021 TBC	Fulham Railway Bridge to Kew Railway Bridge	Fulham Railway Bridge to Kew Railway Bridge. Involves a river closure.
Schools' Head of the River Race[4]	24th March 2021 TBC	Fulham Railway Bridge to Kew Railway Bridge	Fulham Railway Bridge to Kew Railway Bridge. Involves a river closure.

Historic events not yet confirmed within the area

Name	Date	Location	Affected Area
Chelsea FC Victory Parade	May/ June 2020	Fulham Road, Hortensia Road, King's Road	From Chelsea FC along Fulham Road, down Hortensia Road, King's Road back to Hammersmith

[8] https://www.prudentialridelondon.co.uk/
[9] https://www.alzheimers.org.uk/get-involved/events-and-fundraising/join-event/trekking/thames-bridges-challenge
[10] https://regatta.london/route-map
[11] https://www.adidascityruns.com/fulham/overview/

Appendix C– Phase 1 Habitat Map

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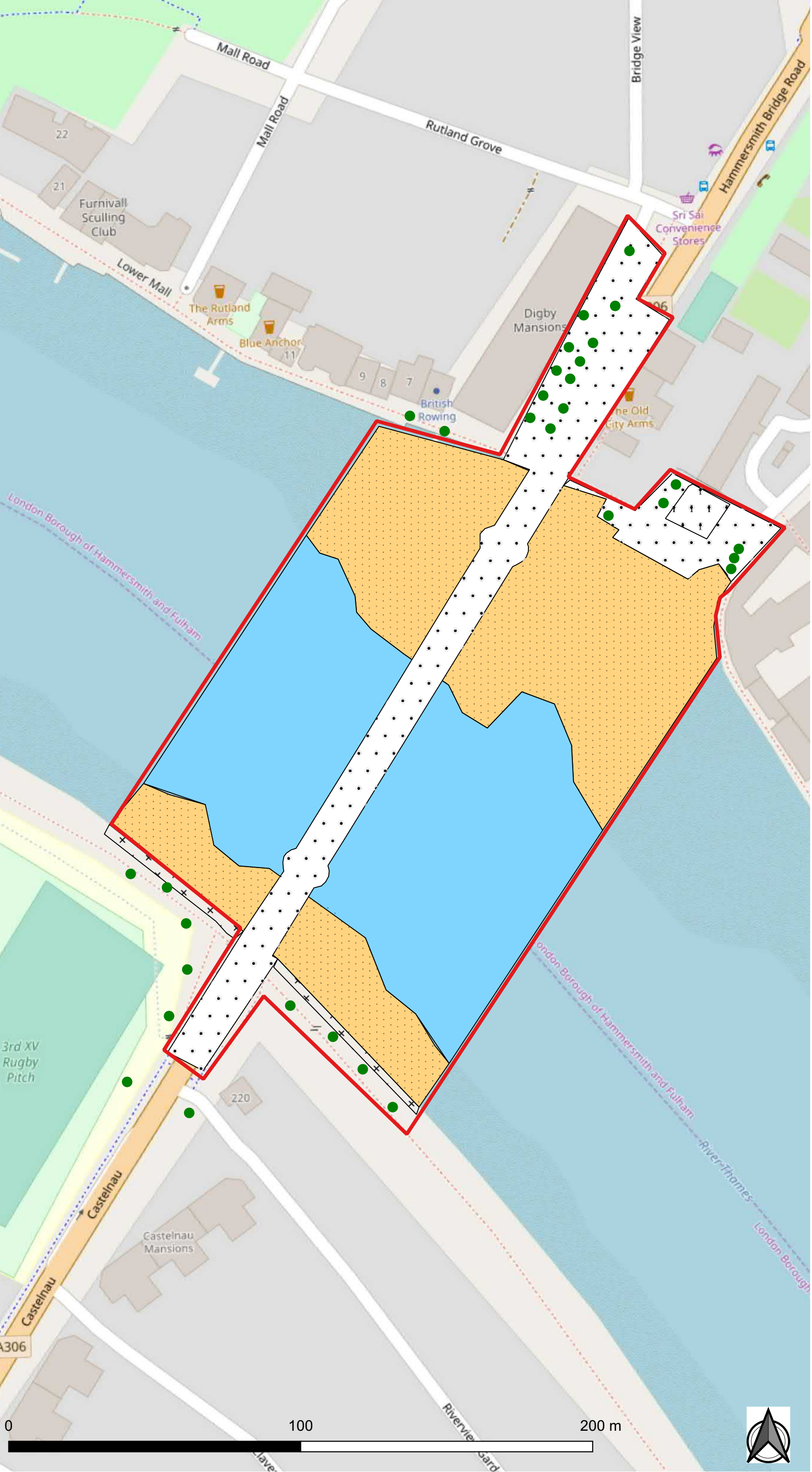
BURRATOR HOUSE, RYDON LANE, EXETER, EX2 7NT



Legend

- Ecology Study Area
- A3.1 - Scattered Broadleaf Trees
- J4 - Bare ground
- B4 - Improved grassland
- J1.3 - Ephemeral/ short perennial vegetation
- H1.1 - Intertidal - mud/sand
- G2 - Running water

Temporary Pedestrian and Cycle Bridge

Phase 1 Habitat Map